TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

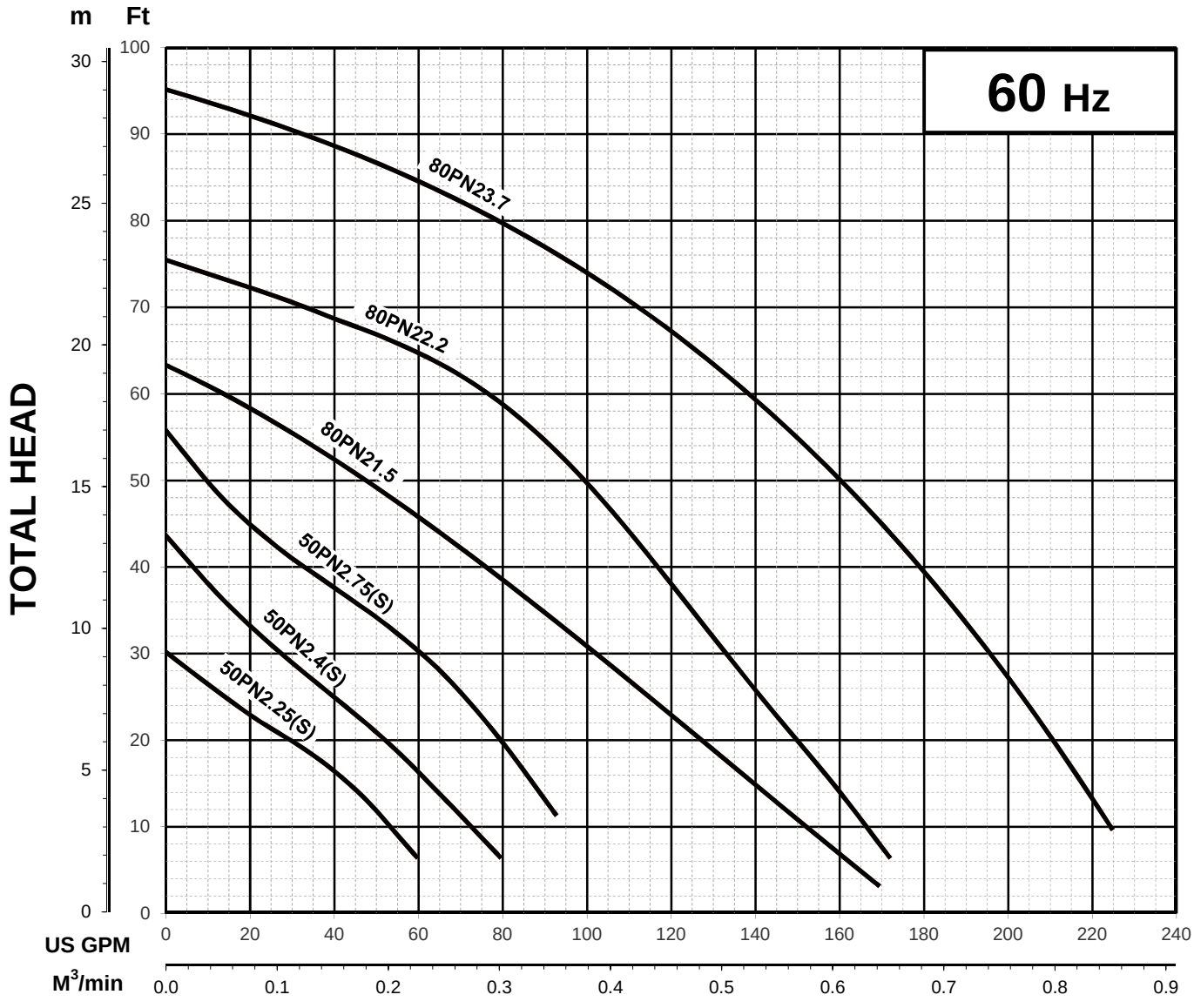
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

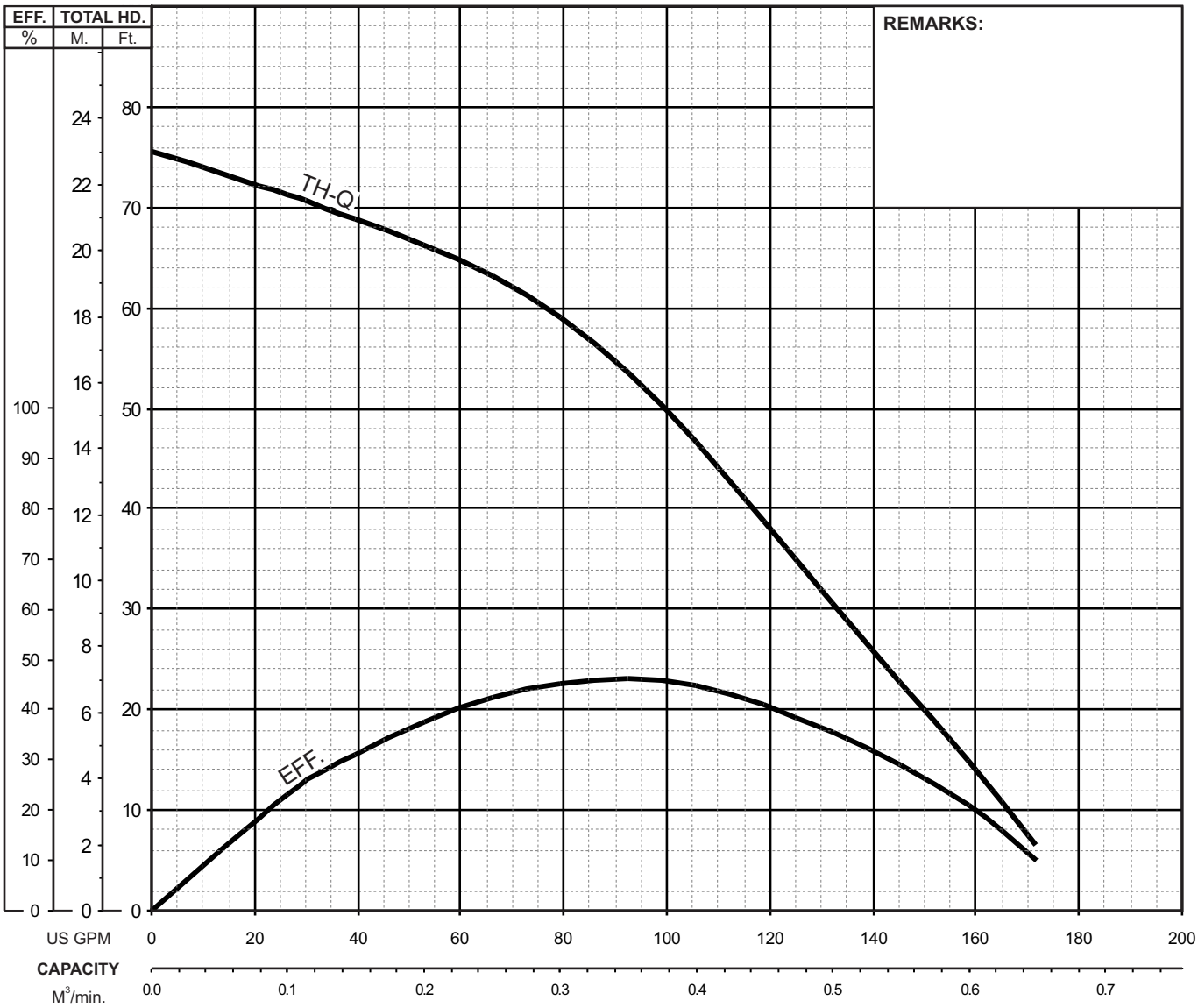
PERFORMANCE CURVE

MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
80PN(A/W)22.2 -61	3"/80mm	3	2.2	3490	0.787"/ 20mm	Water	1.0	1.123 cSt	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater	3	208-220/460/575	9.1-8.5/4.2/3.3	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:

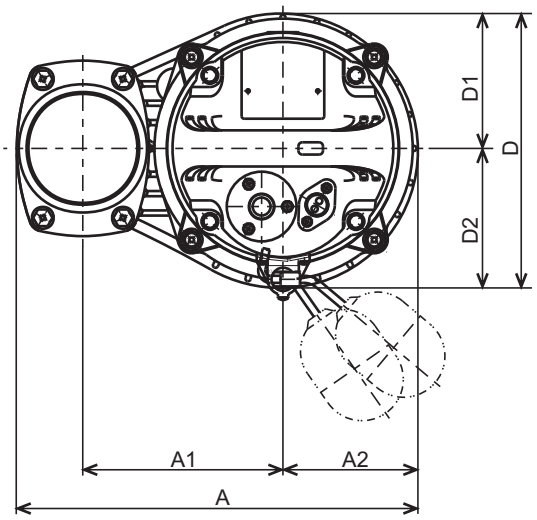


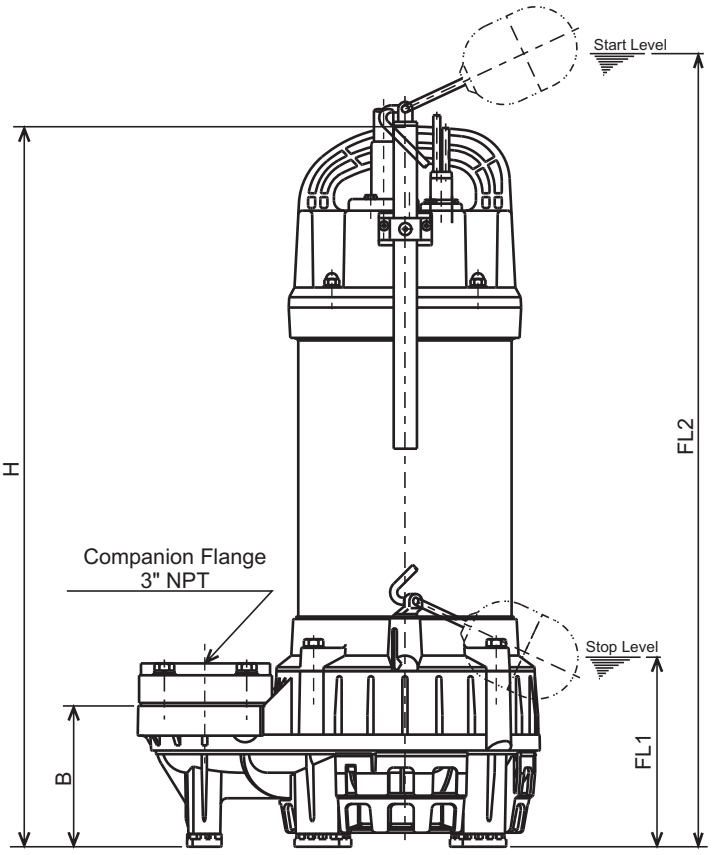
TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

80PNA22.2-61
80PNA23.7-61





DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor								Stop	Start	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(lbs.)
80PNA22.2-61	3	3"	12 1/4	6 1/8	4 1/4	4 5/16	8 11/16	4 1/8	4 5/8	22	6	30 1/4	51
80PNA23.7-61	5	3"	12 1/4	6 1/8	4 1/4	4 5/16	8 11/16	4 1/8	4 5/8	23 3/8	6	31 5/8	62

DIMENSIONS:METRIC (mm)

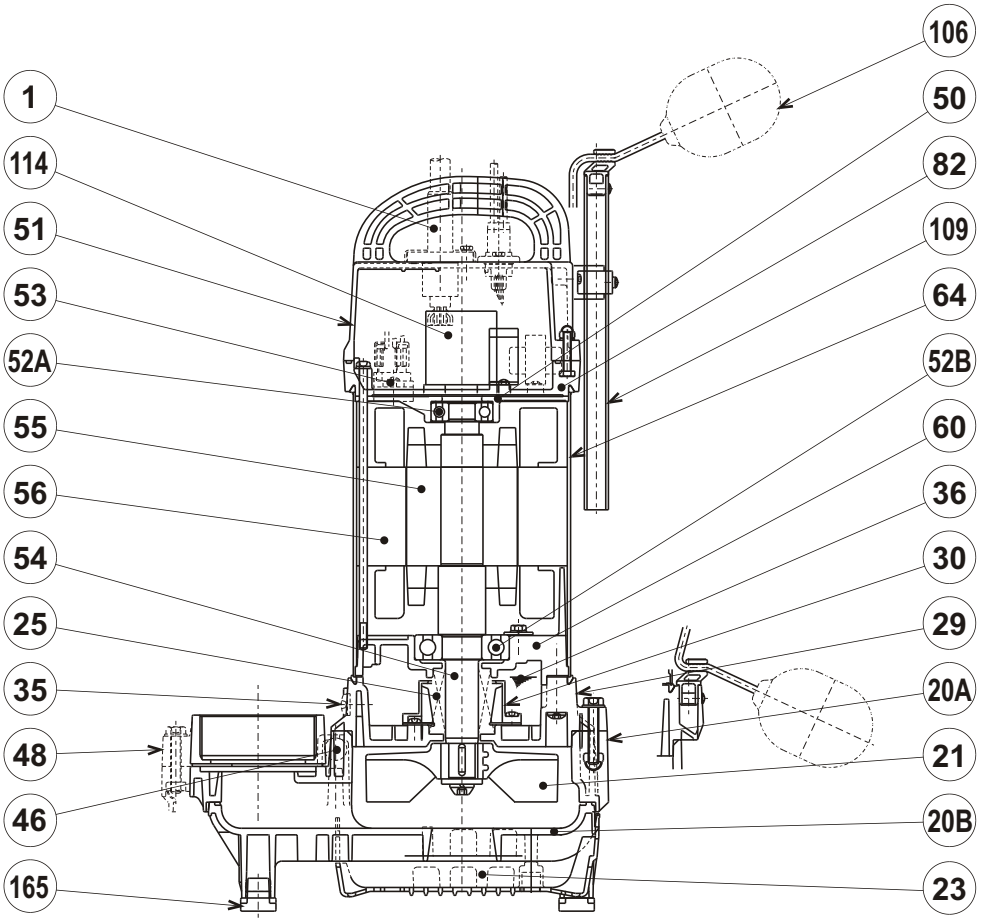
Model	kW	NOM.	Pump & Motor								Stop	Start	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(kg)
80PNA22.2-61	2.2	80	311	155	105	110	221	104	117	559	152	767	23
80PNA23.7-61	3.7	80	311	155	105	110	221	104	117	594	152	802	28

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

80PNA22.2-61
80PNA23.7-61



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable (80PNA22.2-61)	PVC Sheath AWG14/4-32ft			1
	Power Cable (80PNA23.7-61)	PVC Sheath AWG12/4-32ft			
20A	Upper Pump Casing	PA+ABS Plastic w/GF30			1
20B	Lower Pump Casing	PA+ABS Plastic w/GF30			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / H-25AT			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic w/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PVC / NPT 3"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/GF40			1
52A	Upper Bearing	#6204ZZC3			1
52B	Lower Bearing	#6306ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
82	Motor Head Cover Spacer	PPS Plastic w/GF40			1
106	Float Set	ABS Plastic			2
109	Float Support Pipe	PVC			1
114	Power Relay				1
165	Rubber Cushion	Nitrile Butadiene Rubber			5

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency drive. (Only for 3 ph.)

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

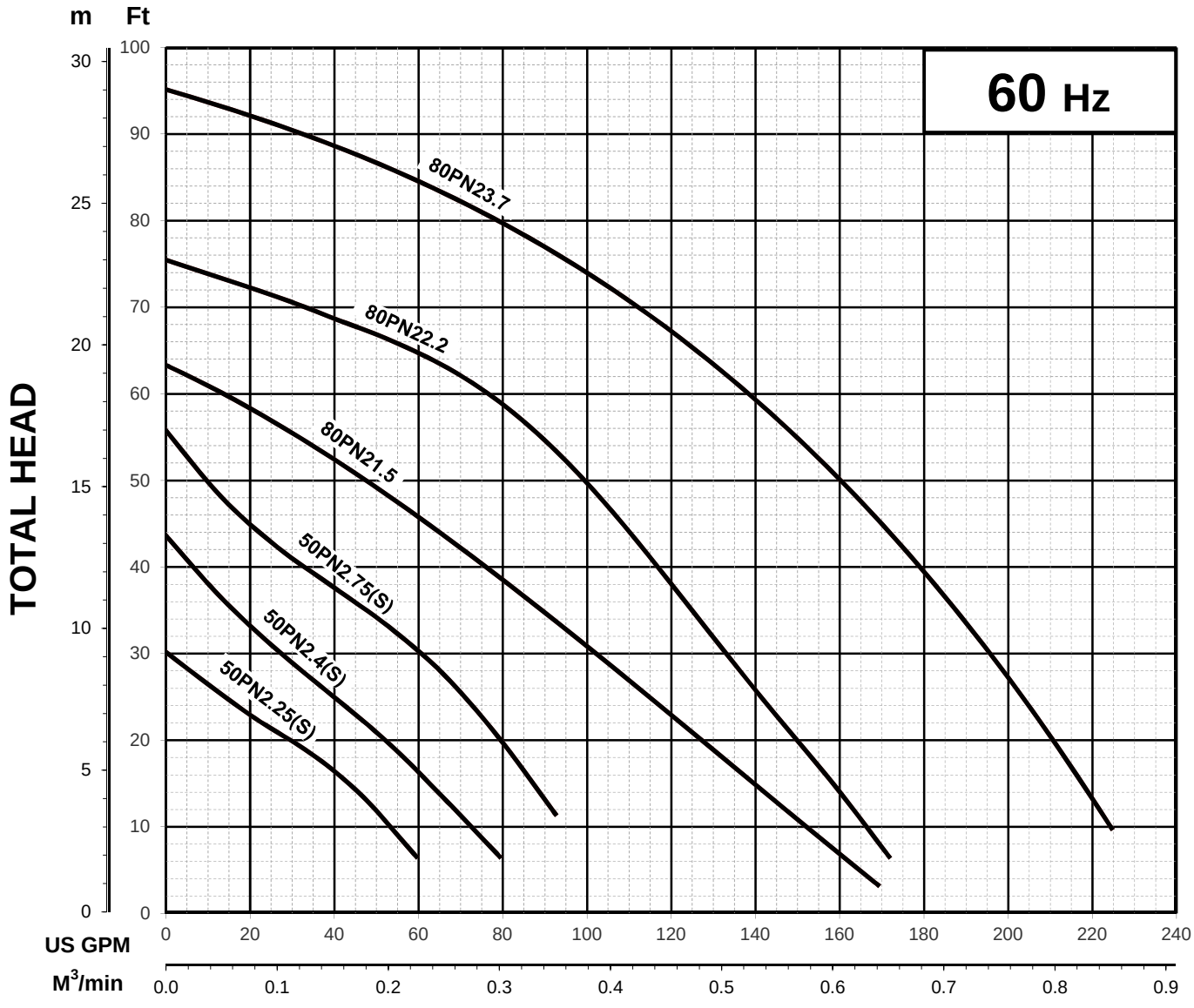
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

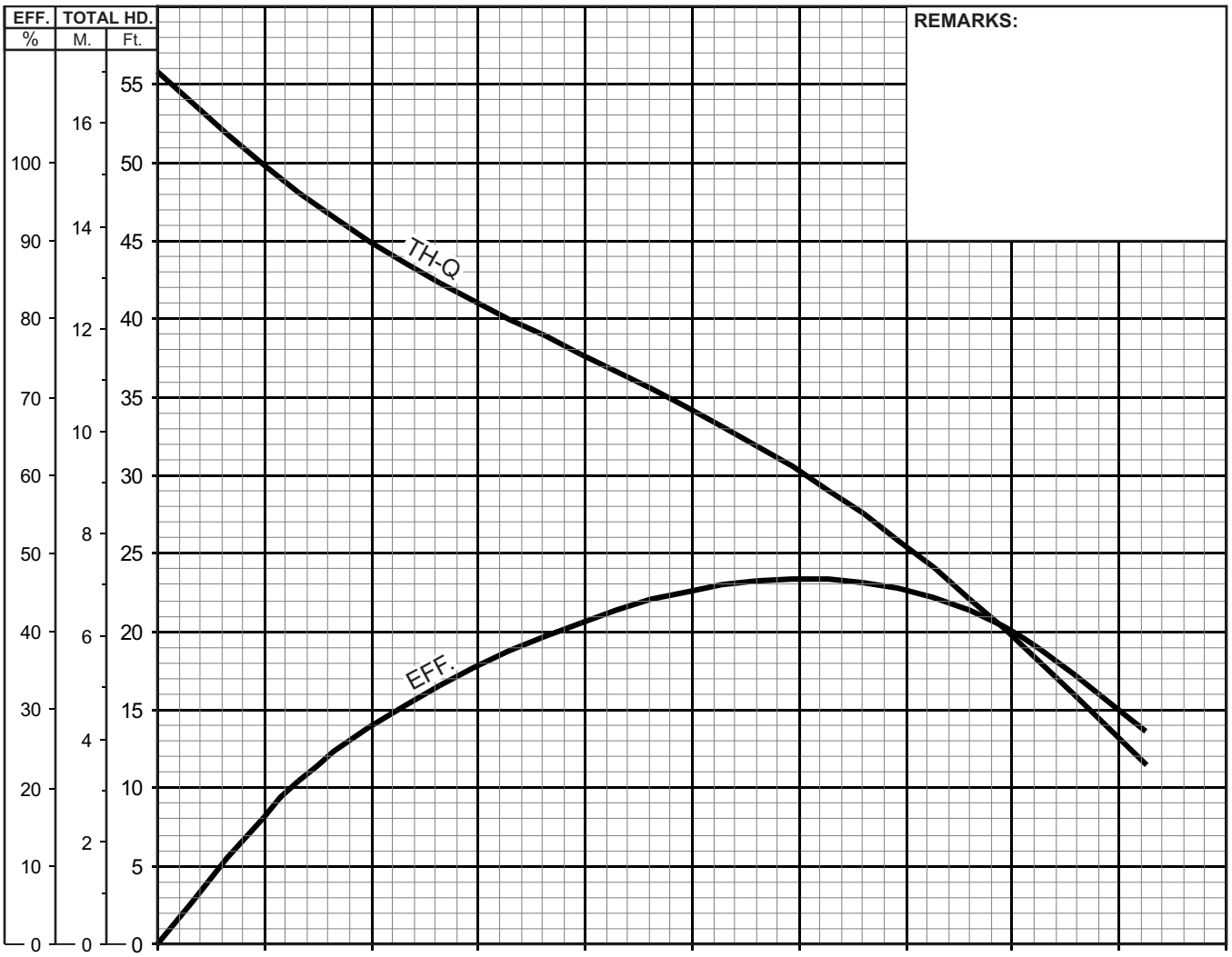
PERFORMANCE CURVE

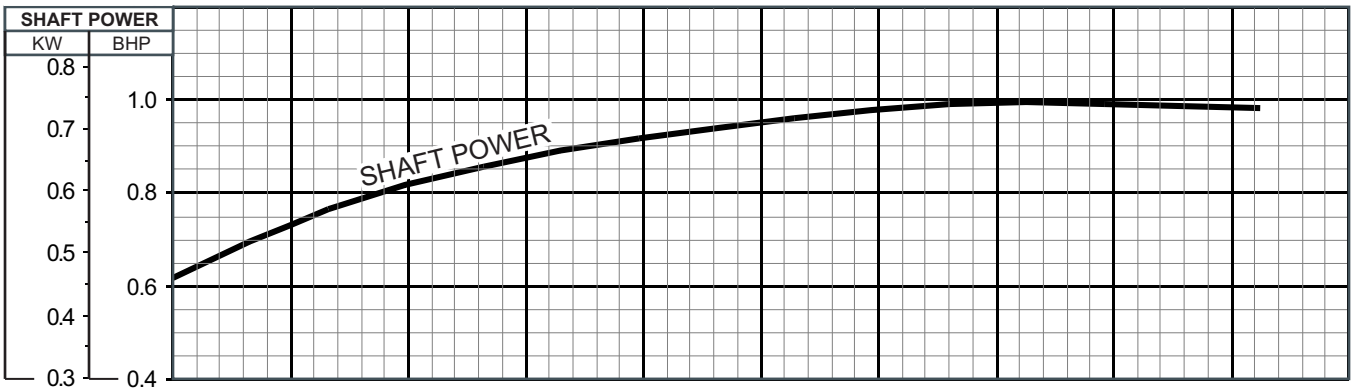
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.75S -63	2" / 50mm	1	0.75	3374	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex Wastewater Pump	Single	115-120 / 230	9.2-9.1 / 4.6	60	Capacitor-Start	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



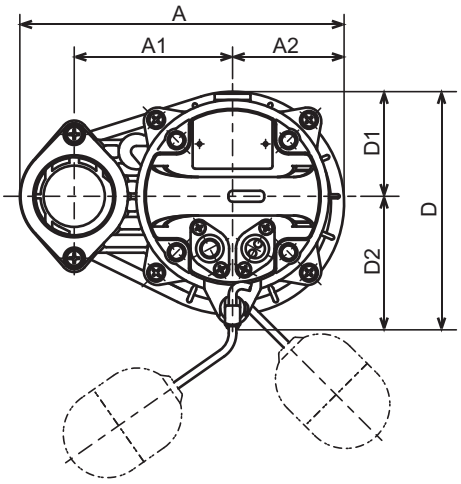


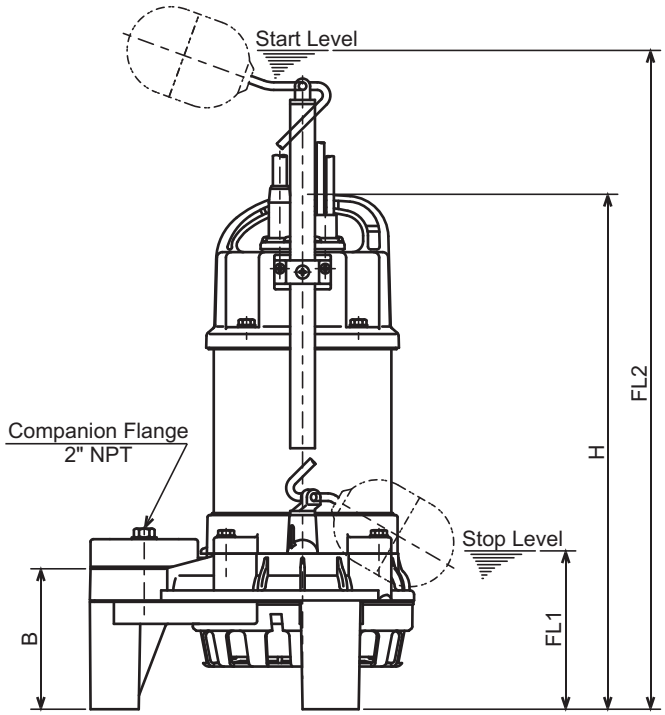
TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PNA2.25S-62
50PNA2.25-62
50PNA2.4S-62
50PNA2.4-62
50PNA2.75S-62
50PNA2.75-62





DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(lbs.)
50PNA2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	17.0
50PNA2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 5/16	4 1/2	23 1/2	14.8
50PNA2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	17.0
50PNA2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	16.7
50PNA2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/2	4 1/2	24 5/8	20.9
50PNA2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/4	4 1/2	24 1/2	19.6

DIMENSIONS:METRIC (mm)

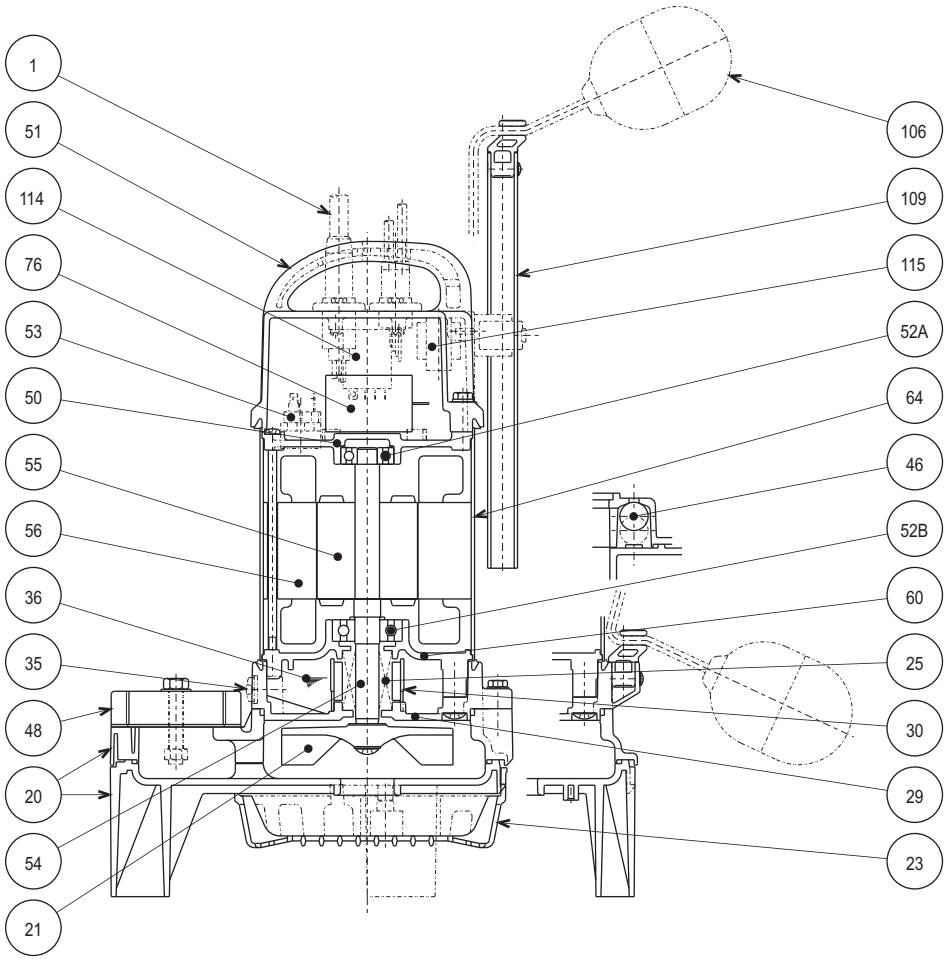
Model	kW	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(kg)
50PNA2.25S-62	0.25	50	236	115	81	102	173	76	97	374	115	607	7.7
50PNA2.25-62	0.25	50	236	115	81	102	173	76	97	363	115	596	6.7
50PNA2.4S-62	0.40	50	236	115	81	102	173	76	97	374	115	607	7.7
50PNA2.4-62	0.40	50	236	115	81	102	173	76	97	374	115	607	7.6
50PNA2.75S-62	0.75	50	236	115	81	102	173	76	97	394	115	627	9.5
50PNA2.75-62	0.75	50	236	115	81	102	173	76	97	388	115	621	8.9

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PNA2.75S-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG14/3-32ft or AWG16/3-32ft (230V)			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6302ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
76	Capacitor				1
106	Float Set	ABS Plastic			2
109	Float Support Pipe	PVC			1
114	Power Relay				1
115	Transformer				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

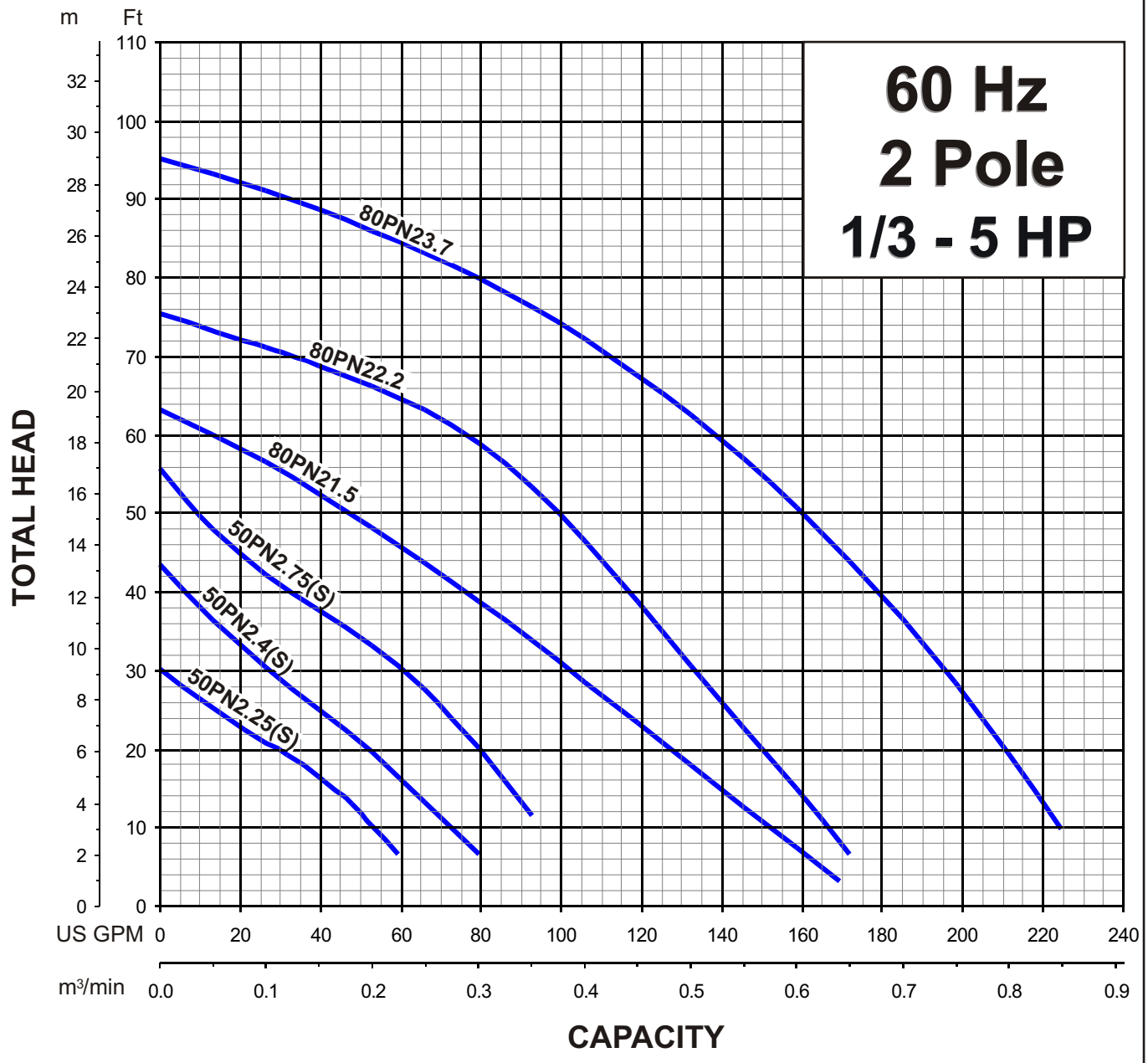
ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	PERFORMANCE RANGE

PERFORMANCE RANGE



TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

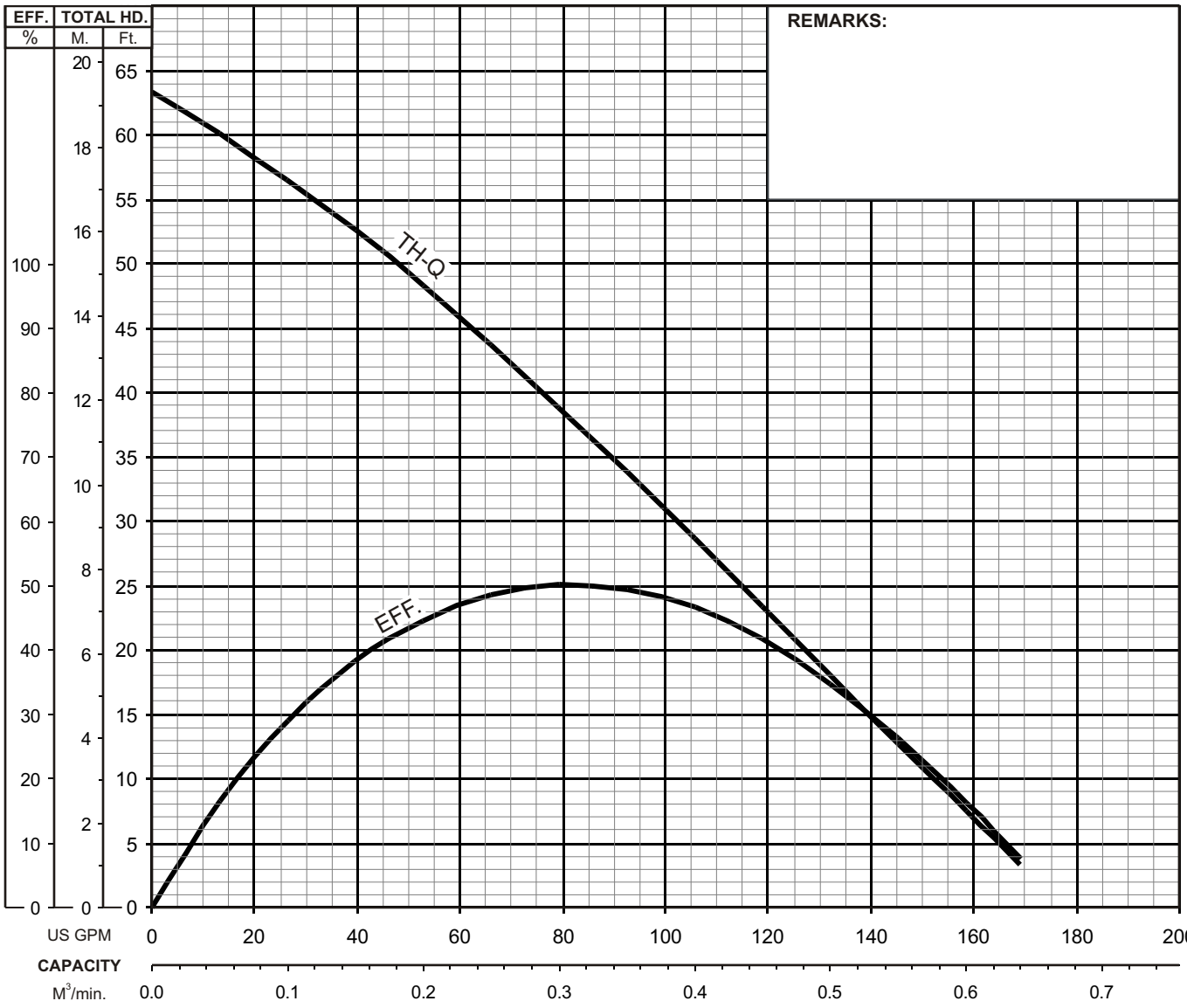
PERFORMANCE CURVE

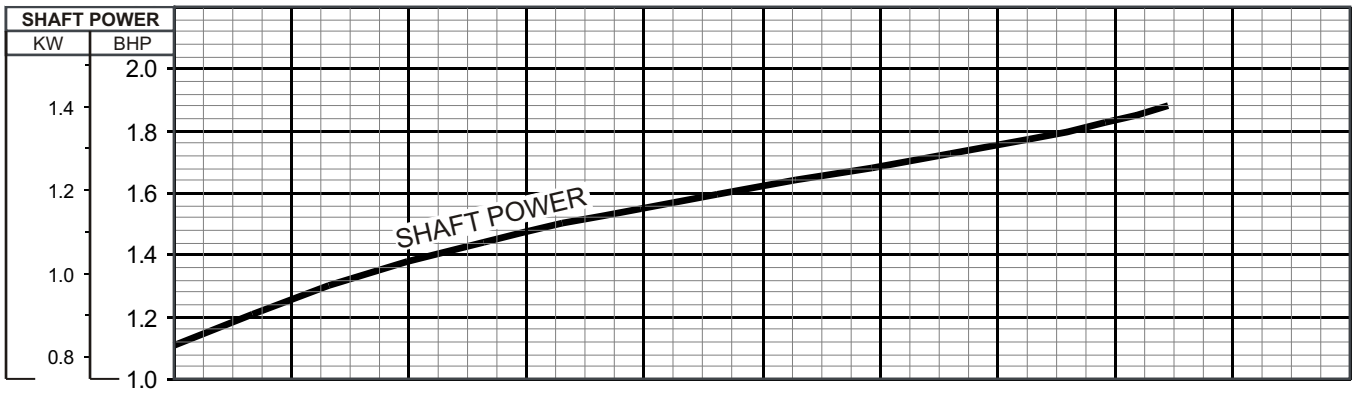
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
80PN(A/W)21.5 -62	3"/80mm	2	1.5	3455	0.787"/20mm	Water	1.0	1.123 CST	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex Wastewater Pump	3	208 - 220 / 440	6.9 - 6.6 / 3.6	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



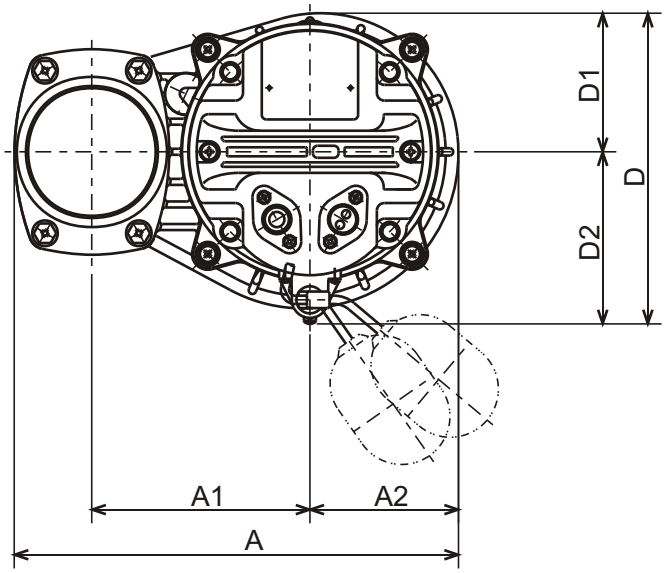


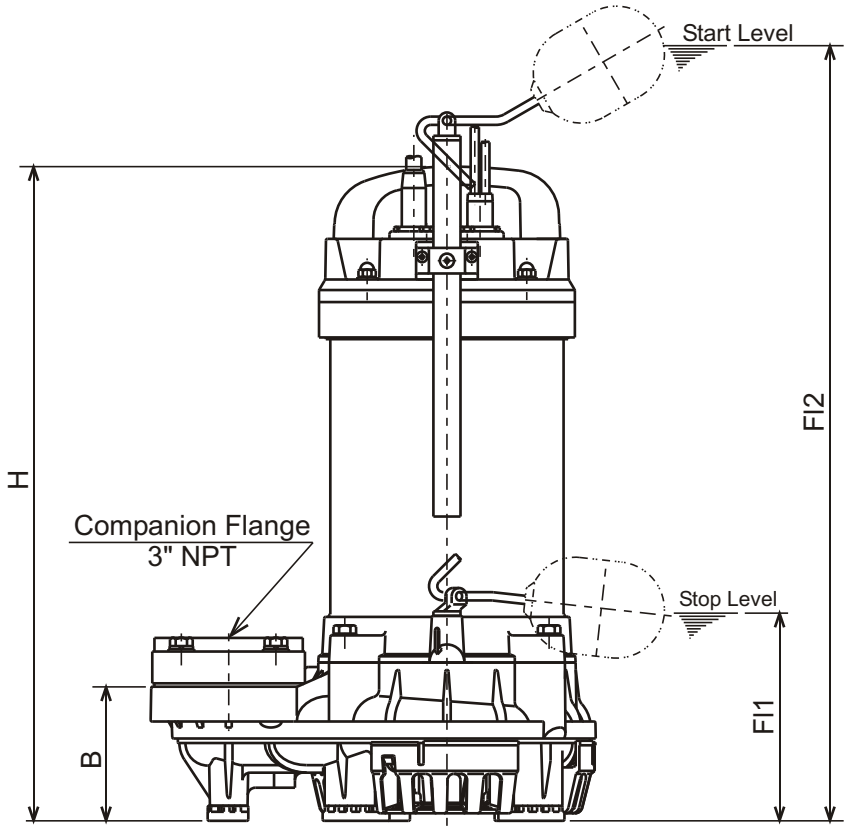
TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

80PNA21.5-62





DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(lbs.)
80PNA21.5-62	2	3"	11 5/8	5 11/16	3 7/8	3 1/2	8 1/8	3 5/8	4 1/2	17 1/8	5 3/8	24 1/2	36.6

DIMENSIONS:METRIC (mm)

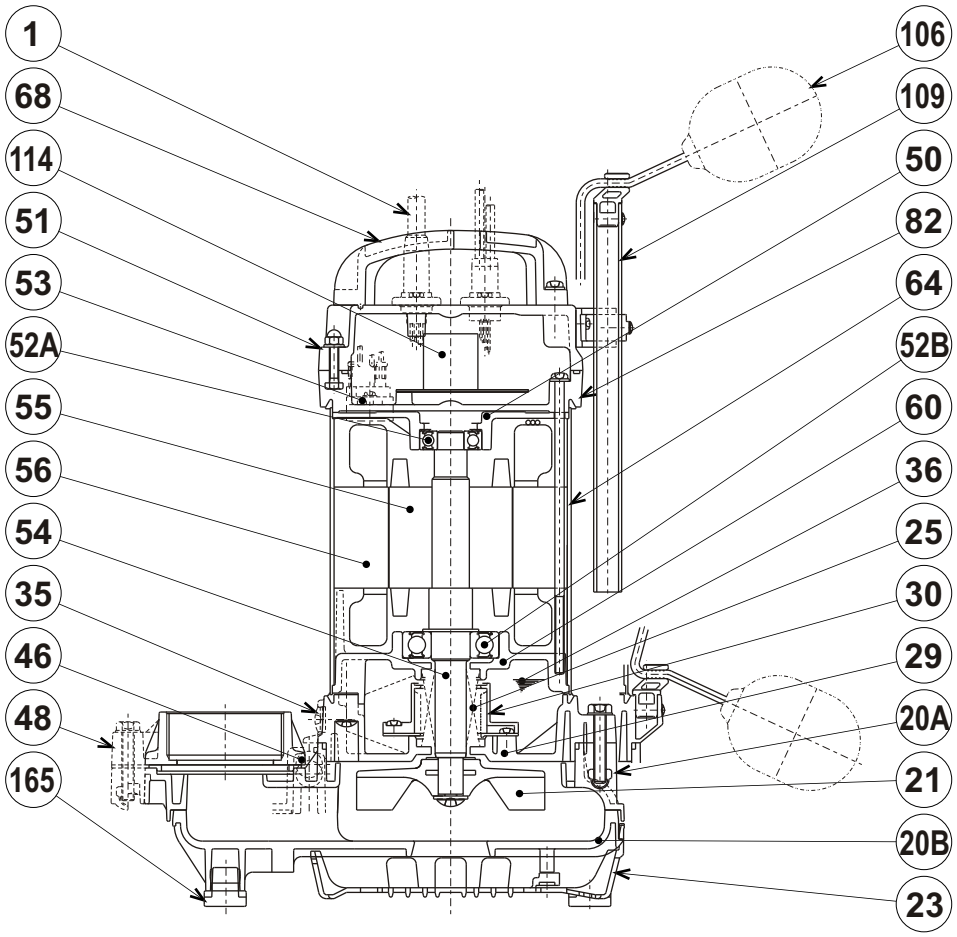
Model	kW	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(kg)
80PNA21.5-62	1.5	80	295	145	99	89	206	92	114	435	138	623	16.6

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

80PNA21.5-62



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/4-32ft			1
20A	Upper Pump Casing	PA+ABS Plastic w/GF30			1
20B	Lower Pump Casing	PA+ABS Plastic w/GF30			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / H-20A			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic W/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PVC / NPT 3"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/GF40			1
52A	Upper Bearing	#6203ZZC3			1
52B	Lower Bearing	#6305ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
68	Handle	ABS Plastic			1
82	Motor Head Cover Spacer	PPS Plastic w/GF40			1
106	Float Set	ABS Plastic			2
109	Float Support Pipe	PVC			1
114	Power Relay				1
165	Rubber Cusion	Nitrile Butadiene Rubber			5

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency drive. (Only for 3 ph.)

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

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SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

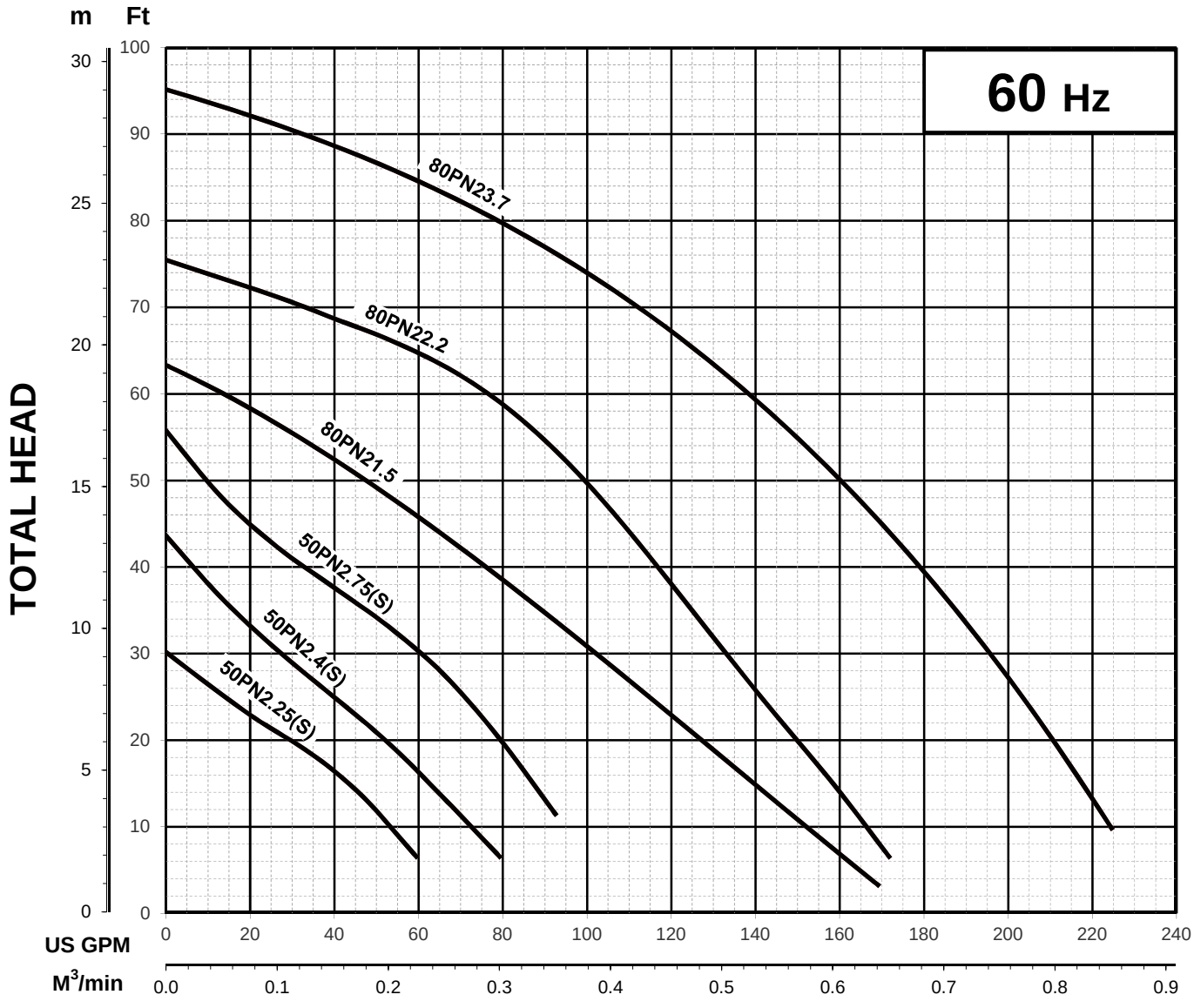
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

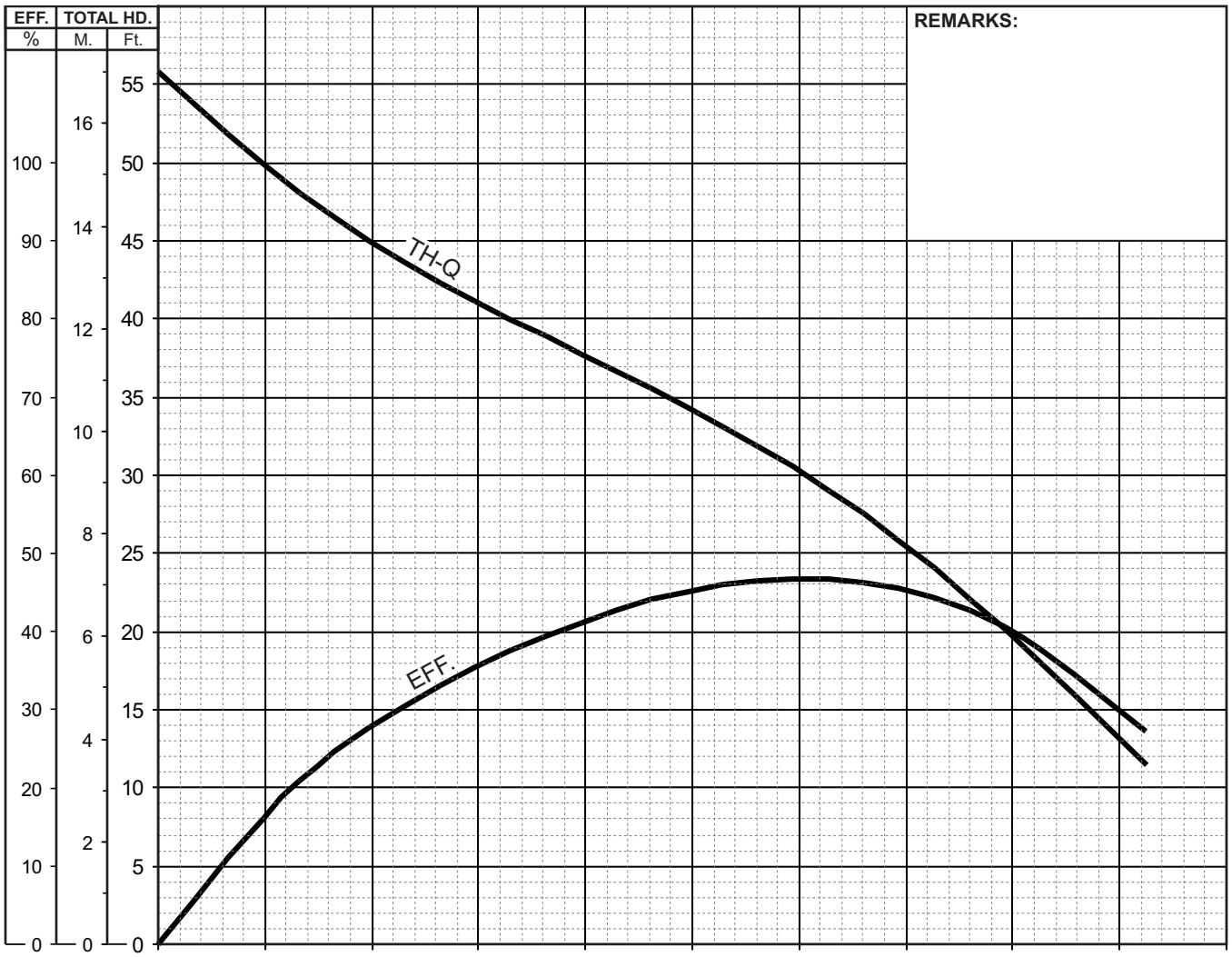
PERFORMANCE CURVE

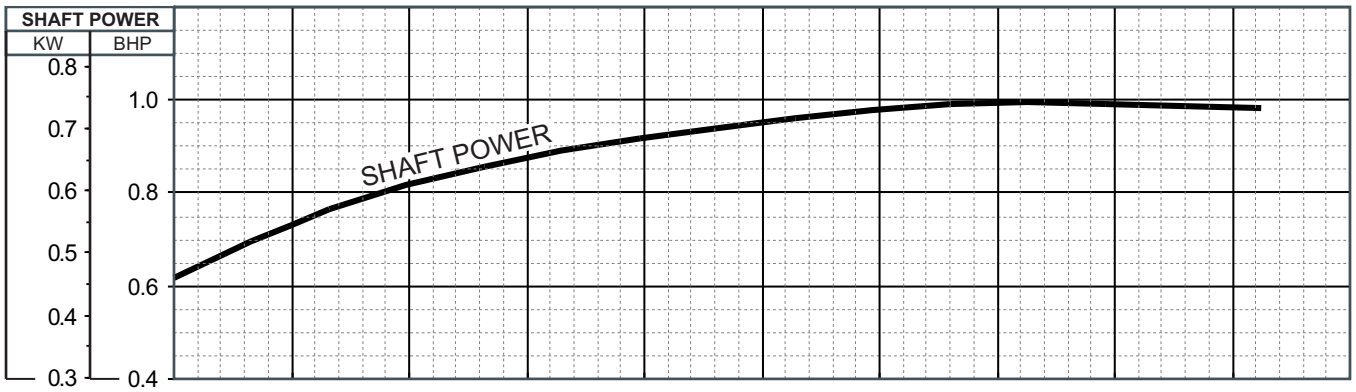
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.75 -63	2" / 50mm	1	0.75	3375	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex Wastewater Pump	3	208-220/460	3.2-3.2 / 1.5	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



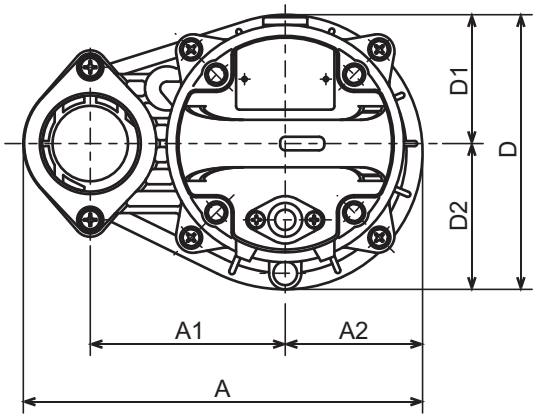


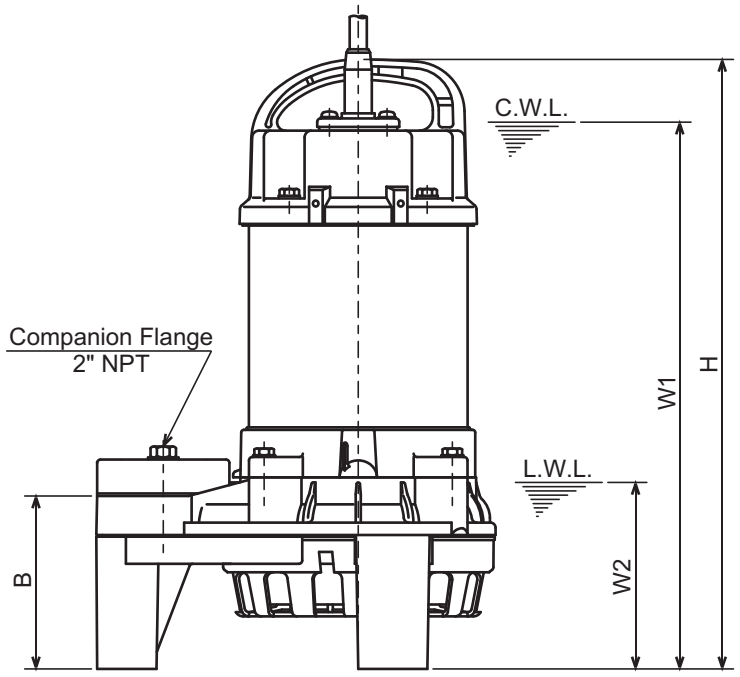
TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PN2.25S-62
50PN2.25-62
50PN2.4S-62
50PN2.4-62
50PN2.75S-62
50PN2.75-62





C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water Level

DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(lbs.)
50PN2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	13 3/4	12 1/4	4 3/8	13.4
50PN2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.4
50PN2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 15/16	13 5/8	4 3/8	19.6
50PN2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/4	13 3/8	4 3/8	18.3

DIMENSIONS:METRIC (mm)

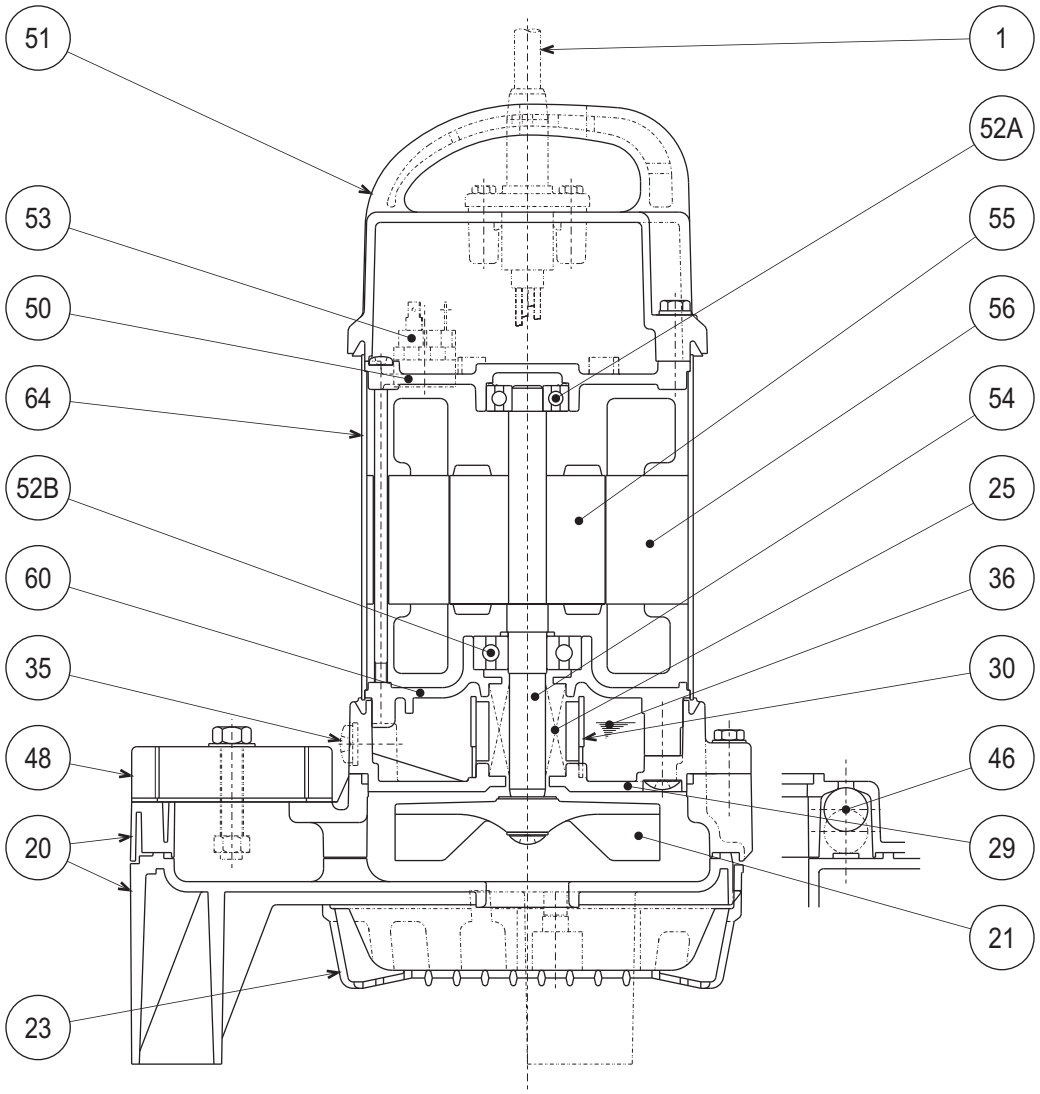
Model	kW	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
50PN2.25S-62	0.25	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.25-62	0.25	50	236	115	81	102	162	76	86	349	310	110	6.1
50PN2.4S-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.4-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.0
50PN2.75S-62	0.75	50	236	115	81	102	162	76	86	380	345	110	8.9
50PN2.75-62	0.75	50	236	115	81	102	162	76	86	374	340	110	8.3

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PN2.75-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/4-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6302ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

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SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

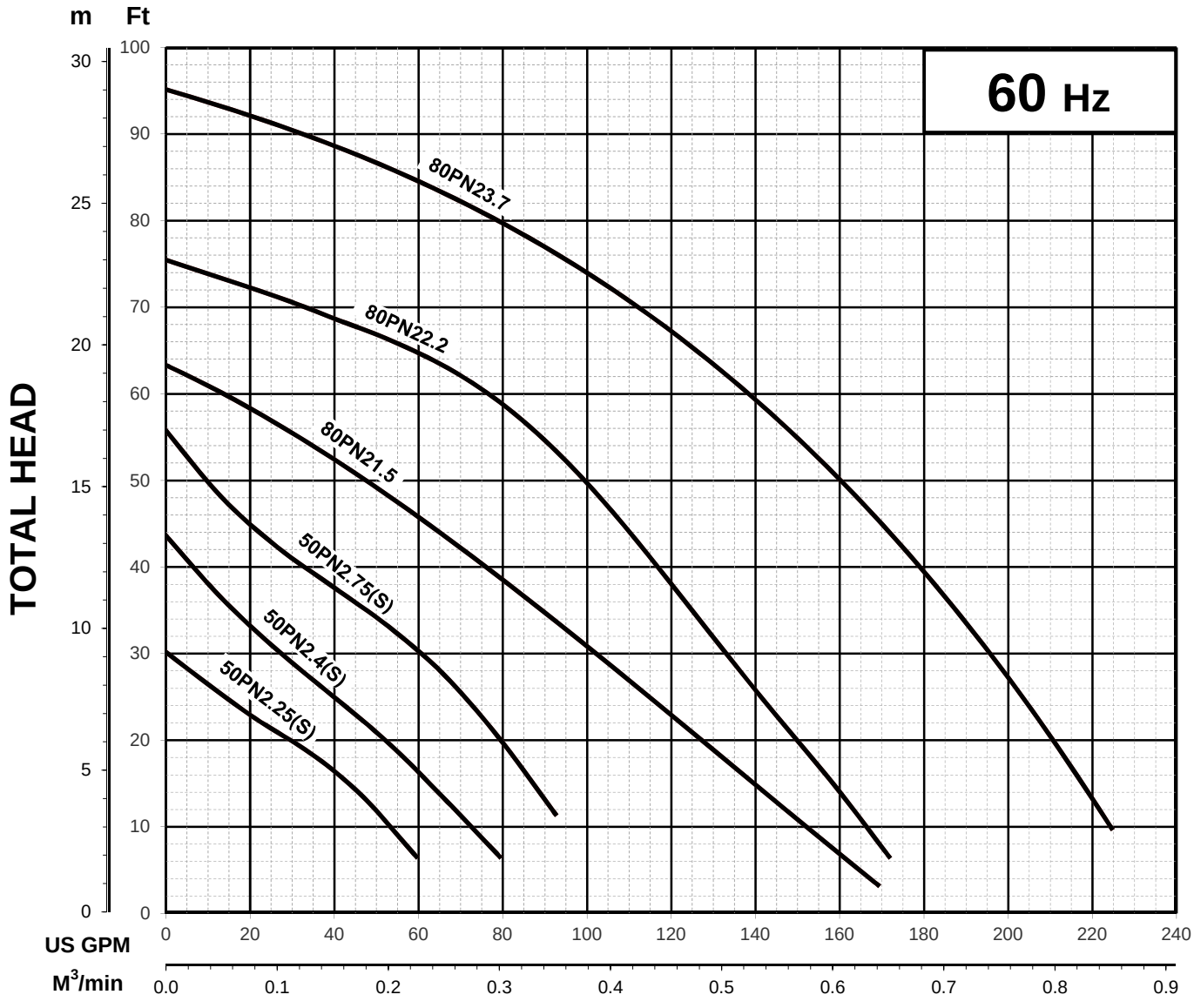
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

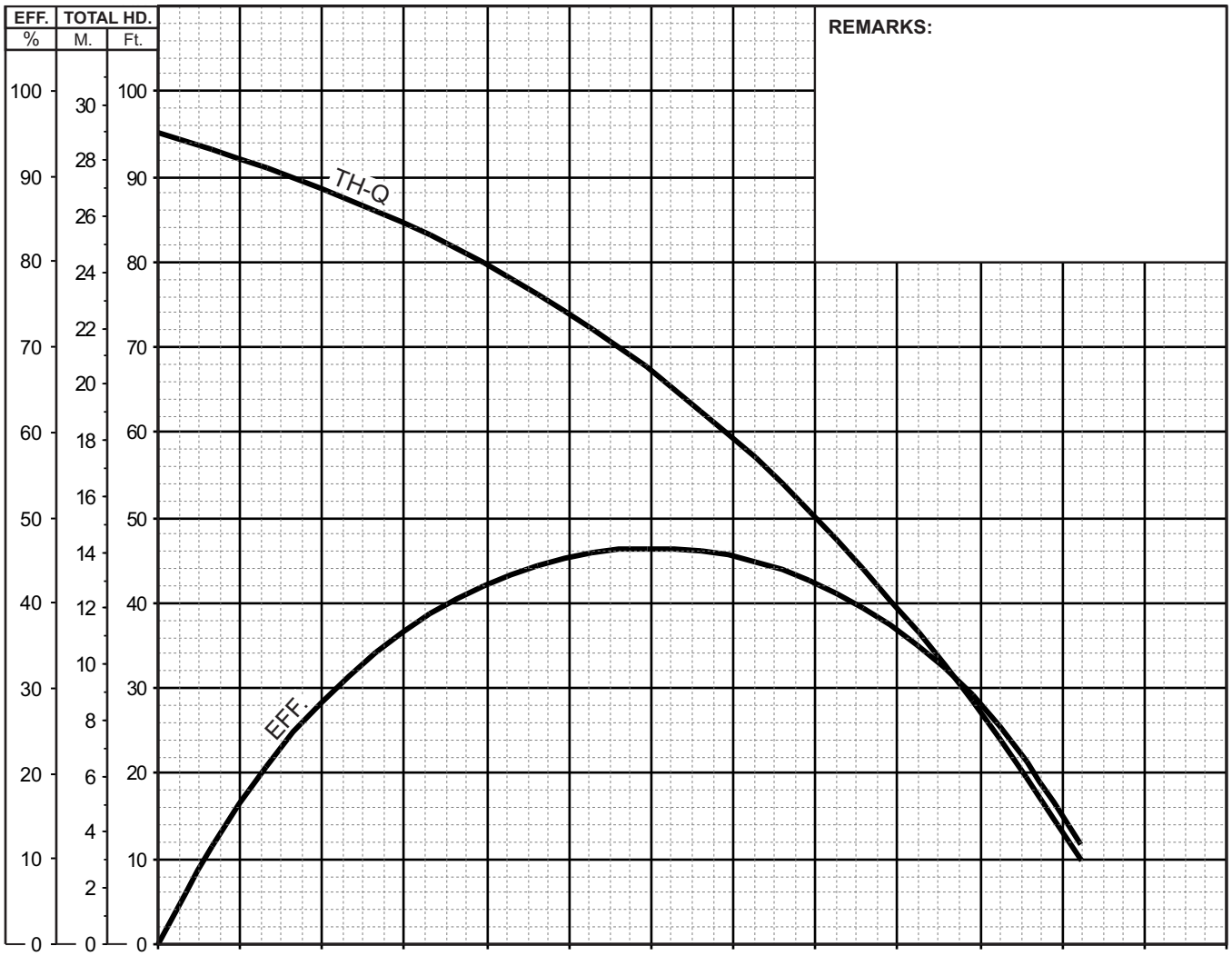
PERFORMANCE CURVE

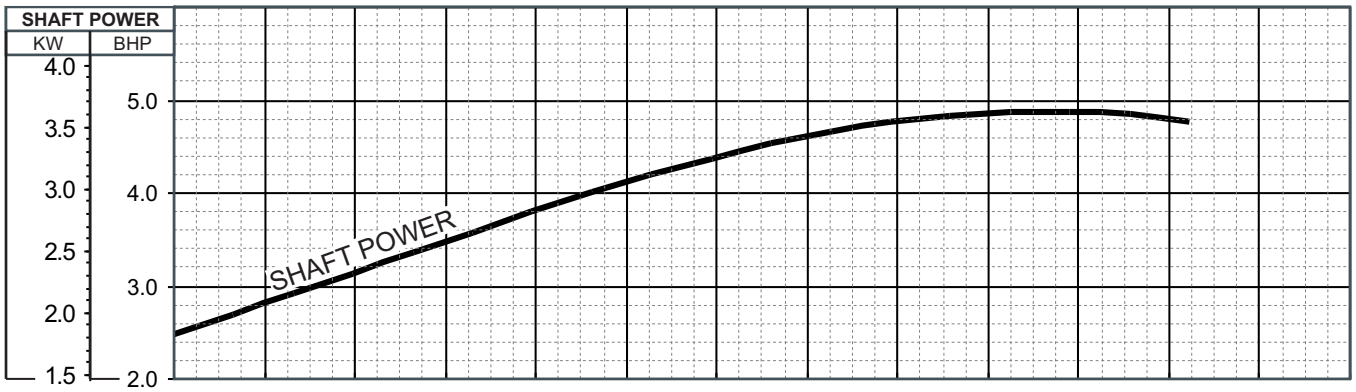
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
80PN(A/W)23.7 -61	3"/80mm	5	3.7	3495	0.787"/ 20mm	Water	1.0	1.123 cSt	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater	3	208-220/460/575	14.4-13.4/6.5/5.0	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



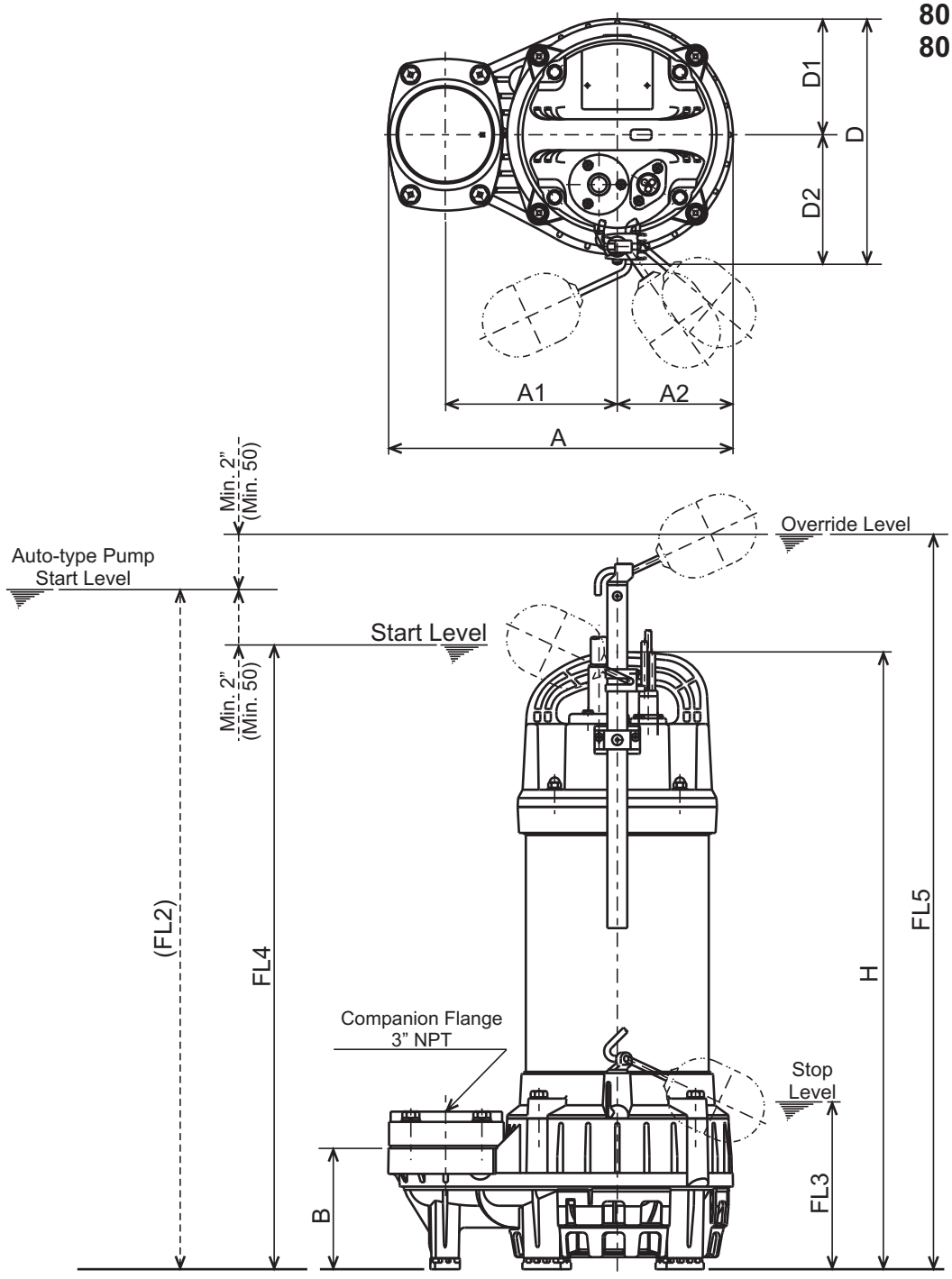


TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

80PNW22.2-61
80PNW23.7-61



DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor								Stop	Start	Override	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(lbs.)
80PNW22.2-61	3	3"	12 1/4	6 1/8	4 1/8	4 5/16	8 11/16	4 1/8	4 5/8	22	6	28 1/4	32 1/8	51
80PNW23.7-61	5	3"	12 1/4	6 1/8	4 1/8	4 5/16	8 11/16	4 1/8	4 5/8	23 3/8	6	29 5/8	33 1/2	62

DIMENSIONS:METRIC (mm)

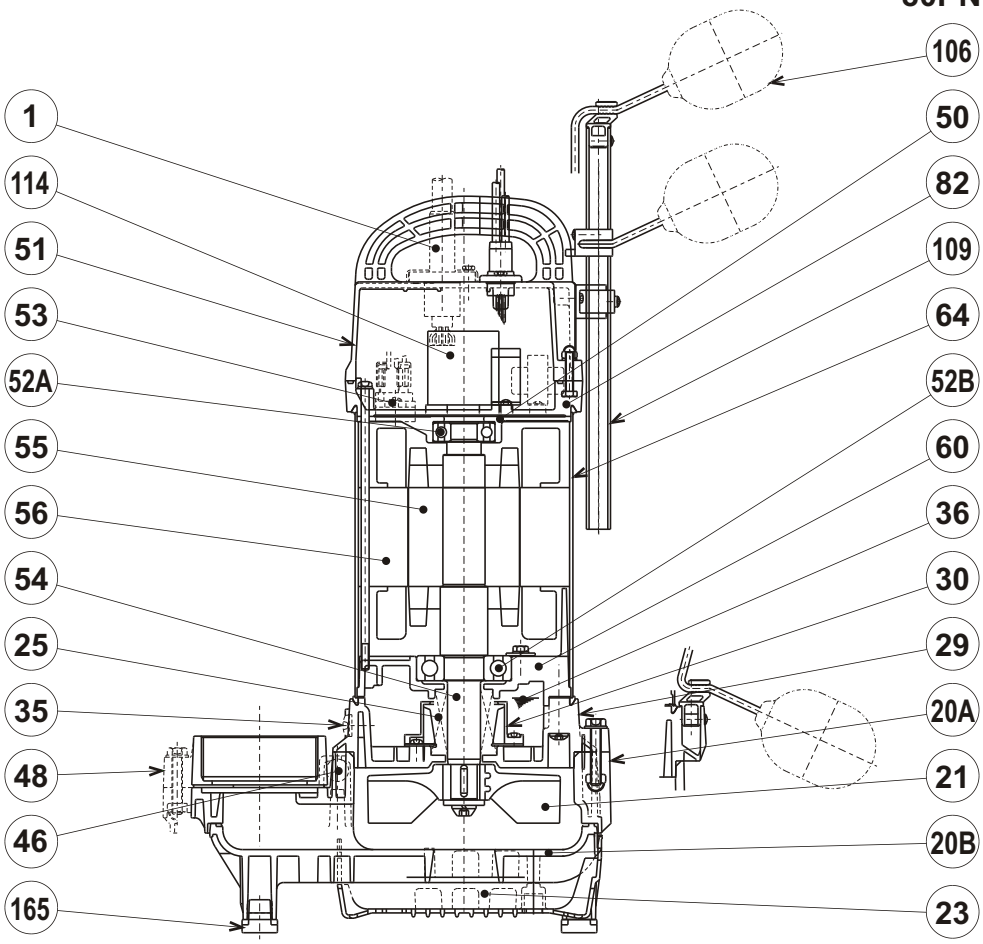
Model	kW	NOM.	Pump & Motor								Stop	Start	Override	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(kg)
80PNW22.2-61	2.2	80	311	155	105	110	221	104	117	559	152	717	817	23
80PNW23.7-61	3.7	80	311	155	105	110	221	104	117	594	152	752	852	28

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

80PNW22.2-61
80PNW23.7-61



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable (80PNW22.2-61)	PVC Sheath AWG14/4-32ft			1
	Power Cable (80PNW23.7-61)	PVC Sheath AWG12/4-32ft			
20A	Upper Pump Casing	PA+ABS Plastic w/GF30			1
20B	Lower Pump Casing	PA+ABS Plastic w/GF30			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / H-25AT			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic w/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PVC / NPT 3"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/GF40			1
52A	Upper Bearing	#6204ZZC3			1
52B	Lower Bearing	#6306ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
82	Motor Head Cover Spacer	PPS Plastic w/GF40			1
106	Float Set	ABS Plastic			3
109	Float Support Pipe	PVC			1
114	Power Relay				1
165	Rubber Cushion	Nitrile Butadiene Rubber			5

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency drive. (Only for 3 ph.)

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

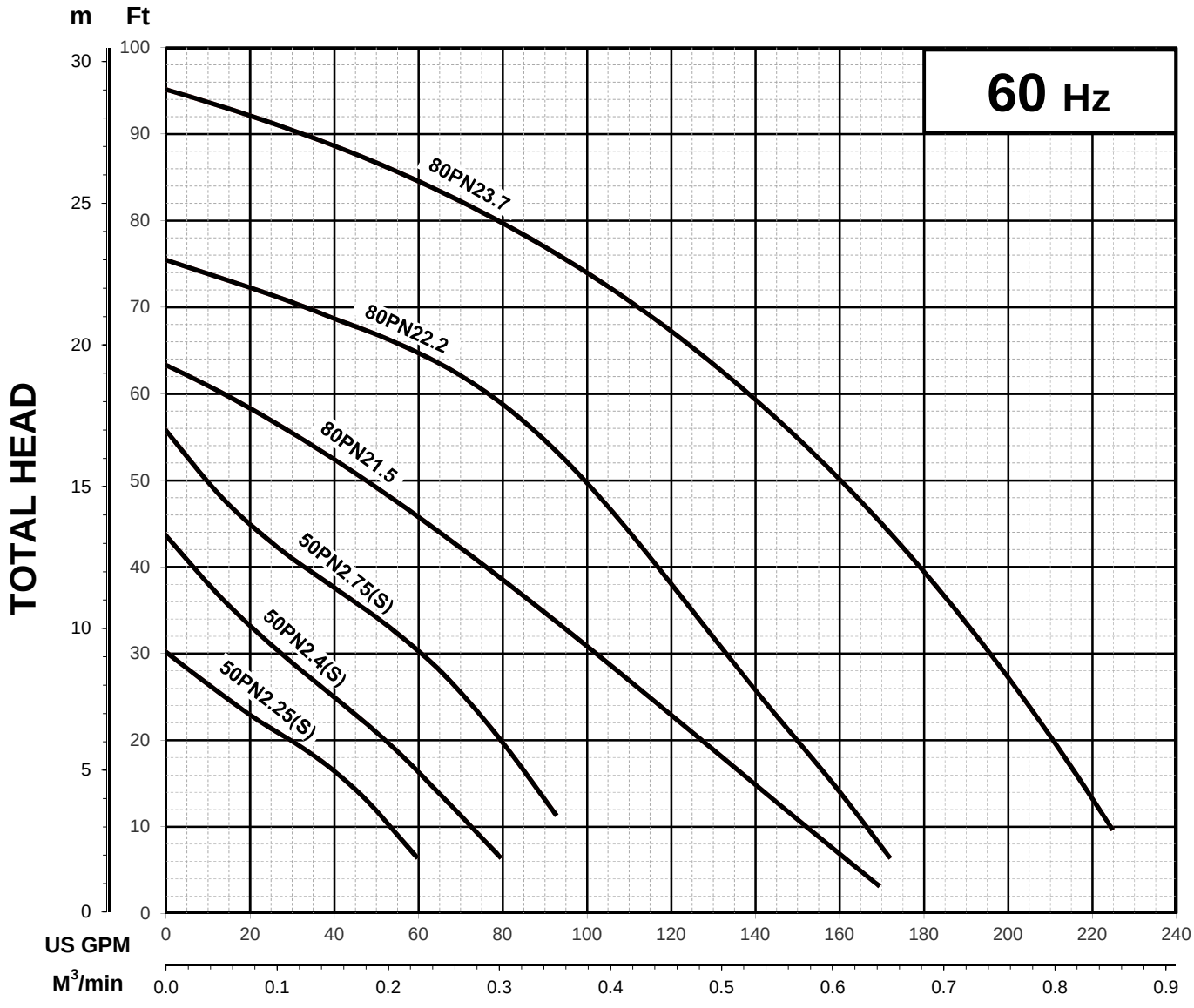
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

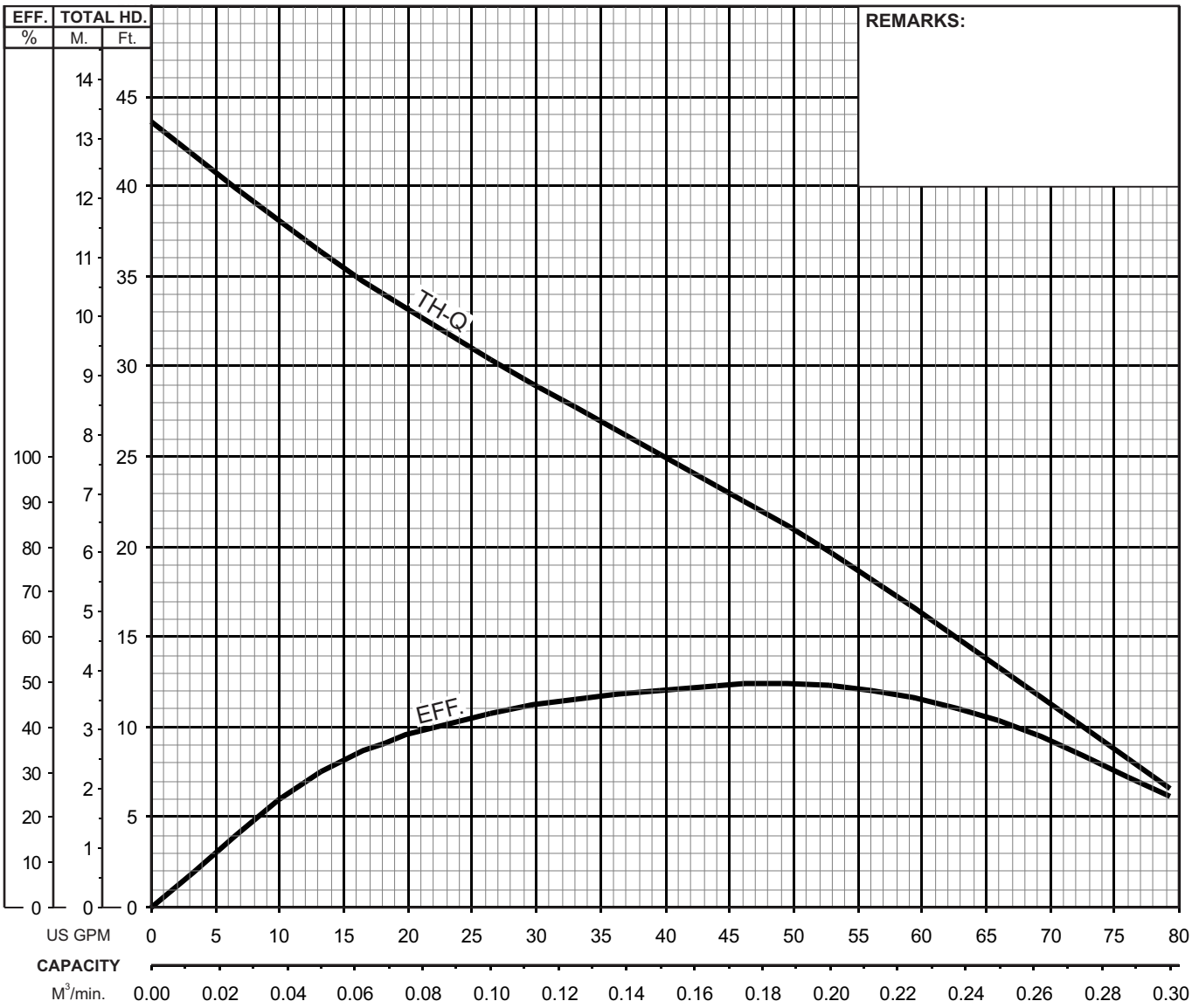
PERFORMANCE CURVE

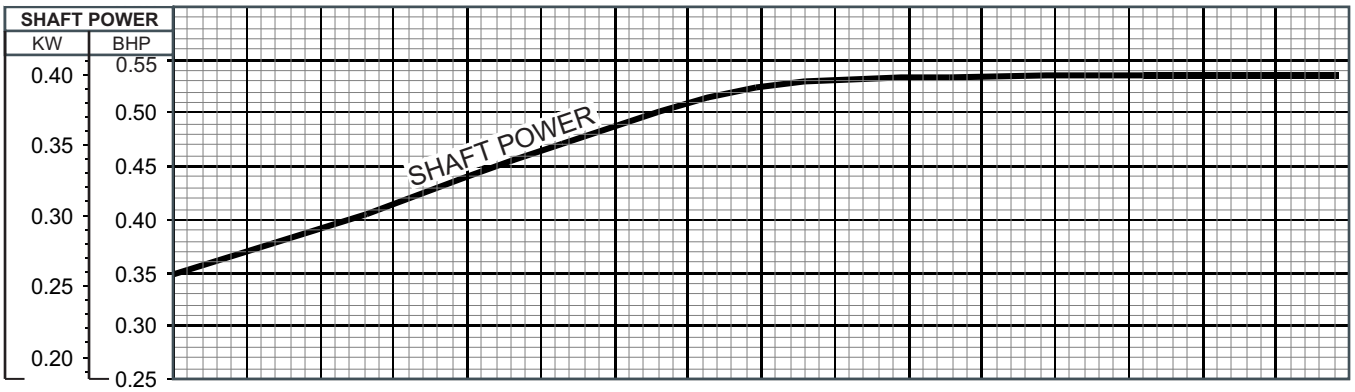
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.4S -63	2" / 50mm	0.54	0.40	3395	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater Pump	Single	115-120 / 230	5.8-5.8 / 2.9	60	Capacitor-Start	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



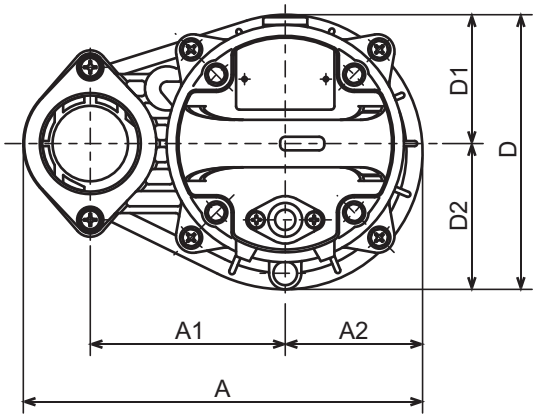


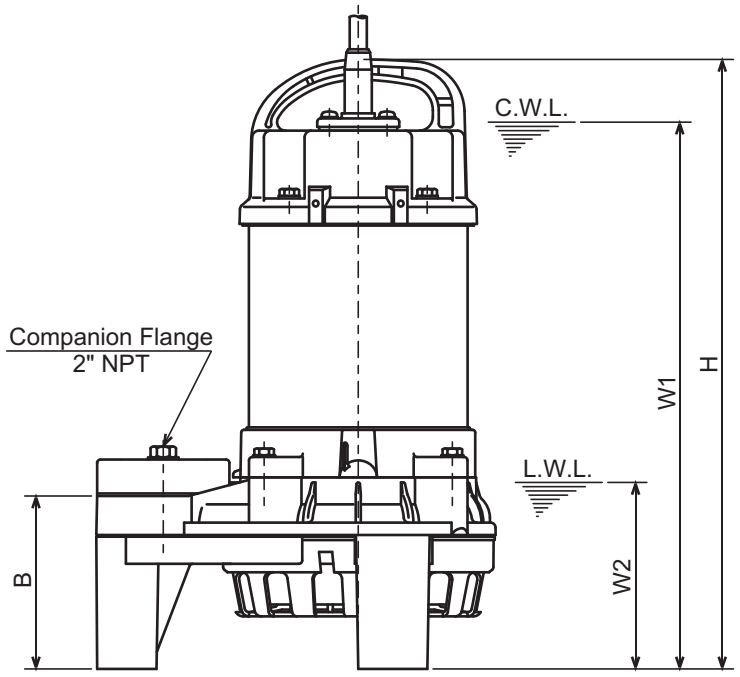
TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PN2.25S-62
50PN2.25-62
50PN2.4S-62
50PN2.4-62
50PN2.75S-62
50PN2.75-62





C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water Level

DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(lbs.)
50PN2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	13 3/4	12 1/4	4 3/8	13.4
50PN2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.4
50PN2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 15/16	13 5/8	4 3/8	19.6
50PN2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/4	13 3/8	4 3/8	18.3

DIMENSIONS:METRIC (mm)

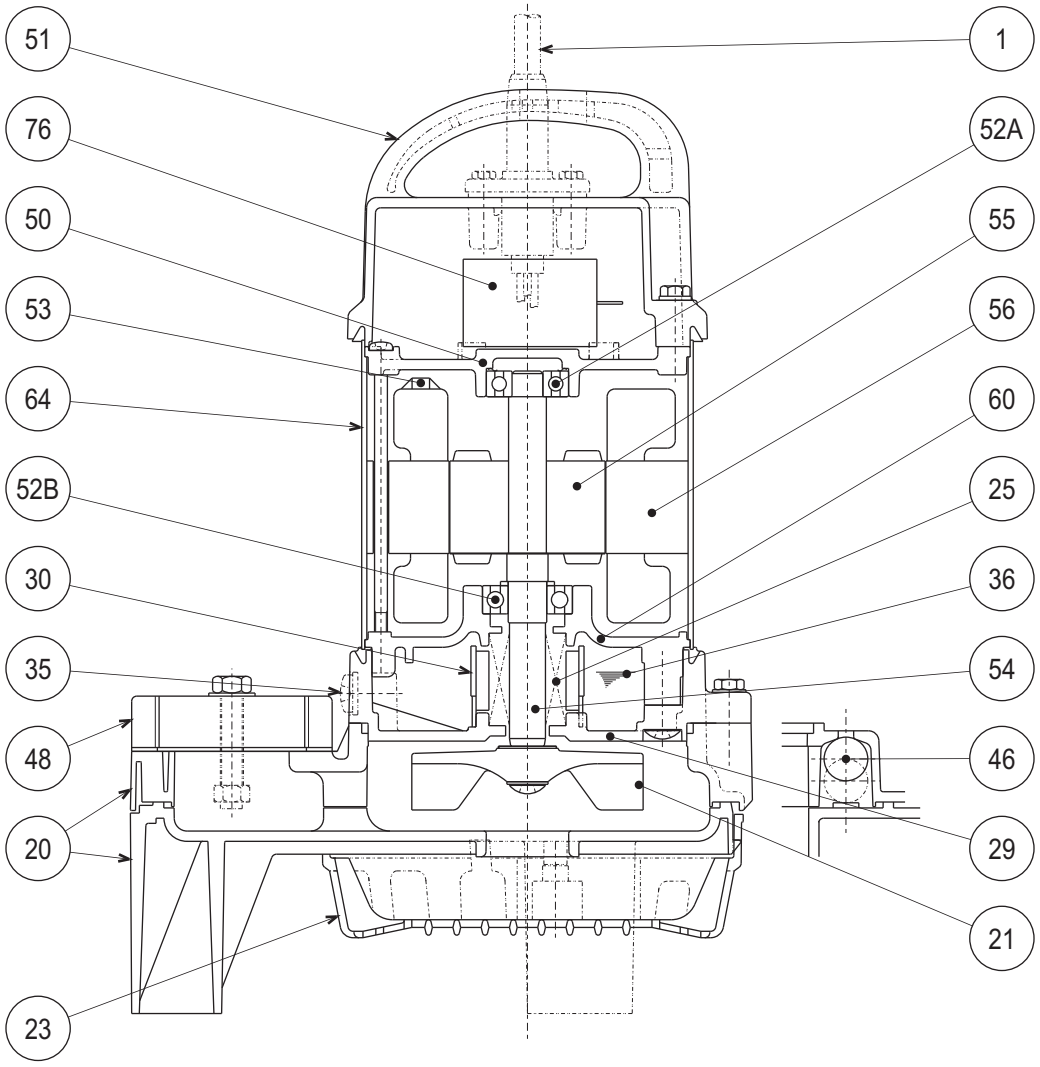
Model	kW	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
50PN2.25S-62	0.25	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.25-62	0.25	50	236	115	81	102	162	76	86	349	310	110	6.1
50PN2.4S-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.4-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.0
50PN2.75S-62	0.75	50	236	115	81	102	162	76	86	380	345	110	8.9
50PN2.75-62	0.75	50	236	115	81	102	162	76	86	374	340	110	8.3

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PN2.25S-63
50PN2.4S-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/3-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6202ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
76	Capacitor				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

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SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

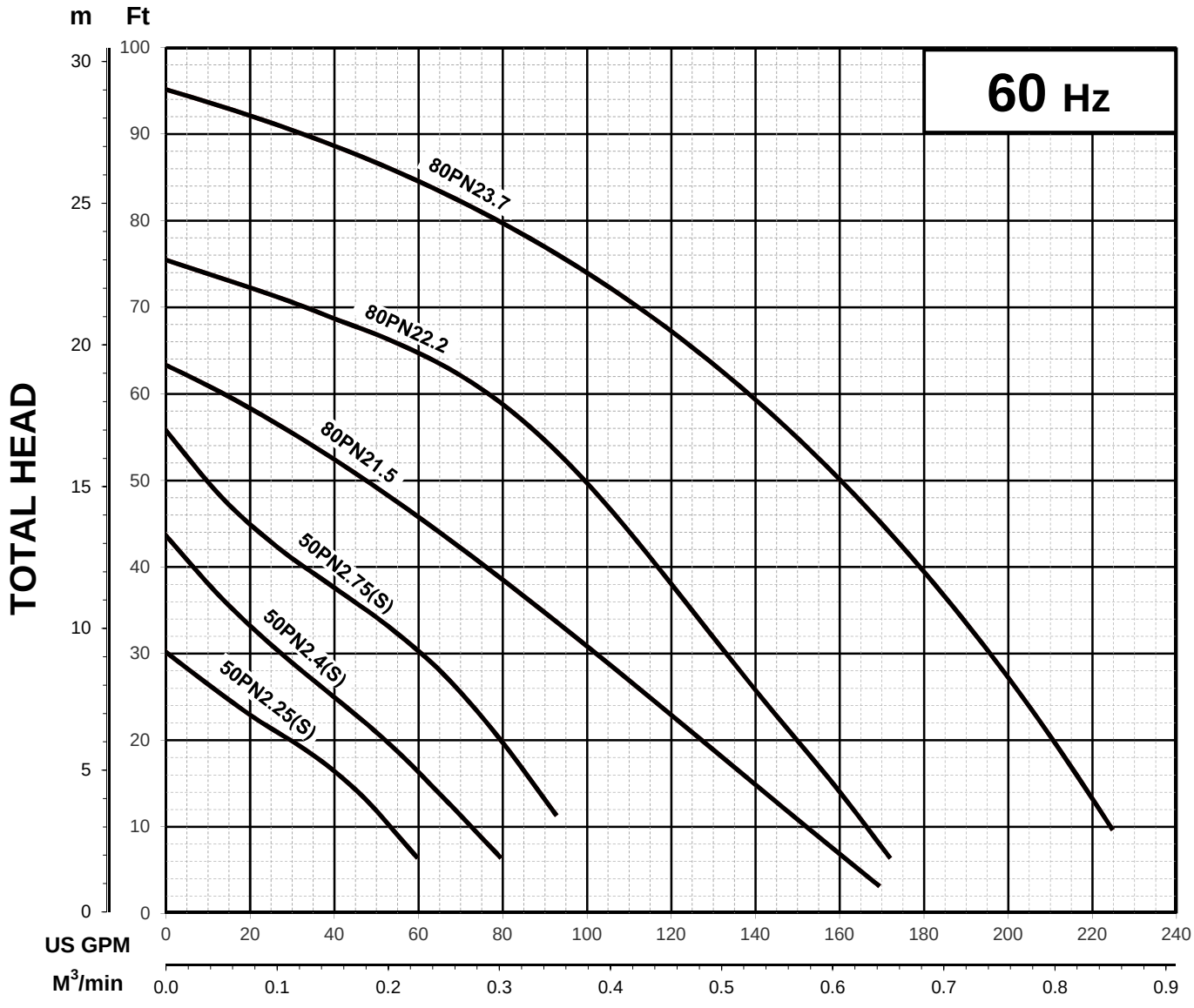
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

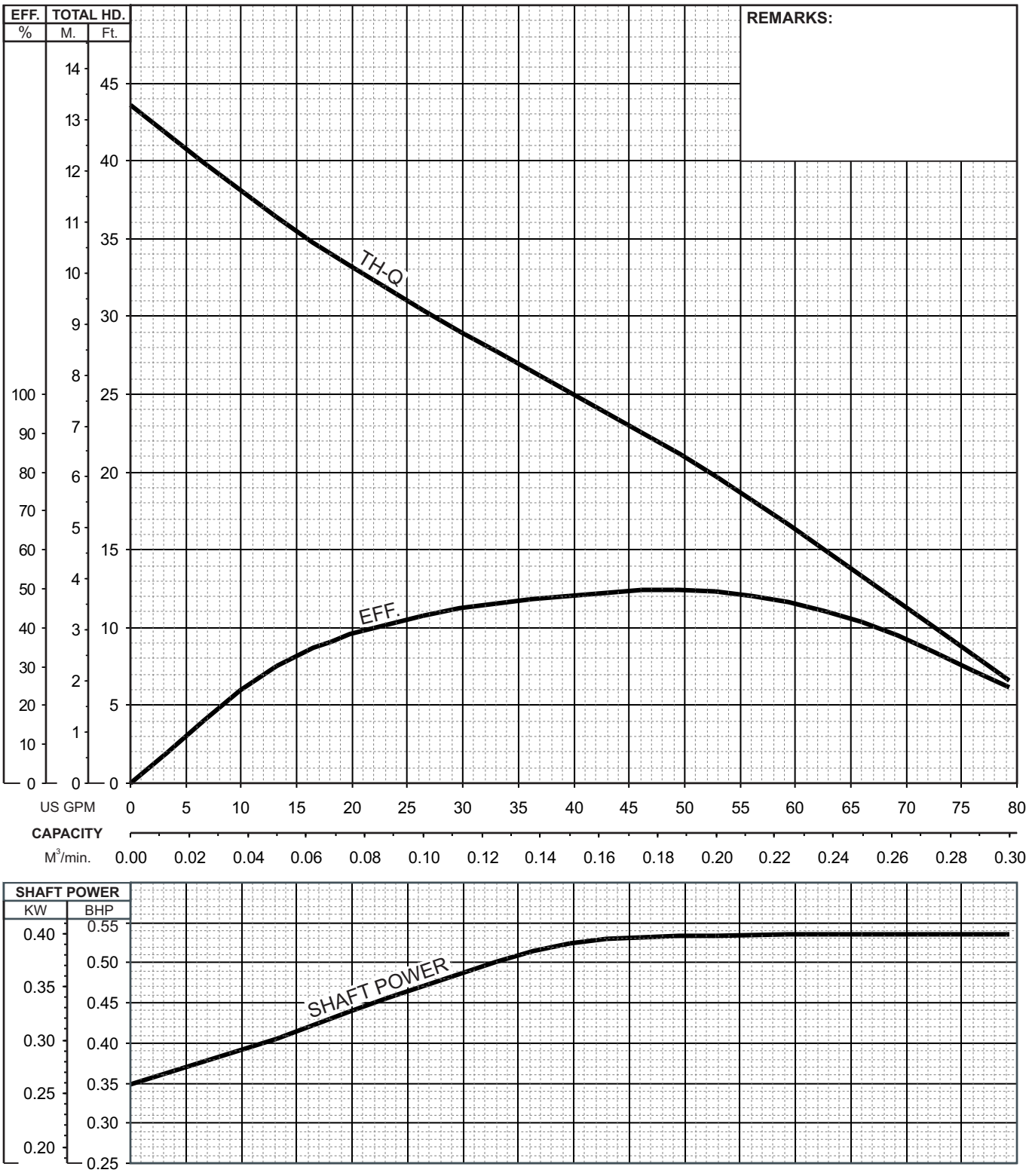
PERFORMANCE CURVE

MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.4 -63	2" / 50mm	0.54	0.40	3395	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater Pump	3	208-220/460	2.1-2.0 / 0.95	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:

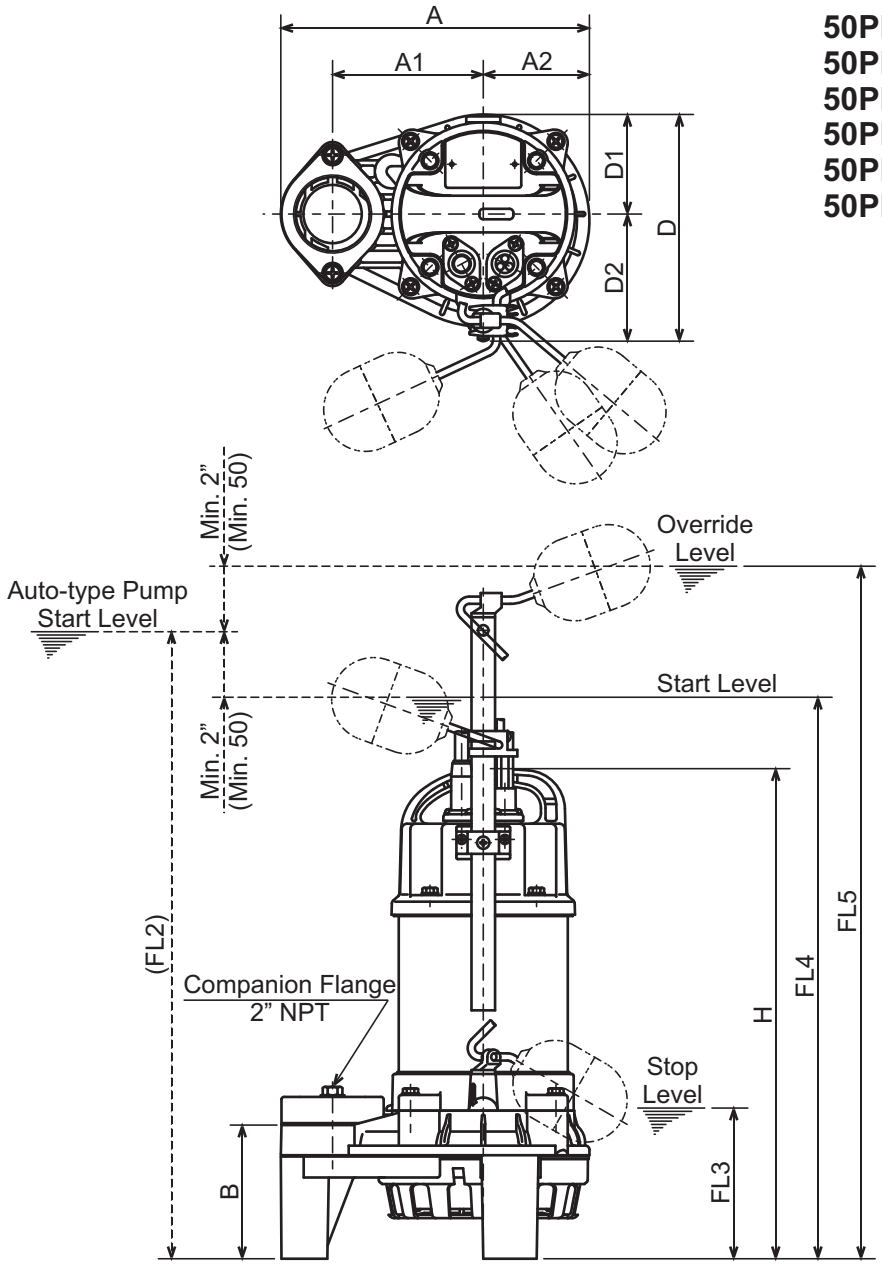


TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PNW2.25S-62
50PNW2.25-62
50PNW2.4S-62
50PNW2.4-62
50PNW2.75S-62
50PNW2.75-62



DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								Stop	Start	Override	Wt.
			A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(lbs.)
50PNW2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.2
50PNW2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 5/16	4 1/2	21 1/2	25 3/8	15.0
50PNW2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.2
50PNW2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.0
50PNW2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/2	4 1/2	22 3/4	26 5/8	21.1
50PNW2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/4	4 1/2	22 1/2	26 3/8	19.8

DIMENSIONS:METRIC (mm)

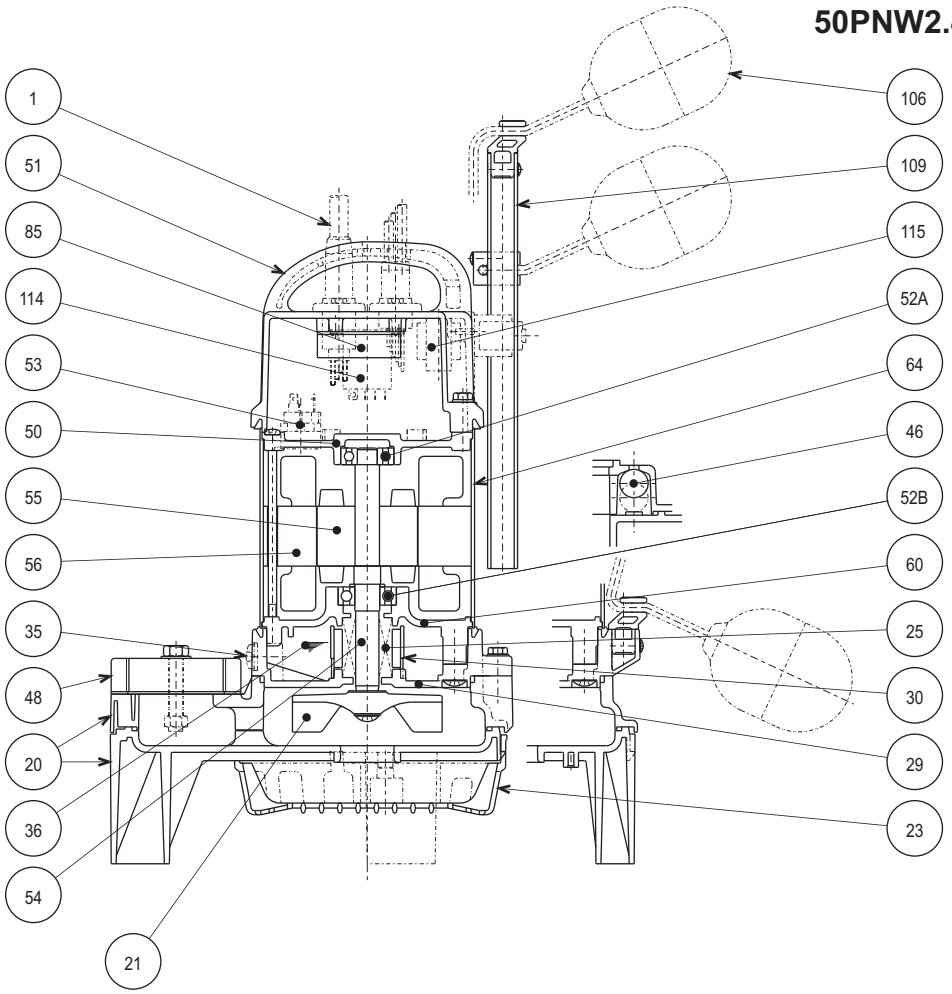
Model	kW	NOM. SIZE	Pump & Motor								Stop	Start	Override	Wt.
			A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(kg)
50PNW2.25S-62	0.25	50	236	115	81	102	173	76	97	374	115	557	657	7.8
50PNW2.25-62	0.25	50	236	115	81	102	173	76	97	363	115	546	646	6.8
50PNW2.4S-62	0.40	50	236	115	81	102	173	76	97	374	115	557	657	7.8
50PNW2.4-62	0.40	50	236	115	81	102	173	76	97	374	115	557	657	7.7
50PNW2.75S-62	0.75	50	236	115	81	102	173	76	97	394	115	577	677	9.6
50PNW2.75-62	0.75	50	236	115	81	102	173	76	97	388	115	571	671	9.0

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PNW2.25-63
50PNW2.4-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/4-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6202ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
85	Relay Unit				1
106	Float Set	ABS Plastic			3
109	Float Support Pipe	PVC			1
114	Power Relay				1
115	Transformer				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

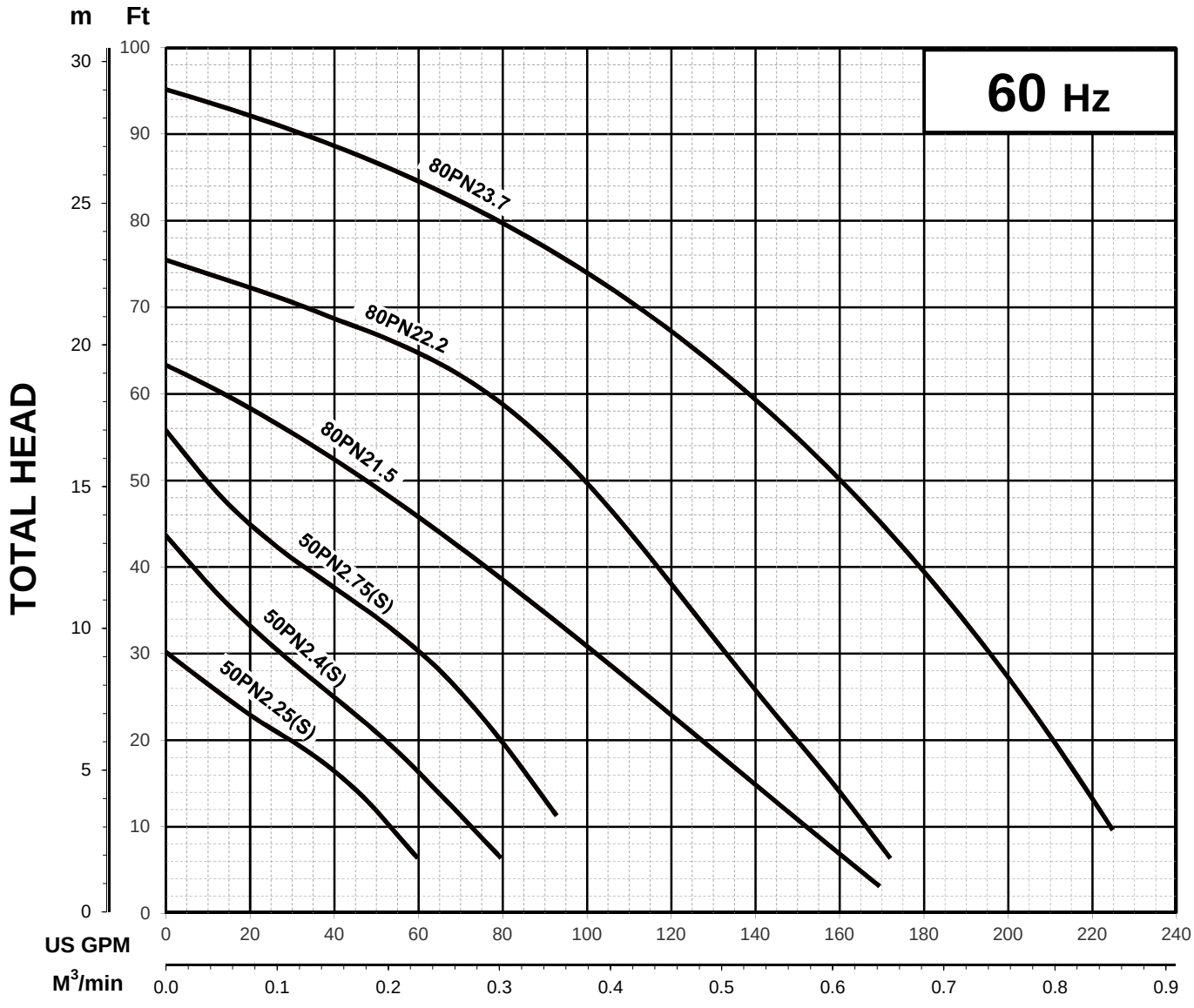
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

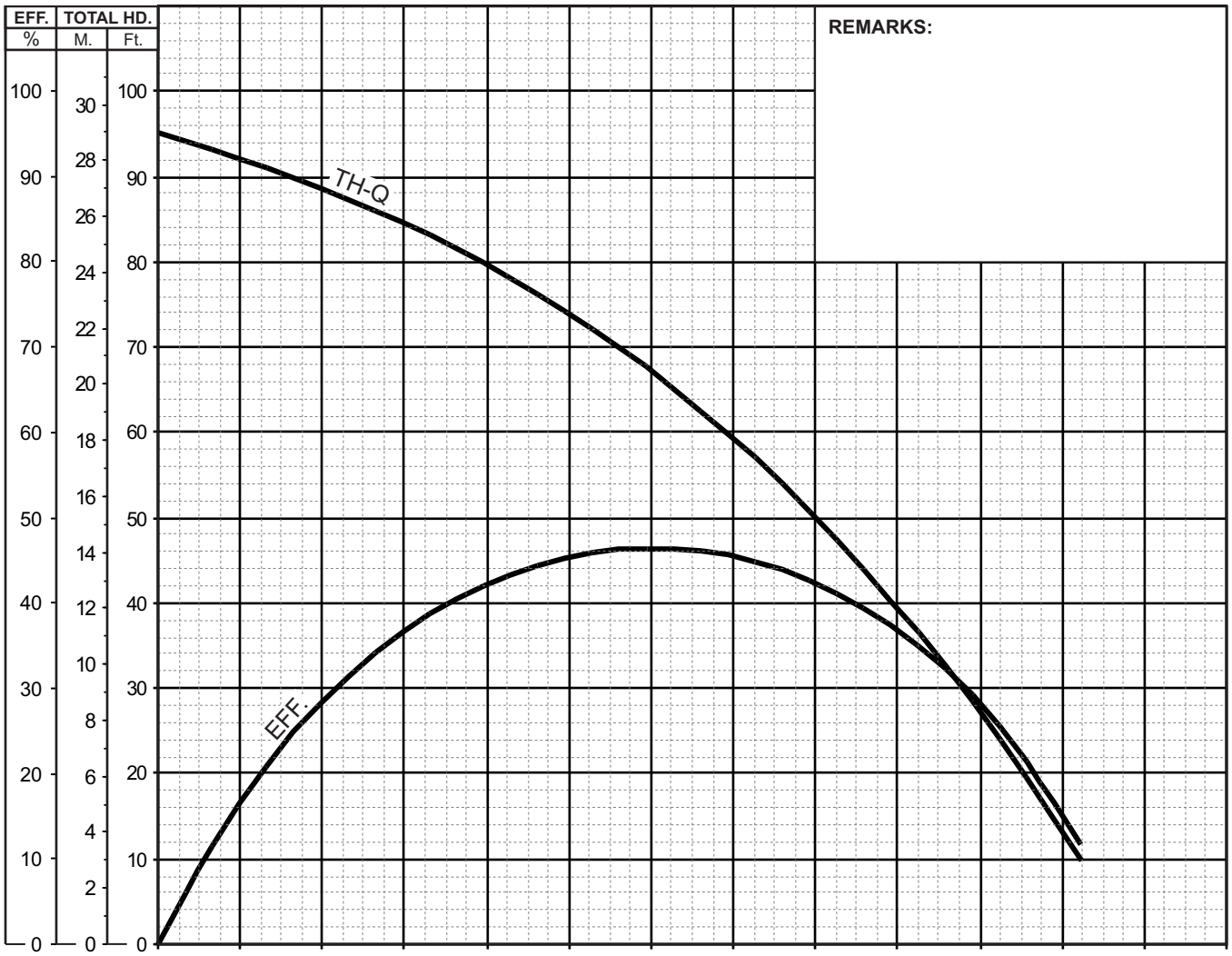
PERFORMANCE CURVE

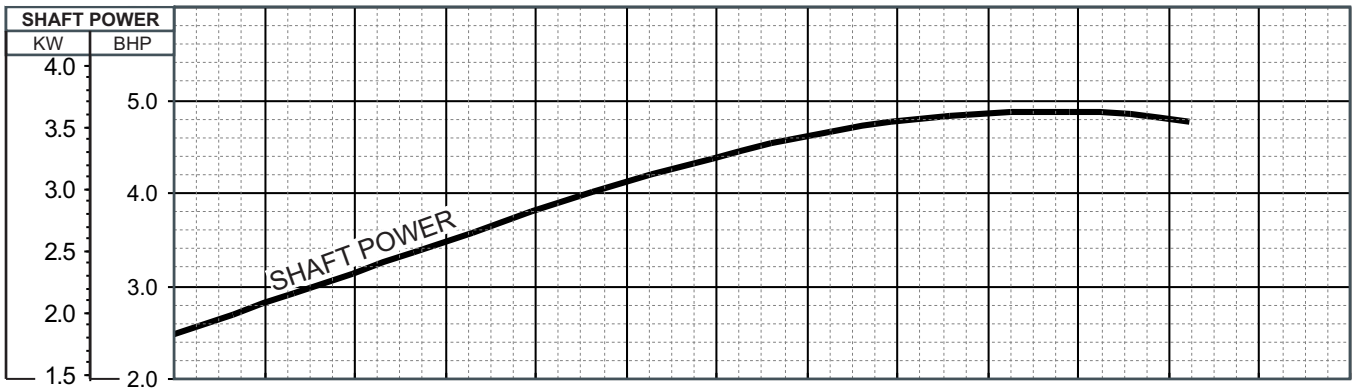
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
80PN(A/W)23.7 -61	3"/80mm	5	3.7	3495	0.787"/ 20mm	Water	1.0	1.123 cSt	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater	3	208-220/460/575	14.4-13.4/6.5/5.0	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



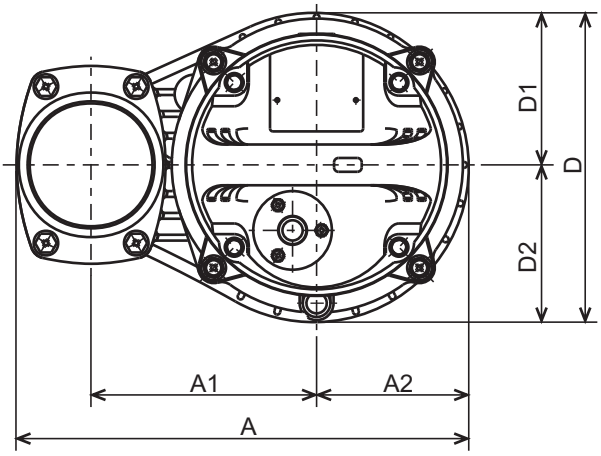


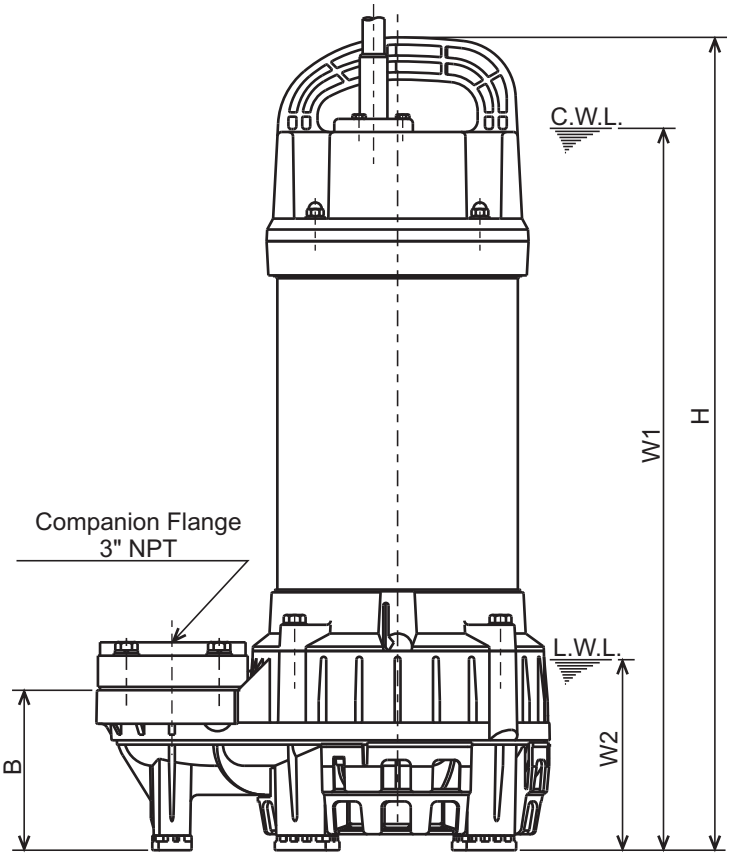
TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

80PN22.2-61
80PN23.7-61





C.W.L. : Continuous running Water Level
L.W.L. : Lowest running Wtaer Level

DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor								C.W.L.	L.W.L.	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	W1	W2	(lbs.)
80PN22.2-61	3	3"	12 1/4	6 1/8	4 1/8	4 5/16	8 3/8	4 1/8	4 1/4	22	19 5/8	5 1/8	48
80PN23.7-61	5	3"	12 1/4	6 1/8	4 1/8	4 5/16	8 3/8	4 1/8	4 1/4	23 3/8	21 1/8	5 1/8	59

DIMENSIONS:METRIC (mm)

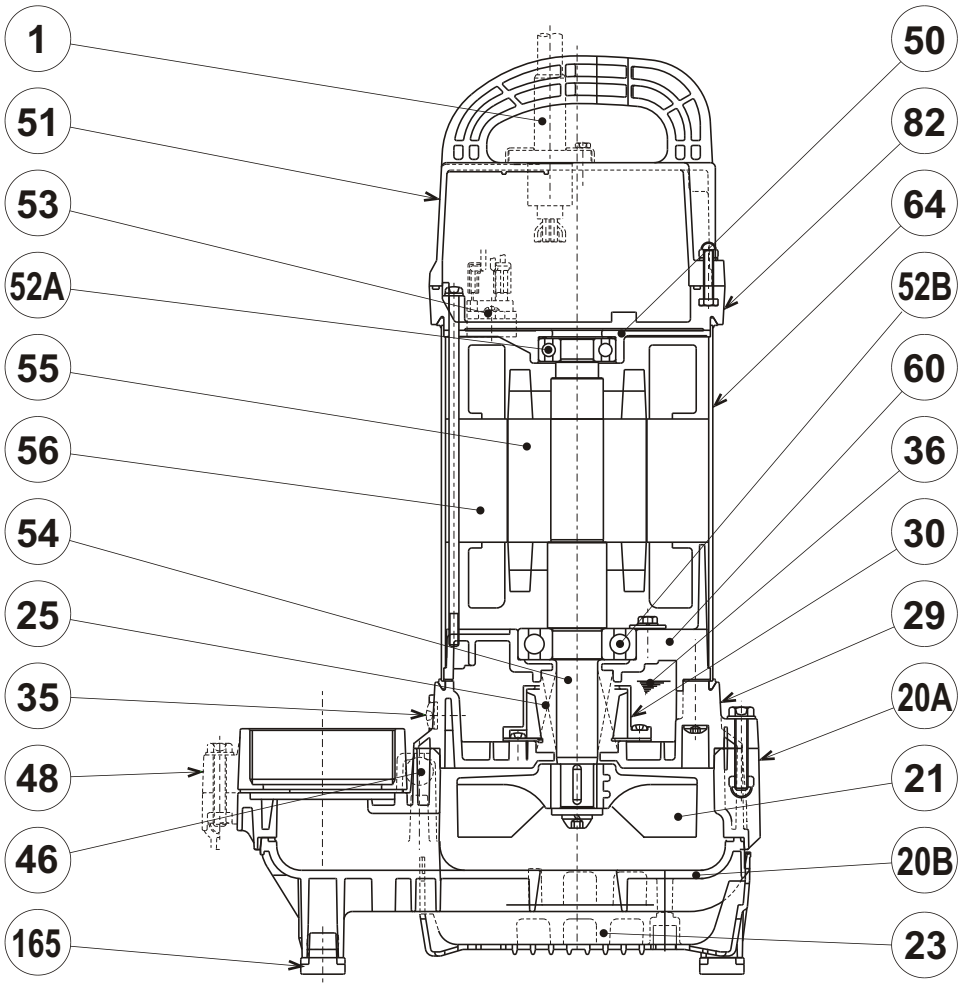
Model	kW	NOM.	Pump & Motor								C.W.L.	L.W.L.	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
80PN22.2-61	2.2	80	311	155	105	110	212	104	108	559	500	130	22
80PN23.7-61	3.7	80	311	155	105	110	212	104	108	594	535	130	27

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

80PN22.2-61
80PN23.7-61



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable (80PN22.2-61)	PVC Sheath AWG14/4-32ft			1
	Power Cable (80PN23.7-61)	PVC Sheath AWG12/4-32ft			
20A	Upper Pump Casing	PA+ABS Plastic w/GF30			1
20B	Lower Pump Casing	PA+ABS Plastic w/GF30			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / H-25AT			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic w/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PVC / NPT 3"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/GF40			1
52A	Upper Bearing	#6204ZZC3			1
52B	Lower Bearing	#6306ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
82	Motor Head Cover Spacer	PPS Plastic w/GF40			1
165	Rubber Cushion	Nitrile Butadiene Rubber			5

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency drive. (Only for 3 ph.)

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

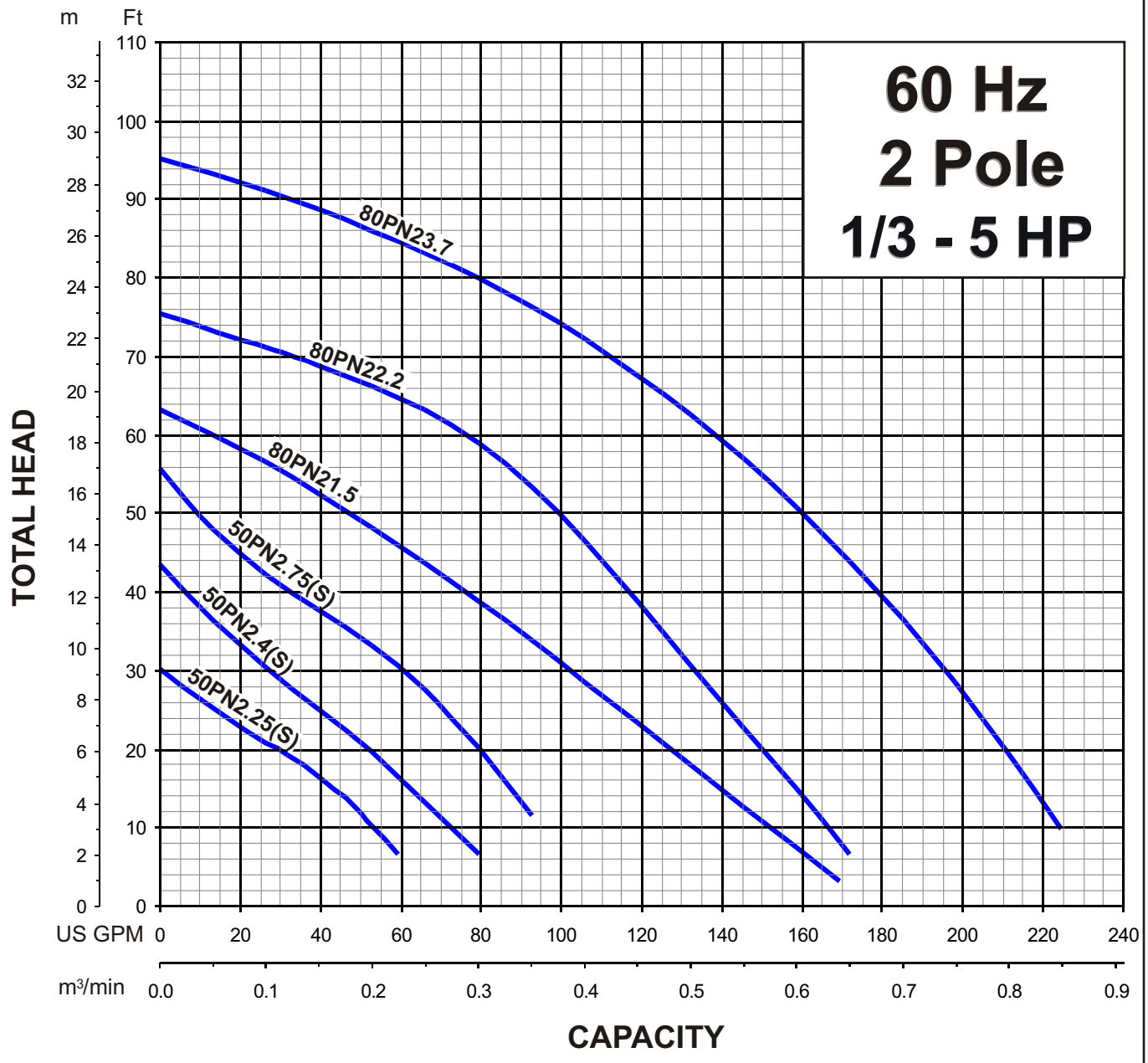
ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	PERFORMANCE RANGE

PERFORMANCE RANGE



TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

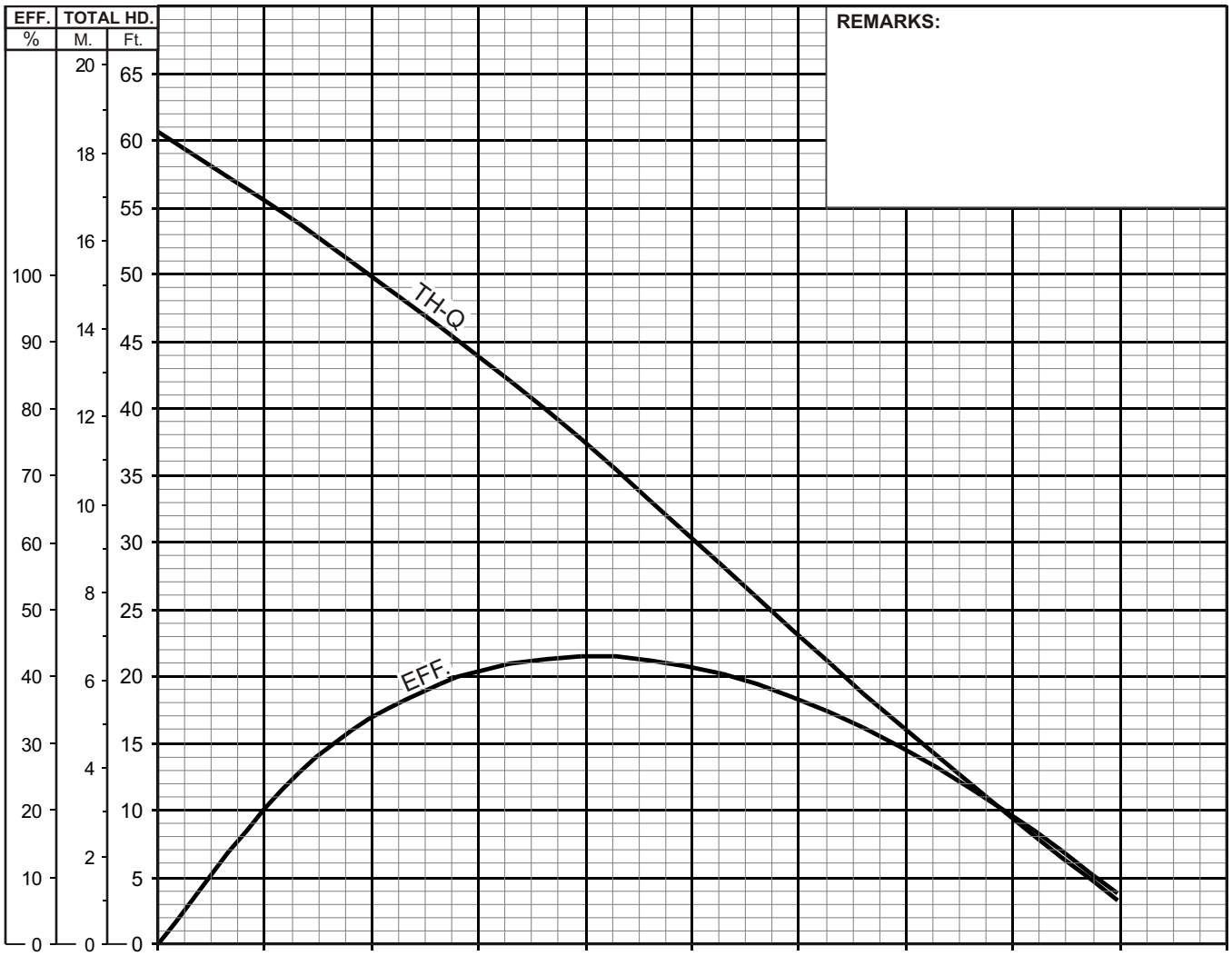
PERFORMANCE CURVE

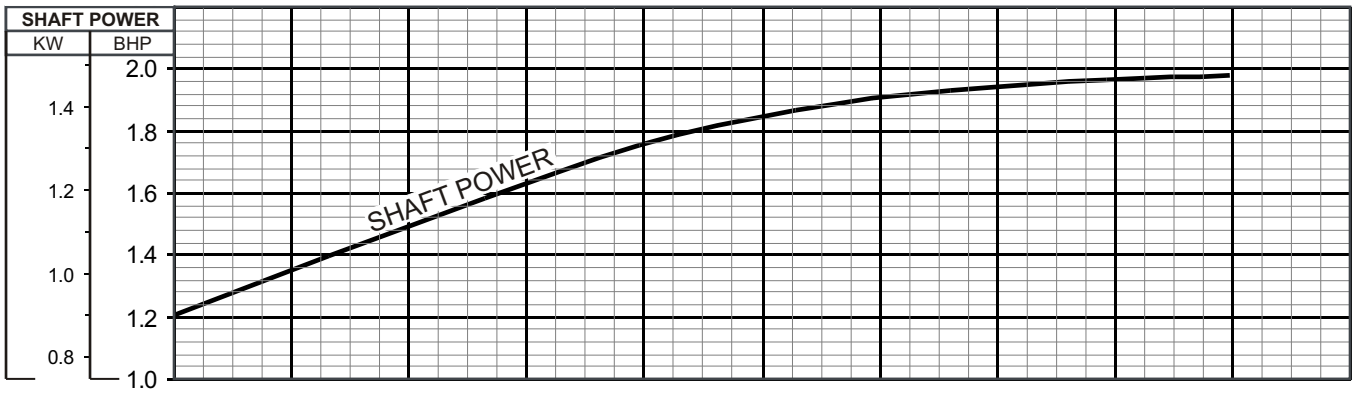
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
80PN(A/W)21.5 -61	3"/80mm	2	1.5	3455	0.787"/20mm	Water	1.0	1.81 CST	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex Wastewater Pump	3	208 / 230 / 460	6.8 / 6.2 / 3.1	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



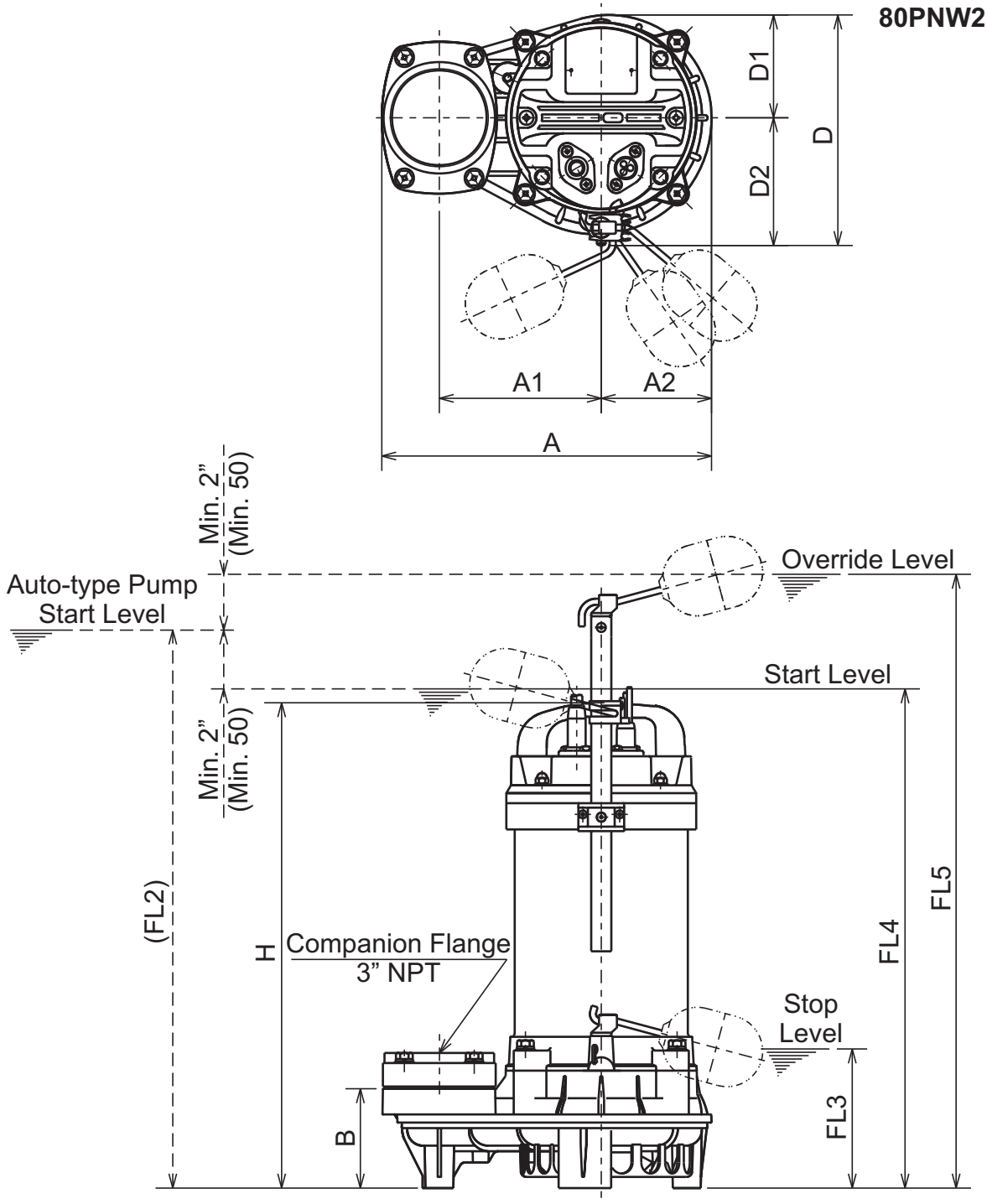


TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

80PNW21.5-61



DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor								Stop	Start	Override	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(lbs.)
80PNW21.5-61	2	3"	11 5/8	5 11/16	3 7/8	3 9/16	8 1/8	3 5/8	4 1/2	17 1/8	5 3/8	22 1/2	26 1/2	36.8

DIMENSIONS:METRIC (mm)

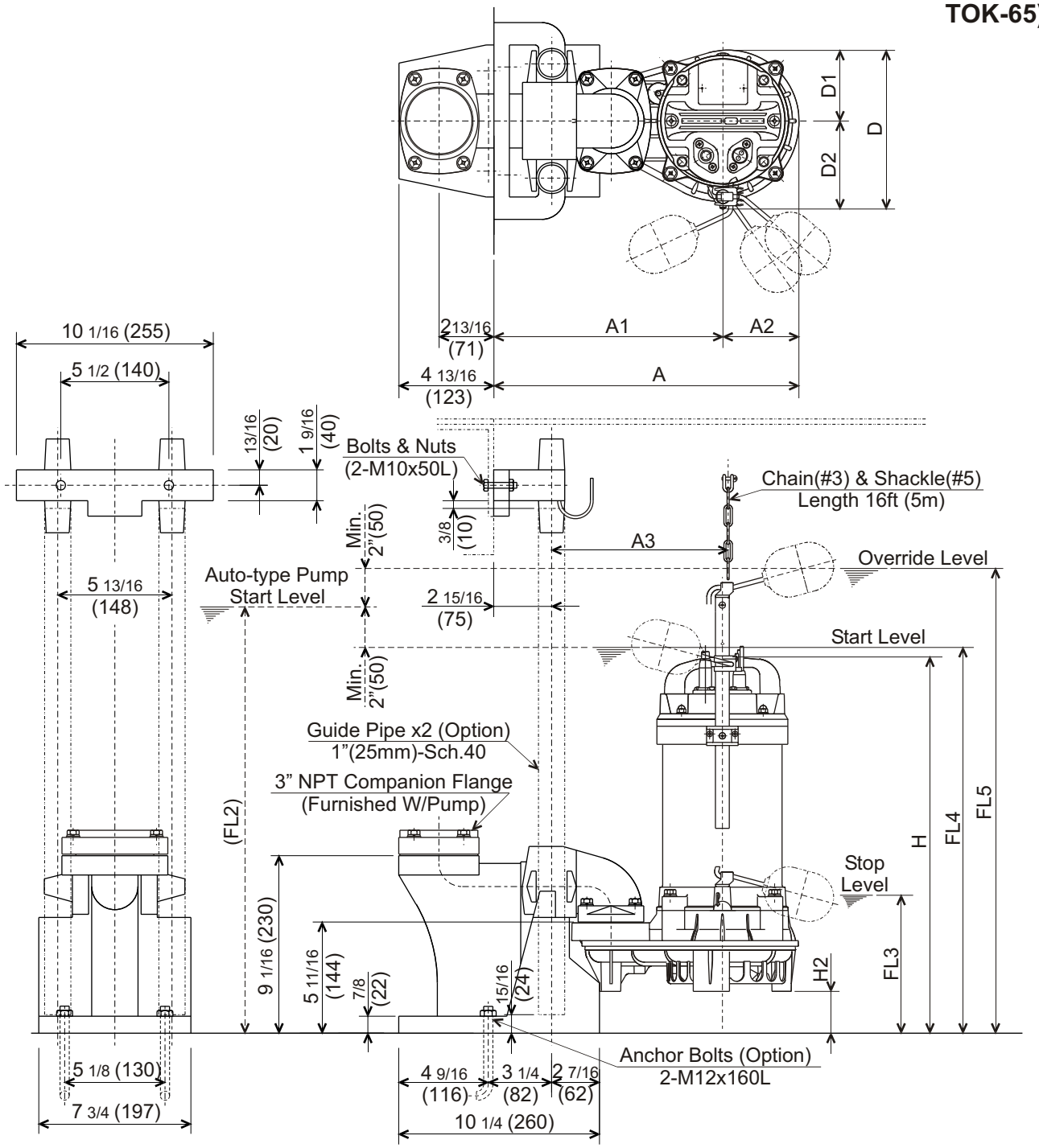
Model	kW	NOM.	Pump & Motor								Stop	Start	Override	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(kg)
80PNW21.5-61	1.5	80	295	145	99	90	206	92	114	435	138	573	673	16.7

TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

TOK80PNW21.5
(Slide Rail System TOK-65)



DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor									Stop	Start	Override	Wt.
		SIZE	A	A1	A2	A3	D	D1	D2	H	H2	FL3	Max.FL4	Max.FL5	(lbs.)
TOK80PNW21.5	2	3"	15 9/16	11 11/16	3 7/8	9 1/16	7 11/16	3 5/8	4 1/8	19 1/4	2 1/8	7 1/2	24 5/8	28 5/8	36.8

DIMENSIONS:METRIC (mm)

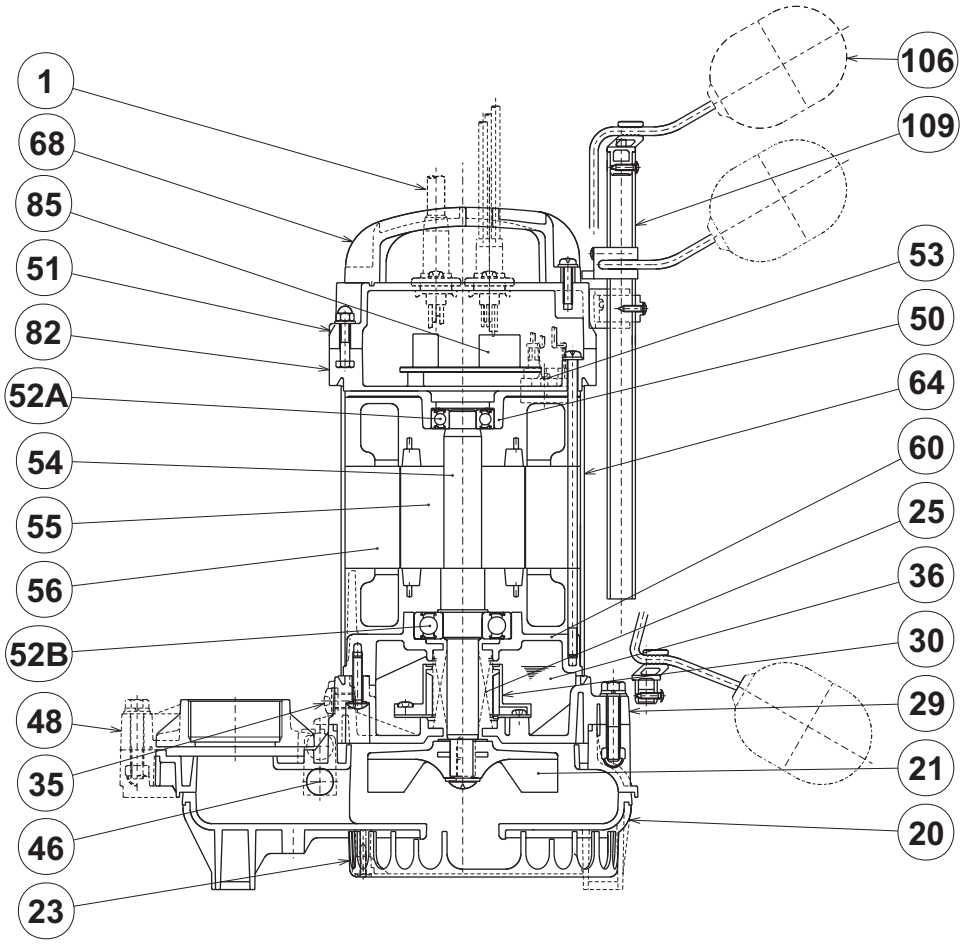
Model	kW	NOM.	Pump & Motor									Stop	Start	Override	Wt.
		SIZE	A	A1	A2	A3	D	D1	D2	H	H2	FL3	Max.FL4	Max.FL5	(kg)
TOK80PNW21.5	1.5	80	396	297	99	231	196	92	104	489	54	192	627	727	16.7

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

80PNW21.5-61



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/4-32ft			1
20A	Upper Pump Casing	ABS Plastic w/GF20			1
20B	Lower Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / H-20A			1
29	Oil Casing	PPS Plastic w/GF40			1
30	Oil Lifter	ABS Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Oil ISO VG15			
46	Air Valve	Glass Ball			1
48	Companion Flange	PVC / NPT 3"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPO+PPS Plastic w/GF30			1
52A	Upper Bearing	#6203ZZC3			1
52B	Lower Bearing	#6305ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
68	Handle	ABS Plastic			1
82	Motor Head Cover Spacer	PPS Plastic w/GF40			1
85	Relay Unit				1
106	Float Set	ABS Plastic			3
109	Float Support Pipe	PVC			1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency drive. (Only for 3 ph.)

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

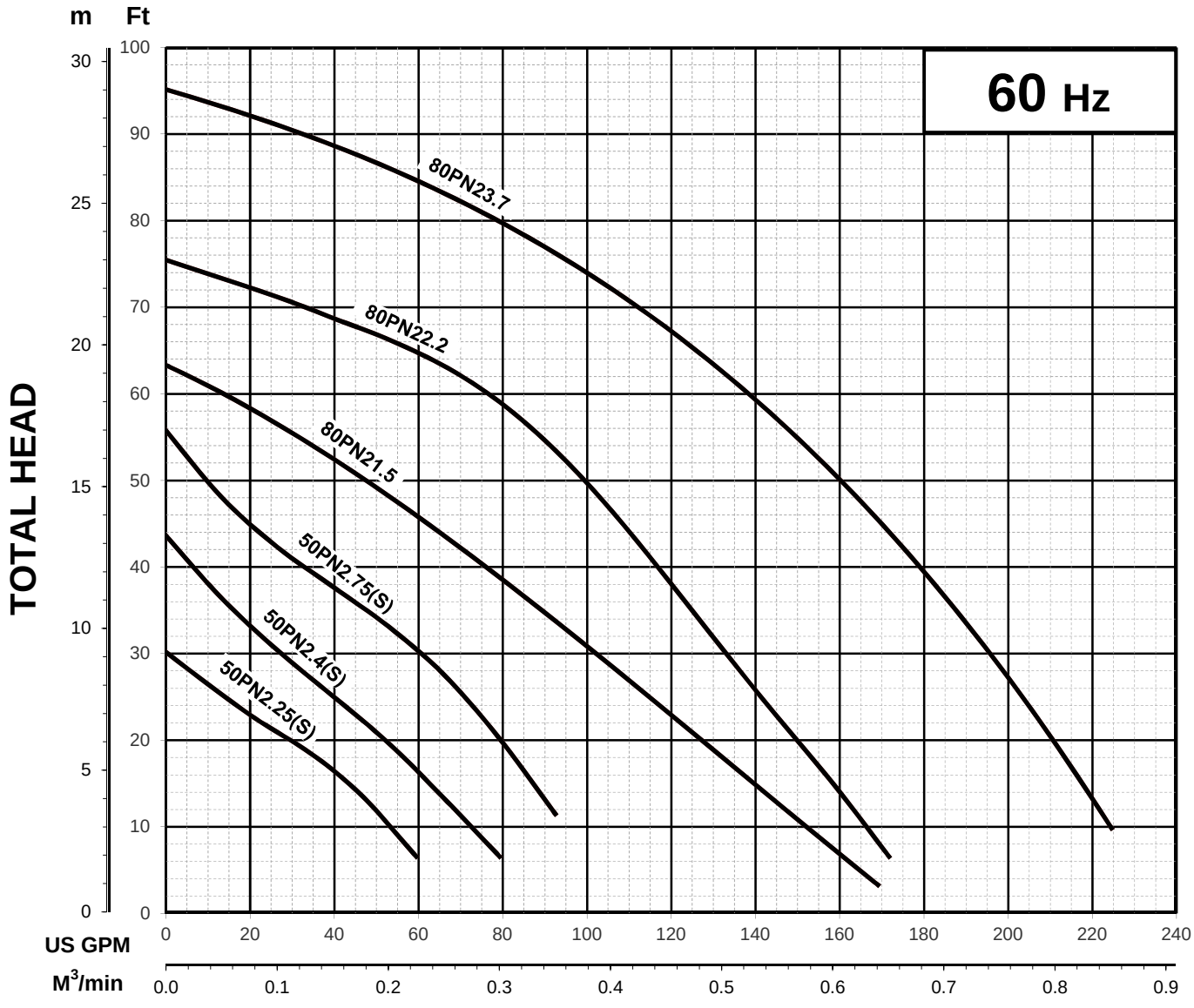
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

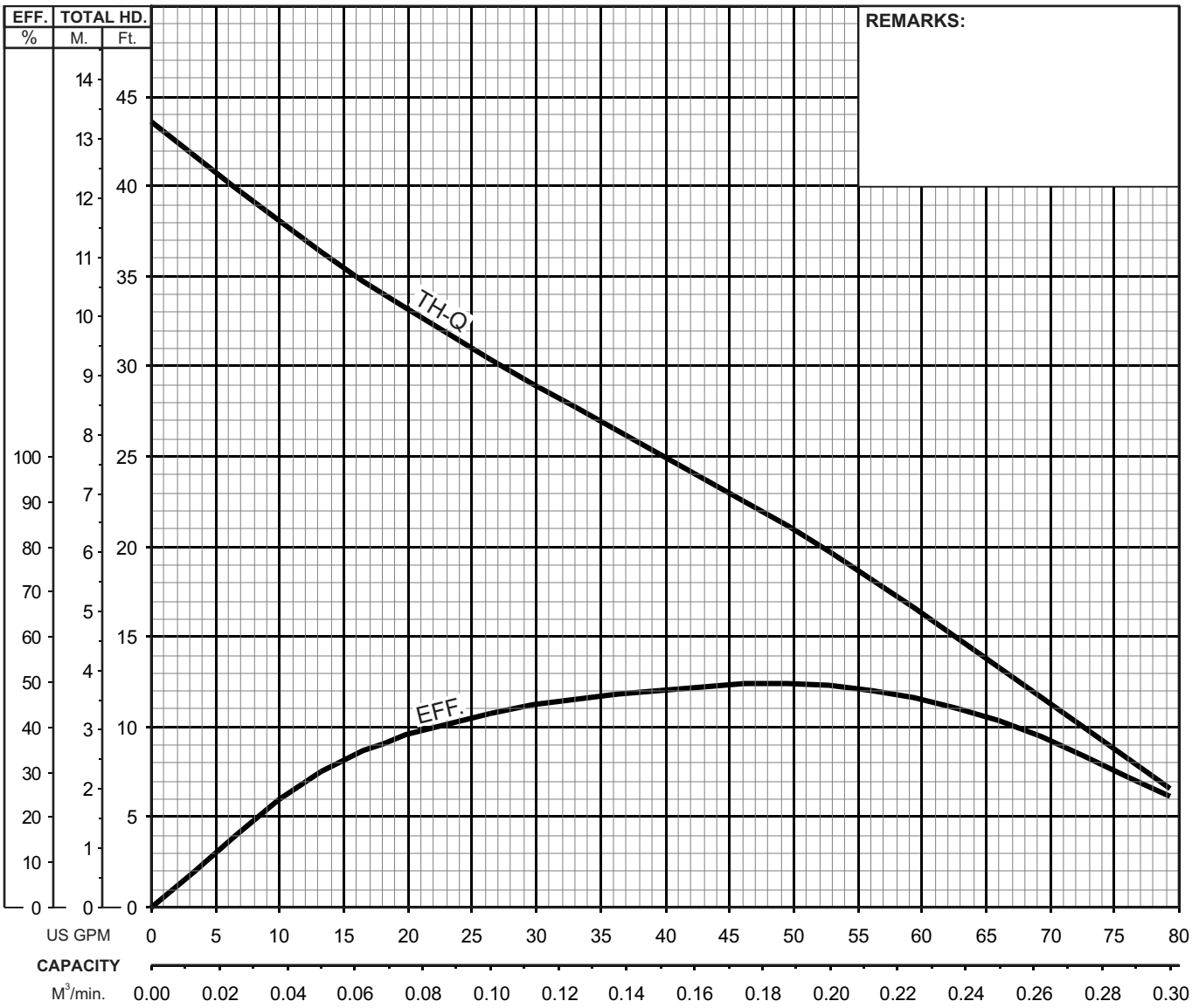
PERFORMANCE CURVE

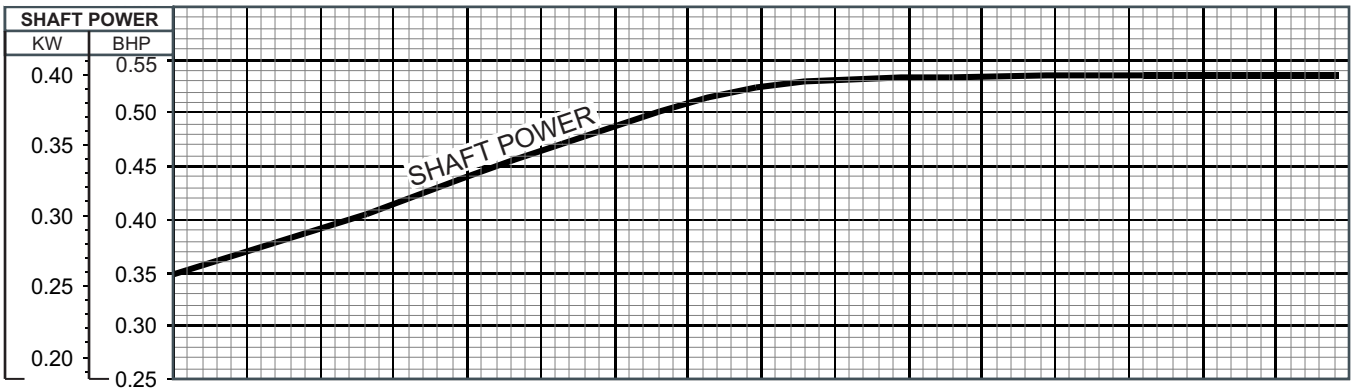
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.4S -63	2" / 50mm	0.54	0.40	3395	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater Pump	Single	115-120 / 230	5.8-5.8 / 2.9	60	Capacitor-Start	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



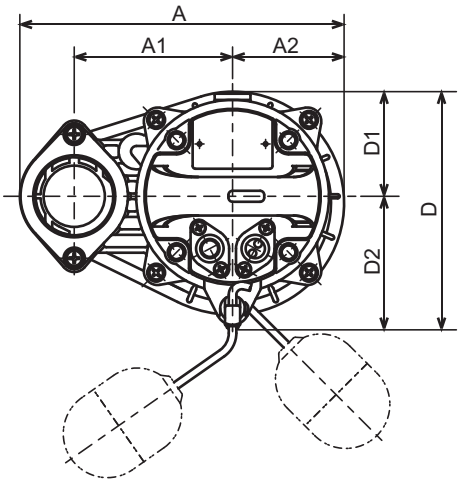


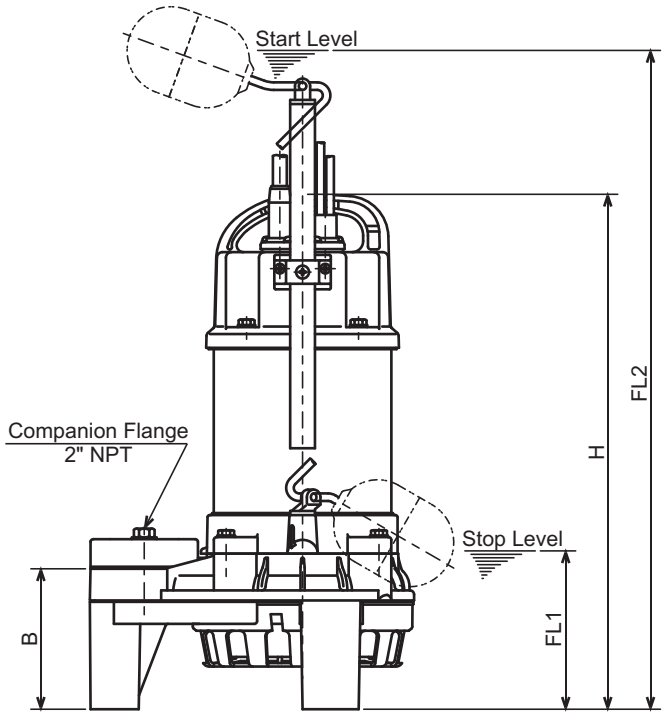
TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PNA2.25S-62
50PNA2.25-62
50PNA2.4S-62
50PNA2.4-62
50PNA2.75S-62
50PNA2.75-62





DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(lbs.)
50PNA2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	17.0
50PNA2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 5/16	4 1/2	23 1/2	14.8
50PNA2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	17.0
50PNA2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	16.7
50PNA2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/2	4 1/2	24 5/8	20.9
50PNA2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/4	4 1/2	24 1/2	19.6

DIMENSIONS:METRIC (mm)

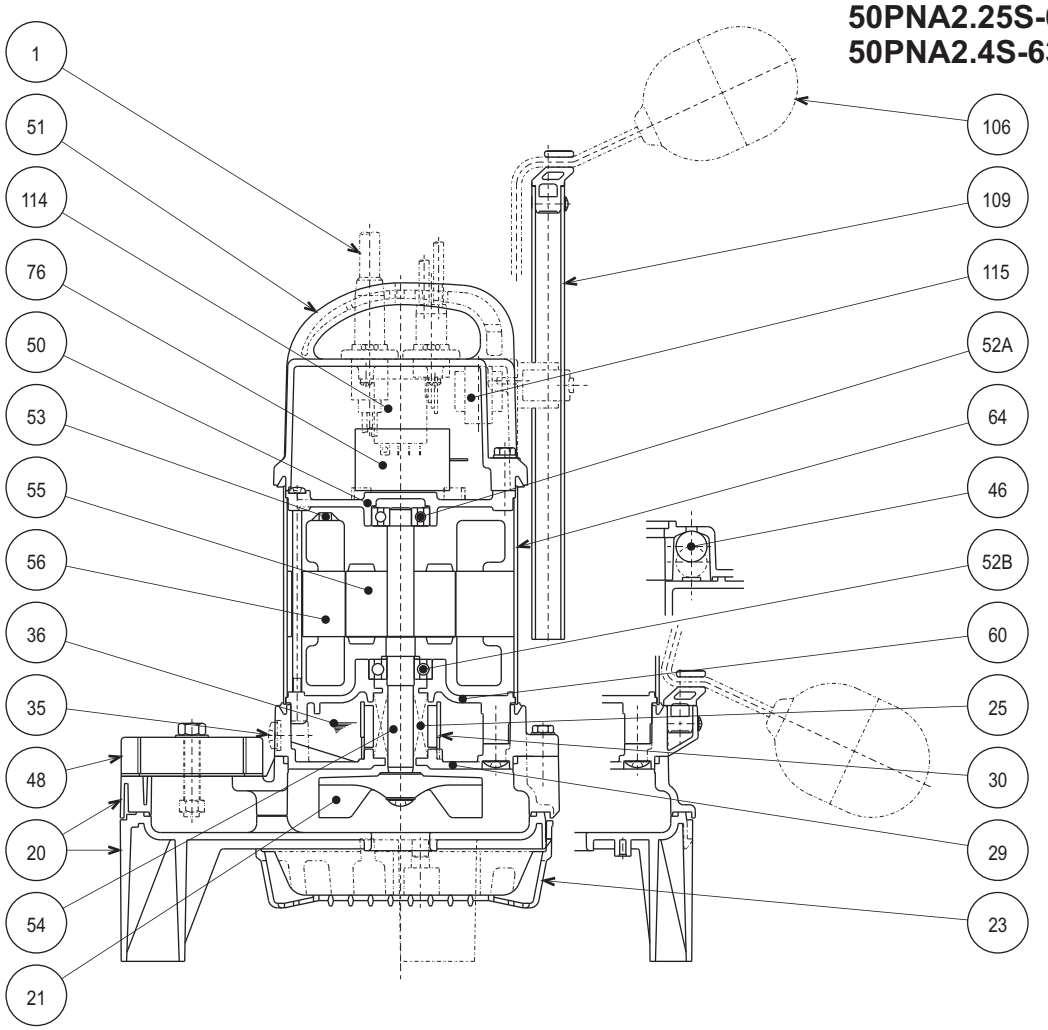
Model	kW	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(kg)
50PNA2.25S-62	0.25	50	236	115	81	102	173	76	97	374	115	607	7.7
50PNA2.25-62	0.25	50	236	115	81	102	173	76	97	363	115	596	6.7
50PNA2.4S-62	0.40	50	236	115	81	102	173	76	97	374	115	607	7.7
50PNA2.4-62	0.40	50	236	115	81	102	173	76	97	374	115	607	7.6
50PNA2.75S-62	0.75	50	236	115	81	102	173	76	97	394	115	627	9.5
50PNA2.75-62	0.75	50	236	115	81	102	173	76	97	388	115	621	8.9

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PNA2.25S-63
50PNA2.4S-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/3-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6202ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
76	Capacitor				1
106	Float Set	ABS Plastic			2
109	Float Support Pipe	PVC			1
114	Power Relay				1
115	Transformer				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

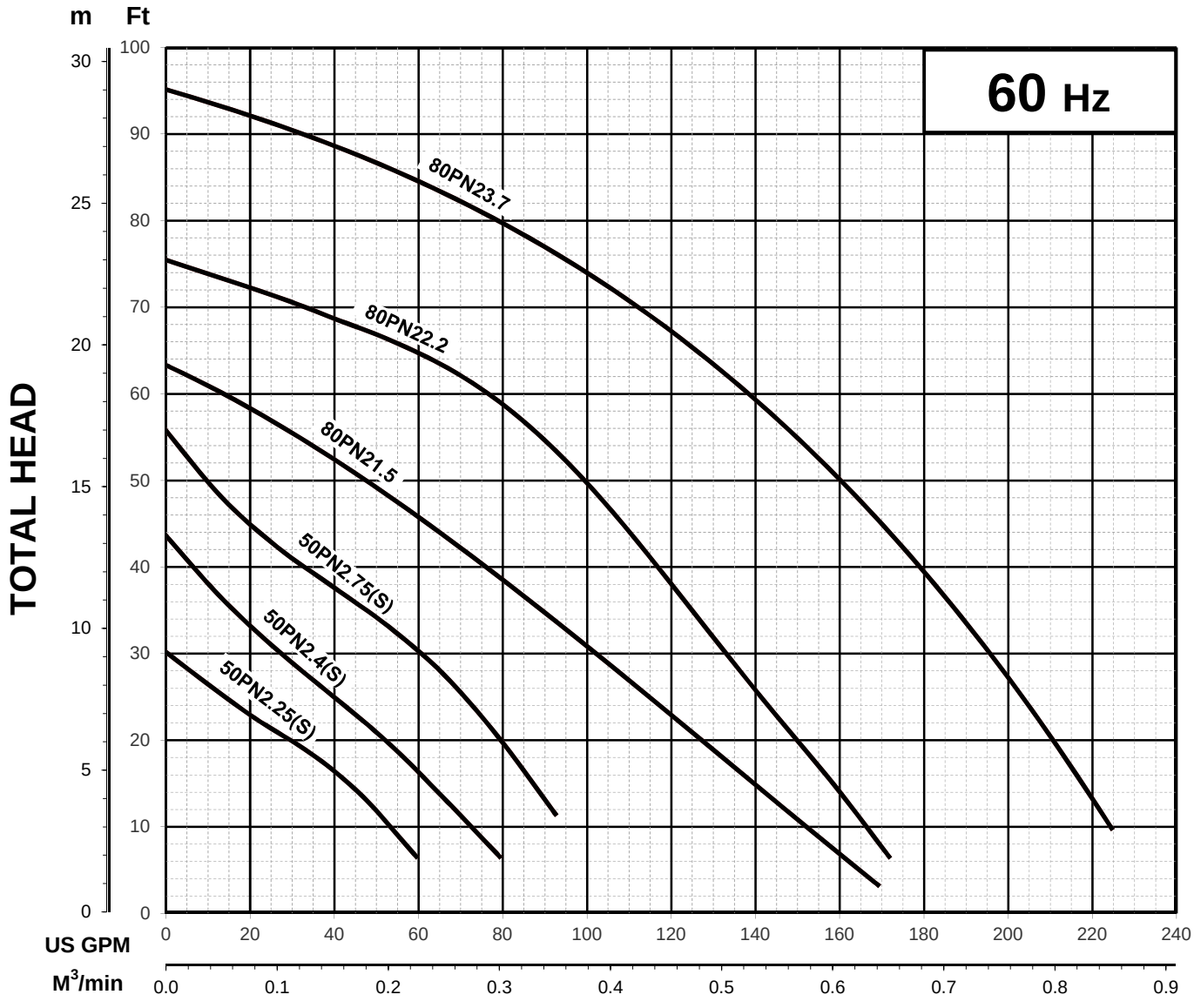
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

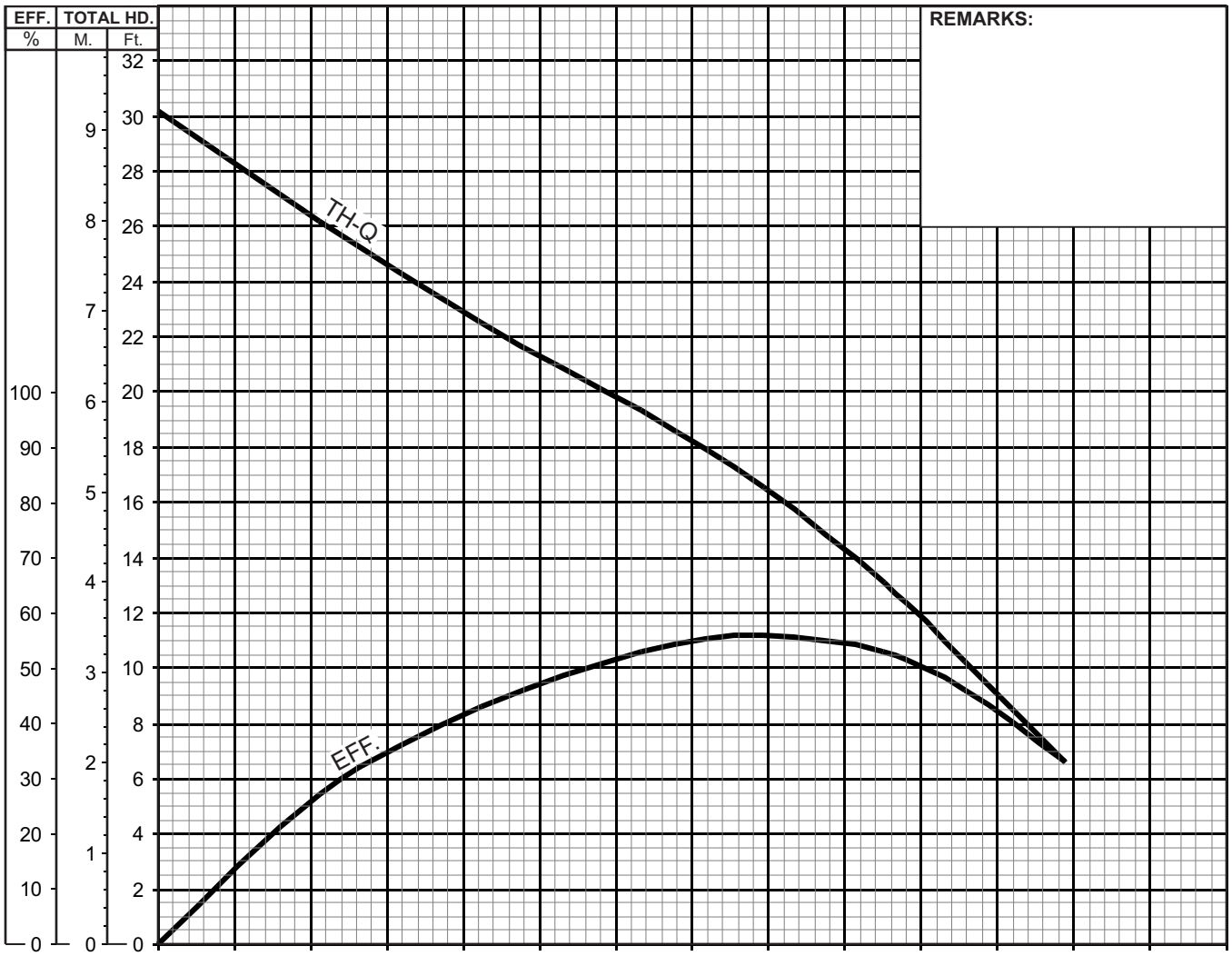
PERFORMANCE CURVE

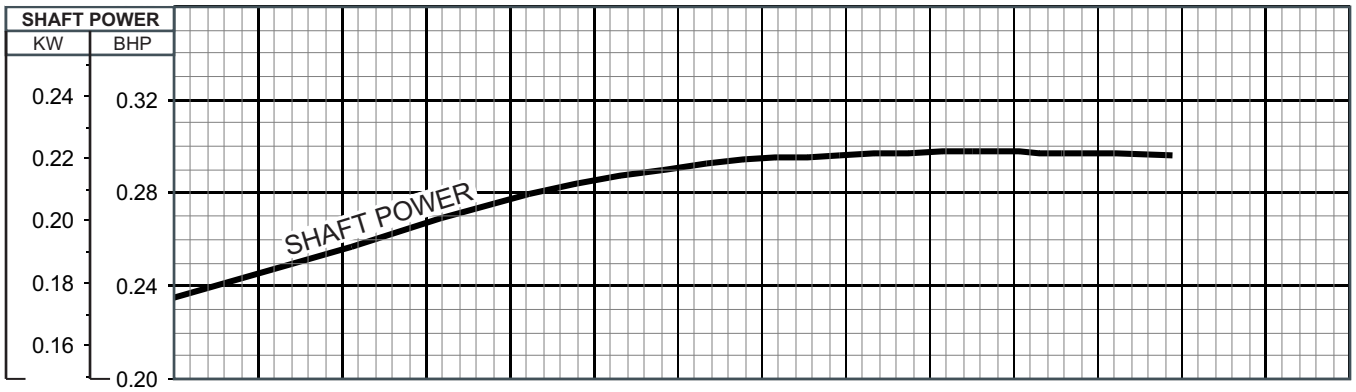
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.25 -62	2" / 50mm	0.34	0.25	3386	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater Pump	3	230 / 460	1.5 / 0.75	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



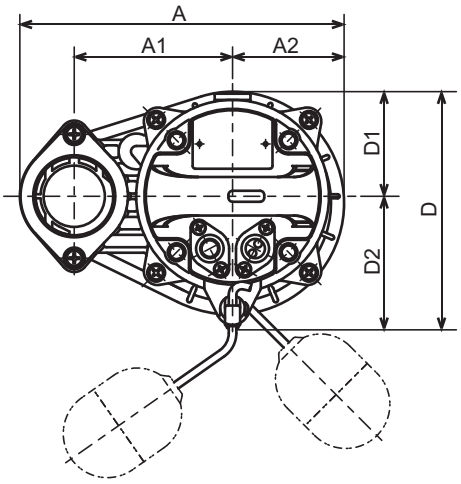


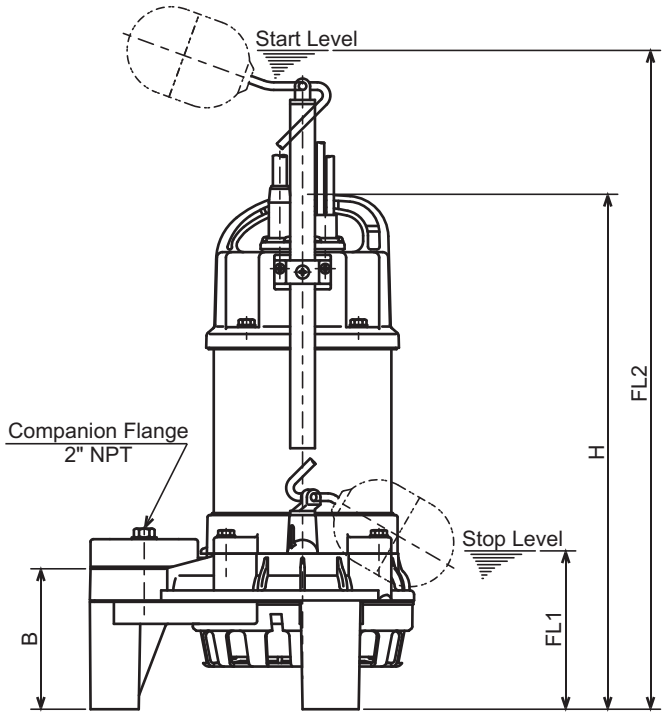
TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PNA2.25S-62
50PNA2.25-62
50PNA2.4S-62
50PNA2.4-62
50PNA2.75S-62
50PNA2.75-62





DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(lbs.)
50PNA2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	17.0
50PNA2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 5/16	4 1/2	23 1/2	14.8
50PNA2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	17.0
50PNA2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	16.7
50PNA2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/2	4 1/2	24 5/8	20.9
50PNA2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/4	4 1/2	24 1/2	19.6

DIMENSIONS:METRIC (mm)

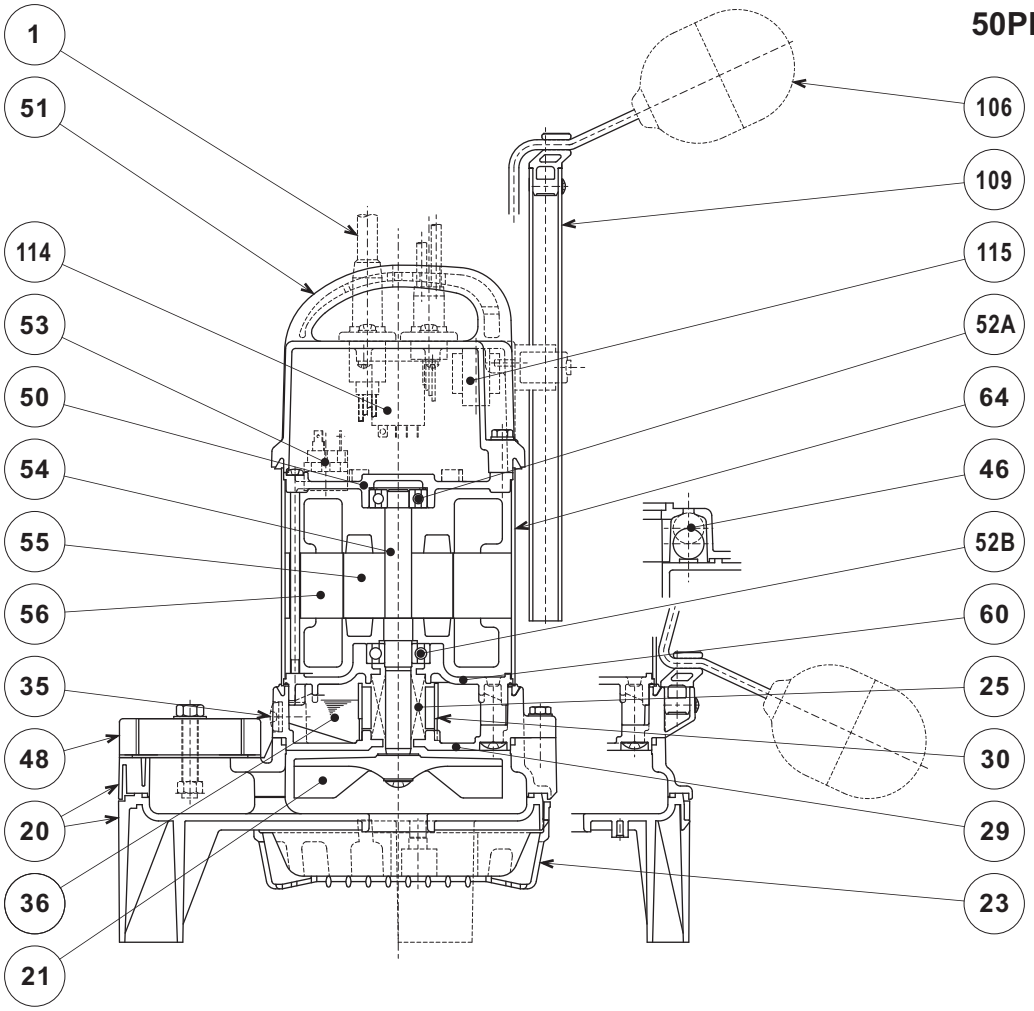
Model	kW	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(kg)
50PNA2.25S-62	0.25	50	236	115	81	102	173	76	97	374	115	607	7.7
50PNA2.25-62	0.25	50	236	115	81	102	173	76	97	363	115	596	6.7
50PNA2.4S-62	0.40	50	236	115	81	102	173	76	97	374	115	607	7.7
50PNA2.4-62	0.40	50	236	115	81	102	173	76	97	374	115	607	7.6
50PNA2.75S-62	0.75	50	236	115	81	102	173	76	97	394	115	627	9.5
50PNA2.75-62	0.75	50	236	115	81	102	173	76	97	388	115	621	8.9

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PNA2.25-62
50PNA2.4-62



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/4-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/GF40			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/GF40			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6202ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
106	Float Set	ABS Plastic			2
109	Float Support Pipe	PVC			1
114	Power Relay				1
115	Transformer				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

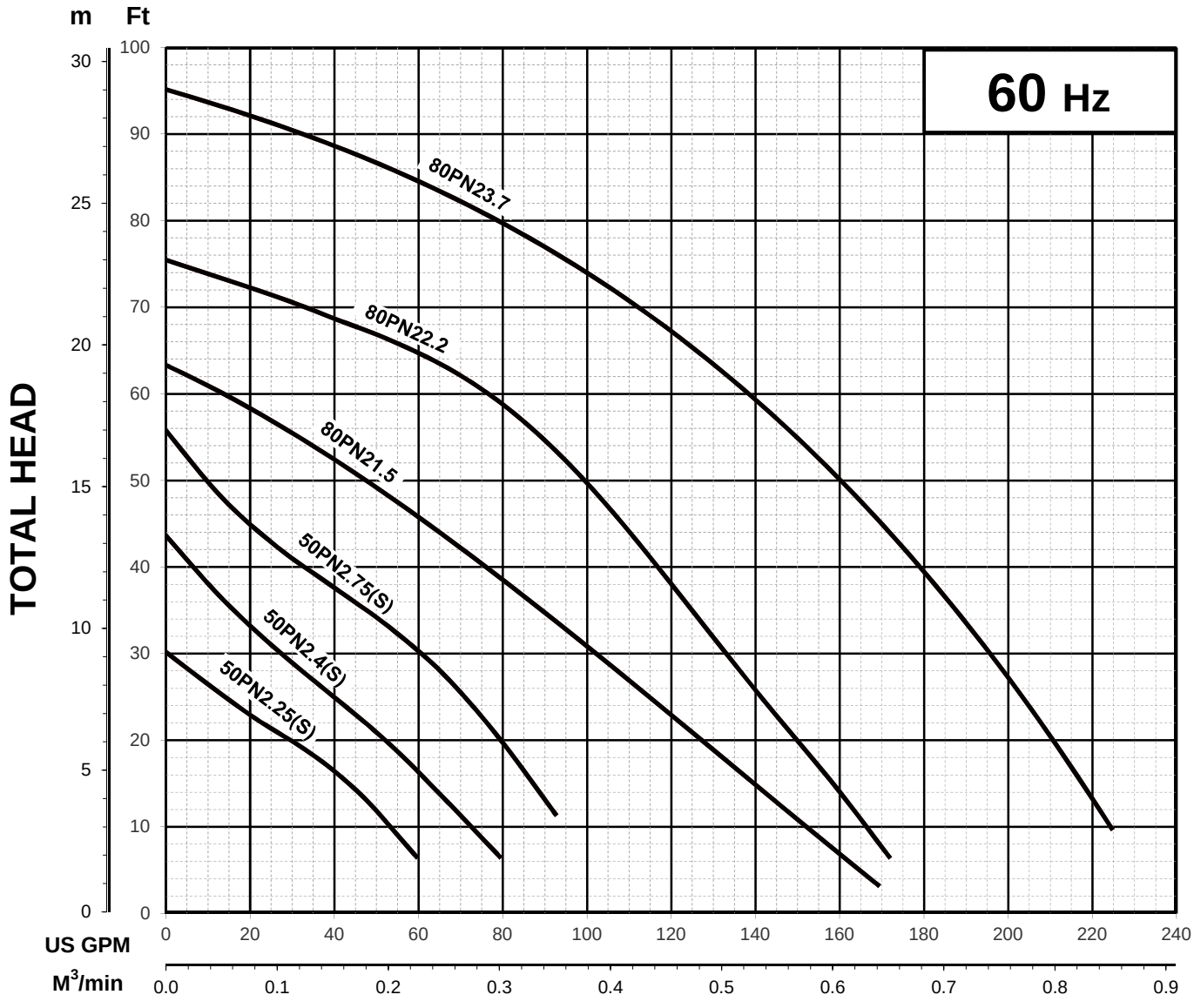
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

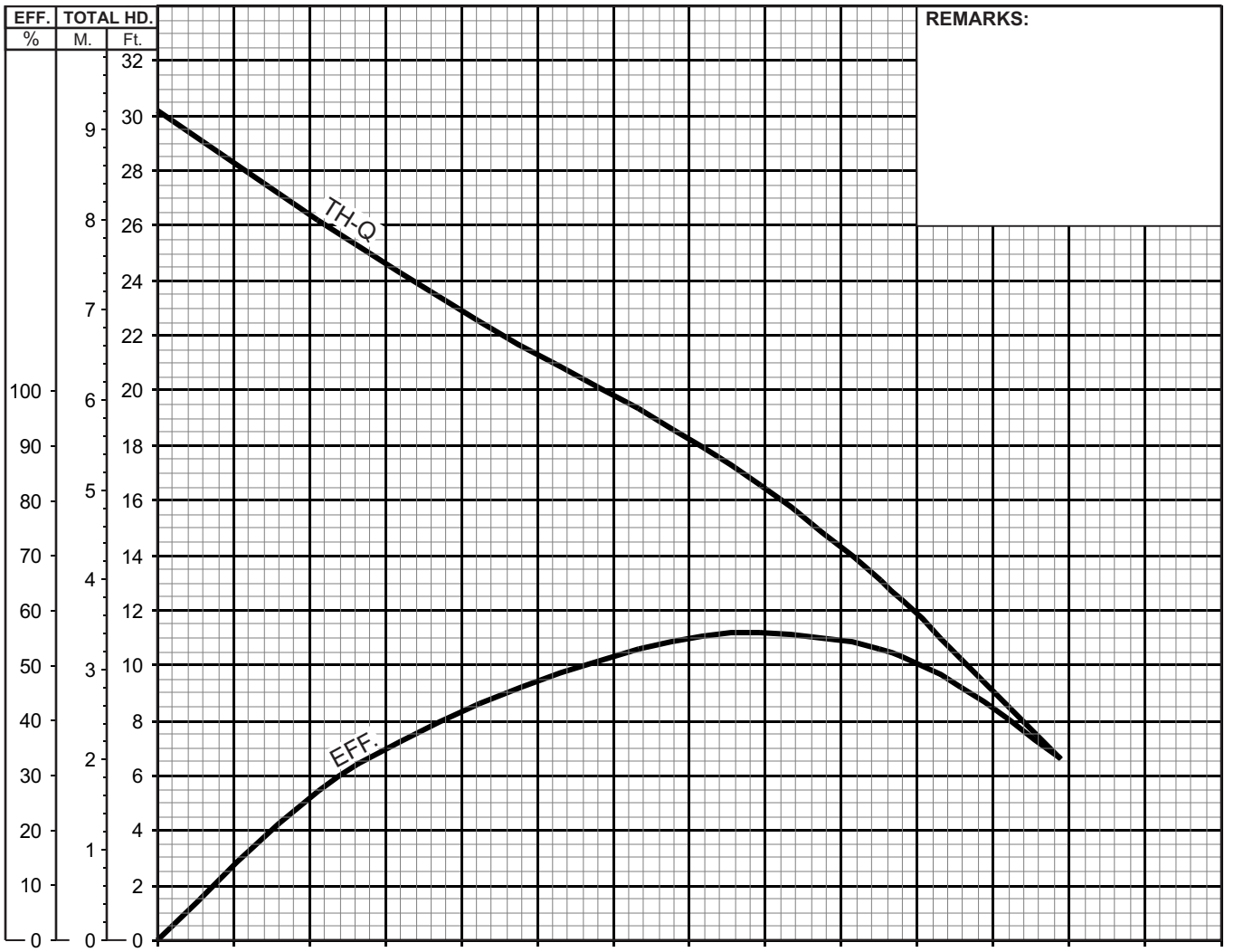
PERFORMANCE CURVE

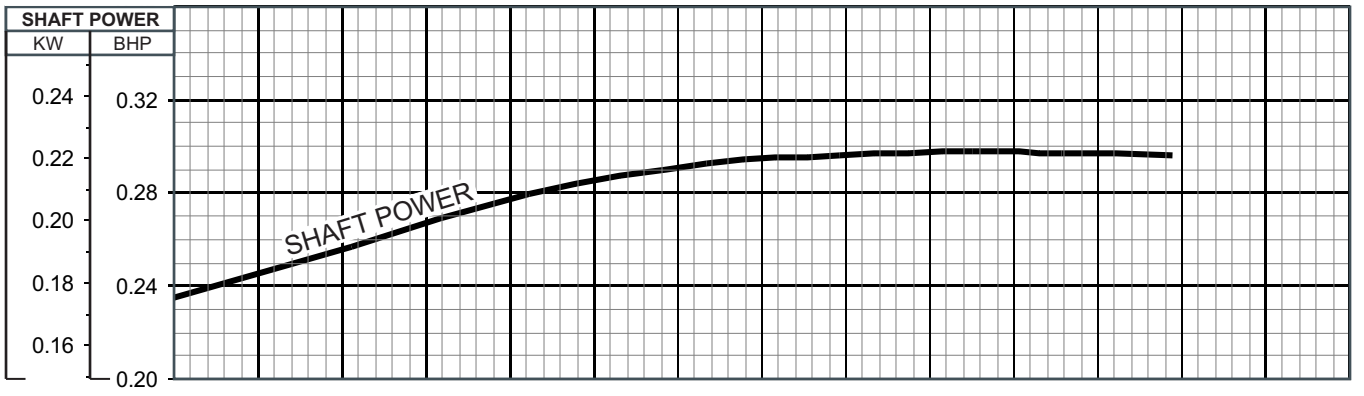
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.25S -63	2" / 50mm	0.34	0.25	3485	0.394"/10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater Pump	Single	115-120 / 230	4.6-4.6 / 2.3	60	Capacitor-Start	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



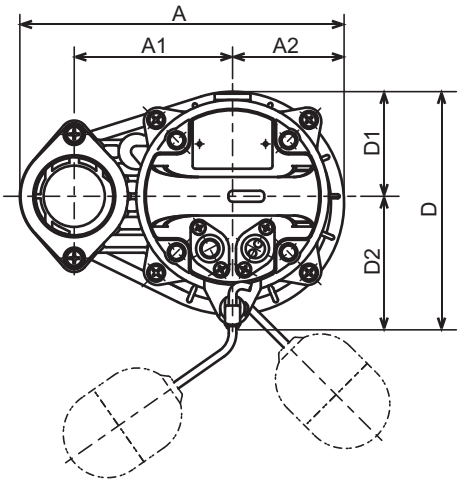


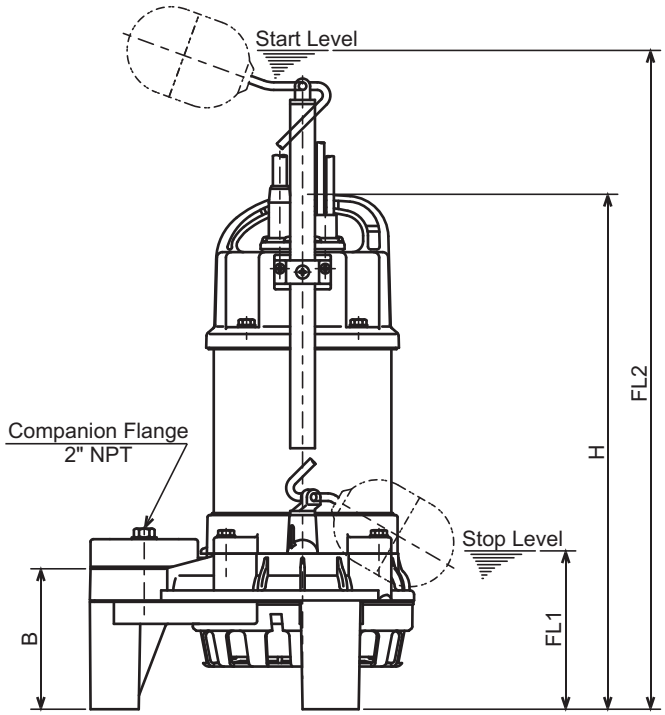
TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PNA2.25S-62
50PNA2.25-62
50PNA2.4S-62
50PNA2.4-62
50PNA2.75S-62
50PNA2.75-62





DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(lbs.)
50PNA2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	17.0
50PNA2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 5/16	4 1/2	23 1/2	14.8
50PNA2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	17.0
50PNA2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	16.7
50PNA2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/2	4 1/2	24 5/8	20.9
50PNA2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/4	4 1/2	24 1/2	19.6

DIMENSIONS:METRIC (mm)

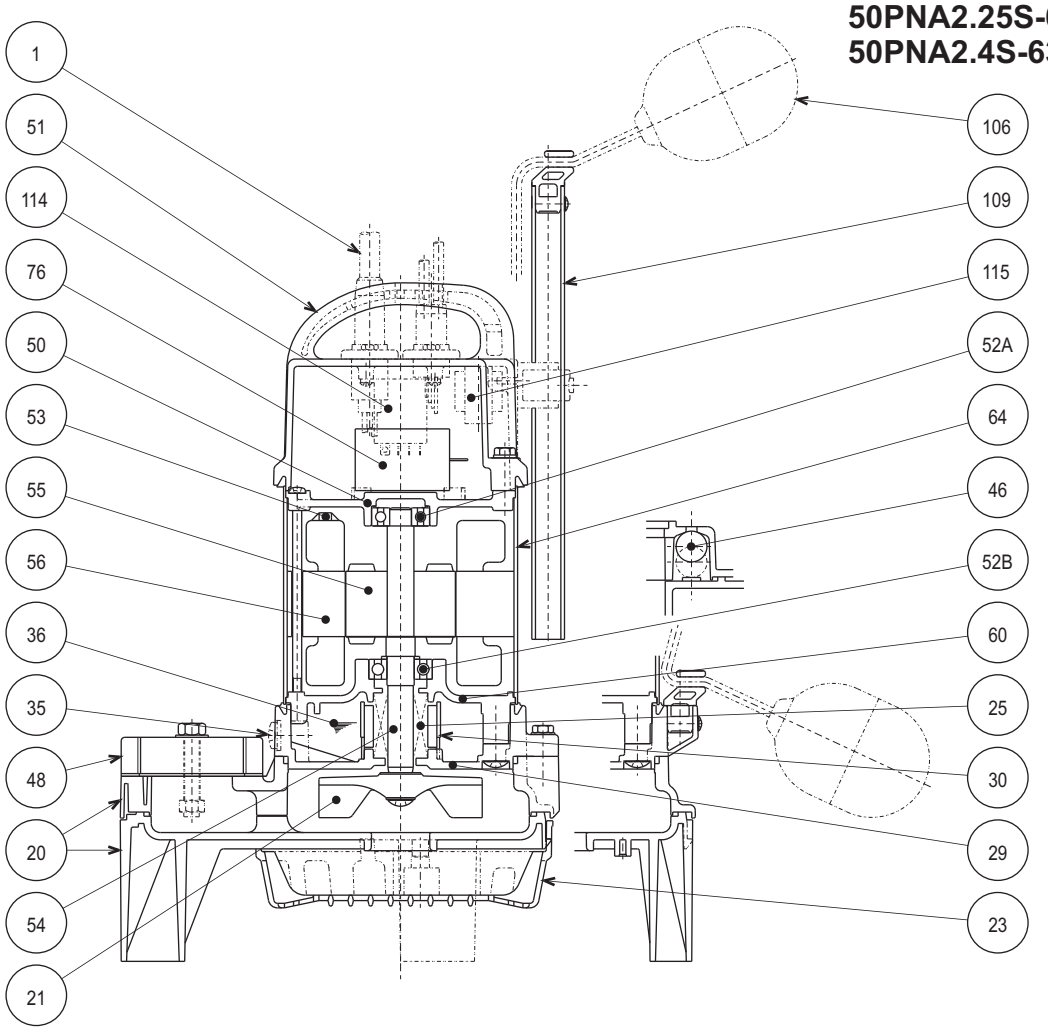
Model	kW	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(kg)
50PNA2.25S-62	0.25	50	236	115	81	102	173	76	97	374	115	607	7.7
50PNA2.25-62	0.25	50	236	115	81	102	173	76	97	363	115	596	6.7
50PNA2.4S-62	0.40	50	236	115	81	102	173	76	97	374	115	607	7.7
50PNA2.4-62	0.40	50	236	115	81	102	173	76	97	374	115	607	7.6
50PNA2.75S-62	0.75	50	236	115	81	102	173	76	97	394	115	627	9.5
50PNA2.75-62	0.75	50	236	115	81	102	173	76	97	388	115	621	8.9

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PNA2.25S-63
50PNA2.4S-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/3-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6202ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
76	Capacitor				1
106	Float Set	ABS Plastic			2
109	Float Support Pipe	PVC			1
114	Power Relay				1
115	Transformer				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

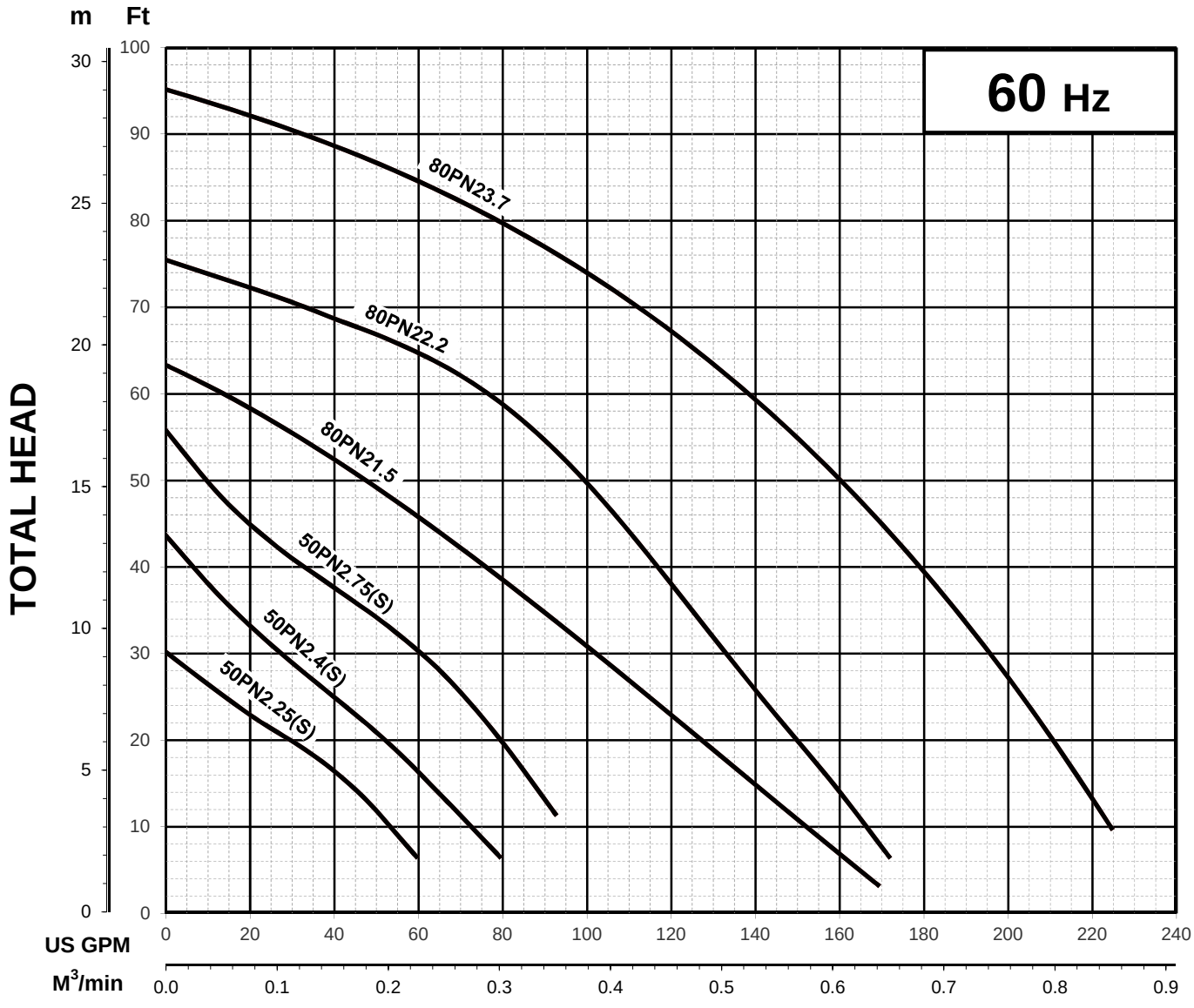
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

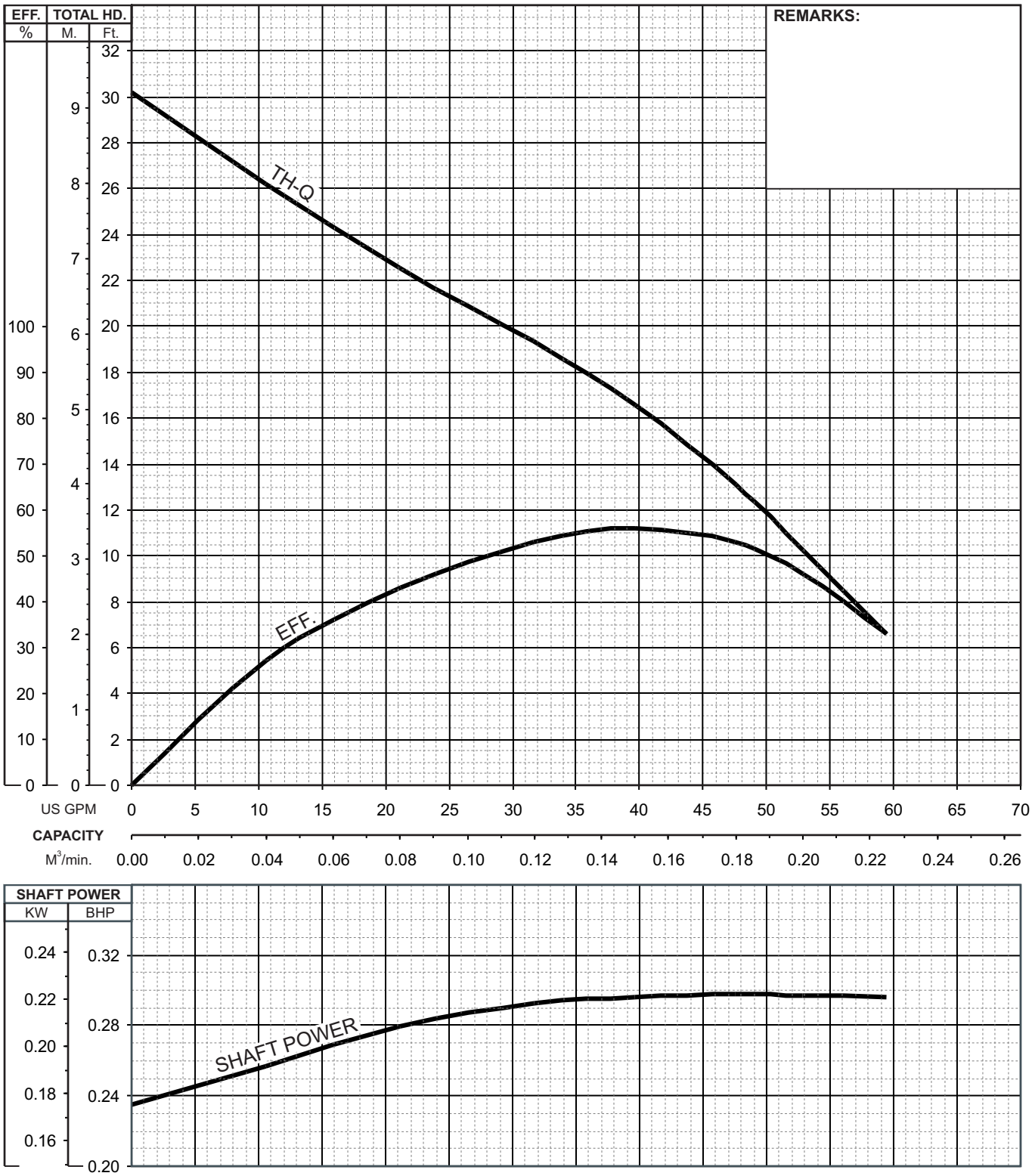
PERFORMANCE CURVE

MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.25 -63	2" / 50mm	0.34	0.25	3400	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater Pump	3	208-220/460	1.65-1.6 / 0.75	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:

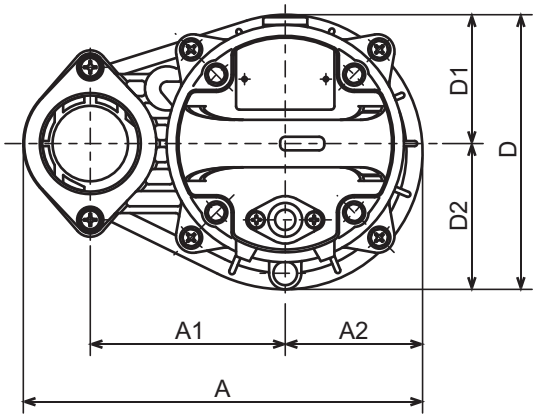


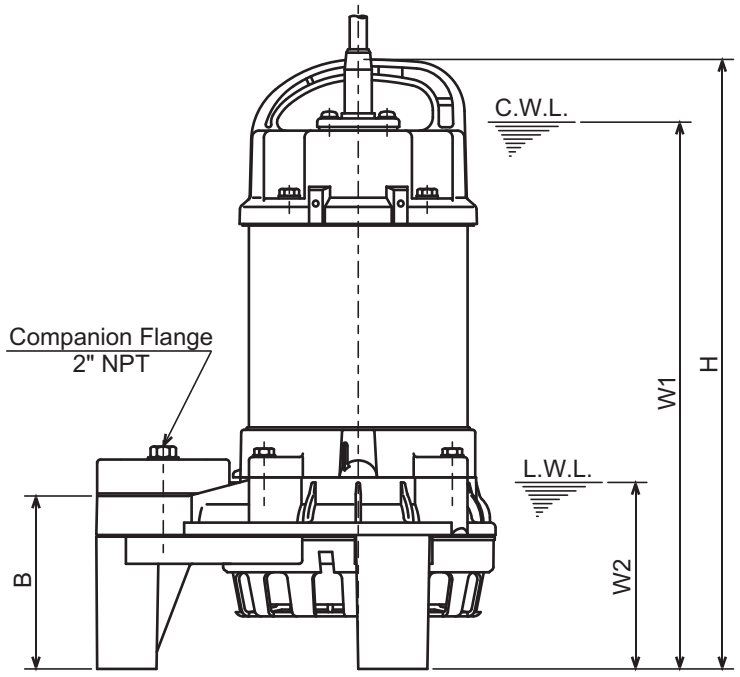
TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PN2.25S-62
50PN2.25-62
50PN2.4S-62
50PN2.4-62
50PN2.75S-62
50PN2.75-62





C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water Level

DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(lbs.)
50PN2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	13 3/4	12 1/4	4 3/8	13.4
50PN2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.4
50PN2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 15/16	13 5/8	4 3/8	19.6
50PN2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/4	13 3/8	4 3/8	18.3

DIMENSIONS:METRIC (mm)

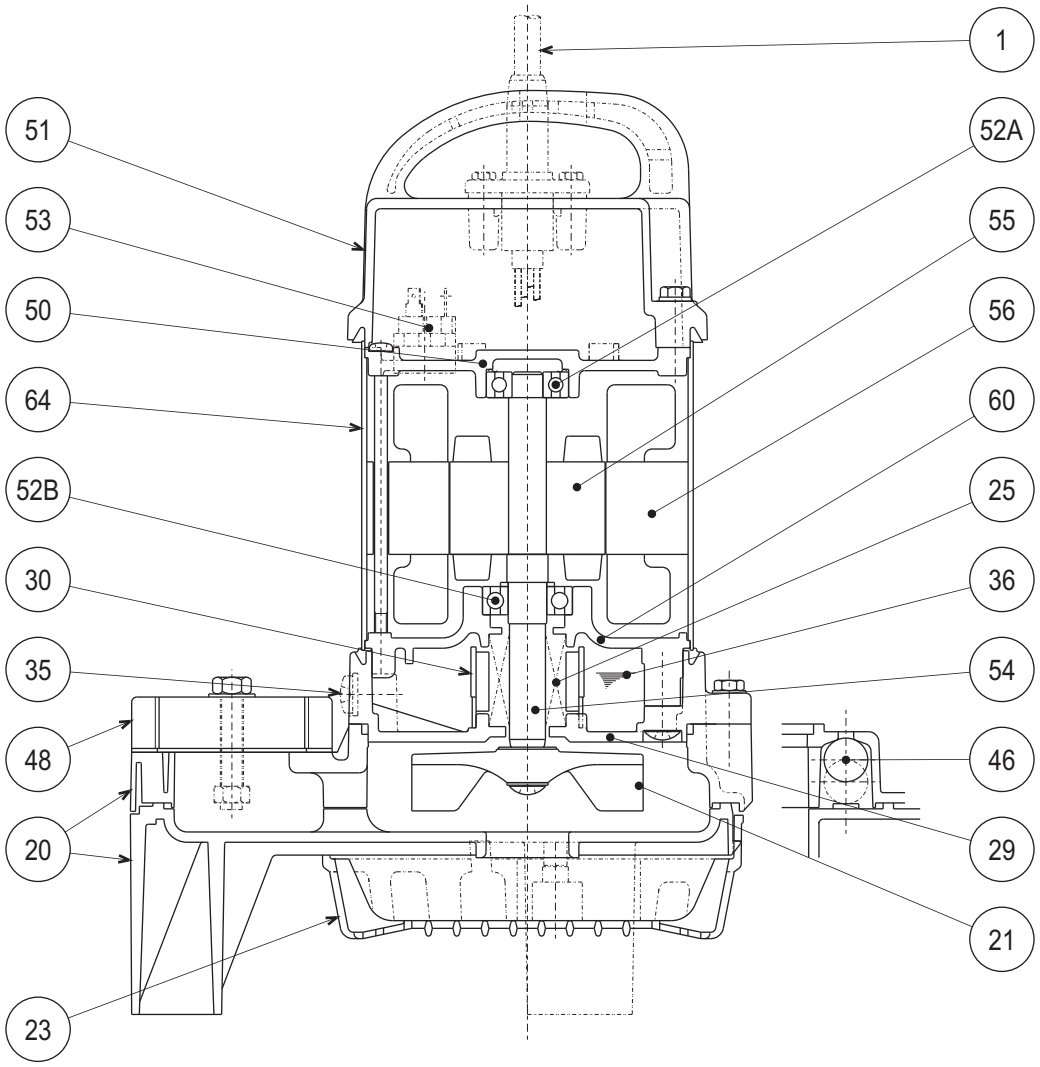
Model	kW	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
50PN2.25S-62	0.25	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.25-62	0.25	50	236	115	81	102	162	76	86	349	310	110	6.1
50PN2.4S-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.4-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.0
50PN2.75S-62	0.75	50	236	115	81	102	162	76	86	380	345	110	8.9
50PN2.75-62	0.75	50	236	115	81	102	162	76	86	374	340	110	8.3

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PN2.25-63
50PN2.4-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/4-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6202ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

Specifications

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

Intertek

OIL LIFTER EQUIPPED

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	

STANDARD

OPTIONS

Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.

Length as Required

Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

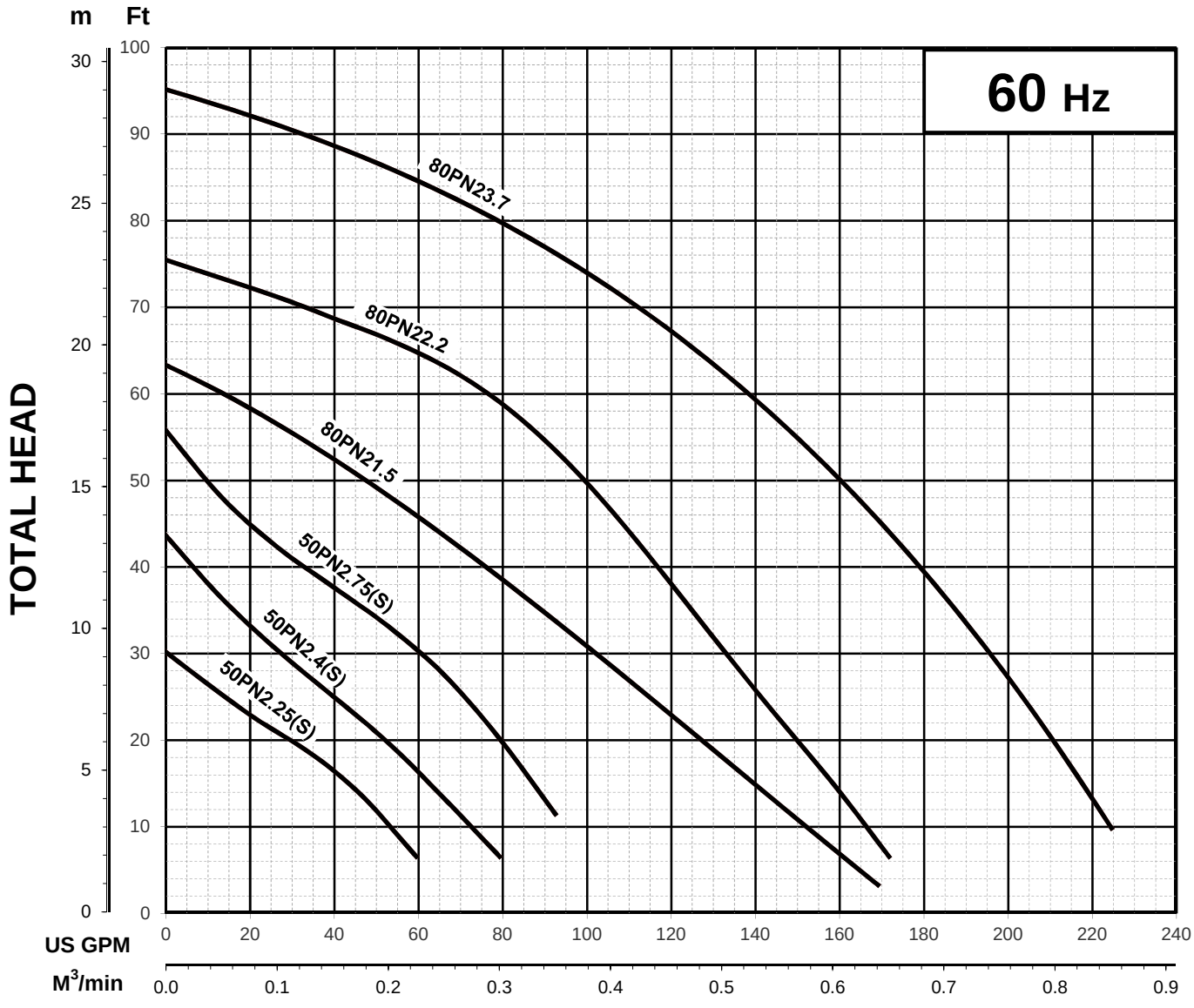
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

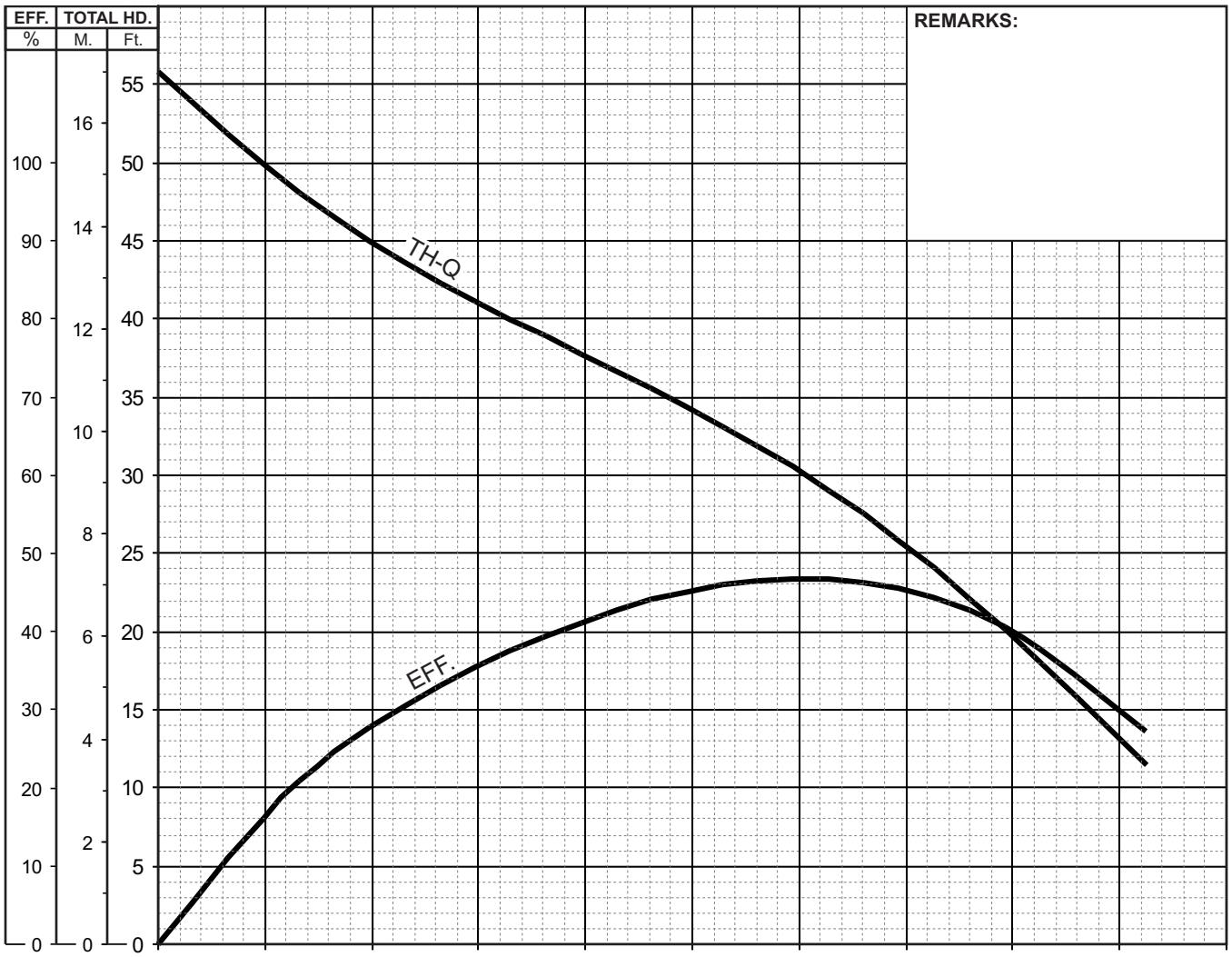
PERFORMANCE CURVE

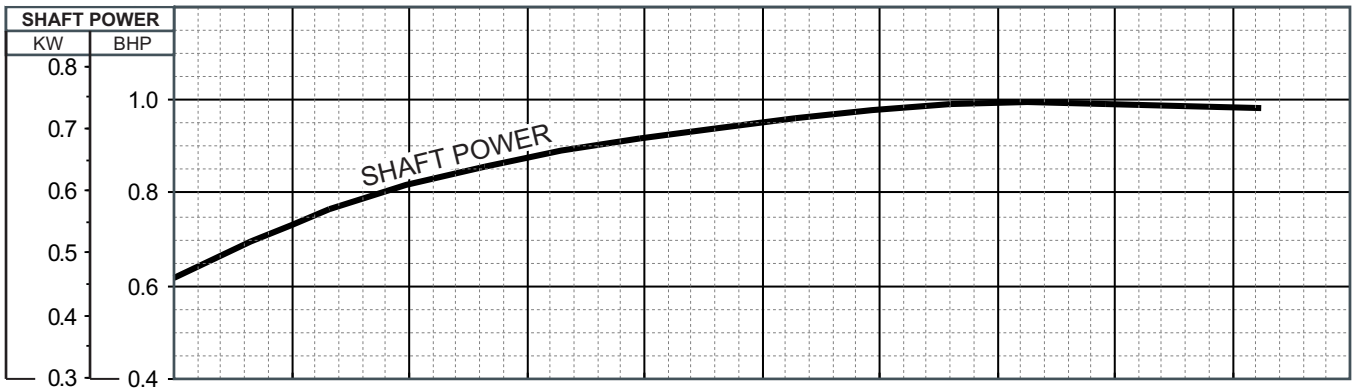
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.75 -63	2" / 50mm	1	0.75	3375	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex Wastewater Pump	3	208-220/460	3.2-3.2 / 1.5	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



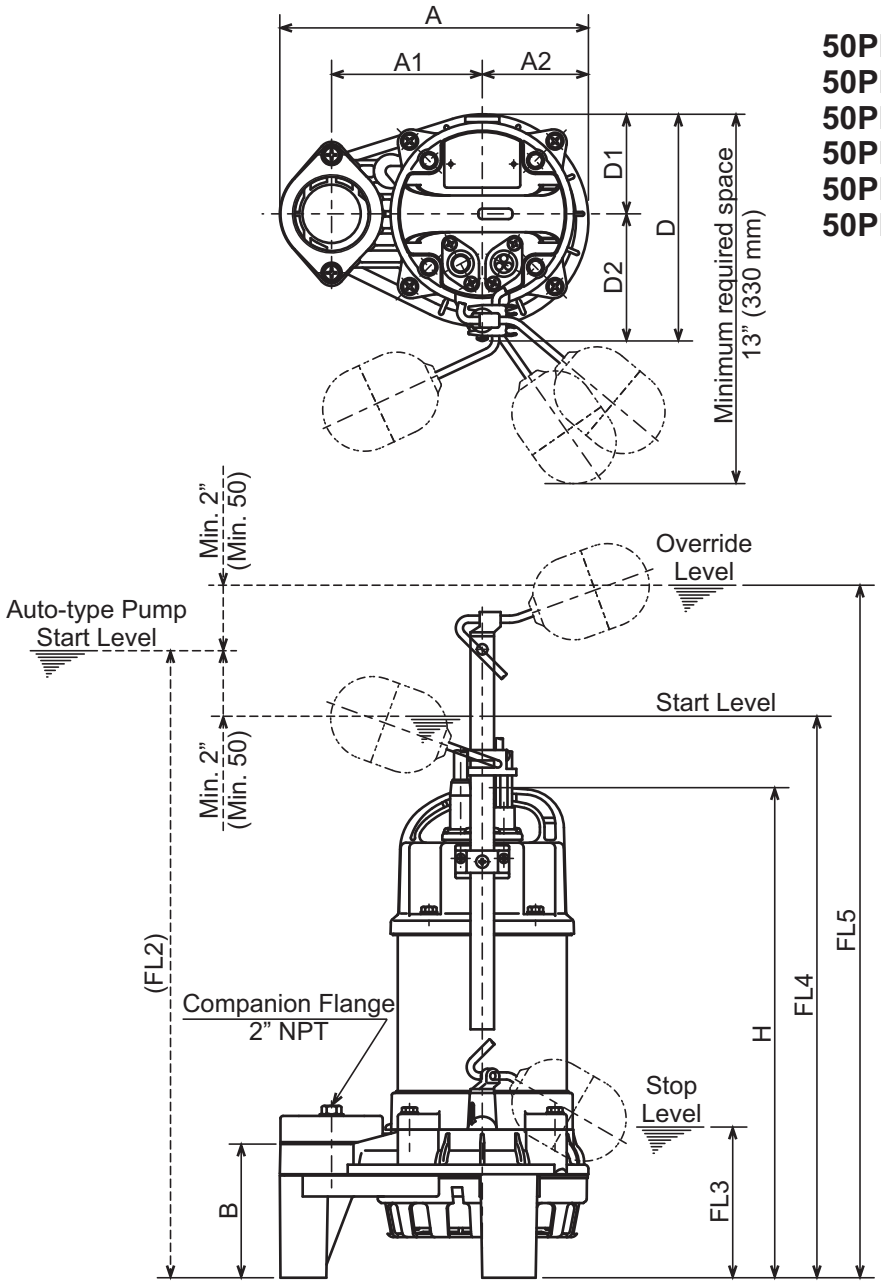


TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PNW2.25S-63
50PNW2.25-63
50PNW2.4S-63
50PNW2.4-63
50PNW2.75S-63
50PNW2.75-63



DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor								Stop	Start	Override	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(lbs.)
50PNW2.25S-63	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.2
50PNW2.25-63	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 5/16	4 1/2	21 1/2	25 3/8	15.0
50PNW2.4S-63	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.2
50PNW2.4-63	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.0
50PNW2.75S-63	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/2	4 1/2	22 3/4	26 5/8	21.1
50PNW2.75-63	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/4	4 1/2	22 1/2	26 3/8	19.8

DIMENSIONS:METRIC (mm)

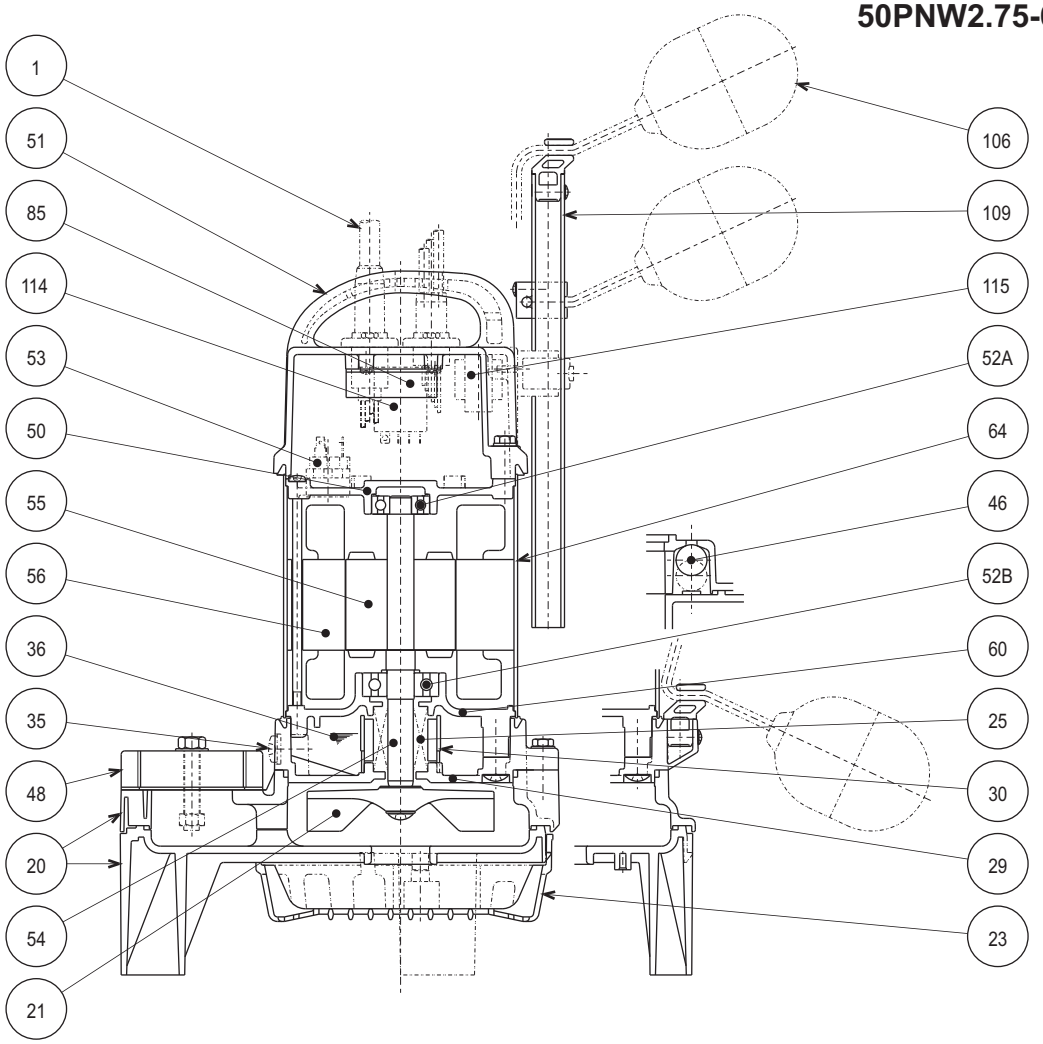
Model	kW	NOM.	Pump & Motor								Stop	Start	Override	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(kg)
50PNW2.25S-63	0.25	50	236	115	81	102	173	76	97	374	115	557	657	7.8
50PNW2.25-63	0.25	50	236	115	81	102	173	76	97	363	115	546	646	6.8
50PNW2.4S-63	0.40	50	236	115	81	102	173	76	97	374	115	557	657	7.8
50PNW2.4-63	0.40	50	236	115	81	102	173	76	97	374	115	557	657	7.7
50PNW2.75S-63	0.75	50	236	115	81	102	173	76	97	394	115	577	677	9.6
50PNW2.75-63	0.75	50	236	115	81	102	173	76	97	388	115	571	671	9.0

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PNW2.75-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/4-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6302ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
85	Relay unit				1
106	Float Set	ABS Plastic			3
109	Float Support Pipe	PVC			1
114	Power Relay				1
115	Transformer				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 304 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

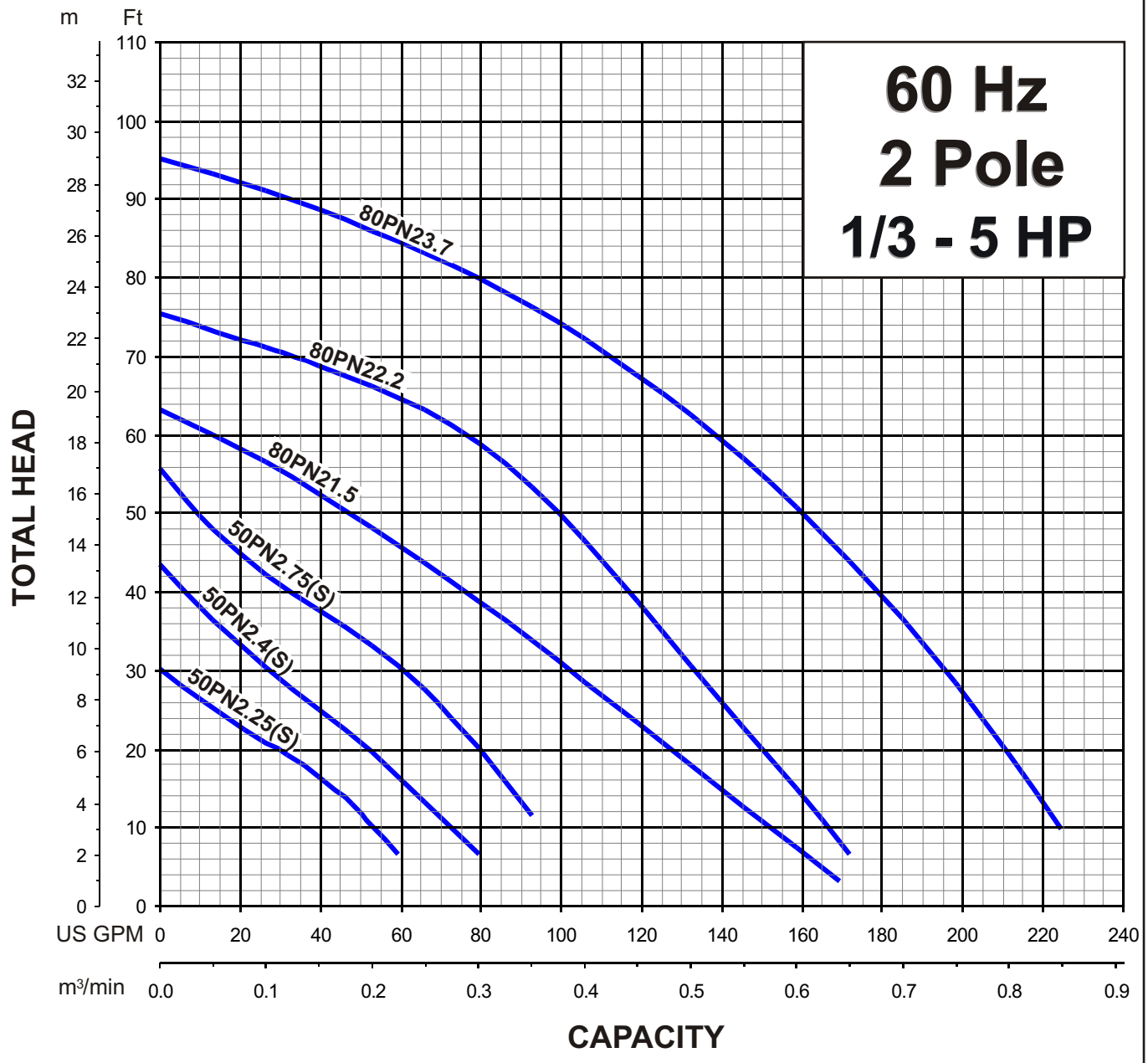
ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	PERFORMANCE RANGE

PERFORMANCE RANGE



TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

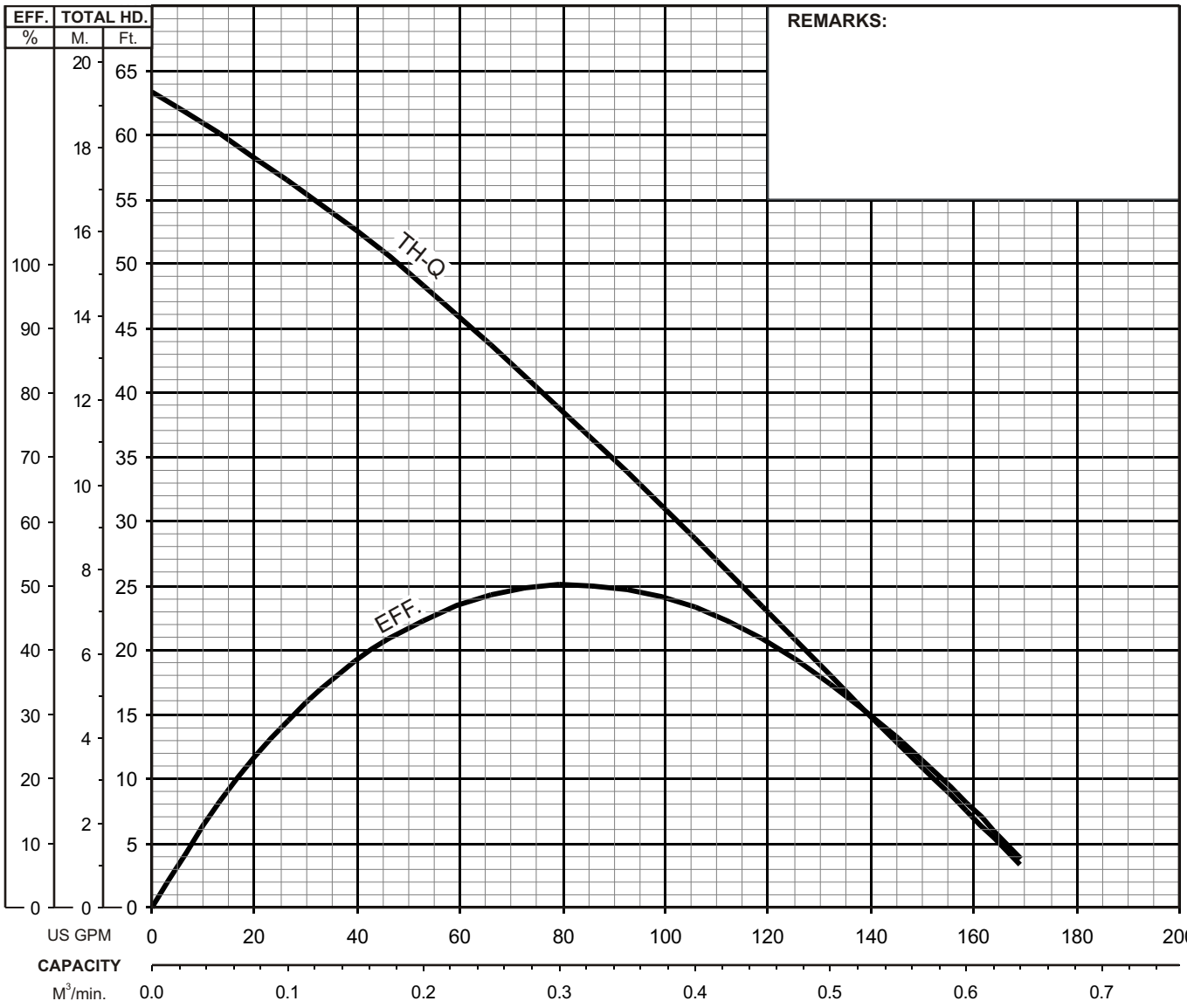
PERFORMANCE CURVE

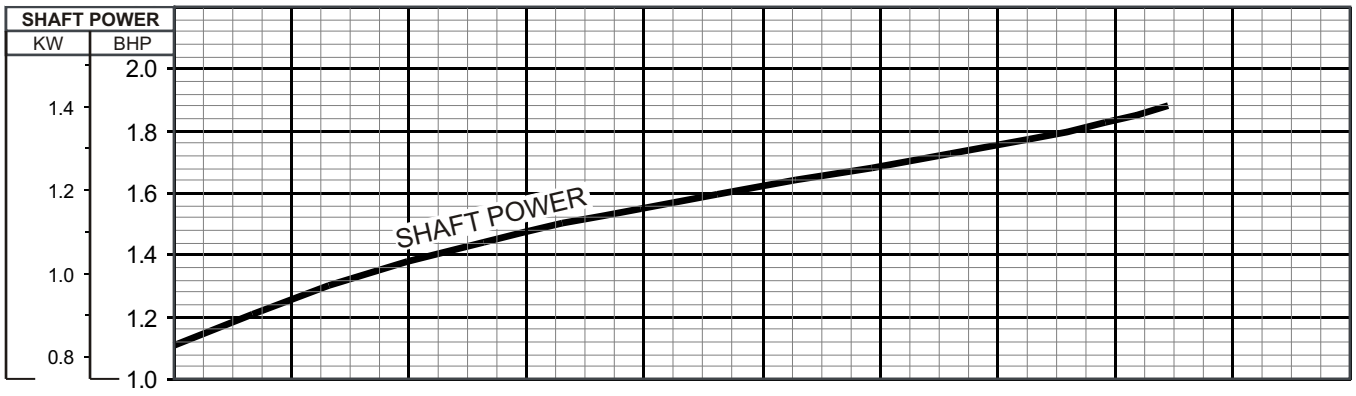
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
80PN(A/W)21.5 -62	3"/80mm	2	1.5	3455	0.787"/20mm	Water	1.0	1.123 CST	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex Wastewater Pump	3	208 - 220 / 440	6.9 - 6.6 / 3.6	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



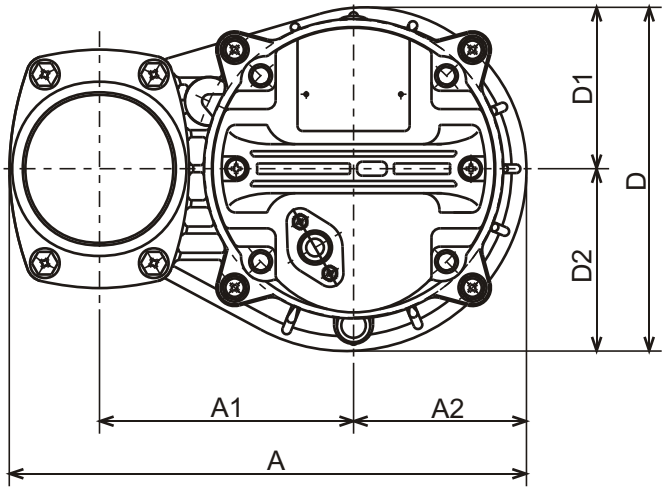


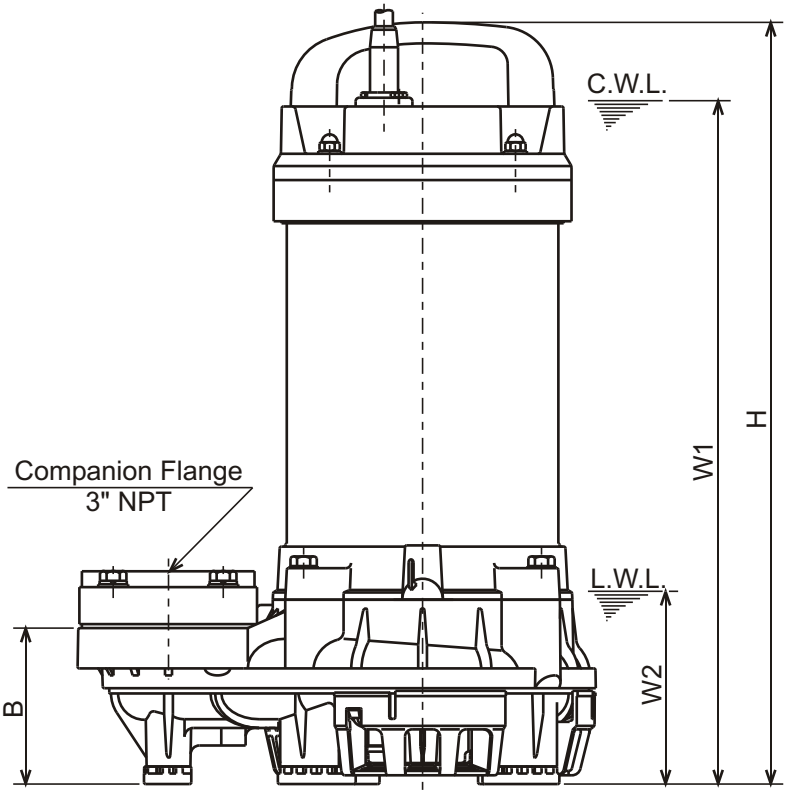
TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

80PN21.5-62





C.W.L. : Continuous running Water Level
L.W.L. : Lowest running Water Level

DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(lbs.)
80PN21.5-62	2	3"	11 5/8	5 11/16	3 7/8	3 1/2	7 11/16	3 5/8	4 1/8	17 1/8	15 3/8	4 3/8	35.0

DIMENSIONS:METRIC (mm)

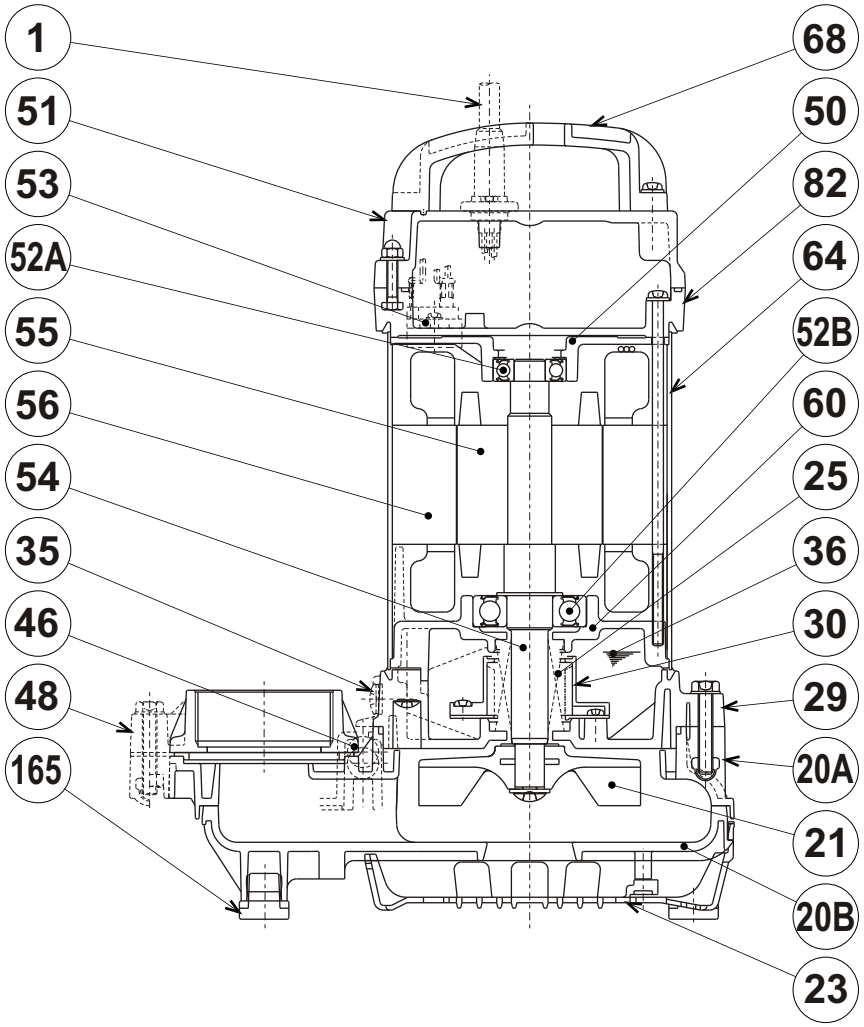
Model	kW	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
80PN21.5-62	1.5	80	295	145	99	89	196	92	104	435	390	110	15.9

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

80PN21.5-62



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/4-32ft			1
20A	Upper Pump Casing	PA+ABS Plastic w/GF30			1
20B	Lower Pump Casing	PA+ABS Plastic w/GF30			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / H-20A			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic W/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PVC / NPT 3"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/GF40			1
52A	Upper Bearing	#6203ZZC3			1
52B	Lower Bearing	#6305ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
68	Handle	ABS Plastic			1
82	Motor Head Cover Spacer	PPS Plastic w/GF40			1
165	Rubber Cusion	Nitrile Butadiene Rubber			5

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency drive. (Only for 3 ph.)

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

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SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

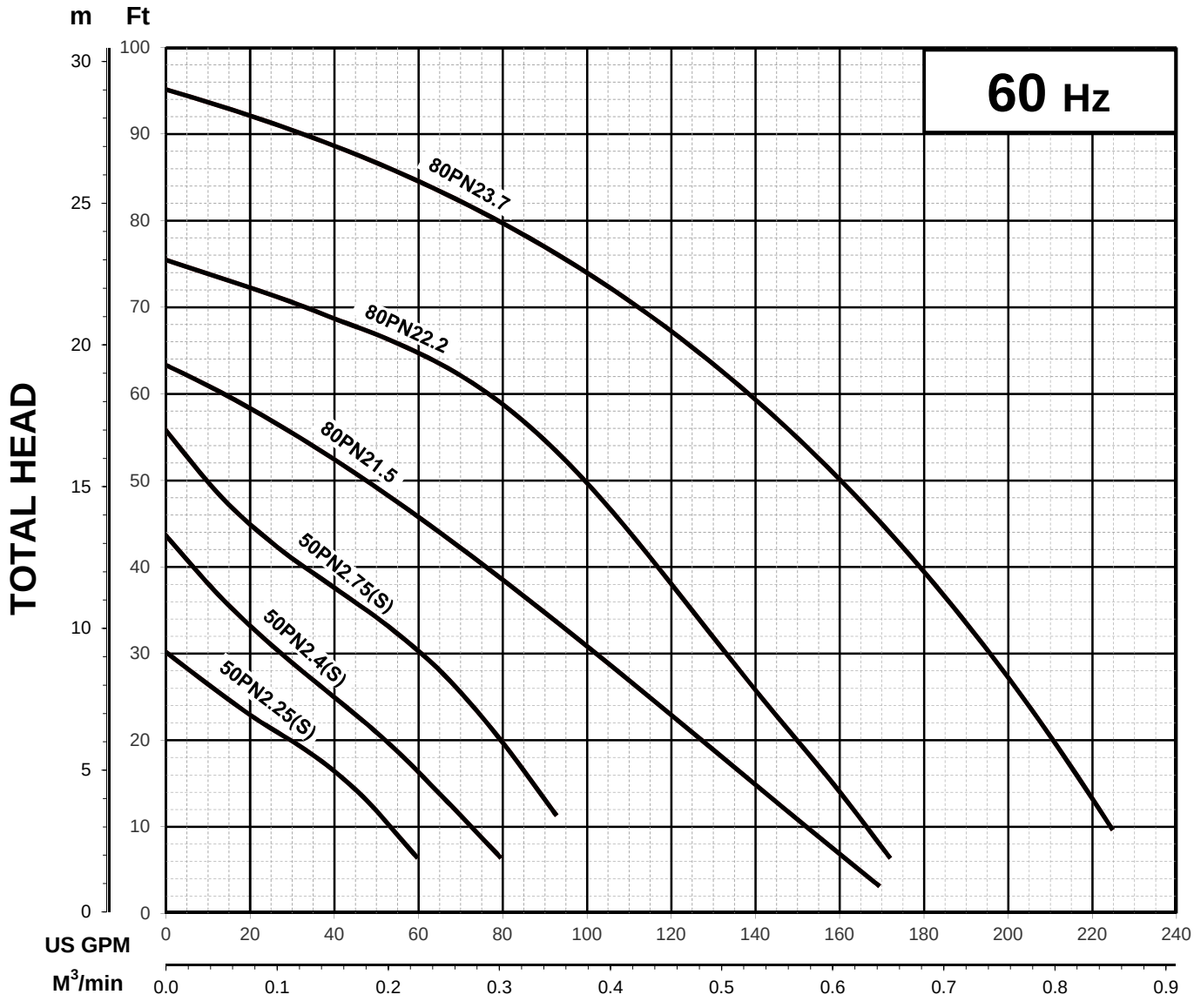
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

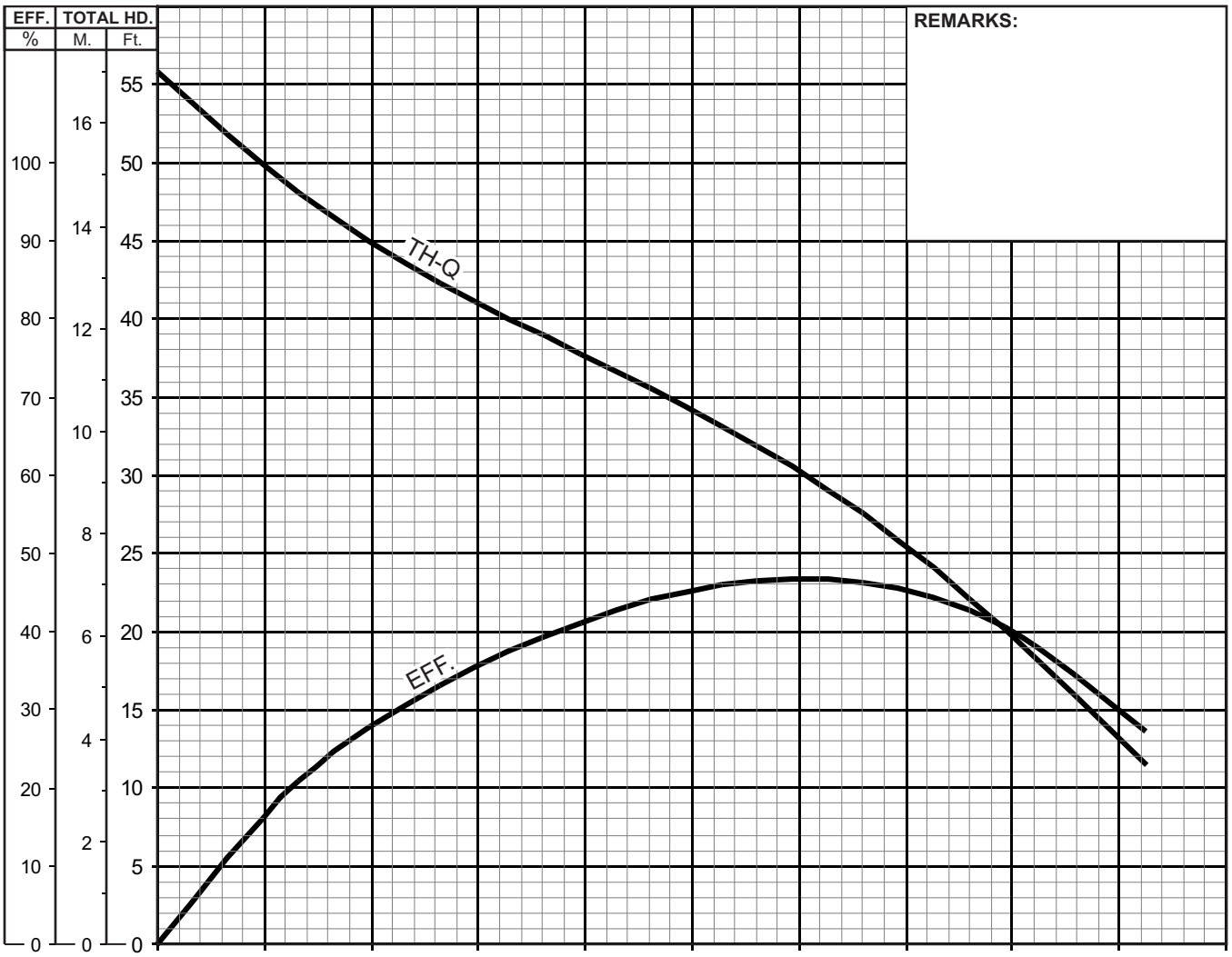
PERFORMANCE CURVE

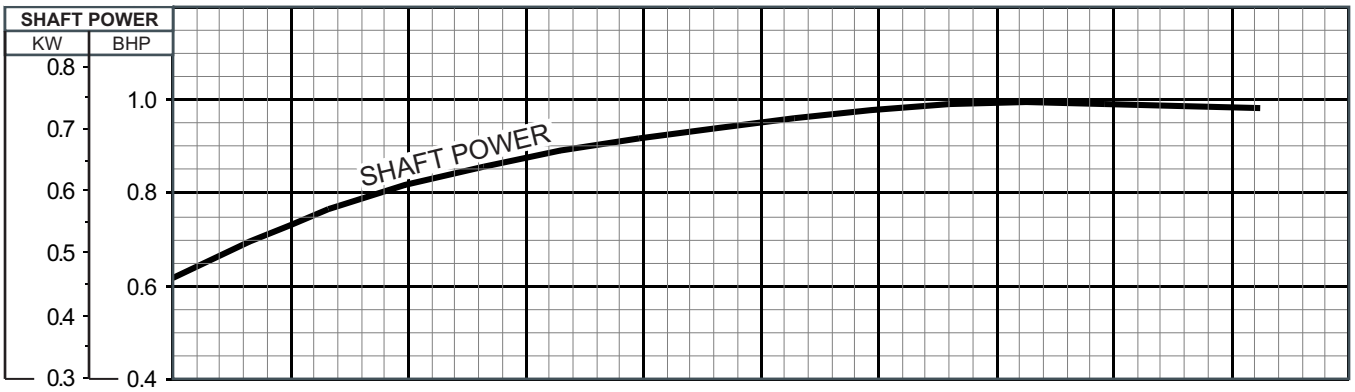
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.75S -63	2" / 50mm	1	0.75	3374	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex Wastewater Pump	Single	115-120 / 230	9.2-9.1 / 4.6	60	Capacitor-Start	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



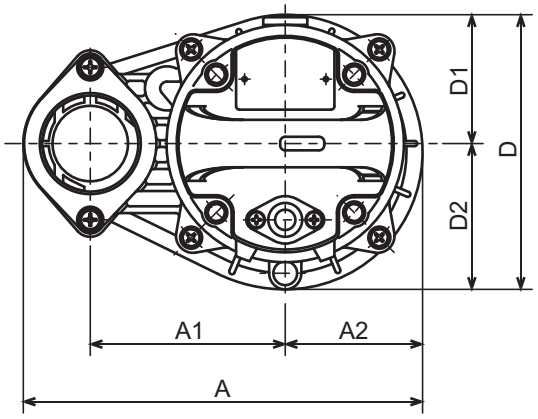


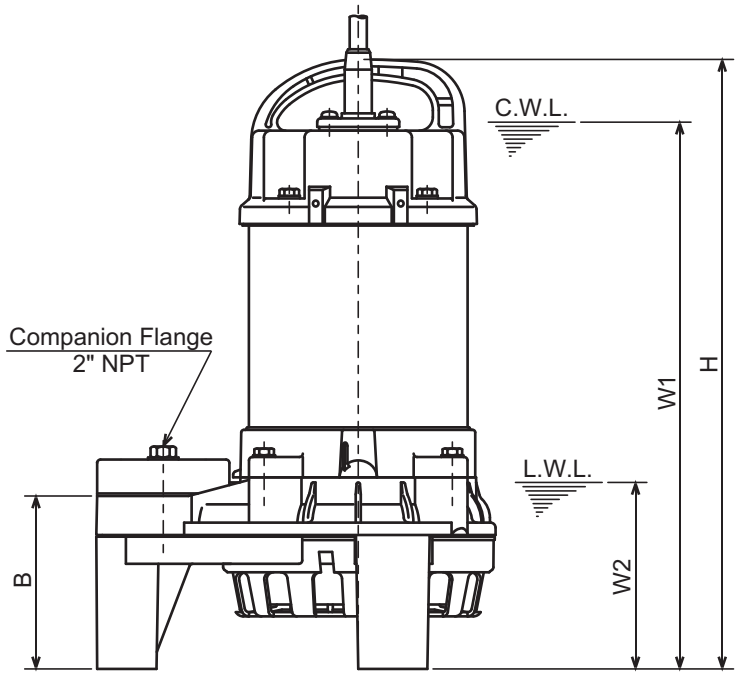
TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PN2.25S-62
50PN2.25-62
50PN2.4S-62
50PN2.4-62
50PN2.75S-62
50PN2.75-62





C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water Level

DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(lbs.)
50PN2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	13 3/4	12 1/4	4 3/8	13.4
50PN2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.4
50PN2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 15/16	13 5/8	4 3/8	19.6
50PN2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/4	13 3/8	4 3/8	18.3

DIMENSIONS:METRIC (mm)

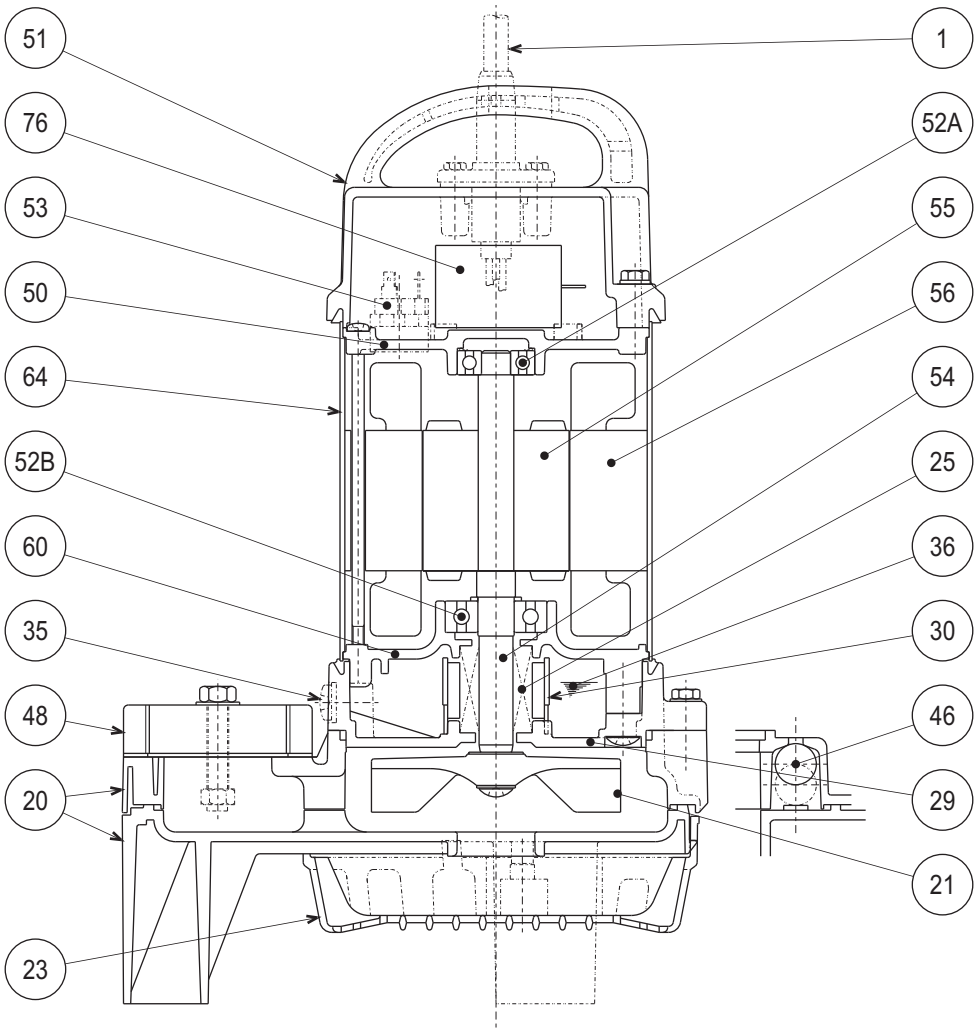
Model	kW	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
50PN2.25S-62	0.25	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.25-62	0.25	50	236	115	81	102	162	76	86	349	310	110	6.1
50PN2.4S-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.4-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.0
50PN2.75S-62	0.75	50	236	115	81	102	162	76	86	380	345	110	8.9
50PN2.75-62	0.75	50	236	115	81	102	162	76	86	374	340	110	8.3

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PN2.75S-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG14/3-32ft or AWG16/3-32ft (230V)			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6302ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
76	Capacitor				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

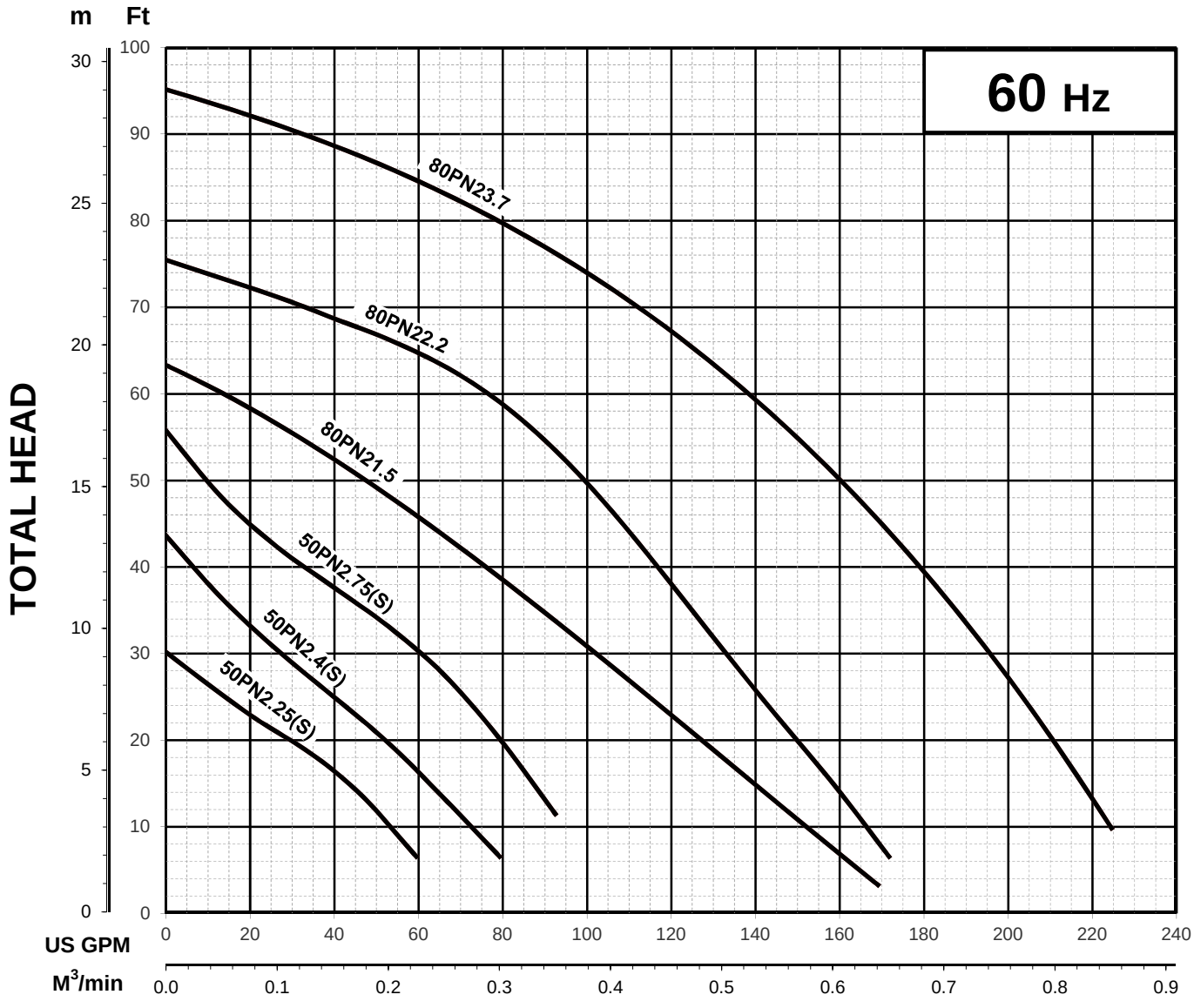
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

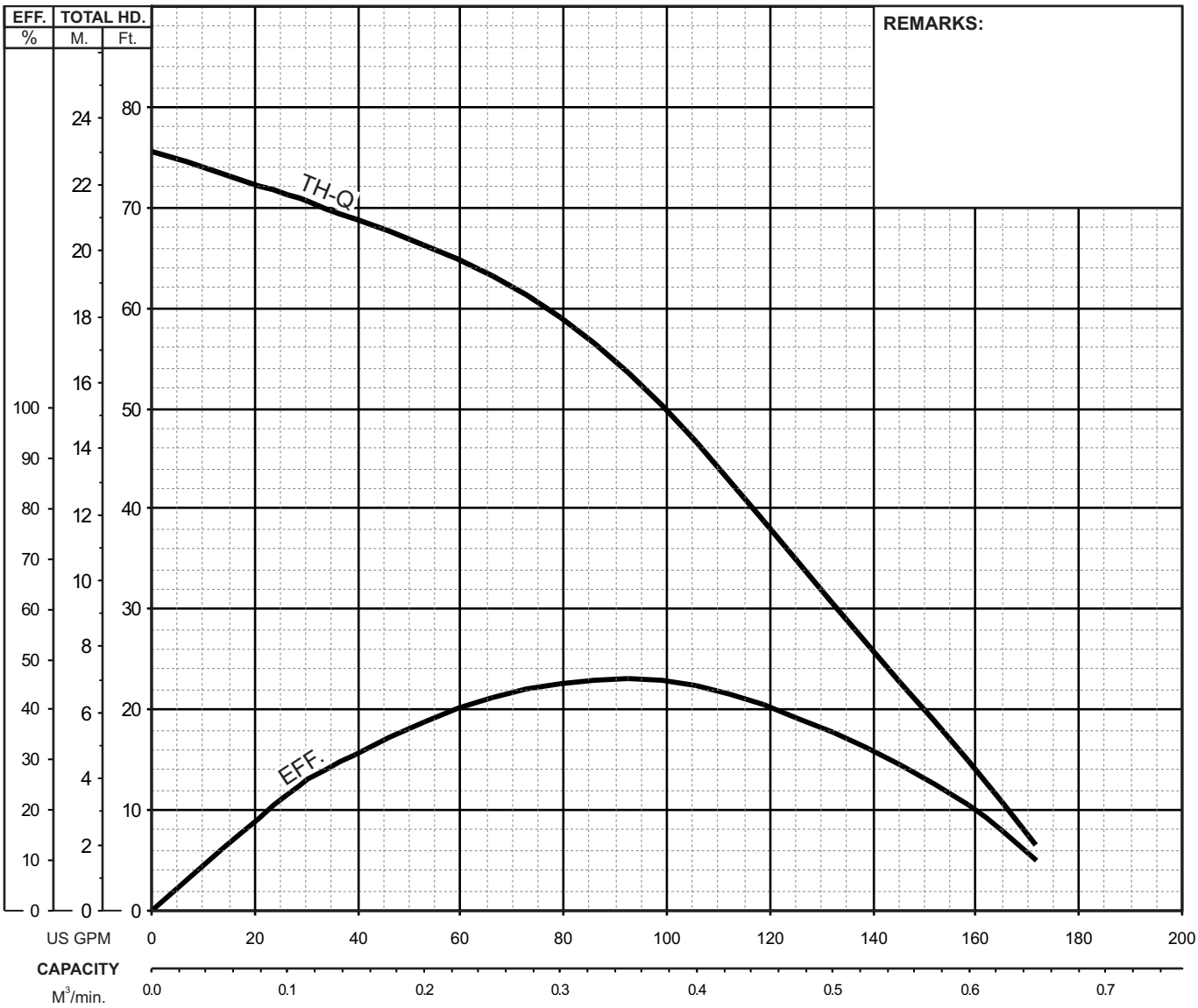
PERFORMANCE CURVE

MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
80PN(A/W)22.2 -61	3"/80mm	3	2.2	3490	0.787"/ 20mm	Water	1.0	1.123 cSt	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater	3	208-220/460/575	9.1-8.5/4.2/3.3	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:

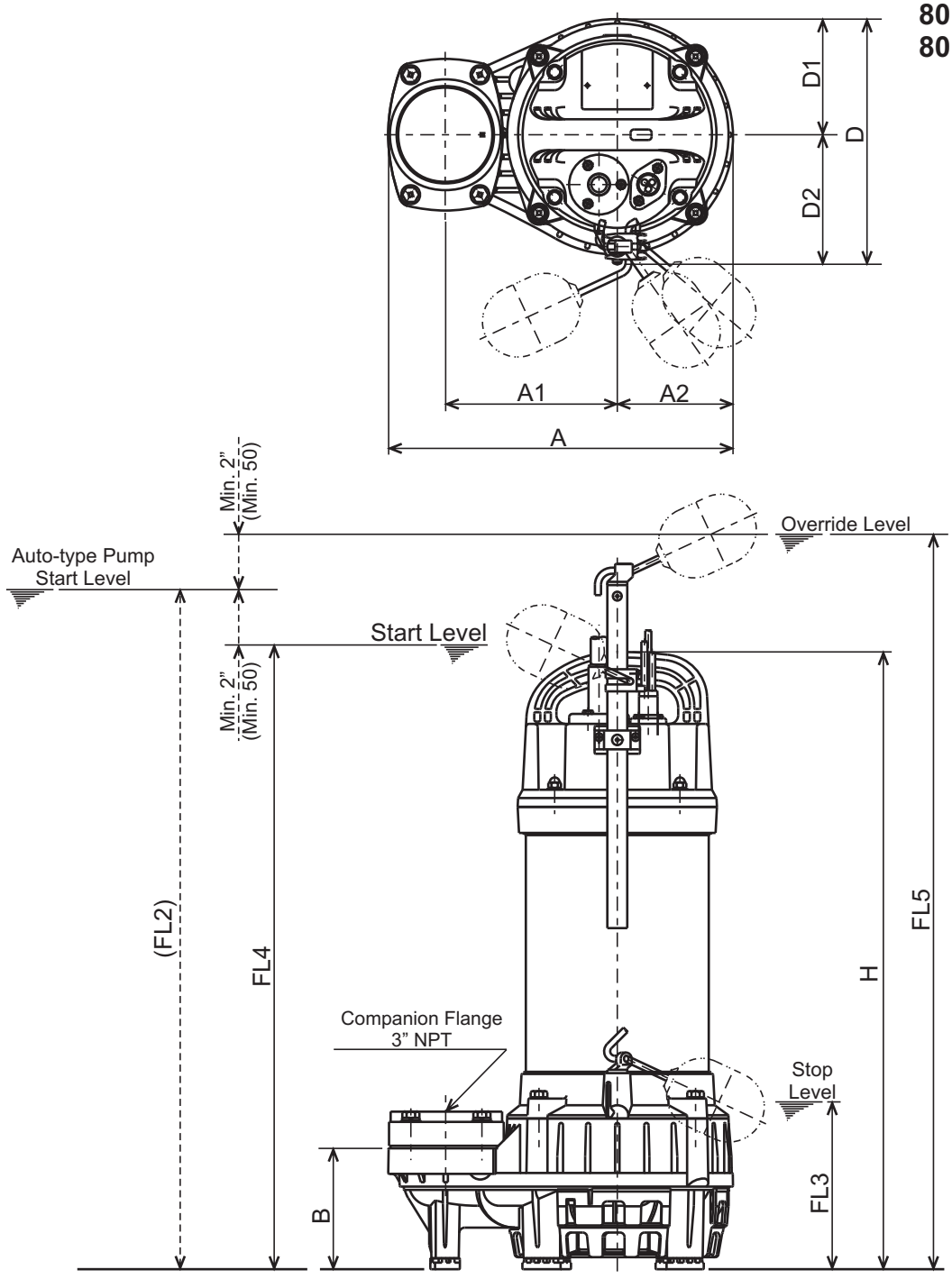


TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

80PNW22.2-61
80PNW23.7-61



DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor								Stop	Start	Override	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(lbs.)
80PNW22.2-61	3	3"	12 1/4	6 1/8	4 1/8	4 5/16	8 11/16	4 1/8	4 5/8	22	6	28 1/4	32 1/8	51
80PNW23.7-61	5	3"	12 1/4	6 1/8	4 1/8	4 5/16	8 11/16	4 1/8	4 5/8	23 3/8	6	29 5/8	33 1/2	62

DIMENSIONS:METRIC (mm)

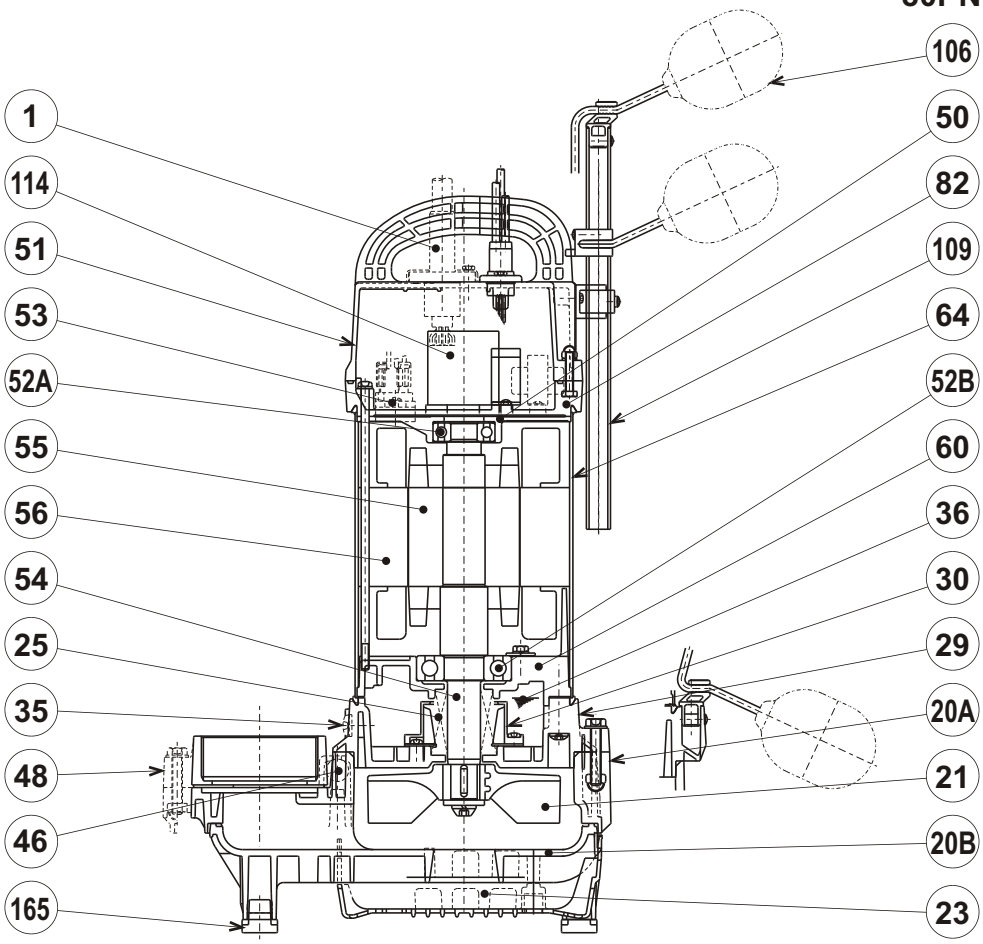
Model	kW	NOM.	Pump & Motor								Stop	Start	Override	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(kg)
80PNW22.2-61	2.2	80	311	155	105	110	221	104	117	559	152	717	817	23
80PNW23.7-61	3.7	80	311	155	105	110	221	104	117	594	152	752	852	28

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

80PNW22.2-61
80PNW23.7-61



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable (80PNW22.2-61)	PVC Sheath AWG14/4-32ft			1
	Power Cable (80PNW23.7-61)	PVC Sheath AWG12/4-32ft			
20A	Upper Pump Casing	PA+ABS Plastic w/GF30			1
20B	Lower Pump Casing	PA+ABS Plastic w/GF30			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / H-25AT			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic w/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PVC / NPT 3"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/GF40			1
52A	Upper Bearing	#6204ZZC3			1
52B	Lower Bearing	#6306ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
82	Motor Head Cover Spacer	PPS Plastic w/GF40			1
106	Float Set	ABS Plastic			3
109	Float Support Pipe	PVC			1
114	Power Relay				1
165	Rubber Cushion	Nitrile Butadiene Rubber			5

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency drive. (Only for 3 ph.)

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

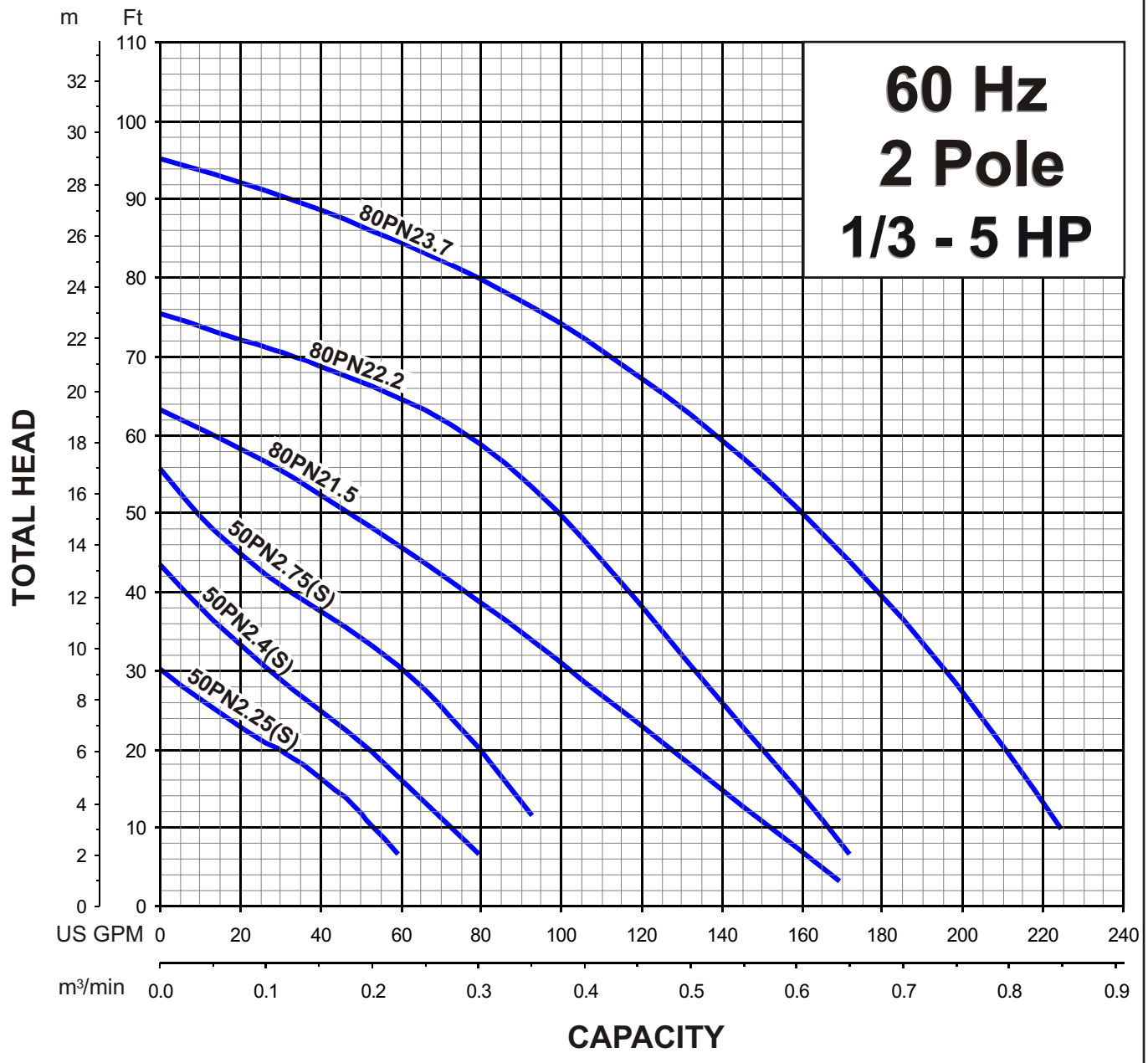
ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	PERFORMANCE RANGE

PERFORMANCE RANGE



TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

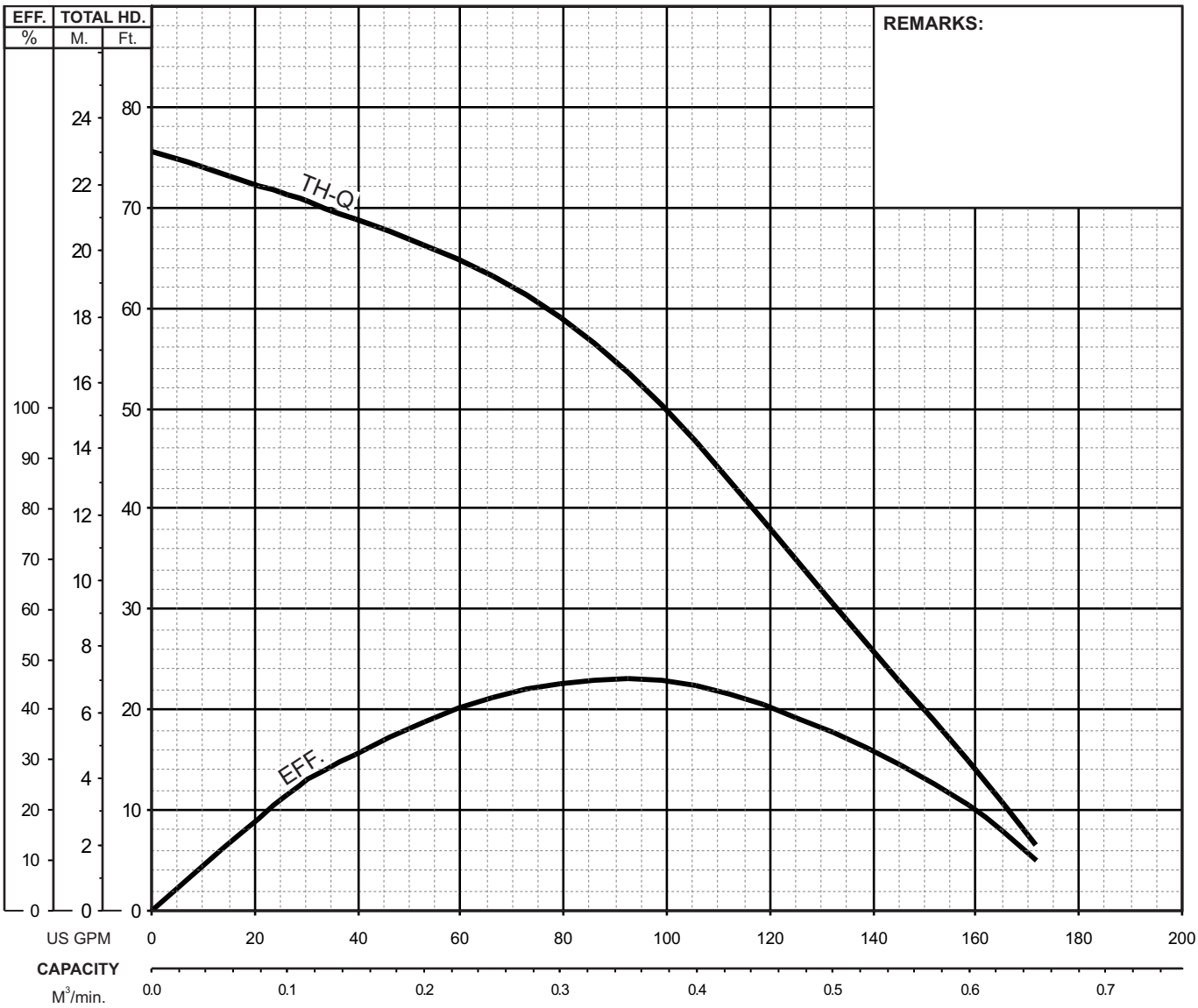
PERFORMANCE CURVE

MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
80PN(A/W)22.2 -61	3"/80mm	3	2.2	3490	0.787"/ 20mm	Water	1.0	1.123 cSt	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater	3	208-220/460/575	9.1-8.5/4.2/3.3	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:

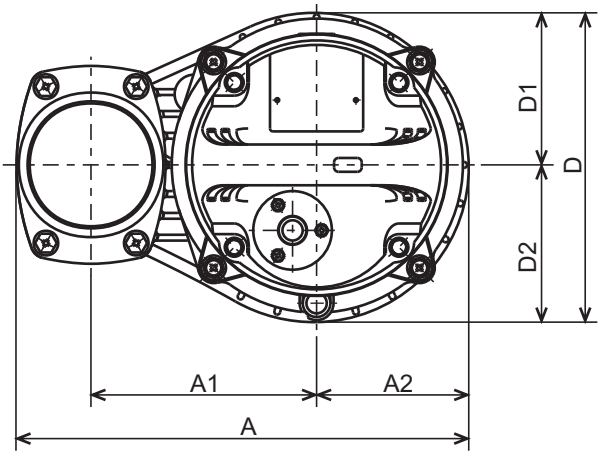


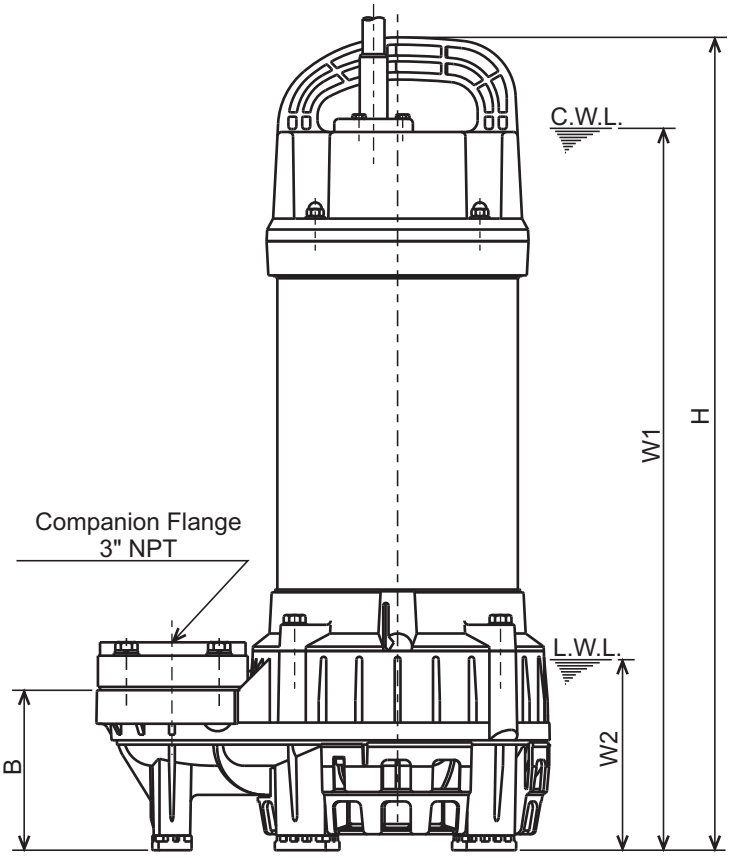
TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

80PN22.2-61
80PN23.7-61





C.W.L. : Continuous running Water Level
L.W.L. : Lowest running Wtaer Level

DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor								C.W.L.	L.W.L.	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	W1	W2	(lbs.)
80PN22.2-61	3	3"	12 1/4	6 1/8	4 1/8	4 5/16	8 3/8	4 1/8	4 1/4	22	19 5/8	5 1/8	48
80PN23.7-61	5	3"	12 1/4	6 1/8	4 1/8	4 5/16	8 3/8	4 1/8	4 1/4	23 3/8	21 1/8	5 1/8	59

DIMENSIONS:METRIC (mm)

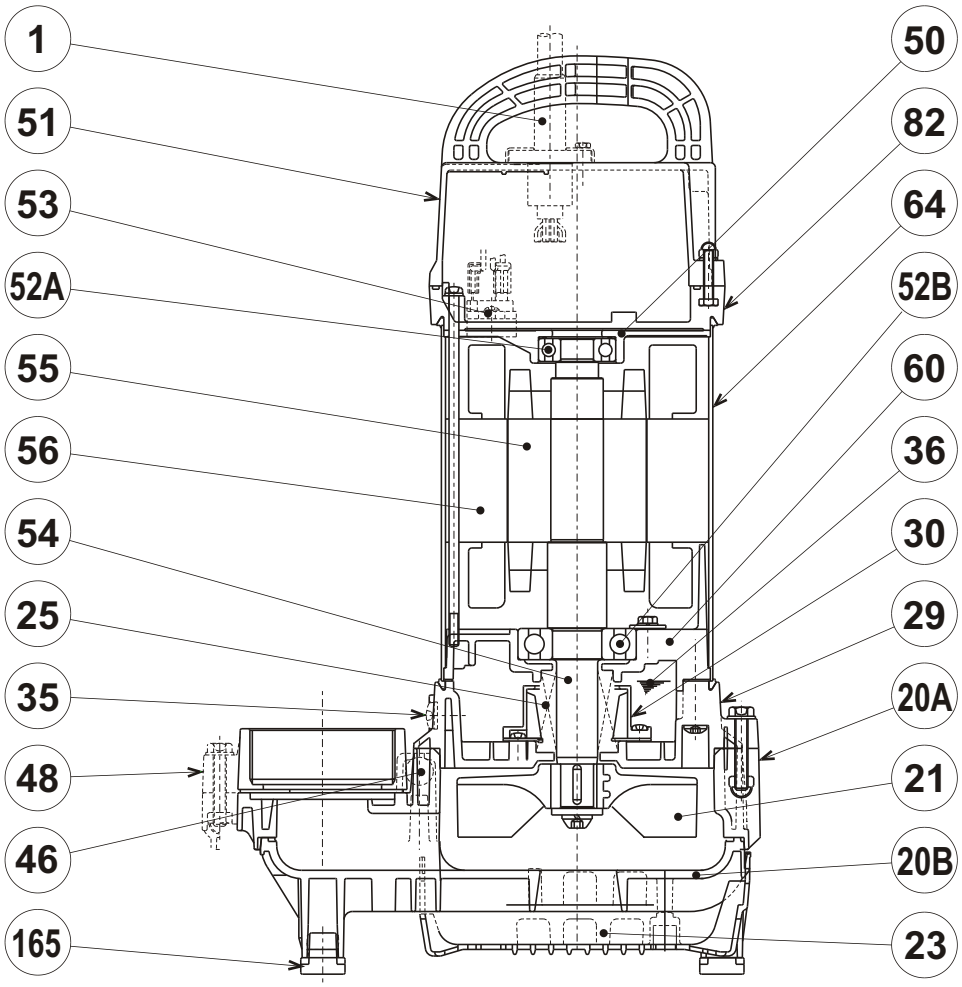
Model	kW	NOM.	Pump & Motor								C.W.L.	L.W.L.	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
80PN22.2-61	2.2	80	311	155	105	110	212	104	108	559	500	130	22
80PN23.7-61	3.7	80	311	155	105	110	212	104	108	594	535	130	27

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

80PN22.2-61
80PN23.7-61



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable (80PN22.2-61)	PVC Sheath AWG14/4-32ft			1
	Power Cable (80PN23.7-61)	PVC Sheath AWG12/4-32ft			
20A	Upper Pump Casing	PA+ABS Plastic w/GF30			1
20B	Lower Pump Casing	PA+ABS Plastic w/GF30			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / H-25AT			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic w/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PVC / NPT 3"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/GF40			1
52A	Upper Bearing	#6204ZZC3			1
52B	Lower Bearing	#6306ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
82	Motor Head Cover Spacer	PPS Plastic w/GF40			1
165	Rubber Cushion	Nitrile Butadiene Rubber			5

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency drive. (Only for 3 ph.)

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

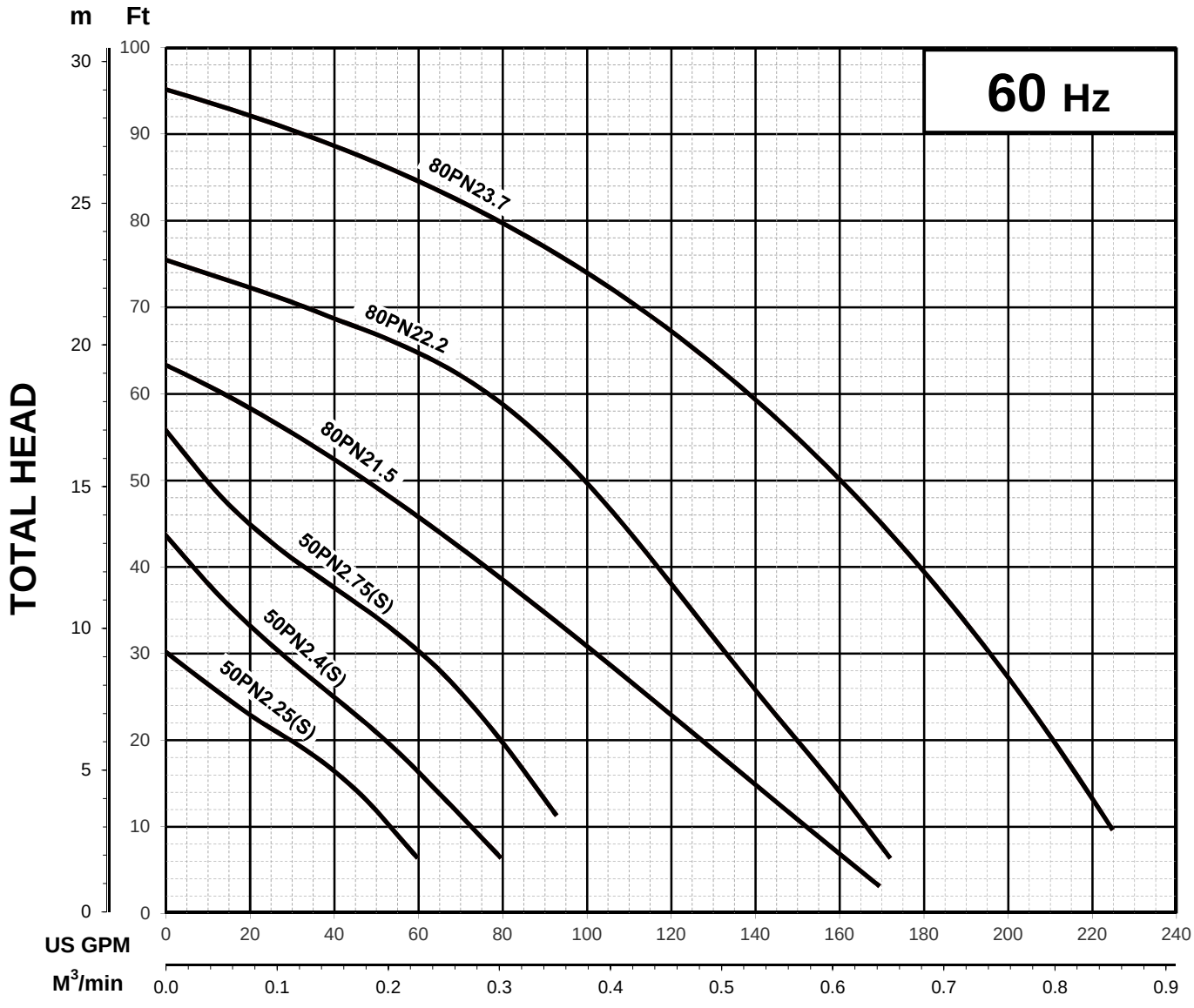
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

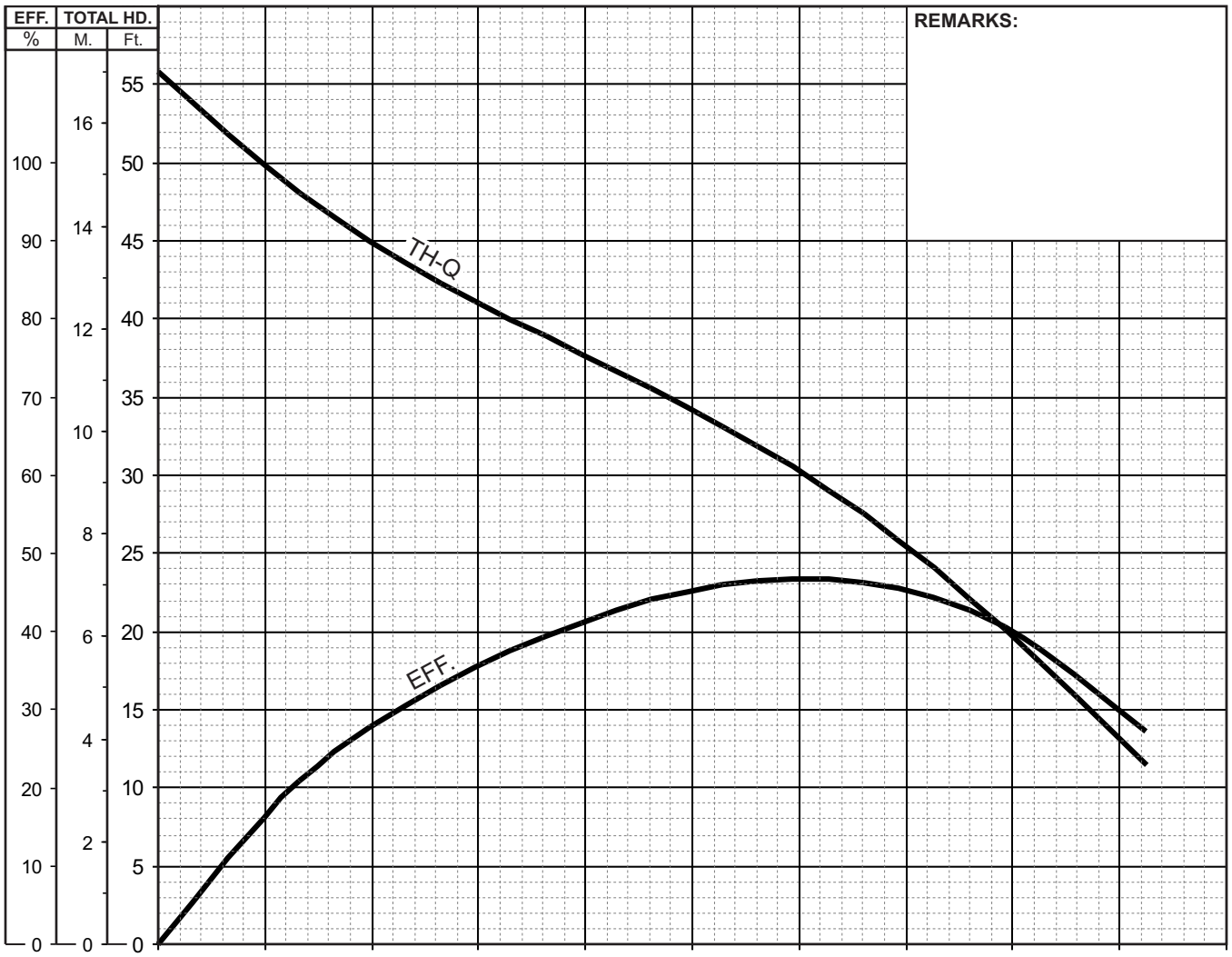
PERFORMANCE CURVE

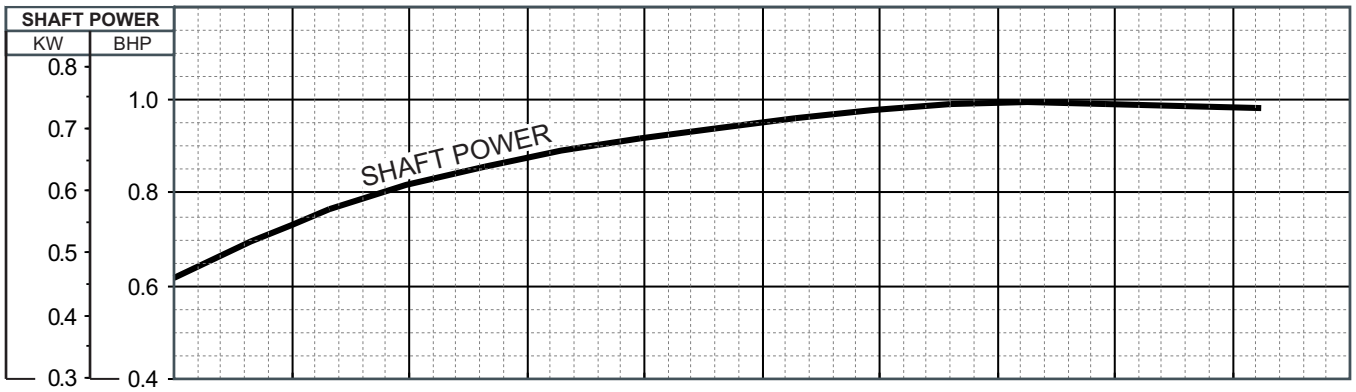
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.75 -63	2" / 50mm	1	0.75	3375	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex Wastewater Pump	3	208-220/460	3.2-3.2 / 1.5	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



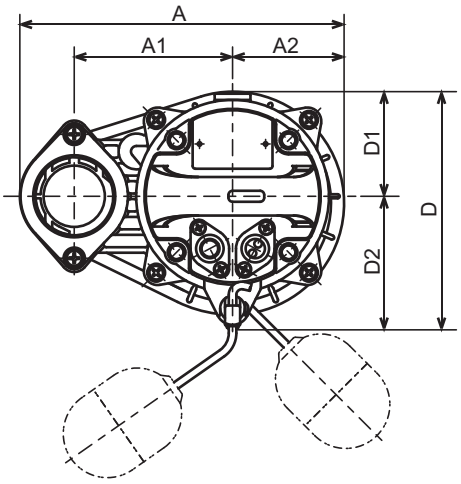


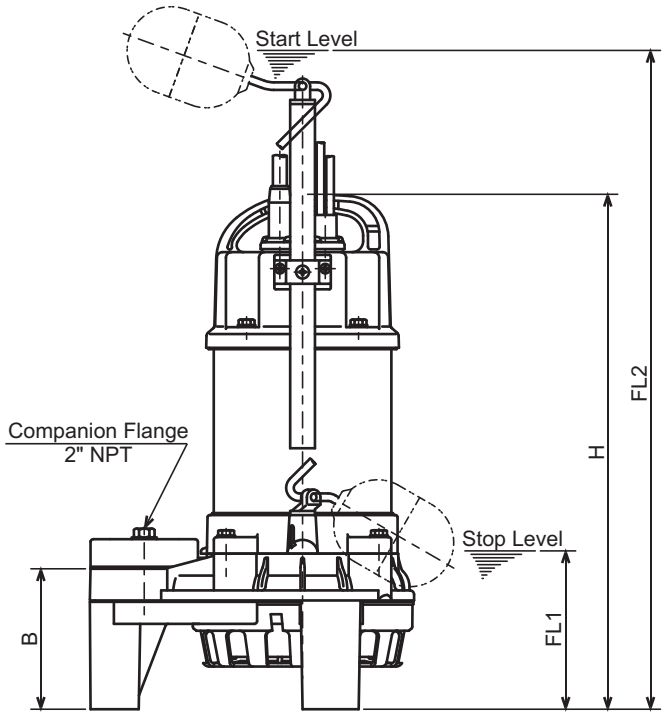
TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PNA2.25S-62
50PNA2.25-62
50PNA2.4S-62
50PNA2.4-62
50PNA2.75S-62
50PNA2.75-62





DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(lbs.)
50PNA2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	17.0
50PNA2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 5/16	4 1/2	23 1/2	14.8
50PNA2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	17.0
50PNA2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	23 7/8	16.7
50PNA2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/2	4 1/2	24 5/8	20.9
50PNA2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/4	4 1/2	24 1/2	19.6

DIMENSIONS:METRIC (mm)

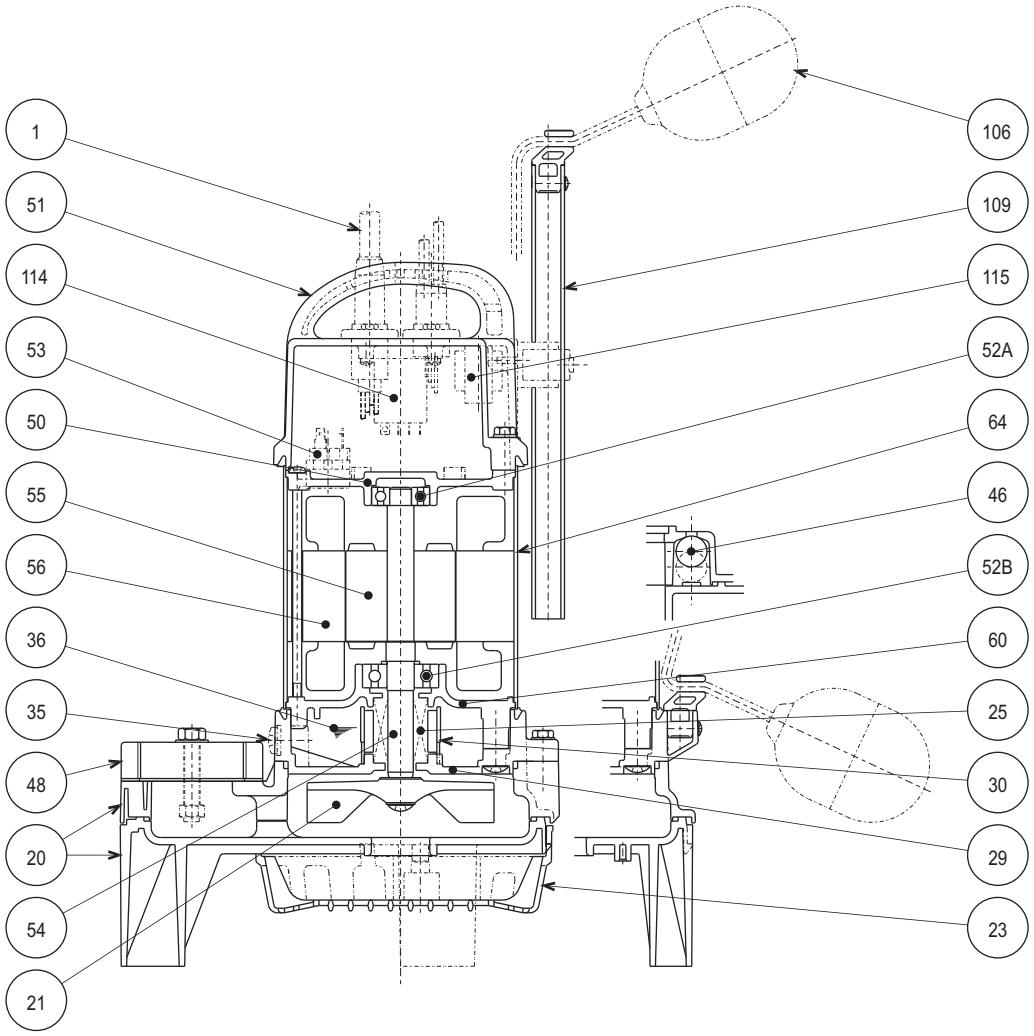
Model	kW	NOM. SIZE	Pump & Motor								Stop	Start	Wt.
			A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(kg)
50PNA2.25S-62	0.25	50	236	115	81	102	173	76	97	374	115	607	7.7
50PNA2.25-62	0.25	50	236	115	81	102	173	76	97	363	115	596	6.7
50PNA2.4S-62	0.40	50	236	115	81	102	173	76	97	374	115	607	7.7
50PNA2.4-62	0.40	50	236	115	81	102	173	76	97	374	115	607	7.6
50PNA2.75S-62	0.75	50	236	115	81	102	173	76	97	394	115	627	9.5
50PNA2.75-62	0.75	50	236	115	81	102	173	76	97	388	115	621	8.9

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PNA2.75-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/4-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6302ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
106	Float Set	ABS Plastic			2
109	Float Support Pipe	PVC			1
114	Power Relay				1
115	Transformer				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP | VANCS - SERIES - 12PN | SPECIFICATIONS

FEATURES

1. Channel Impeller and specially designed volute allows for efficient, high volume pumping.
2. Double inside mechanical seals (Motor side: with ceramic x carbon, Impeller side: with silicon carbide faces) running in an oil filled chamber.
3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.
4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.
6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.
2. Chemical spill containment.
3. Decorative waterfalls, fountains and fish ponds.
4. Raw water supply from rivers or lakes.

C ETL US LISTED Intertek

OIL LIFTER (PAT. PEND) EQUIPPED

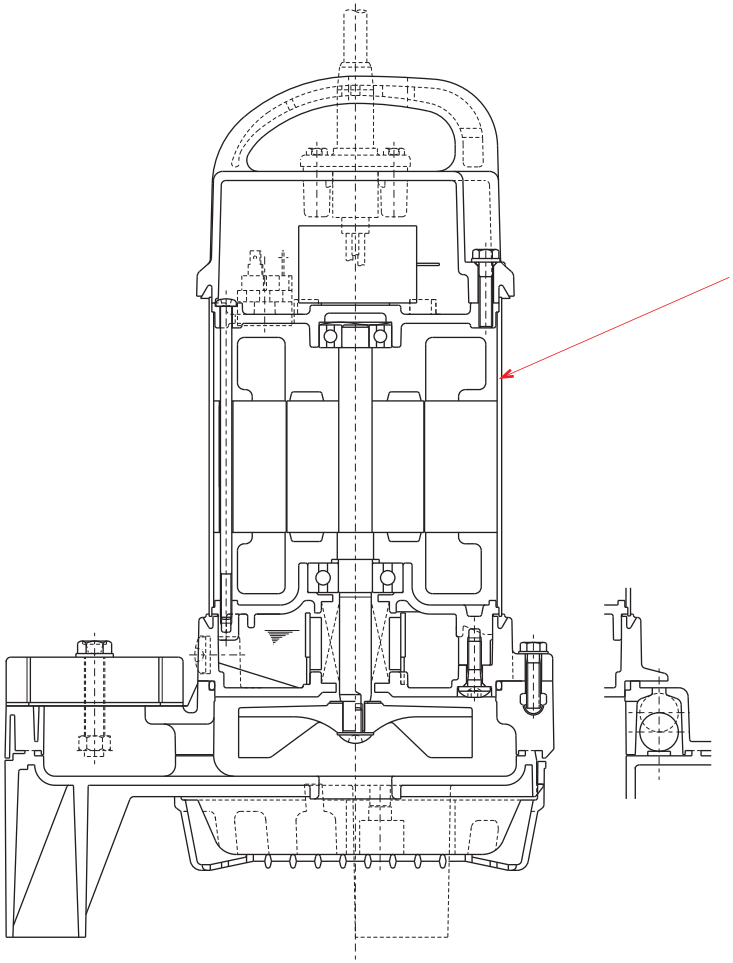
SPECIFICATIONS

Discharge Size	3" NPT (80 mm)
Horsepower Range	1 (0.75 kW)
Performance Range Capacity	10,000 GPH (37.854 m^3/h)
Head	23 Ft (7.0 m)
Maximum water temperature	104^0 F (40^0 C.)
Materials of Construction	
Casing	Cast Iron
Impeller	PPO Plastic w/ GF 20
Shaft	304 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Butadiene Rubber)
Impeller Type	Channel Impeller
Solids Handling Capability	1.38" (35 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	120 V.,1 Ph.
Insulation	Class E
Accessories	Submersible Power Cable 20Ft. (6.1 m)
Operational Mode	Manual

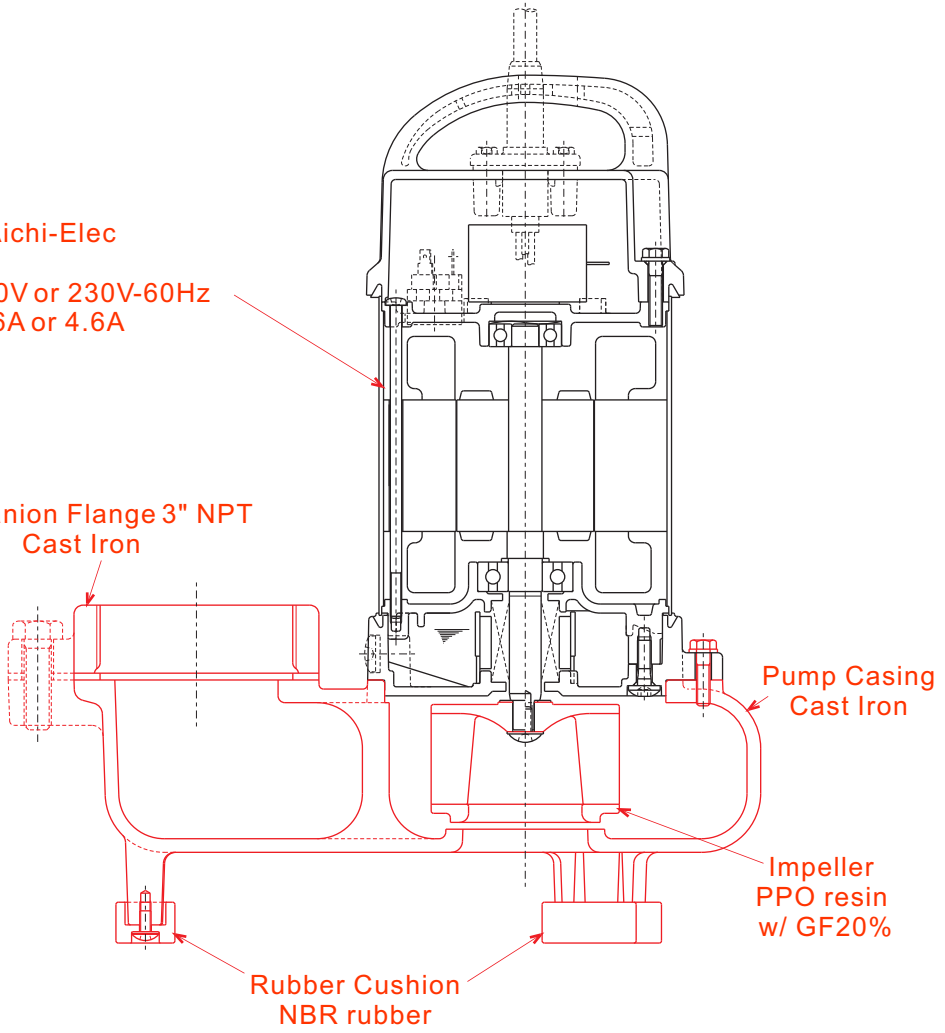
STANDARD

OPTIONS

Length as Required



Motor
Model : VK2-C8
Manufacturer : Aichi-Elec
Rating
1 phase 115/120V or 230V-60Hz
Current : 8.7/8.6A or 4.6A

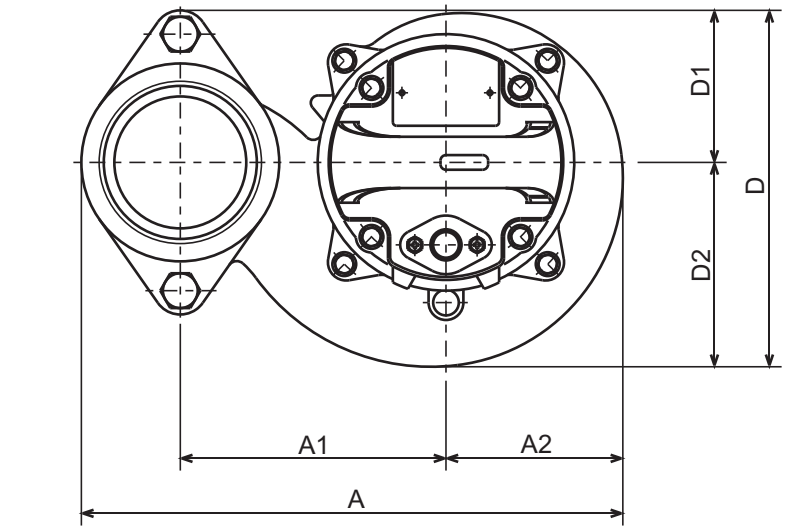


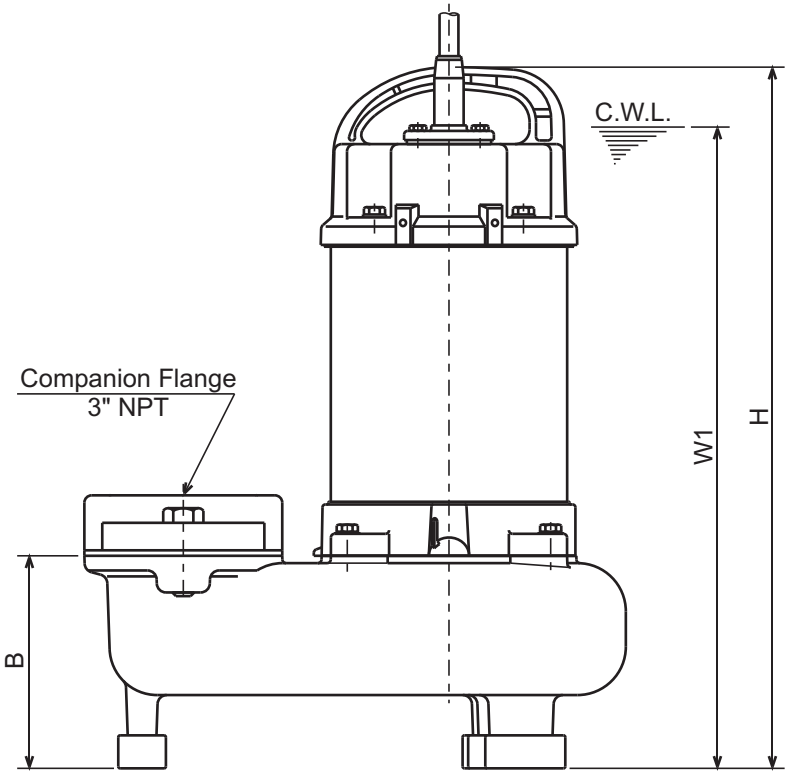
Current Model : 50PN2.75S-62

Additional Model : 12-PN

TSURUMI PUMP | 12-PN HIGH VOLUME POND PUMP | DIMENSIONS

12-PN





C.W.L. :Continuous running Water Level

DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor								C.W.L.	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	W1	(lbs.)
12-PN	1	3"	11 5/8	5 11/16	3 13/16	4 9/16	7 11/16	3 1/4	4 3/8	15 1/16	13 3/4	31.9

DIMENSIONS:METRIC (mm)

Model	kW	NOM.	Pump & Motor								C.W.L.	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	W1	(kg)
12-PN	0.75	80	296	145	97	116	195	83	112	383	350	14.5

TSURUMI PUMP

12-PN

HIGH VOLUME POND PUMP

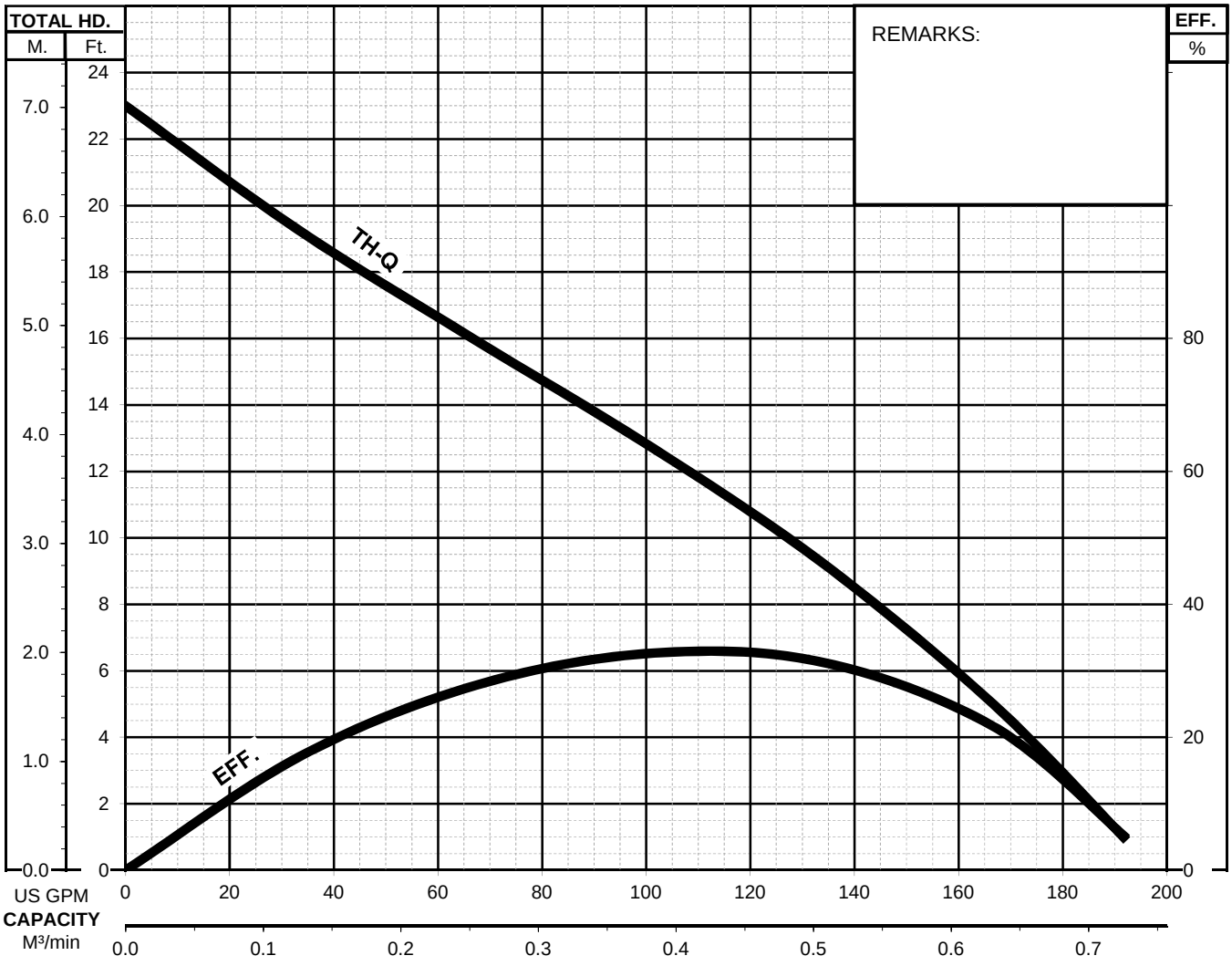
PERFORMANCE CURVE

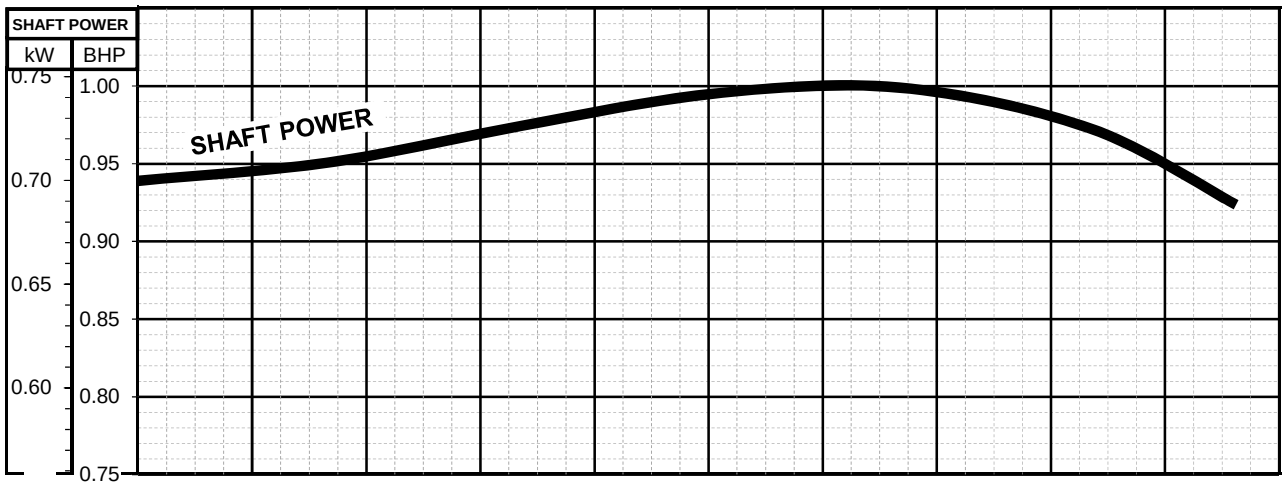
MODEL	BORE	HP	kW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
12-PN	3"/80mm	1.0	0.8	3374	1.38"/35mm	Water	1.0	1.123cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
High Volume Pond Pump	1	110/115/120	9.0 / 8.7 / 8.6	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:





TSURUMI PUMP

12-PN
HIGH VOLUME POND PUMP

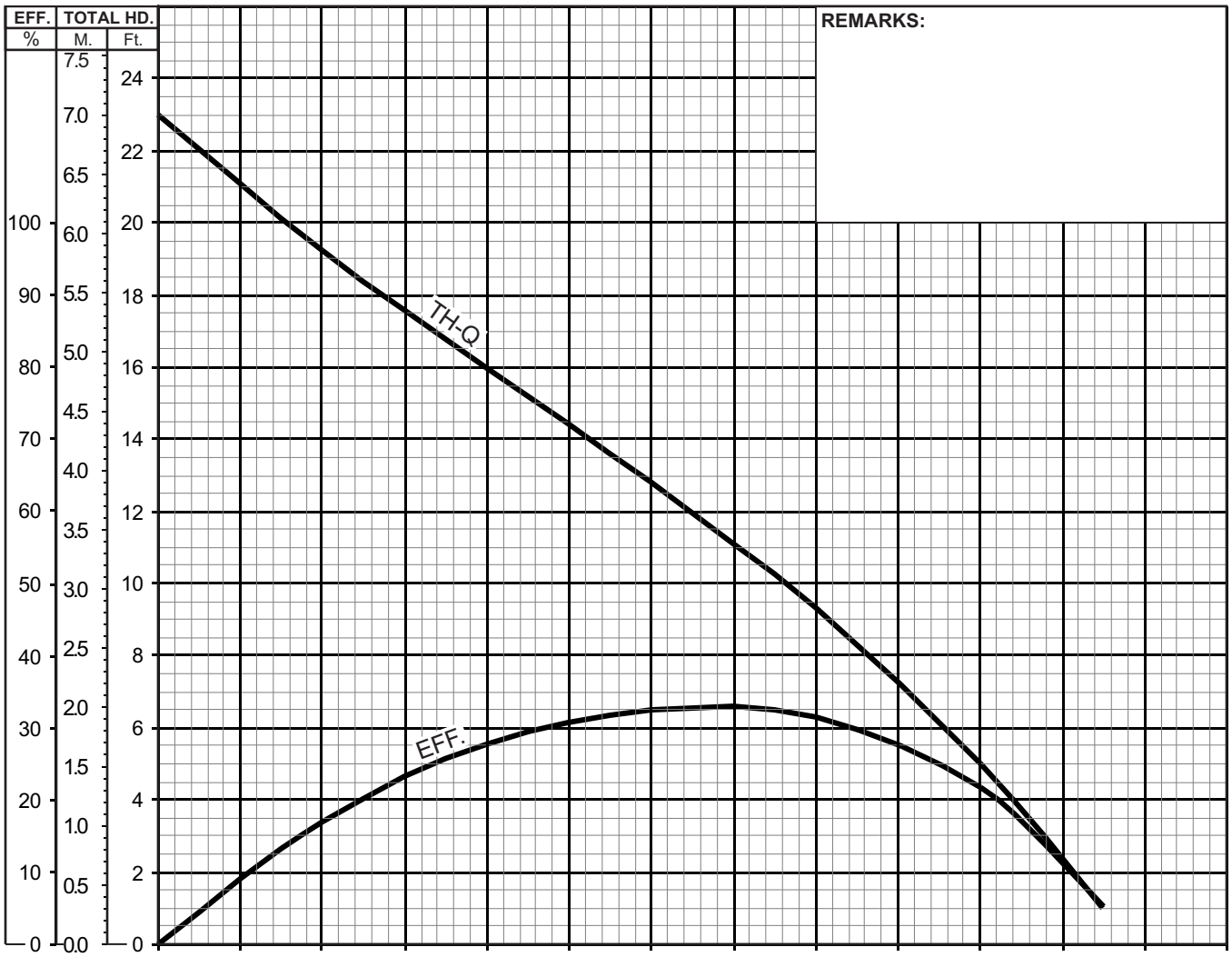
PERFORMANCE CURVE

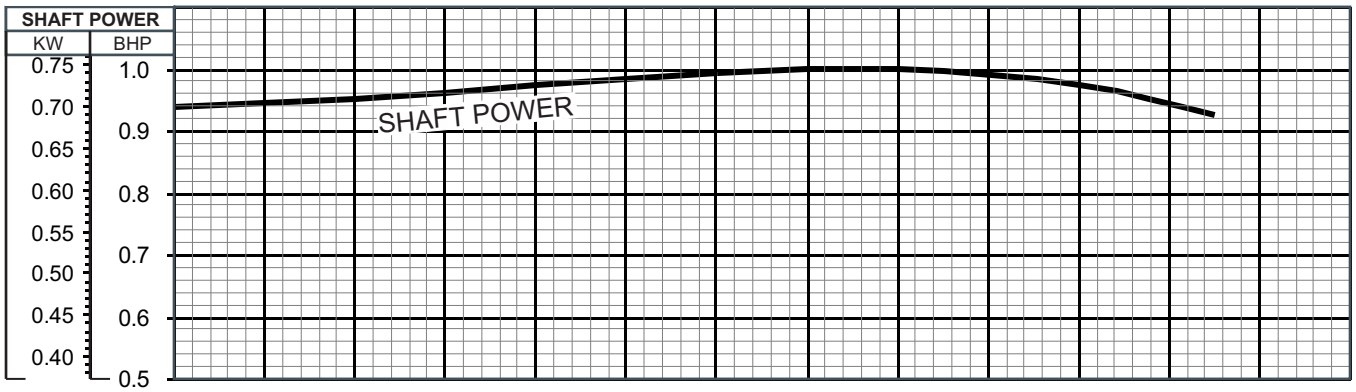
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
12-PN	3" / 80mm	1	0.75	3374	1.38" / 35mm	Water	1.0	1.123 cSt	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
High Volume Pond Pump	Single	110 / 115 / 120	9.5 / 9.2 / 9.1	60	Capacitor-Start	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



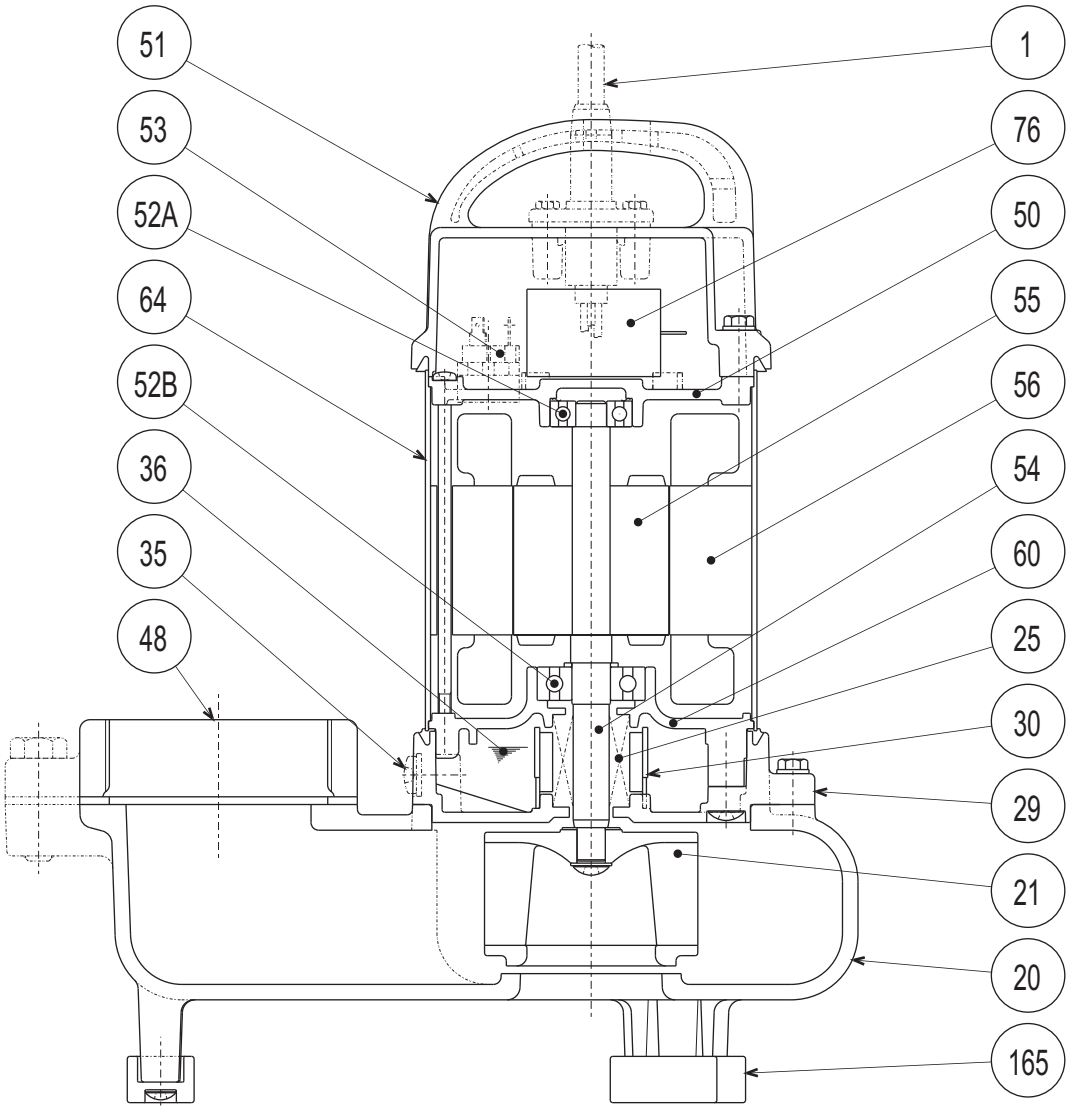


TSURUMI PUMP

12-PN
HIGH VOLUME POND PUMP

SECTIONAL VIEW

12-PN



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/3-20ft			1
20	Pump Casing	Cast Iron	A48M Class30B	EN 1561 GJL-200	1
21	Impeller	PPO Plastic w/GF20			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
48	Companion Flange	Cast Iron / NPT 3"	A48M Class30B	EN 1561 GJL-200	1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6302ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
76	Capacitor				1
165	Rubber Cushion	Nitril Butadiene Rubber			3

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

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SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

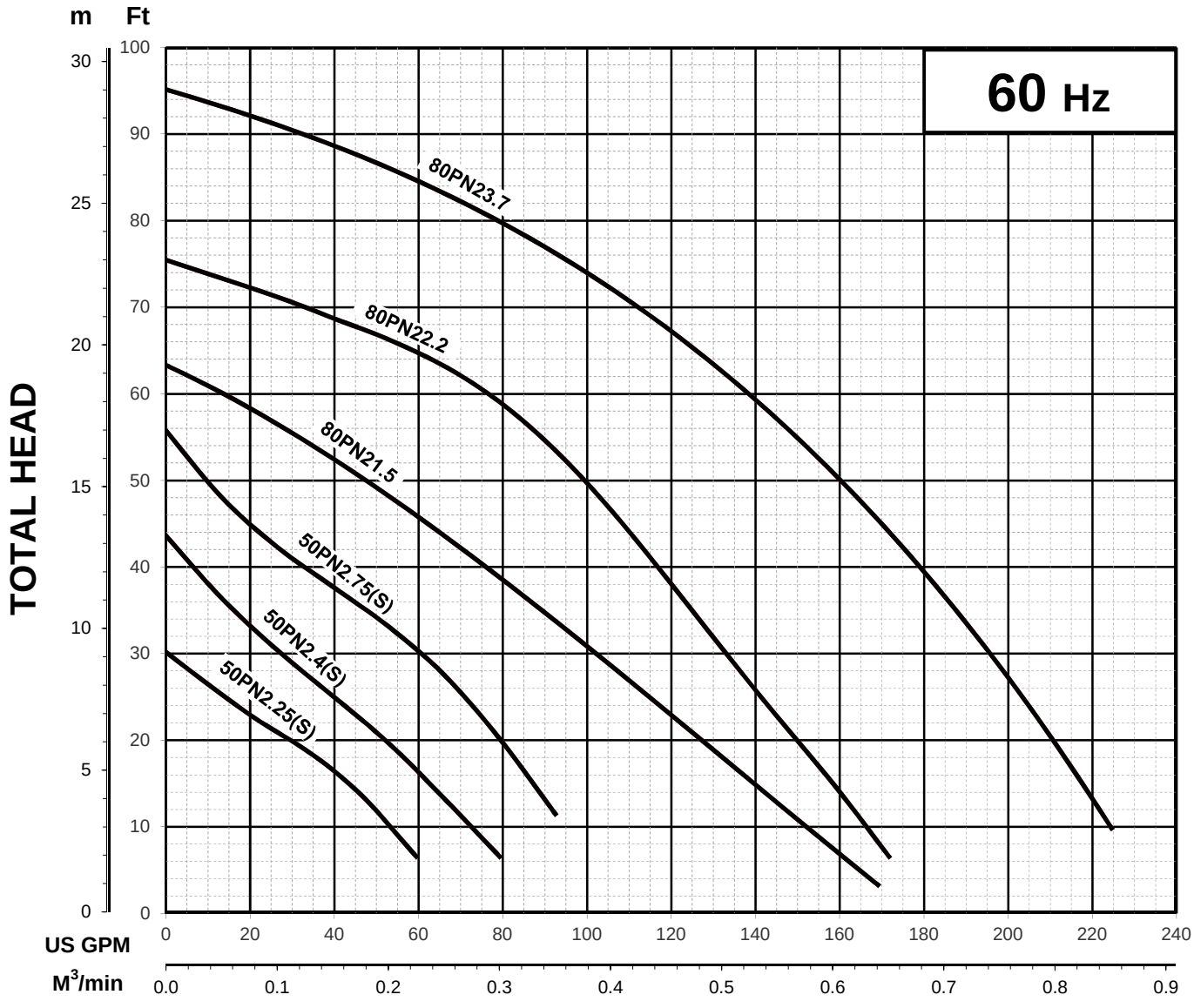
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

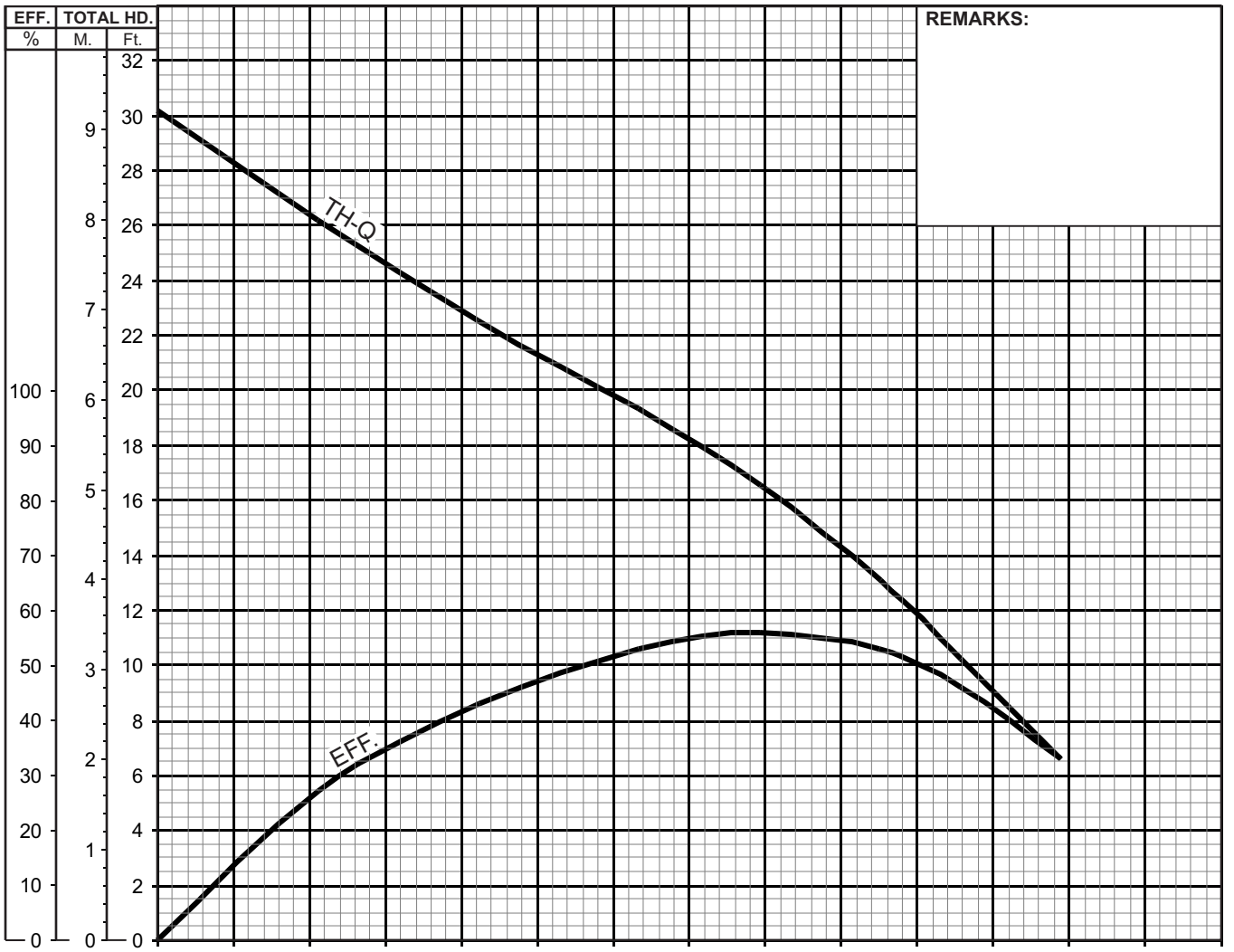
PERFORMANCE CURVE

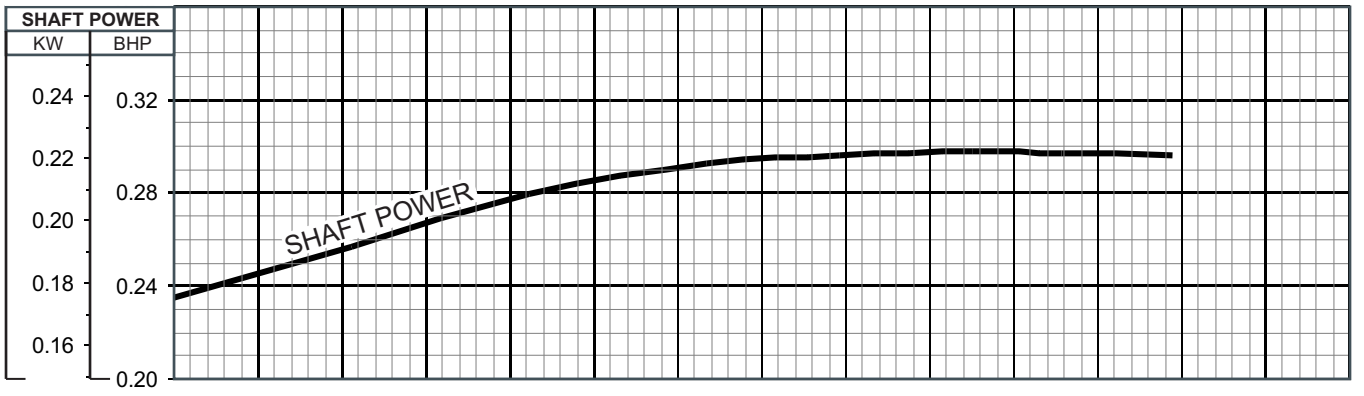
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.25S -63	2" / 50mm	0.34	0.25	3485	0.394"/10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater Pump	Single	115-120 / 230	4.6-4.6 / 2.3	60	Capacitor-Start	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



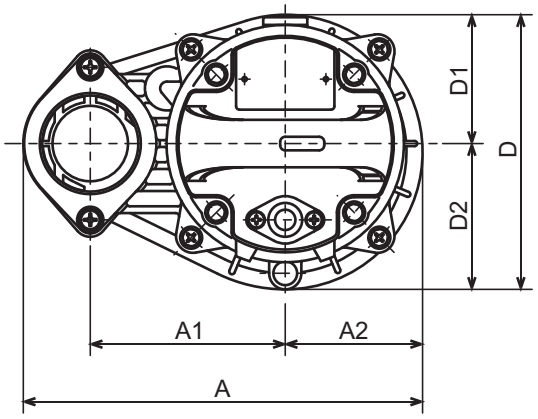


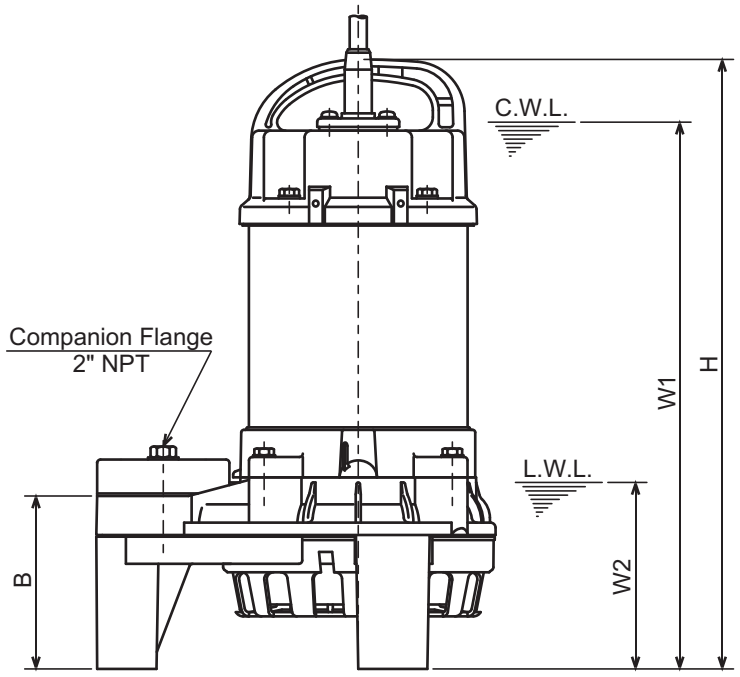
TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PN2.25S-62
50PN2.25-62
50PN2.4S-62
50PN2.4-62
50PN2.75S-62
50PN2.75-62





C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water Level

DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(lbs.)
50PN2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	13 3/4	12 1/4	4 3/8	13.4
50PN2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.4
50PN2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 15/16	13 5/8	4 3/8	19.6
50PN2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/4	13 3/8	4 3/8	18.3

DIMENSIONS:METRIC (mm)

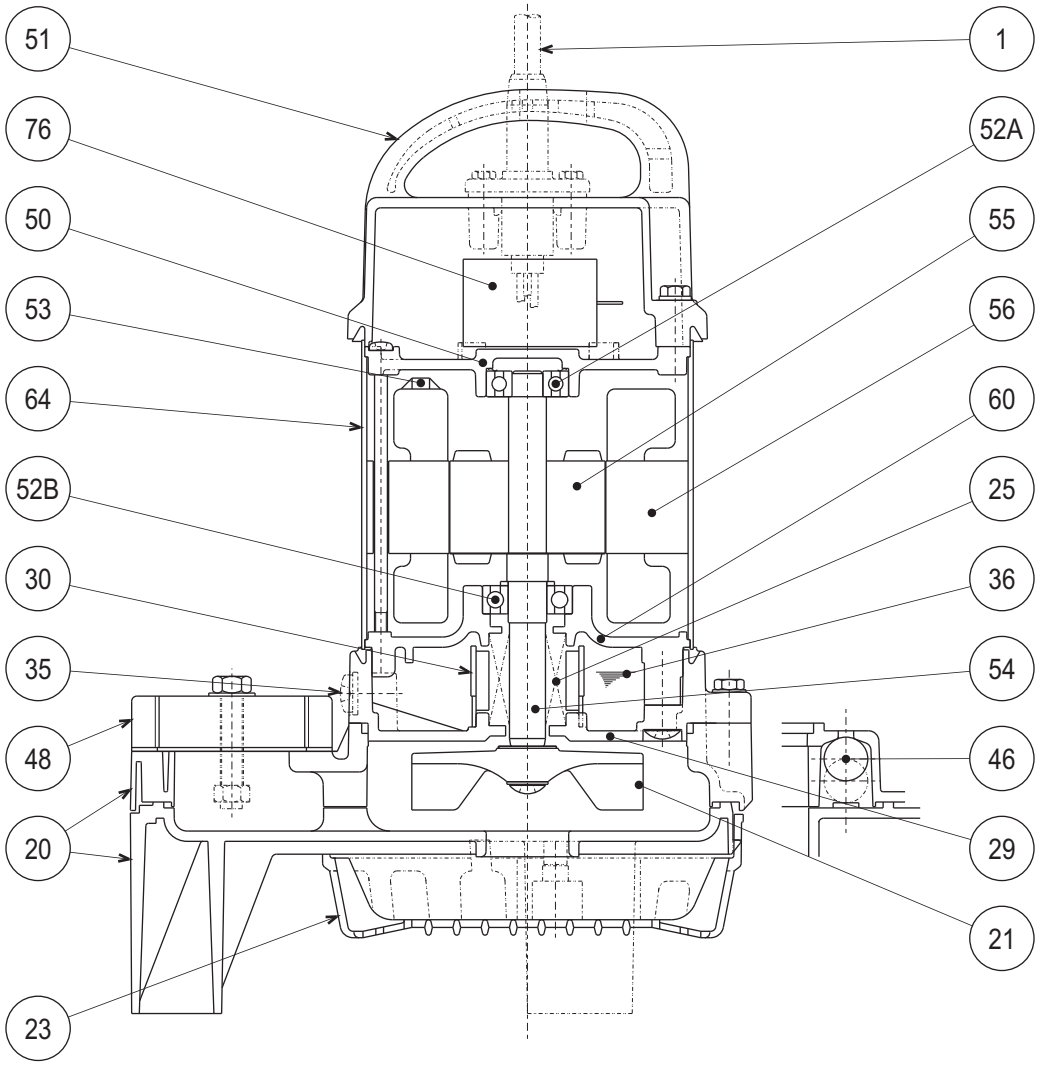
Model	kW	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
50PN2.25S-62	0.25	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.25-62	0.25	50	236	115	81	102	162	76	86	349	310	110	6.1
50PN2.4S-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.4-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.0
50PN2.75S-62	0.75	50	236	115	81	102	162	76	86	380	345	110	8.9
50PN2.75-62	0.75	50	236	115	81	102	162	76	86	374	340	110	8.3

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PN2.25S-63
50PN2.4S-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/3-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6202ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
76	Capacitor				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

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SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

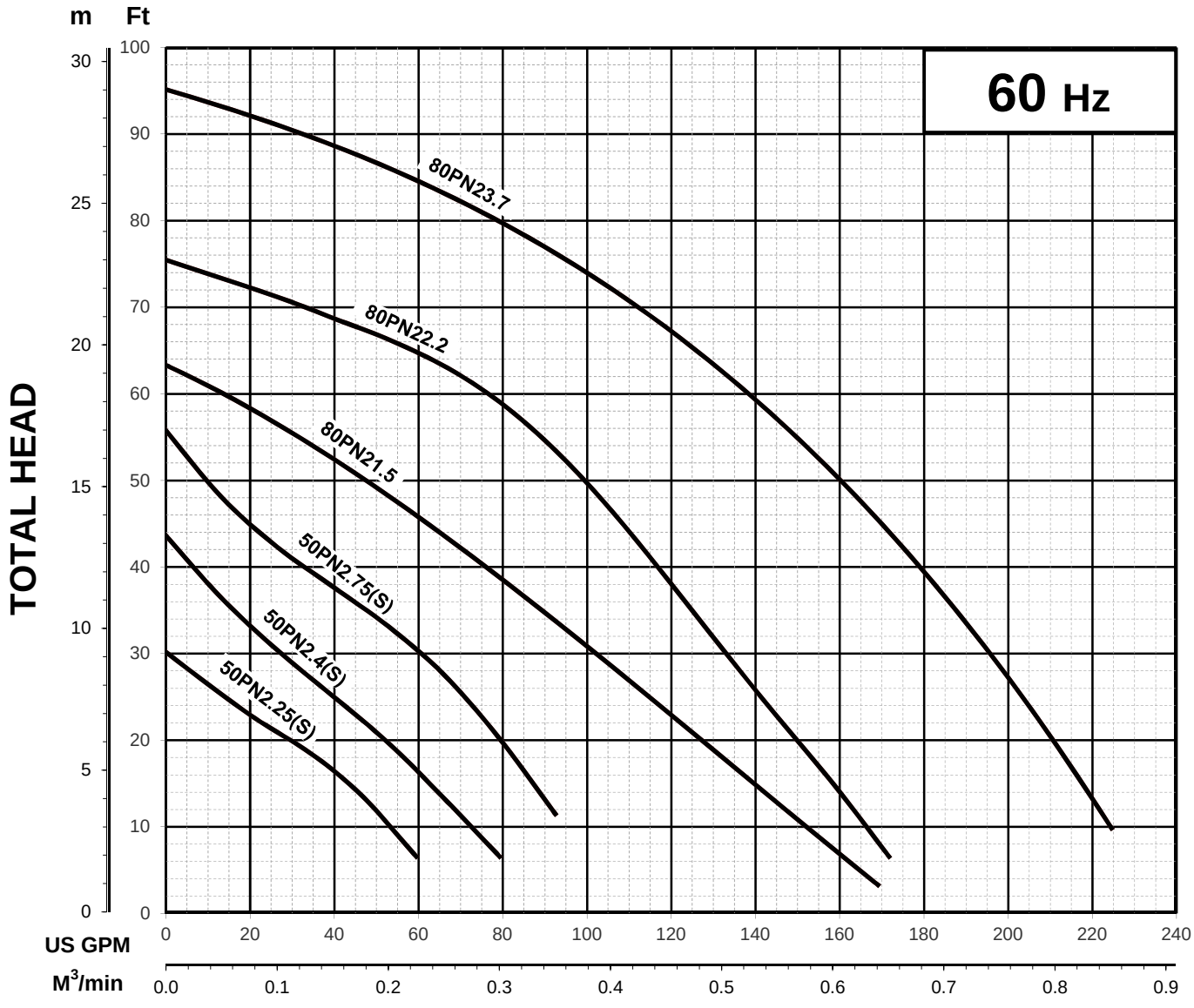
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

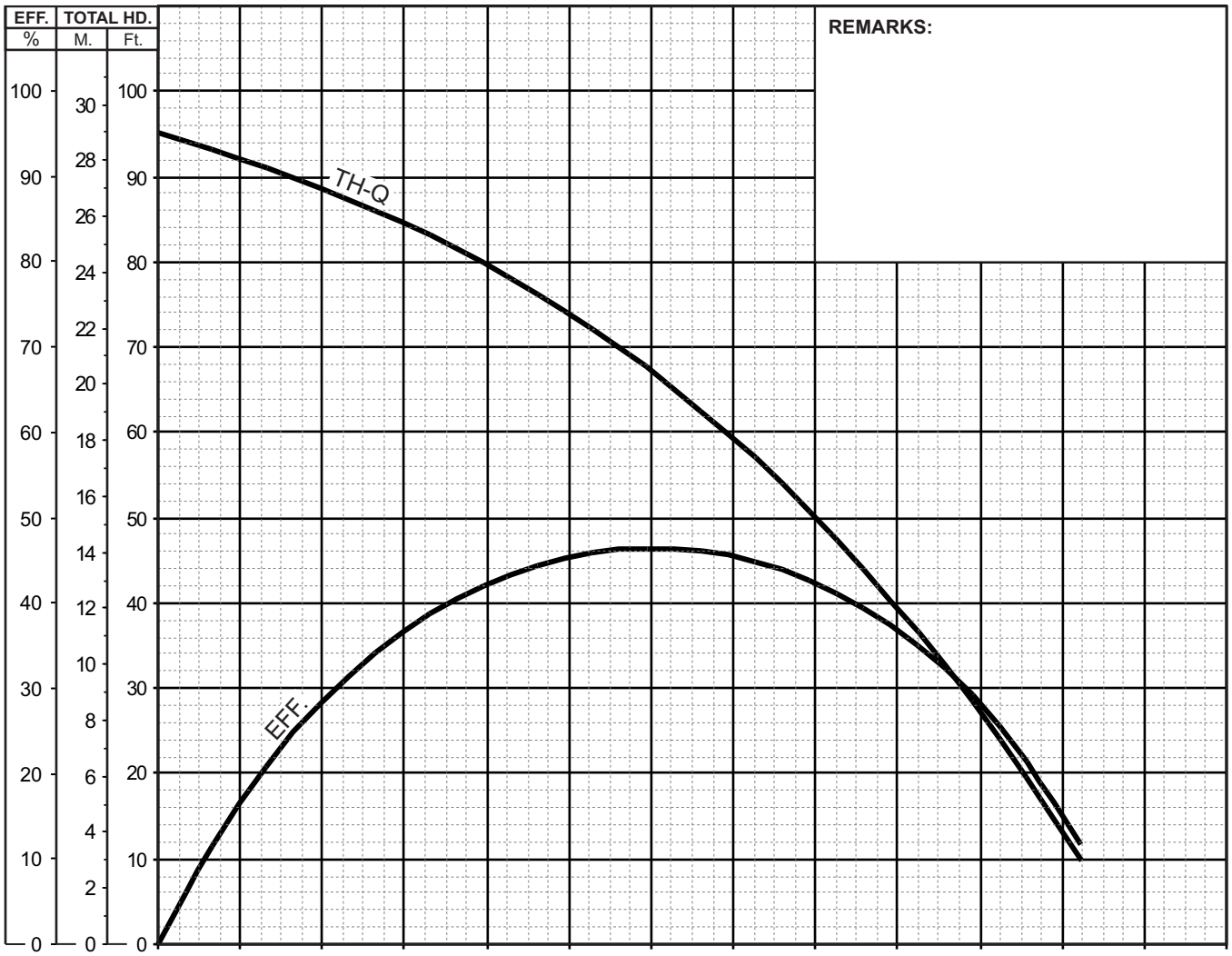
PERFORMANCE CURVE

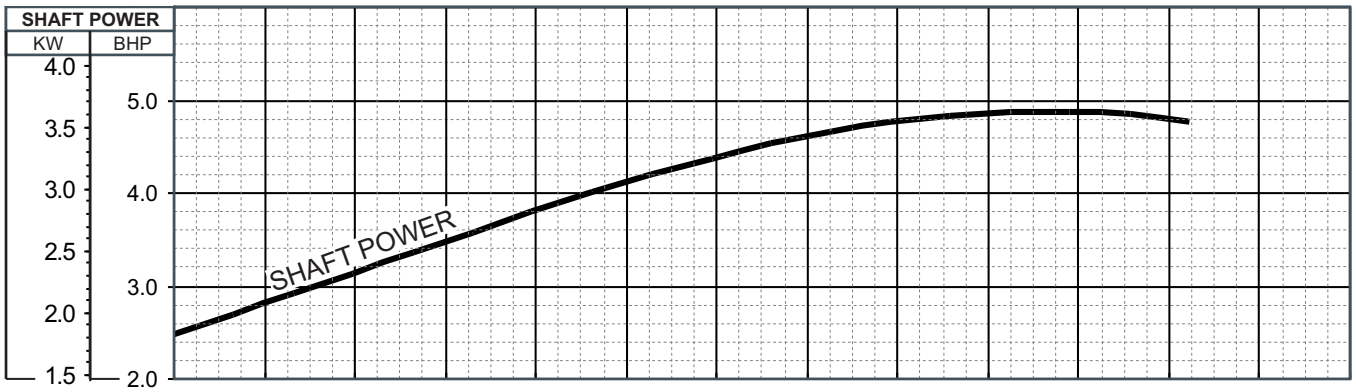
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
80PN(A/W)23.7 -61	3"/80mm	5	3.7	3495	0.787"/ 20mm	Water	1.0	1.123 cSt	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater	3	208-220/460/575	14.4-13.4/6.5/5.0	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



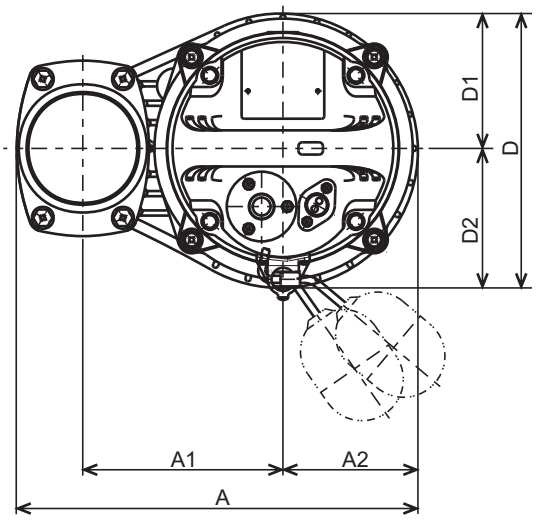


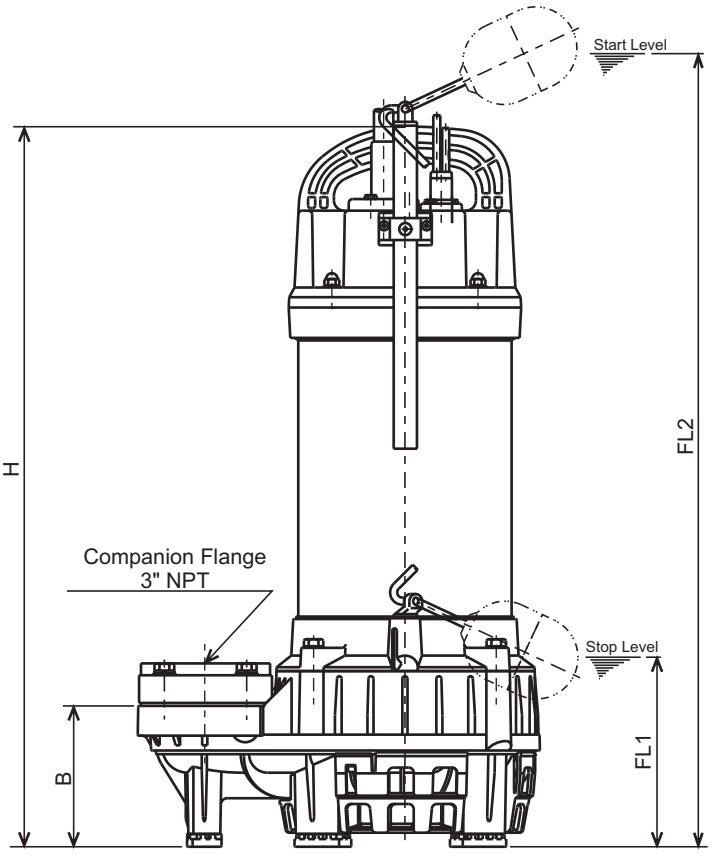
TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

80PNA22.2-61
80PNA23.7-61





DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor								Stop	Start	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(lbs.)
80PNA22.2-61	3	3"	12 1/4	6 1/8	4 1/4	4 5/16	8 11/16	4 1/8	4 5/8	22	6	30 1/4	51
80PNA23.7-61	5	3"	12 1/4	6 1/8	4 1/4	4 5/16	8 11/16	4 1/8	4 5/8	23 3/8	6	31 5/8	62

DIMENSIONS:METRIC (mm)

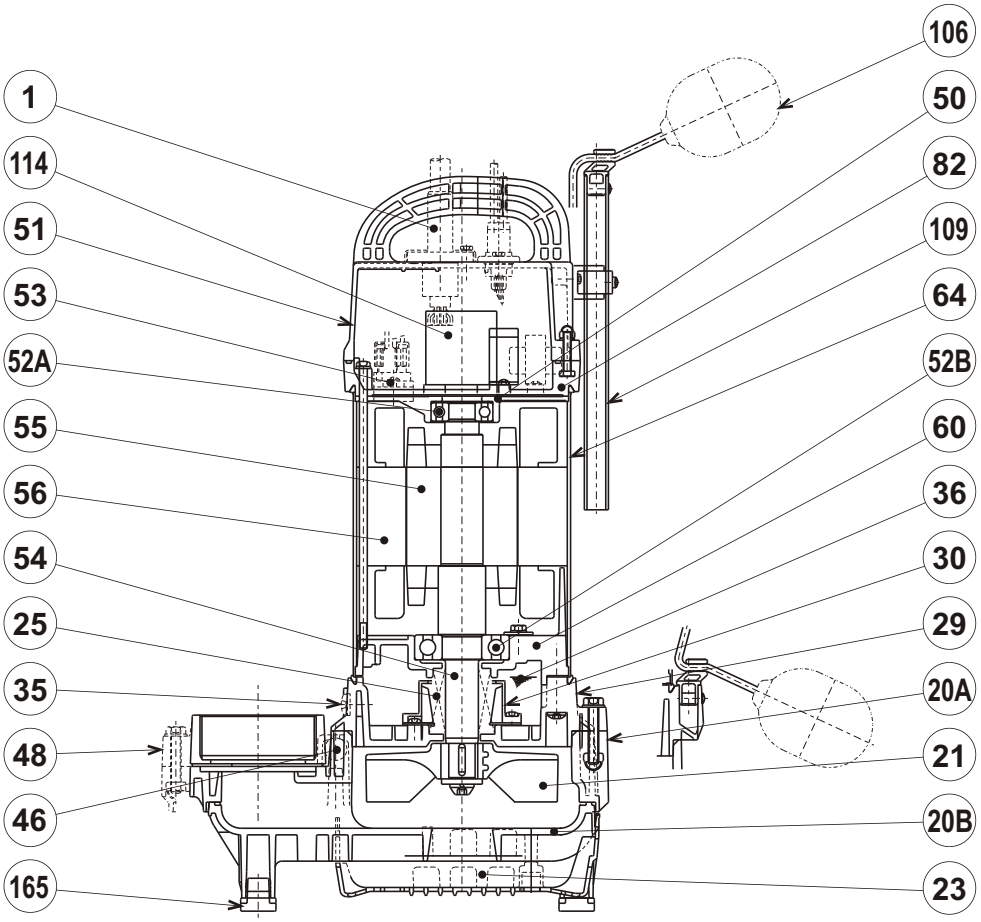
Model	kW	NOM.	Pump & Motor								Stop	Start	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL1	Max.FL2	(kg)
80PNA22.2-61	2.2	80	311	155	105	110	221	104	117	559	152	767	23
80PNA23.7-61	3.7	80	311	155	105	110	221	104	117	594	152	802	28

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

80PNA22.2-61
80PNA23.7-61



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable (80PNA22.2-61)	PVC Sheath AWG14/4-32ft			1
	Power Cable (80PNA23.7-61)	PVC Sheath AWG12/4-32ft			
20A	Upper Pump Casing	PA+ABS Plastic w/GF30			1
20B	Lower Pump Casing	PA+ABS Plastic w/GF30			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / H-25AT			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic w/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PVC / NPT 3"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/GF40			1
52A	Upper Bearing	#6204ZZC3			1
52B	Lower Bearing	#6306ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
82	Motor Head Cover Spacer	PPS Plastic w/GF40			1
106	Float Set	ABS Plastic			2
109	Float Support Pipe	PVC			1
114	Power Relay				1
165	Rubber Cushion	Nitrile Butadiene Rubber			5

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency drive. (Only for 3 ph.)

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

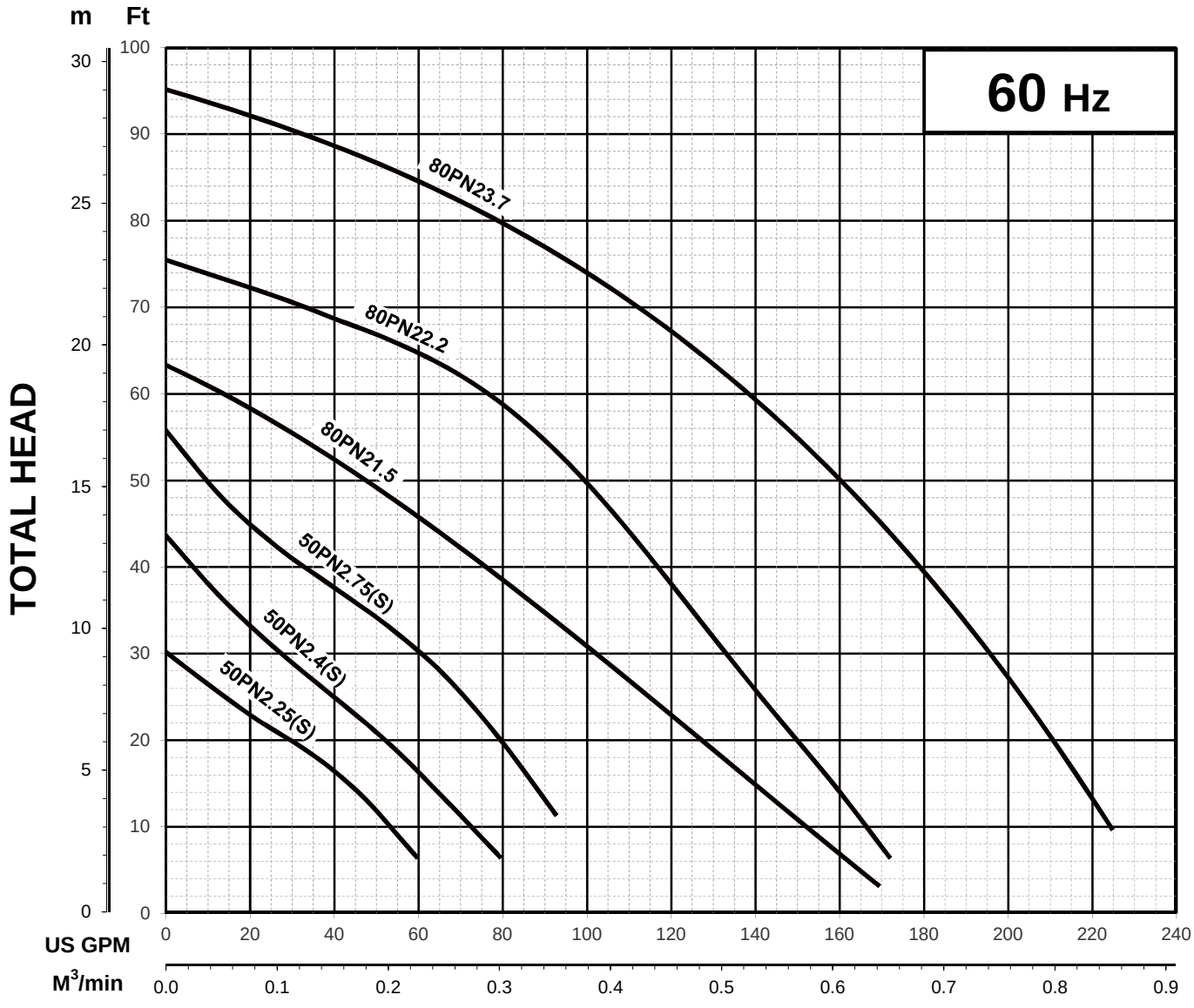
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

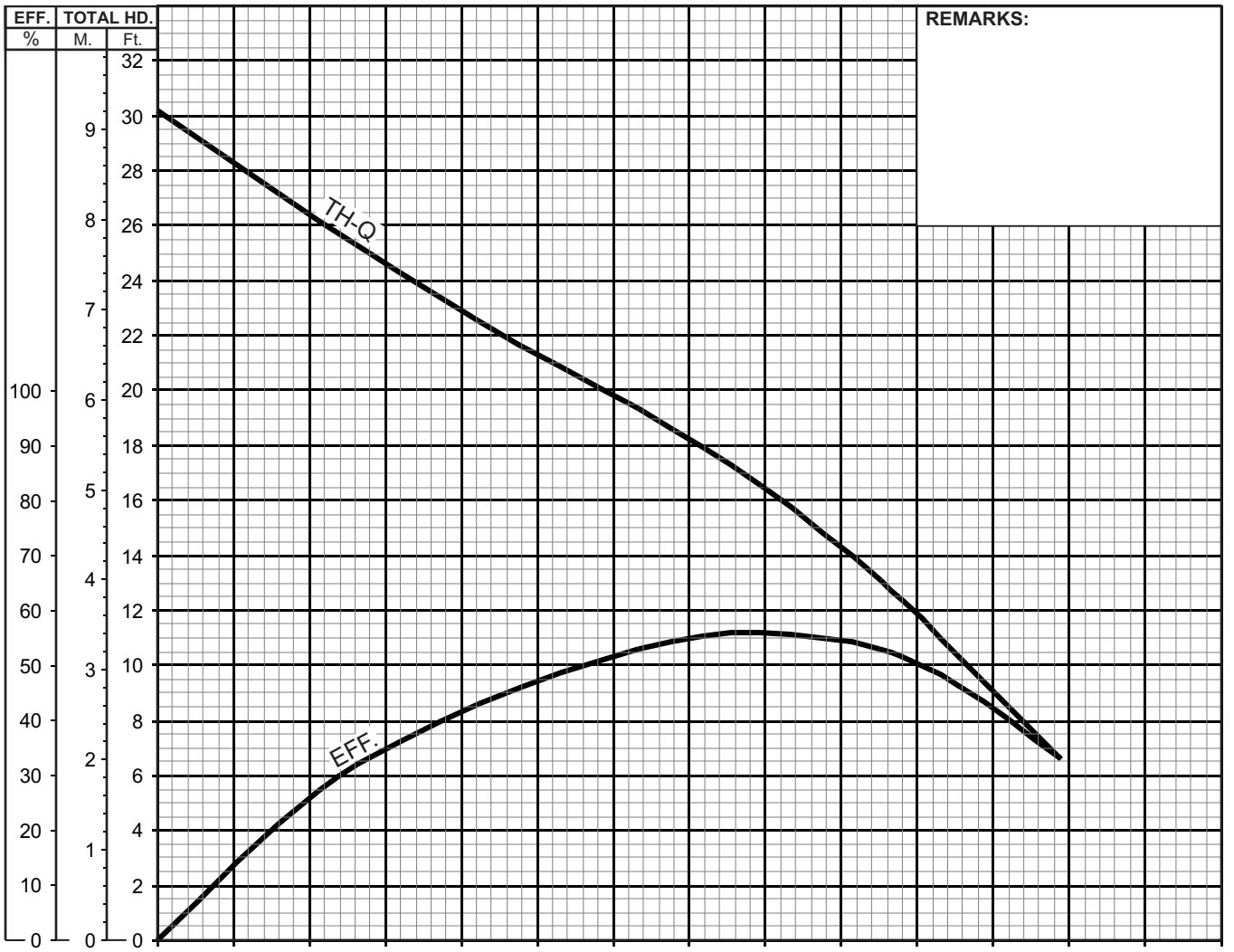
PERFORMANCE CURVE

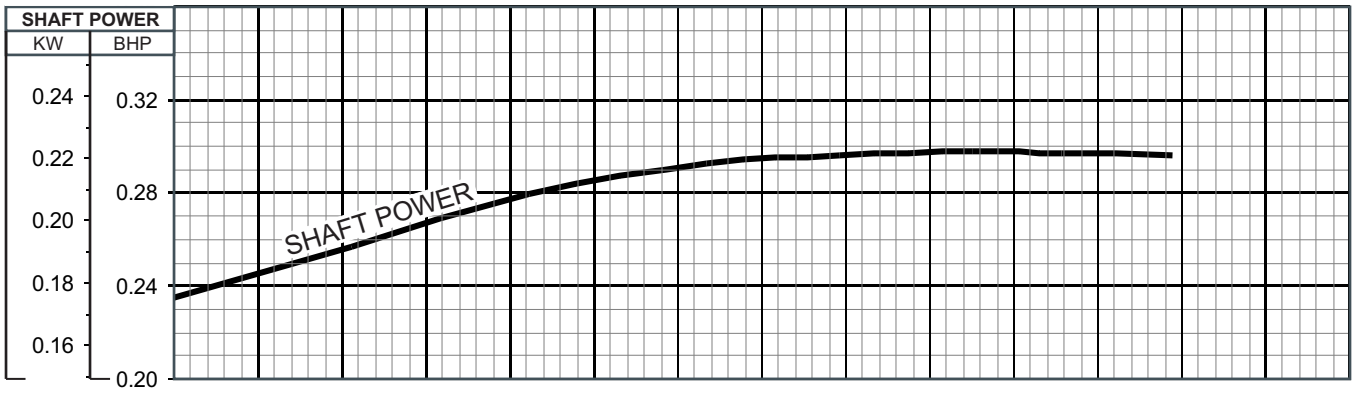
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.25S -63	2" / 50mm	0.34	0.25	3485	0.394"/10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater Pump	Single	115-120 / 230	4.6-4.6 / 2.3	60	Capacitor-Start	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



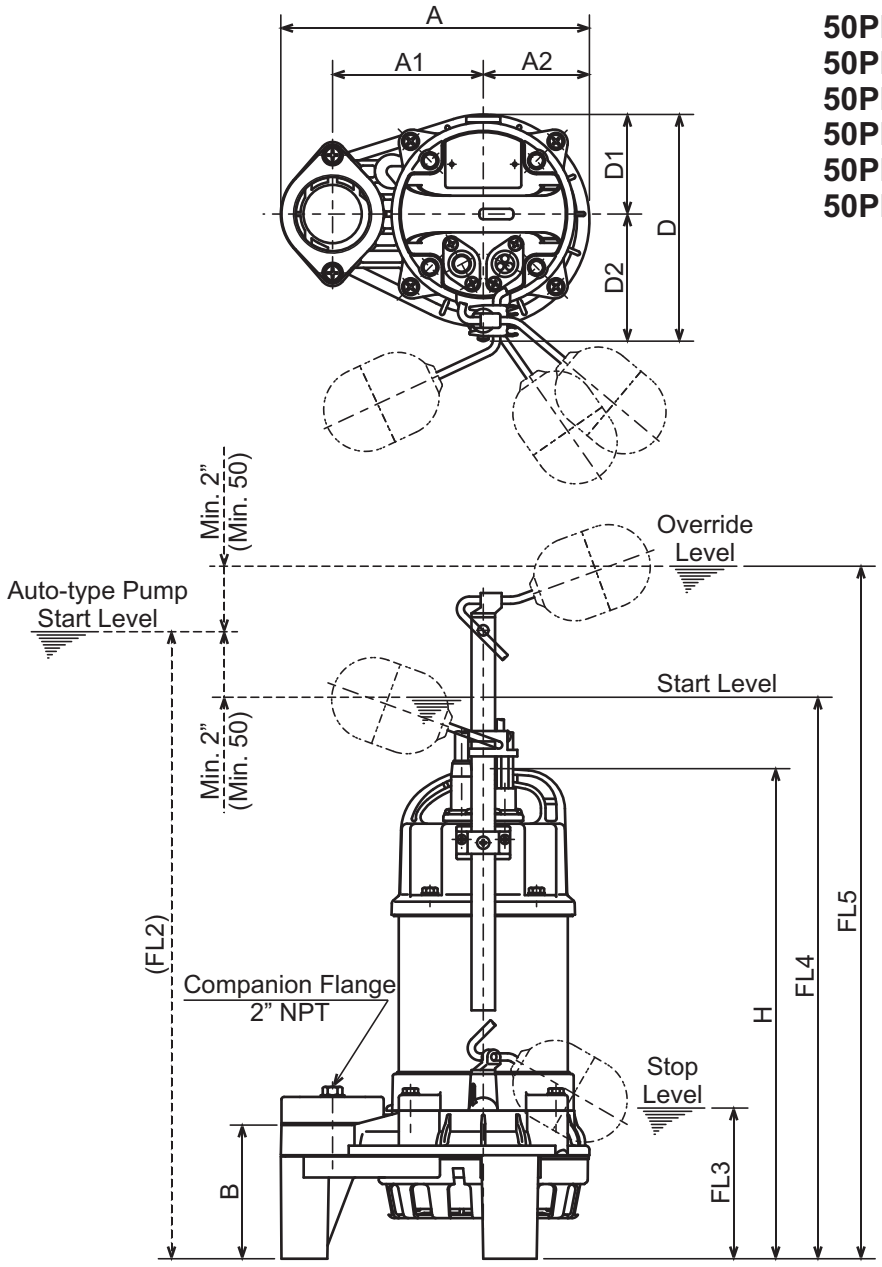


TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PNW2.25S-62
50PNW2.25-62
50PNW2.4S-62
50PNW2.4-62
50PNW2.75S-62
50PNW2.75-62



DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								Stop	Start	Override	Wt.
			A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(lbs.)
50PNW2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.2
50PNW2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 5/16	4 1/2	21 1/2	25 3/8	15.0
50PNW2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.2
50PNW2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.0
50PNW2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/2	4 1/2	22 3/4	26 5/8	21.1
50PNW2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/4	4 1/2	22 1/2	26 3/8	19.8

DIMENSIONS:METRIC (mm)

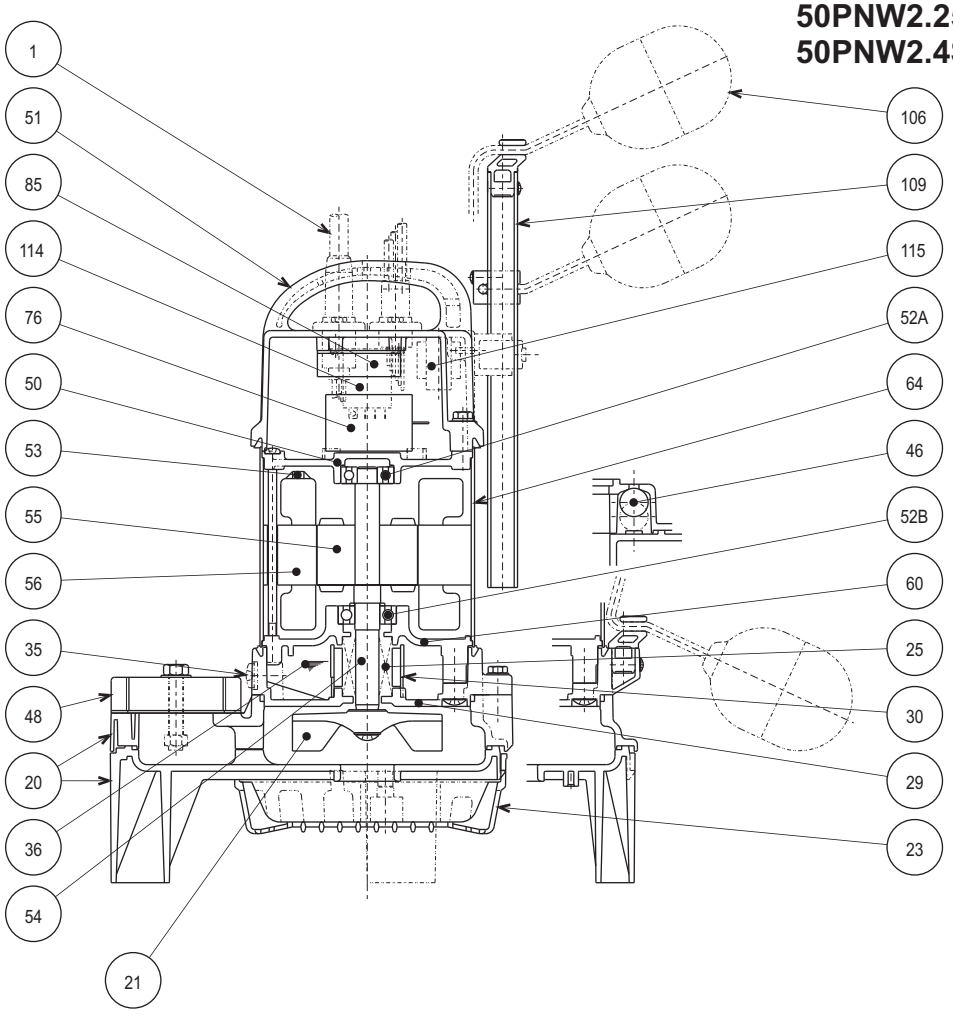
Model	kW	NOM. SIZE	Pump & Motor								Stop	Start	Override	Wt.
			A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(kg)
50PNW2.25S-62	0.25	50	236	115	81	102	173	76	97	374	115	557	657	7.8
50PNW2.25-62	0.25	50	236	115	81	102	173	76	97	363	115	546	646	6.8
50PNW2.4S-62	0.40	50	236	115	81	102	173	76	97	374	115	557	657	7.8
50PNW2.4-62	0.40	50	236	115	81	102	173	76	97	374	115	557	657	7.7
50PNW2.75S-62	0.75	50	236	115	81	102	173	76	97	394	115	577	677	9.6
50PNW2.75-62	0.75	50	236	115	81	102	173	76	97	388	115	571	671	9.0

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PNW2.25S-63
50PNW2.4S-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/3-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6202ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
76	Capacitor				1
85	Relay Unit				1
106	Float Set	ABS Plastic			3
109	Float Support Pipe	PVC			1
114	Power Relay				1
115	Transformer				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

Specifications

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

Intertek

OIL LIFTER EQUIPPED

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	

STANDARD

OPTIONS

Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.

Length as Required

Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

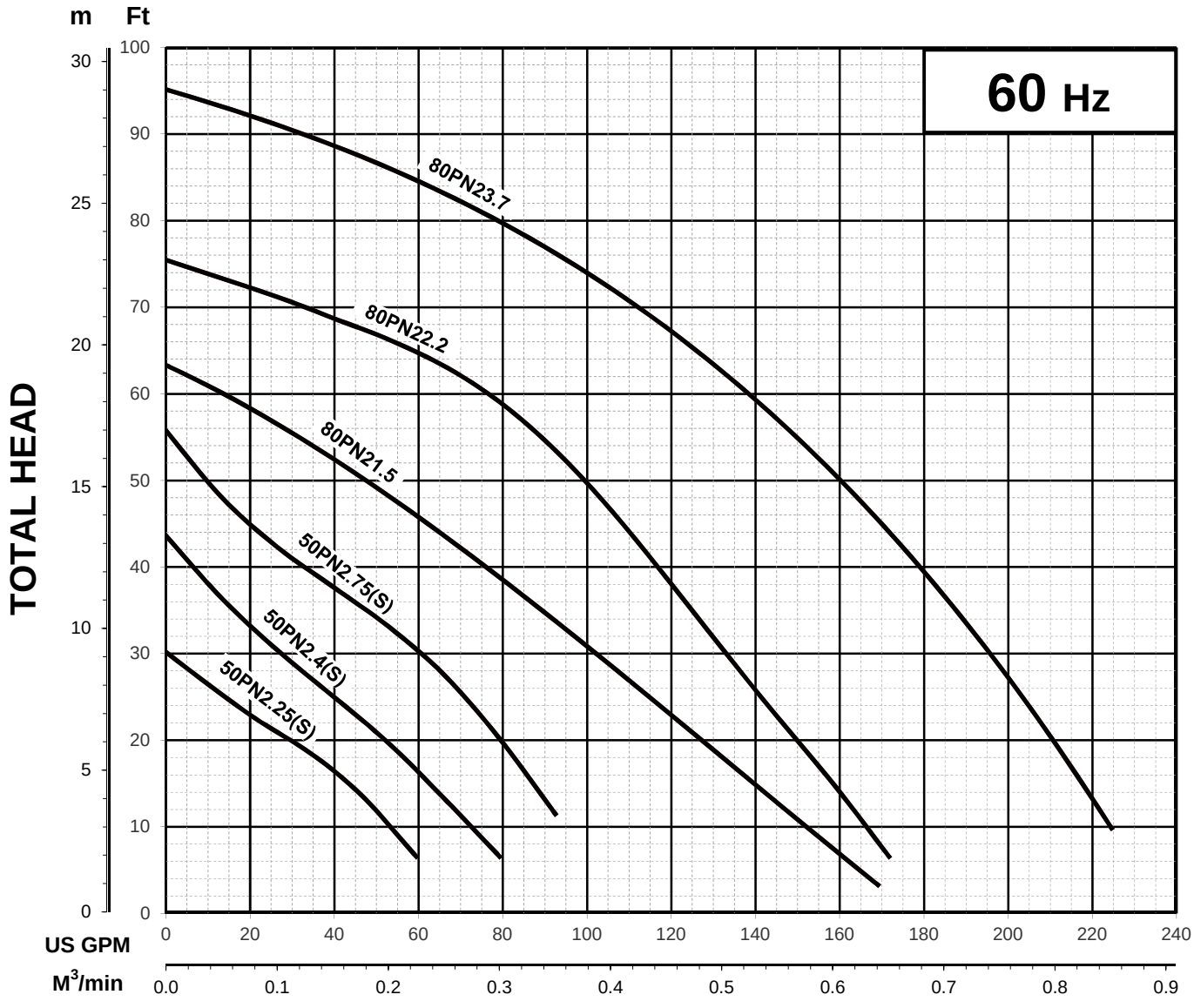
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

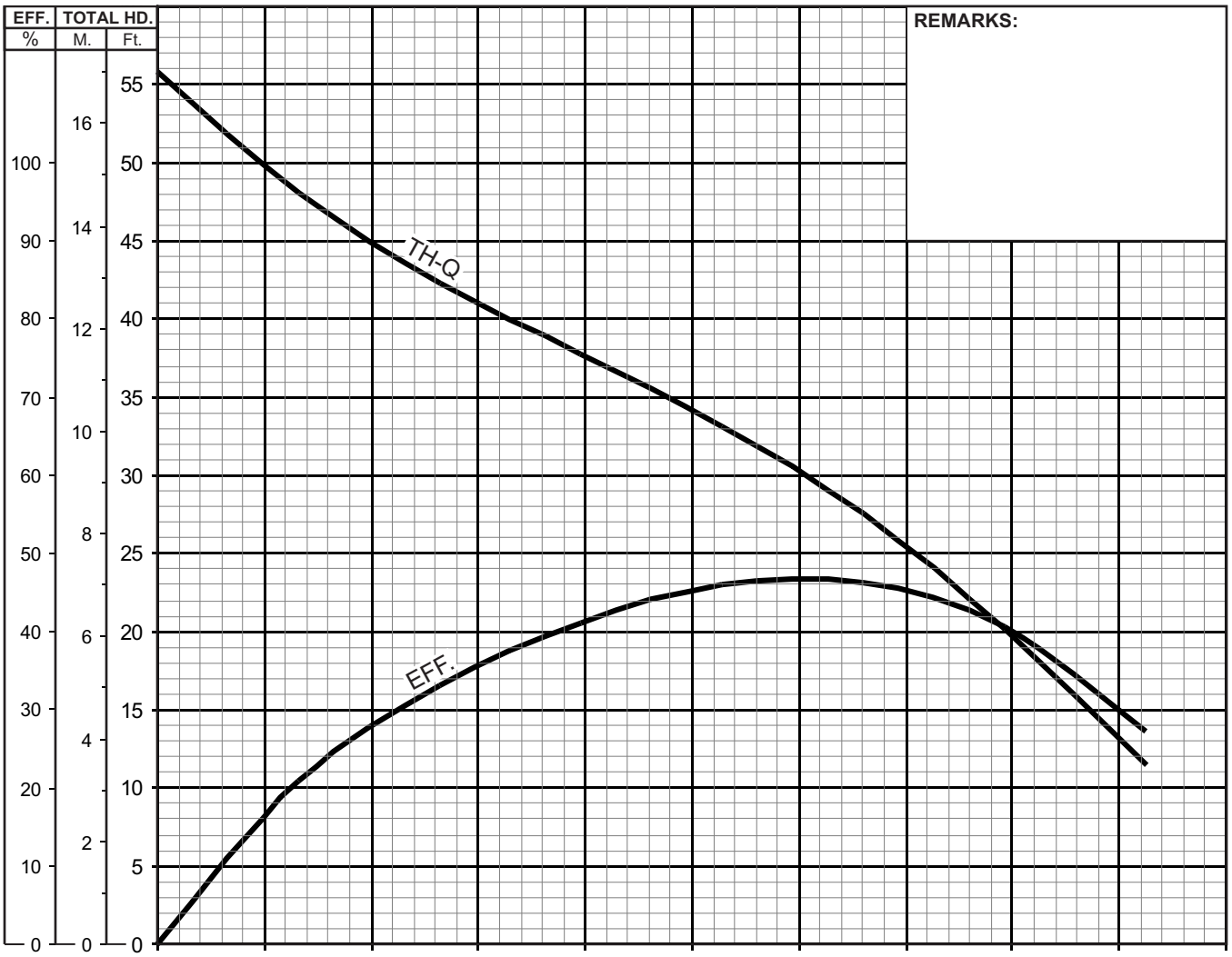
PERFORMANCE CURVE

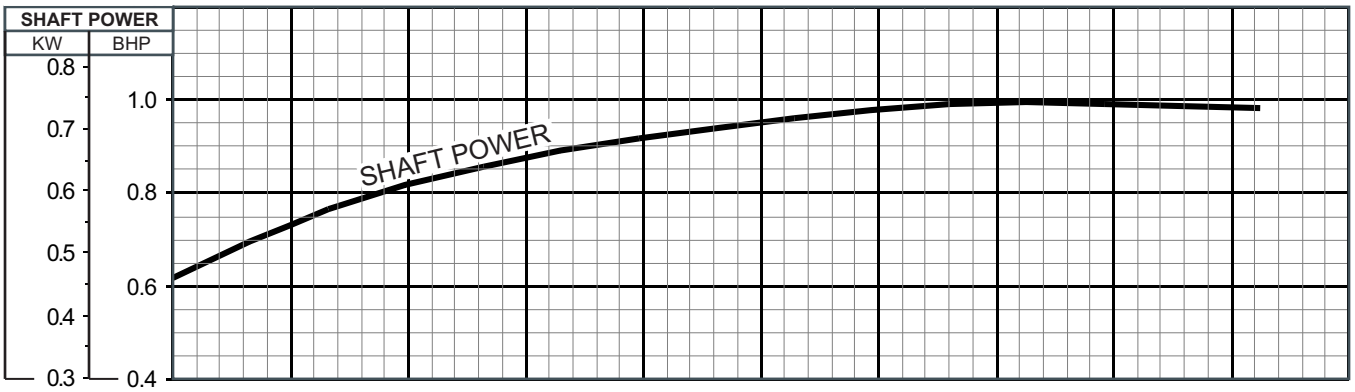
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.75S -63	2" / 50mm	1	0.75	3374	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex Wastewater Pump	Single	115-120 / 230	9.2-9.1 / 4.6	60	Capacitor-Start	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



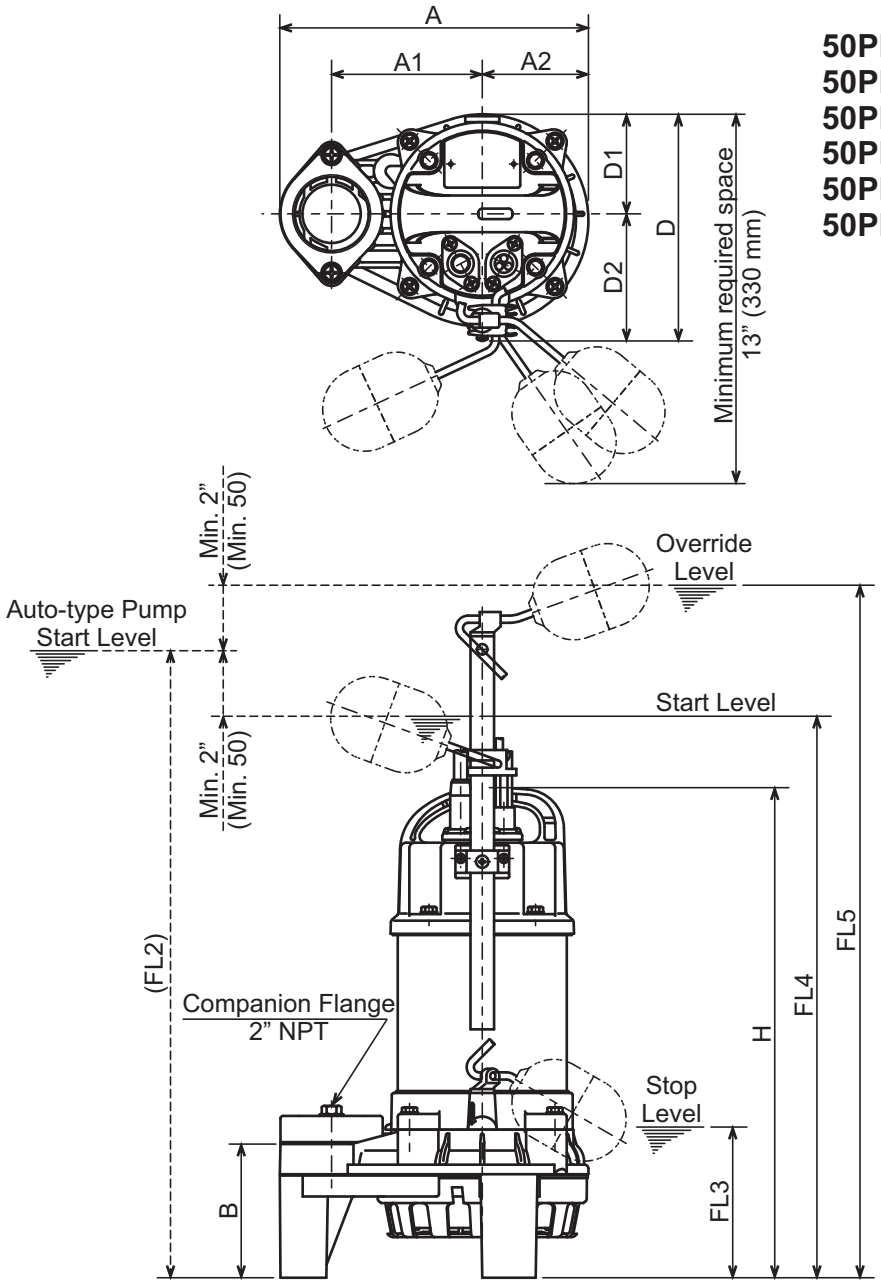


TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PNW2.25S-63
50PNW2.25-63
50PNW2.4S-63
50PNW2.4-63
50PNW2.75S-63
50PNW2.75-63



DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor								Stop	Start	Override	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(lbs.)
50PNW2.25S-63	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.2
50PNW2.25-63	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 5/16	4 1/2	21 1/2	25 3/8	15.0
50PNW2.4S-63	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.2
50PNW2.4-63	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.0
50PNW2.75S-63	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/2	4 1/2	22 3/4	26 5/8	21.1
50PNW2.75-63	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/4	4 1/2	22 1/2	26 3/8	19.8

DIMENSIONS:METRIC (mm)

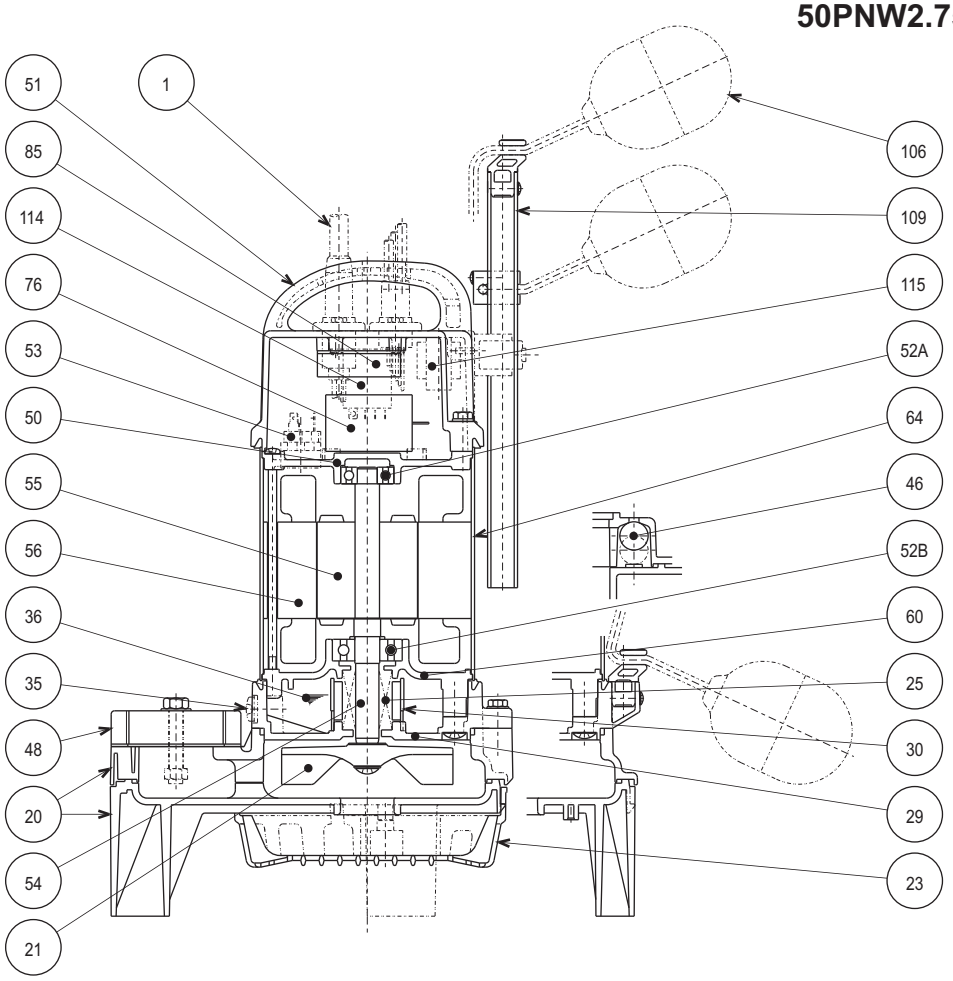
Model	kW	NOM.	Pump & Motor								Stop	Start	Override	Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(kg)
50PNW2.25S-63	0.25	50	236	115	81	102	173	76	97	374	115	557	657	7.8
50PNW2.25-63	0.25	50	236	115	81	102	173	76	97	363	115	546	646	6.8
50PNW2.4S-63	0.40	50	236	115	81	102	173	76	97	374	115	557	657	7.8
50PNW2.4-63	0.40	50	236	115	81	102	173	76	97	374	115	557	657	7.7
50PNW2.75S-63	0.75	50	236	115	81	102	173	76	97	394	115	577	677	9.6
50PNW2.75-63	0.75	50	236	115	81	102	173	76	97	388	115	571	671	9.0

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PNW2.75S-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG14/3-32ft or AWG16/3-32ft (230V)			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6302ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
76	Capacitor				1
85	Relay Unit				1
106	Float Set	ABS Plastic			3
109	Float Support Pipe	PVC			1
114	Power Relay				1
115	Transformer				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 304 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

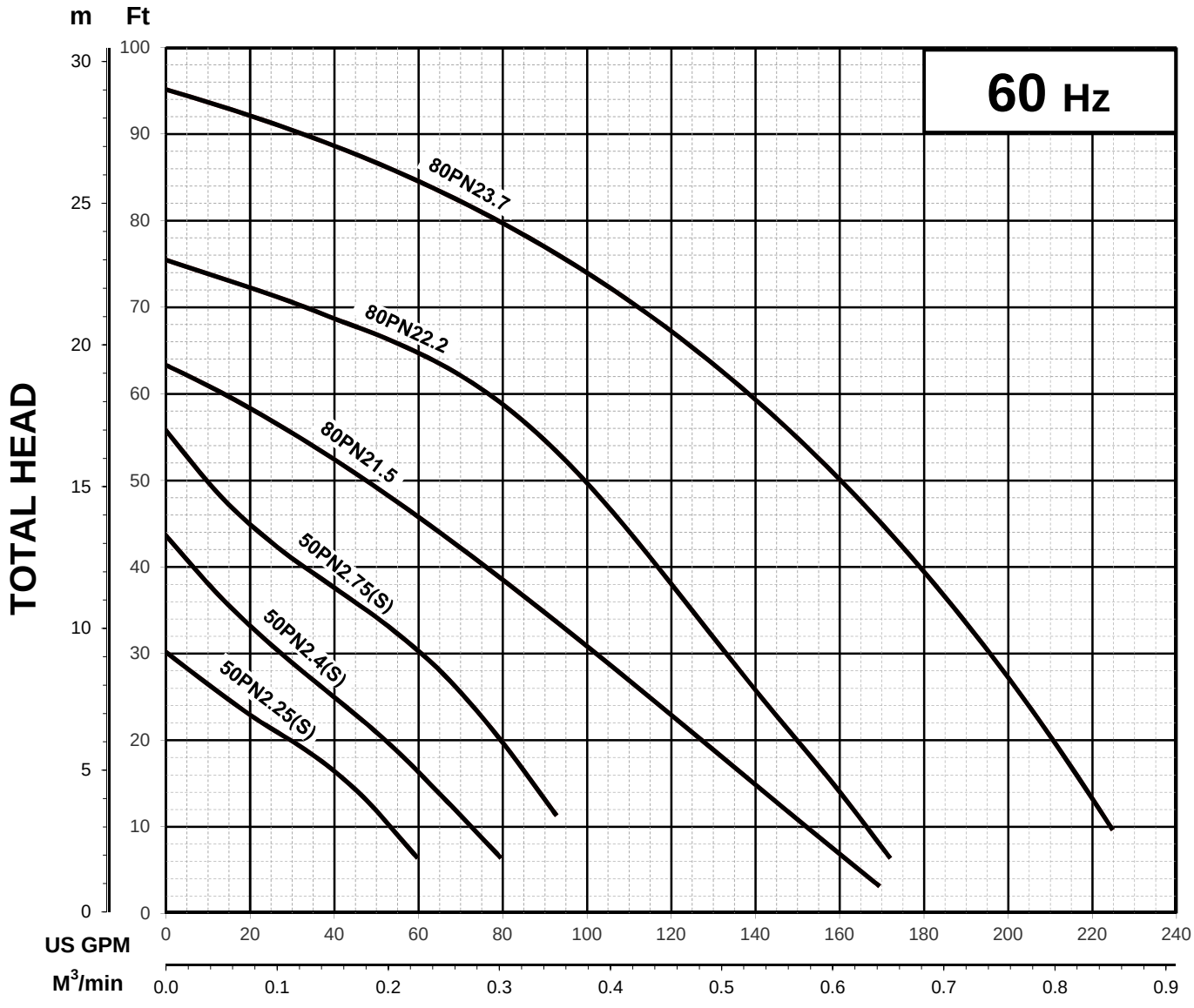
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

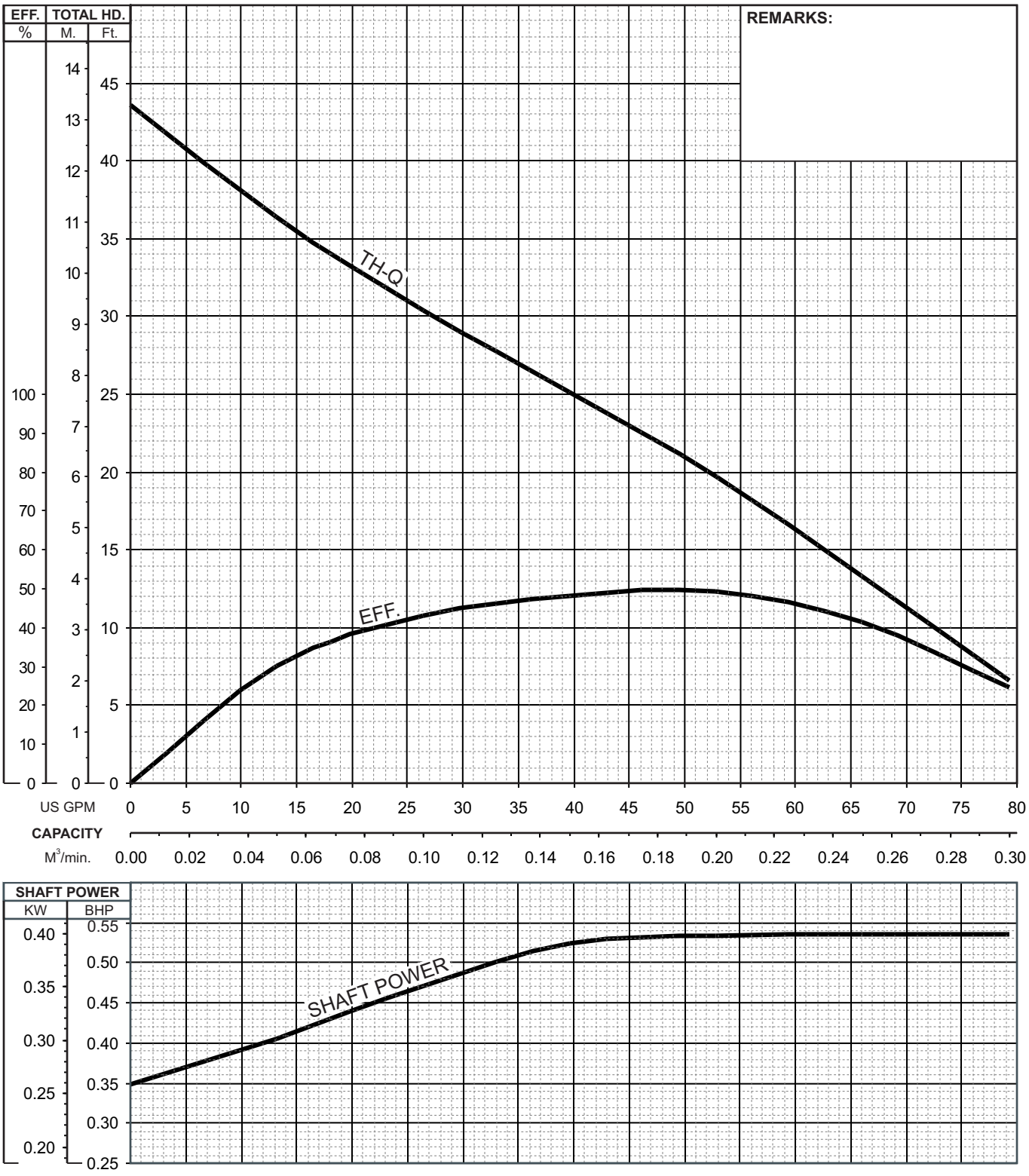
PERFORMANCE CURVE

MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.4 -63	2" / 50mm	0.54	0.40	3395	0.394" / 10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater Pump	3	208-220/460	2.1-2.0 / 0.95	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:

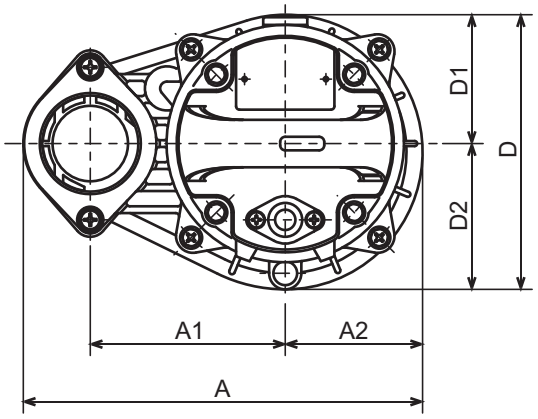


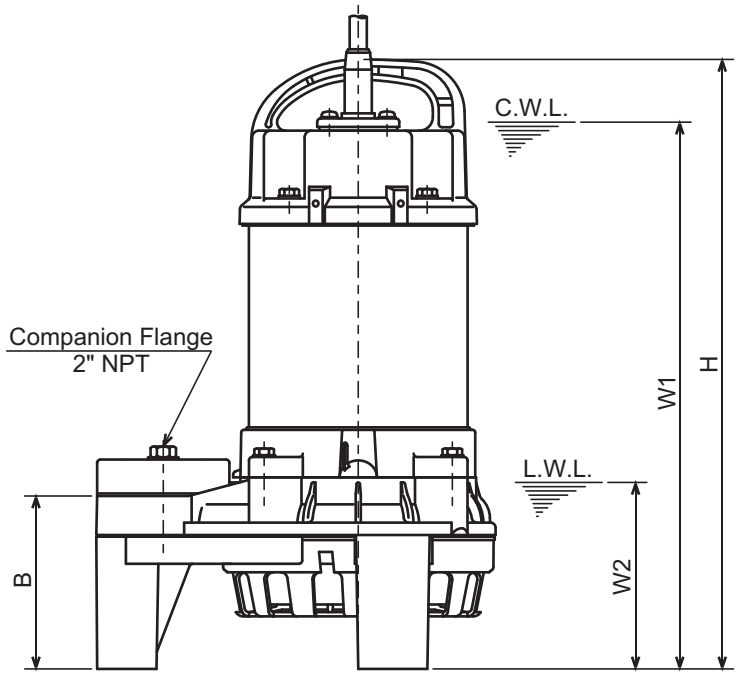
TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PN2.25S-62
50PN2.25-62
50PN2.4S-62
50PN2.4-62
50PN2.75S-62
50PN2.75-62





C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water Level

DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(lbs.)
50PN2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	13 3/4	12 1/4	4 3/8	13.4
50PN2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PN2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.4
50PN2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 15/16	13 5/8	4 3/8	19.6
50PN2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/4	13 3/8	4 3/8	18.3

DIMENSIONS:METRIC (mm)

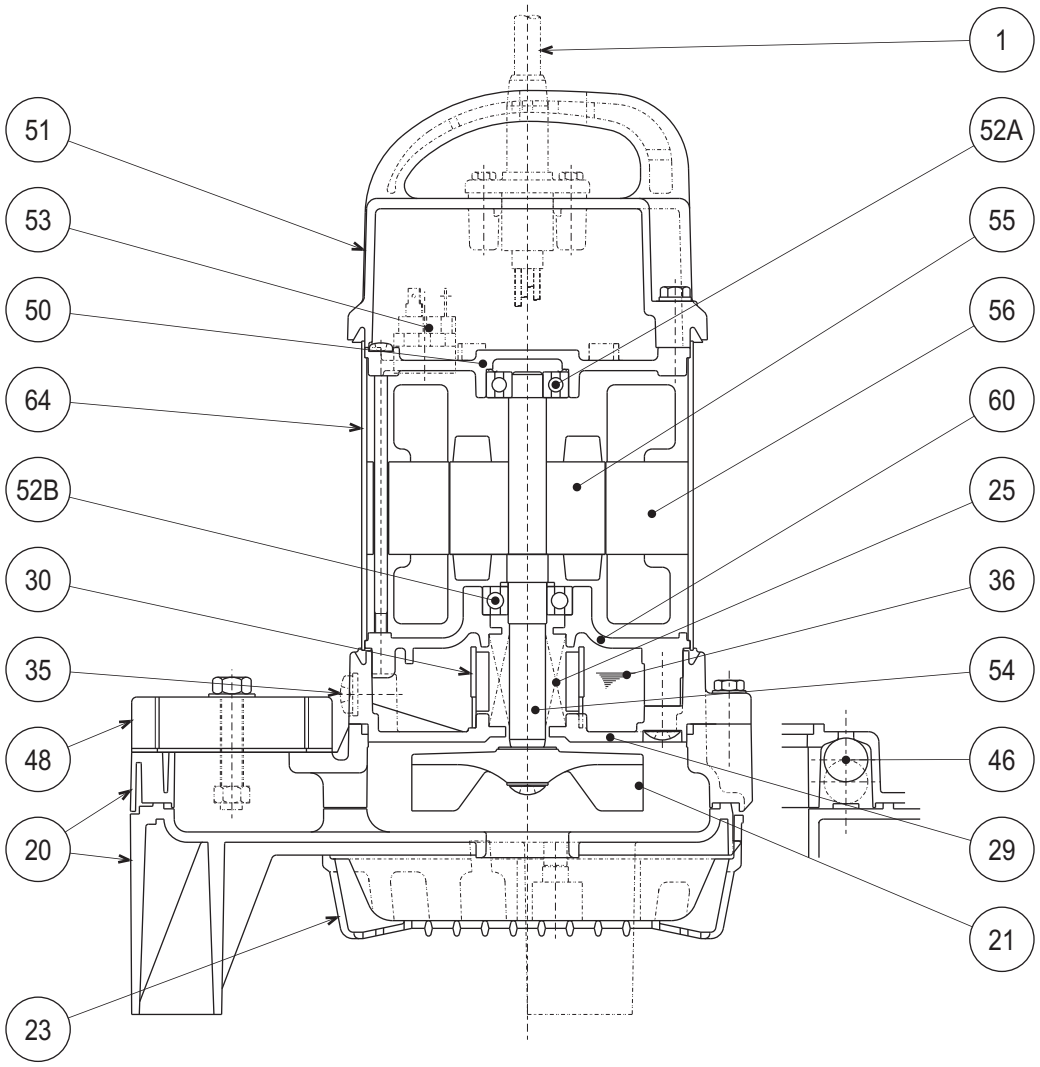
Model	kW	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
50PN2.25S-62	0.25	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.25-62	0.25	50	236	115	81	102	162	76	86	349	310	110	6.1
50PN2.4S-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.1
50PN2.4-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.0
50PN2.75S-62	0.75	50	236	115	81	102	162	76	86	380	345	110	8.9
50PN2.75-62	0.75	50	236	115	81	102	162	76	86	374	340	110	8.3

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PN2.25-63
50PN2.4-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/4-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6202ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

TSURUMI PUMP

VANCS SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.

4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial, effluent, wastewater and site drainage.

2. Chemical spill containment.

3. Decorative waterfalls, fountains and fish ponds.

4. Raw water supply from rivers or lakes.

OIL LIFTER EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

SPECIFICATIONS

Discharge Size	2"~ 3" N.P.T. (50~ 80 mm)
Horsepower Range	1/3 ~ 5 (.25 ~ 3.7 kW)
Performance Range Capacity	10.6 ~ 224.6 G.P.M.. (.04 ~ .85 m^3/min)
Head	10.7 Ft. ~ 95.1 Ft. (3.25 ~ 28.99 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing (upper)/(lower)	FRP (ABS + G20) / ABS
Impeller	FRP (PPO + G20)
Shaft	403 Stainless Steel
Motor Frame	304 Stainless Steel
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-Vortex, solids handling.
Solids Handling Capability	.4" ~ .8" (10 ~ 20mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115 or 230 V.,1 Phase., 208-220, 230, 460,or575 V., 3 Phase.
Insulation	Class E
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Nema 3R inverter available for 230 V.,1 Ph. operation for 2 Hp.
	Length as Required
	Model A(Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

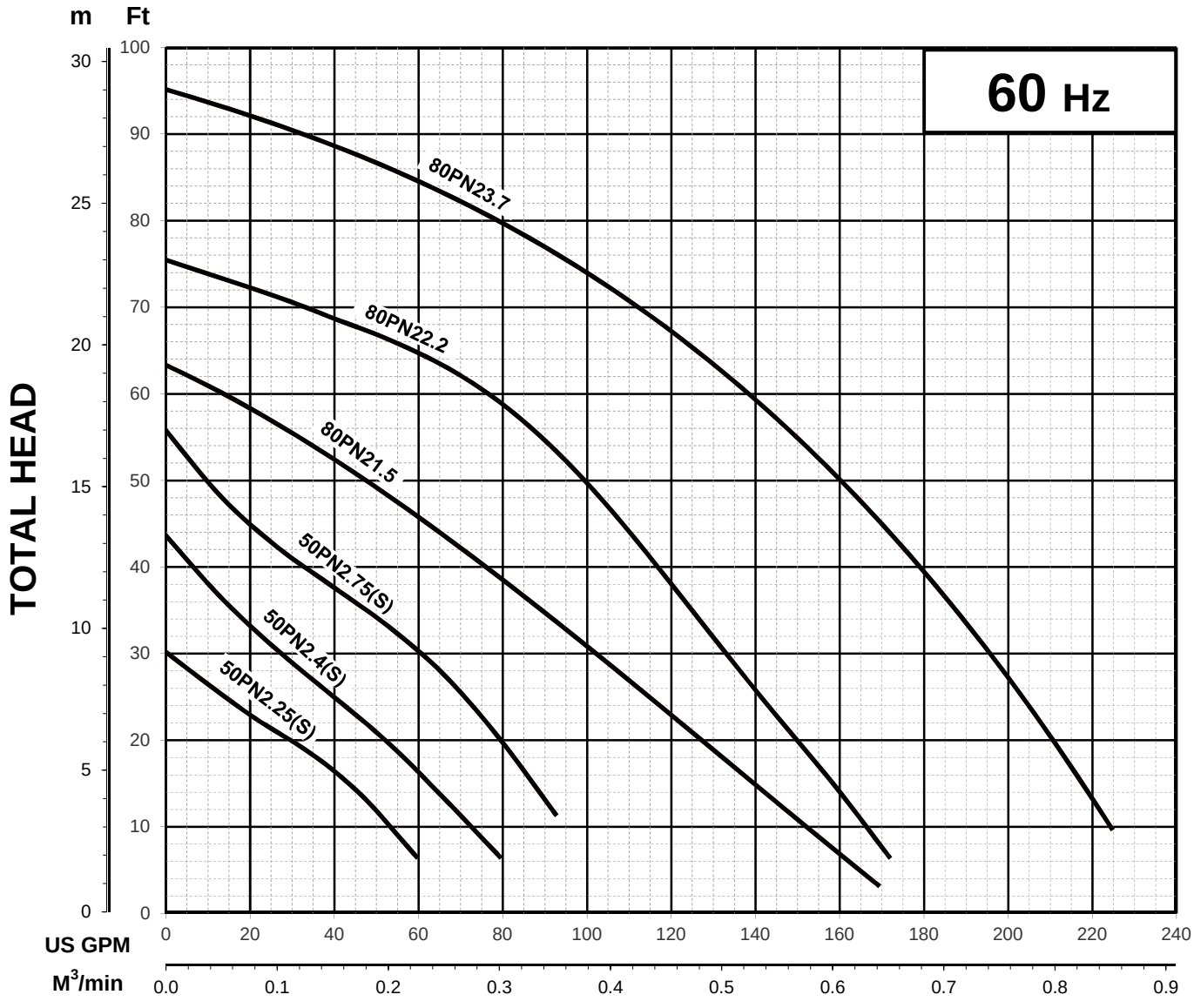
TSURUMI PUMP

VANCS - SERIES - PN

(FRP) SEMI-VORTEX - WASTEWATER PUMPS

PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Note

Ex.

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

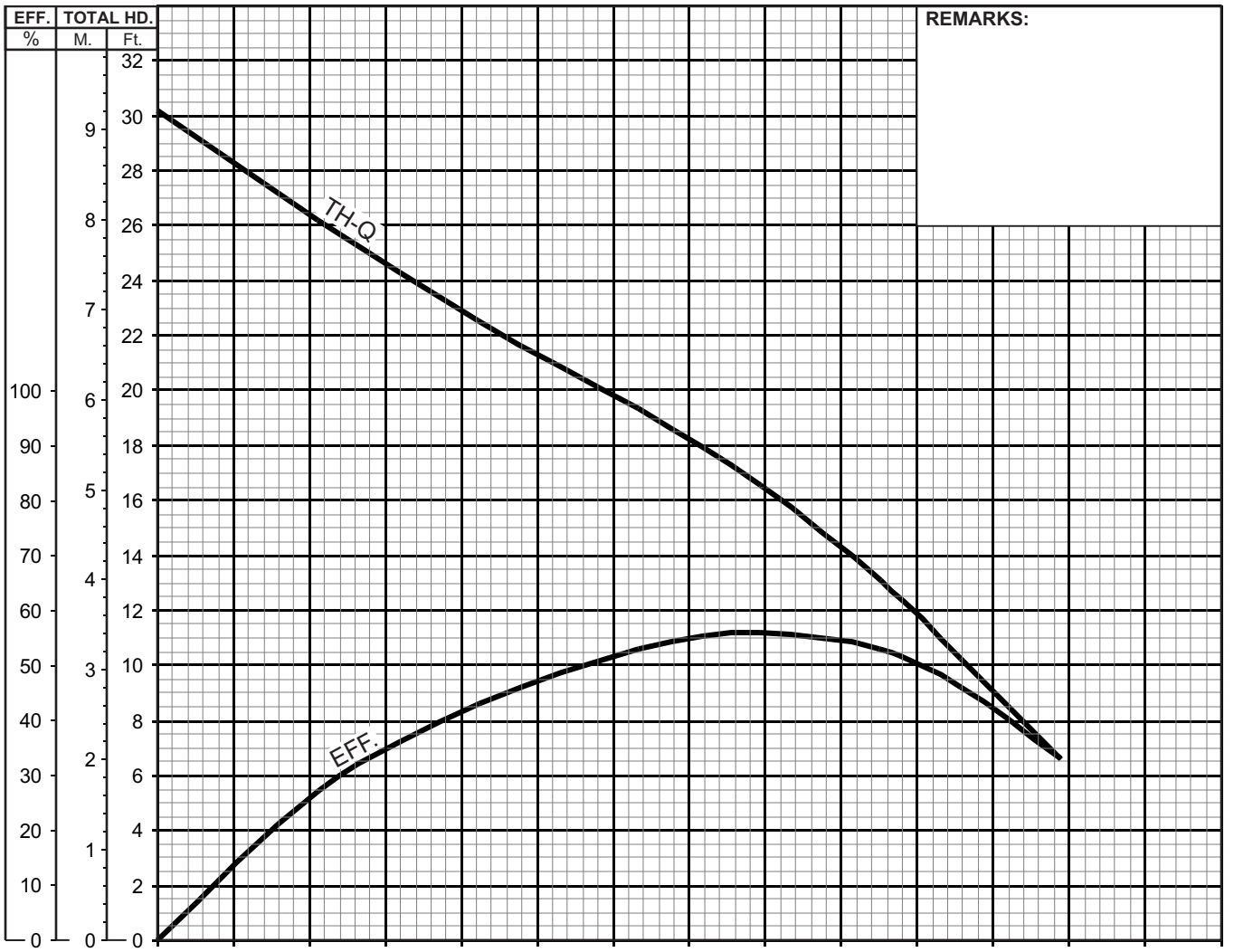
PERFORMANCE CURVE

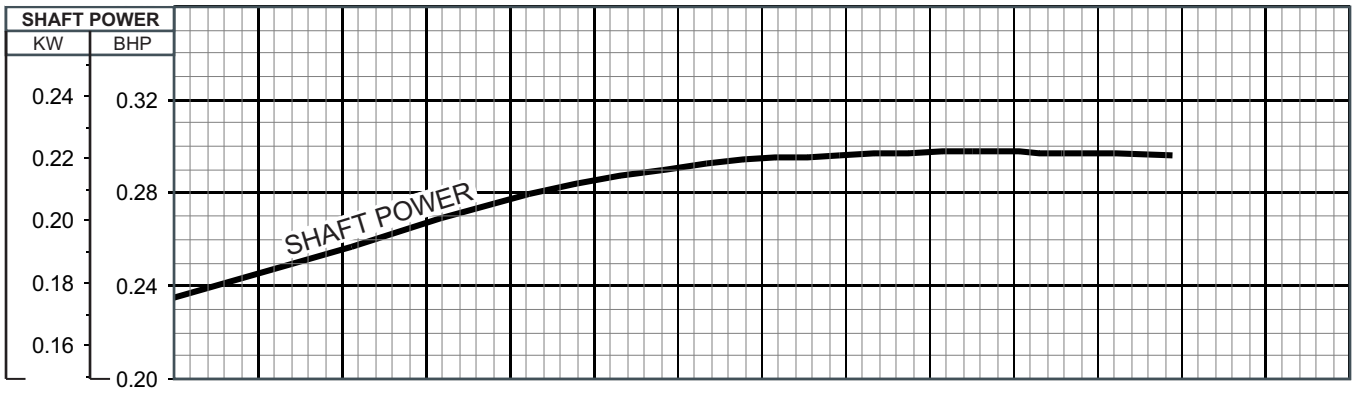
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PN(A/W)2.25S -63	2" / 50mm	0.34	0.25	3485	0.394"/10mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Wastewater Pump	Single	115-120 / 230	4.6-4.6 / 2.3	60	Capacitor-Start	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:



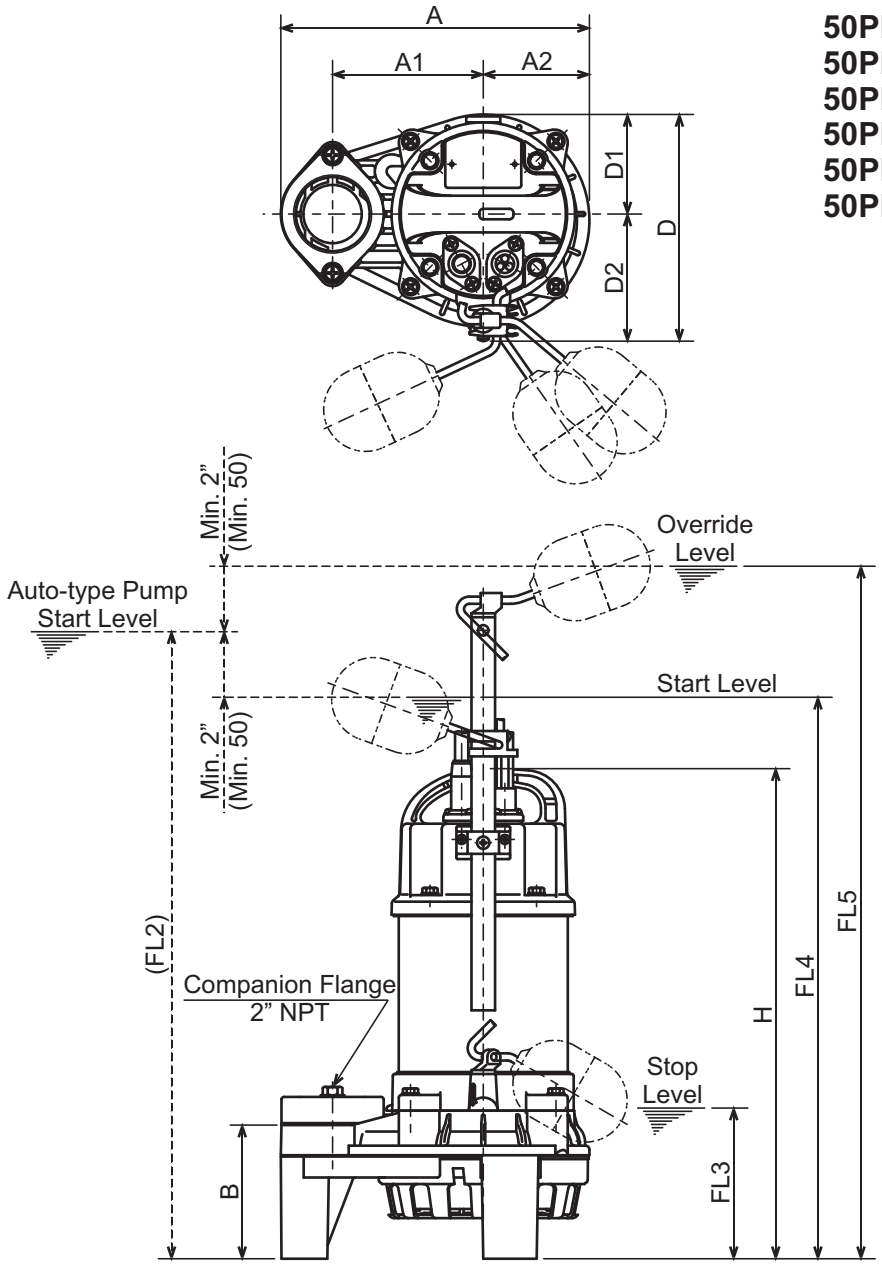


TSURUMI PUMP

VANCS-SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

DIMENSIONS

50PNW2.25S-62
50PNW2.25-62
50PNW2.4S-62
50PNW2.4-62
50PNW2.75S-62
50PNW2.75-62



DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor								Stop	Start	Override	Wt.
			A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(lbs.)
50PNW2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.2
50PNW2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 5/16	4 1/2	21 1/2	25 3/8	15.0
50PNW2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.2
50PNW2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	14 3/4	4 1/2	21 7/8	25 7/8	17.0
50PNW2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/2	4 1/2	22 3/4	26 5/8	21.1
50PNW2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 13/16	3	3 13/16	15 1/4	4 1/2	22 1/2	26 3/8	19.8

DIMENSIONS:METRIC (mm)

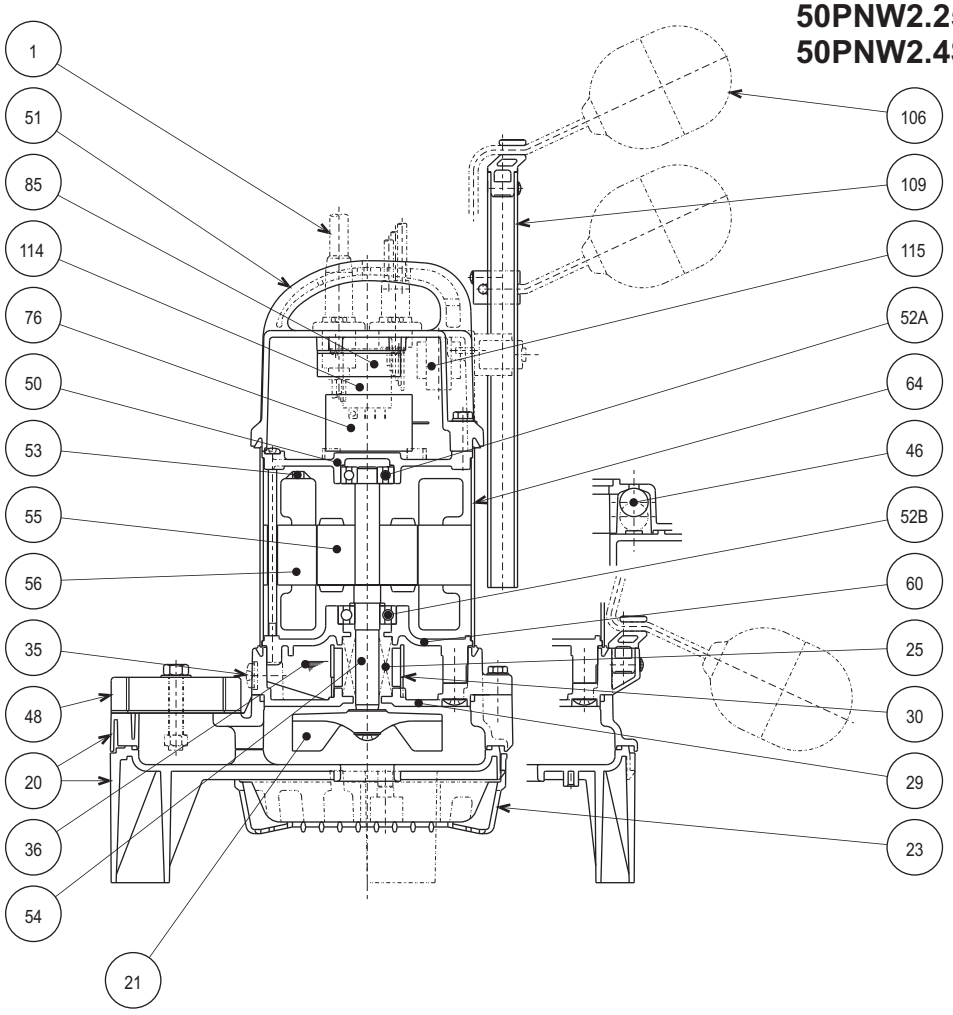
Model	kW	NOM. SIZE	Pump & Motor								Stop	Start	Override	Wt.
			A	A1	A2	B	D	D1	D2	H	FL3	Max.FL4	Max.FL5	(kg)
50PNW2.25S-62	0.25	50	236	115	81	102	173	76	97	374	115	557	657	7.8
50PNW2.25-62	0.25	50	236	115	81	102	173	76	97	363	115	546	646	6.8
50PNW2.4S-62	0.40	50	236	115	81	102	173	76	97	374	115	557	657	7.8
50PNW2.4-62	0.40	50	236	115	81	102	173	76	97	374	115	557	657	7.7
50PNW2.75S-62	0.75	50	236	115	81	102	173	76	97	394	115	577	677	9.6
50PNW2.75-62	0.75	50	236	115	81	102	173	76	97	388	115	571	671	9.0

TSURUMI PUMP

VANCS - SERIES - PN
(FRP) SEMI-VORTEX - WASTEWATER PUMPS

SECTIONAL VIEW

50PNW2.25S-63
50PNW2.4S-63



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/3-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
23	Suction Strainer	ABS Plastic			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/(GF+MD)50			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/(GF+MD)50			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6202ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
76	Capacitor				1
85	Relay Unit				1
106	Float Set	ABS Plastic			3
109	Float Support Pipe	PVC			1
114	Power Relay				1
115	Transformer				1

TSURUMI PUMP	VANCS - SERIES - PN (FRP) SEMI-VORTEX - WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical Seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 6 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.