



**U - SERIES**  
SEMI-VORTEX - SEWAGE & WASTE WATER PUMPS

**SPECIFICATIONS**

**FEATURES**

1. Semi-vortex , Cast Iron, 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 F, 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.

**APPLICATIONS**

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



**SPECIFICATIONS**

Discharge Size  
 Horsepower Range  
 Performance Range Capacity  
 Head  
 Maximum water temperature  
 Materials of Construction  
 Casing  
 Impeller  
 Shaft  
 Motor Frame  
 Fasteners  
 Mechanical Seal  
 Elastomers  
 Impeller Type  
 Solids Handling Capability  
 Bearings  
 Motor Nomenclature  
 Type, Speed, Hz.  
 Voltage, Phase  
 Insulation  
 Accessories  
 Operational Mode

**STANDARD**

2" ~ 3" Npt (50~80 mm)  
 2 ~ 5 Hp. (1.5 ~ 3.7 kW)  
 26.4 ~ 264.0 Gpm. (.01 ~ 1.0 m<sup>3</sup>/min)  
 16.4 ~ 82.0 Ft. (5.0 ~ 25.0 m)  
 104° F. (40° C.)  
 Cast Iron, ASTM 48M Class 30B  
 Cast Iron, ASTM 48M Class 30B  
 403, 420 Stainless Steel  
 Cast Iron, ASTM 48M Class 30B  
 304 Stainless Steel  
 Silicon Carbide  
 NBR (Nitril Buna Rubber)  
 Semi-Vortex, solids handling.  
 1.38" ~ 2.2" (35 mm ~56 mm)  
 Pre-lubricated, Double Shielded  
 Air Filled, 3600 Rpm, 1800 Rpm,60 Hz.  
 208-230, 460 or 575 V. (3 Phase)  
 Class F  
 Submersible Power Cable 32' (10 m)  
 Manual

**OPTIONS**

Nema 3R inverter available for  
 230 V.,1 Ph. operation from 2~5  
 Hp.  
 Length as Required  
 TOS Slide rail system


**TSURUMI PUMP**
**U - SERIES  
SEMI-VORTEX - SEWAGE & WASTEWATER PUMPS**
**SAMPLE  
SPECIFICATIONS**
**1. SCOPE OF SUPPLY -**

Furnish and install TSURUMI Model \_\_\_\_\_ Submersible Pump(s). Each unit shall be capable of delivering \_\_\_\_\_ GPM(\_\_\_\_\_m<sup>3</sup>/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, and discharge elbow shall be manufactured from gray cast iron, ASTM A48 CLASS 35. Internal and external surfaces coming into contact with the pumpage shall be protected by a fused polymer coating. All exposed fasteners shall be stainless steel. All units shall be furnished with a discharge elbow with 150 lb. (10 kg/cm<sup>2</sup>) flat face flange and NPT companion flange. Impellers shall be of the semi-vortex, solids handling design equipped with back pump out vanes and shall be slip fit to the shaft and key driven.

**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 and further protected by an exclusionary oil seal located between the bottom seal faces and the fluid being pumped. The oil chamber 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. Mechanical seals shall rated to preclude the incursion of water up to 42.6 PSI. (98.4 Ft.). 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., 3 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 20 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal and over amperage protection for each winding. 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. Motor housing and bearing housing shall be gray cast iron, ASTM A48 CLASS 30. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency drive.

**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.

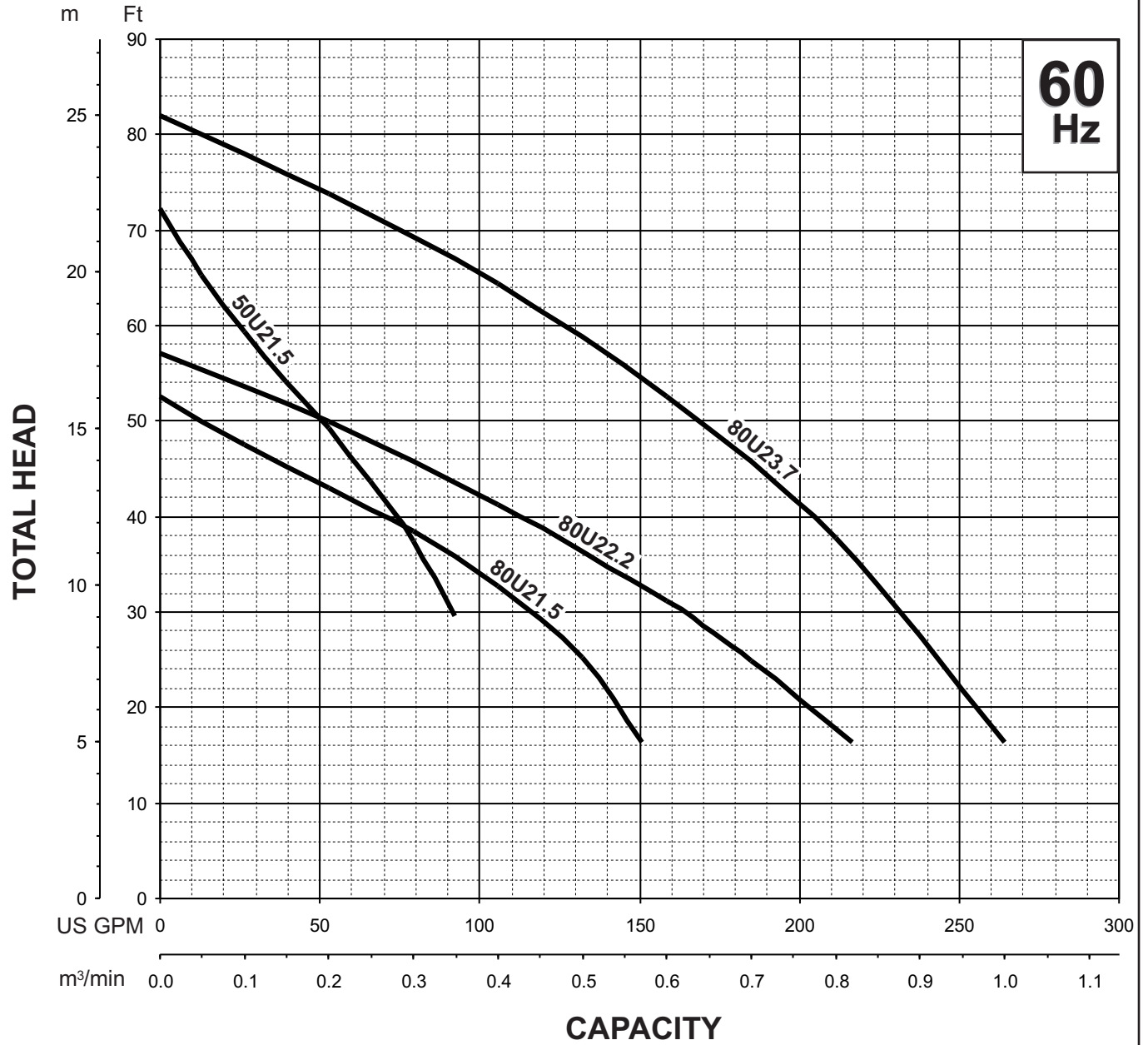


**TSURUMI PUMP**

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**PERFORMANCE RANGE**

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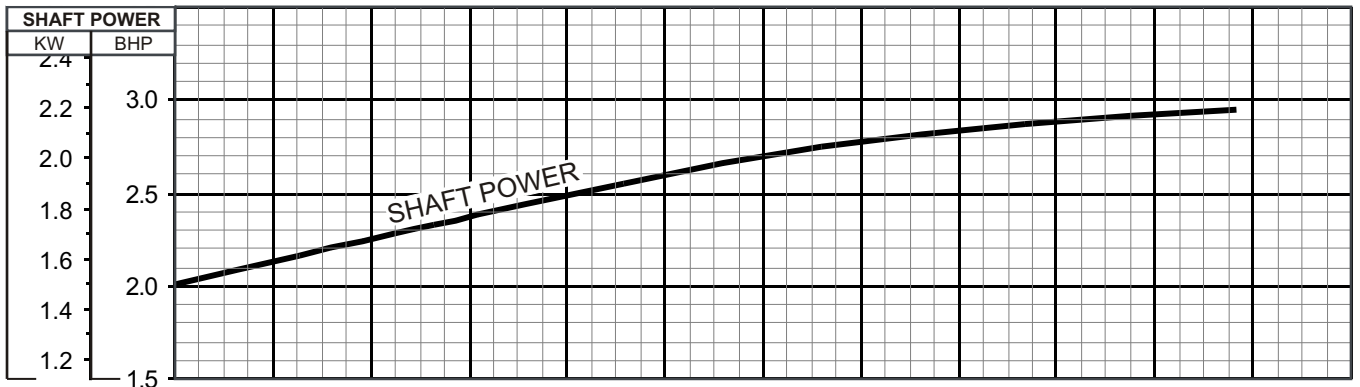
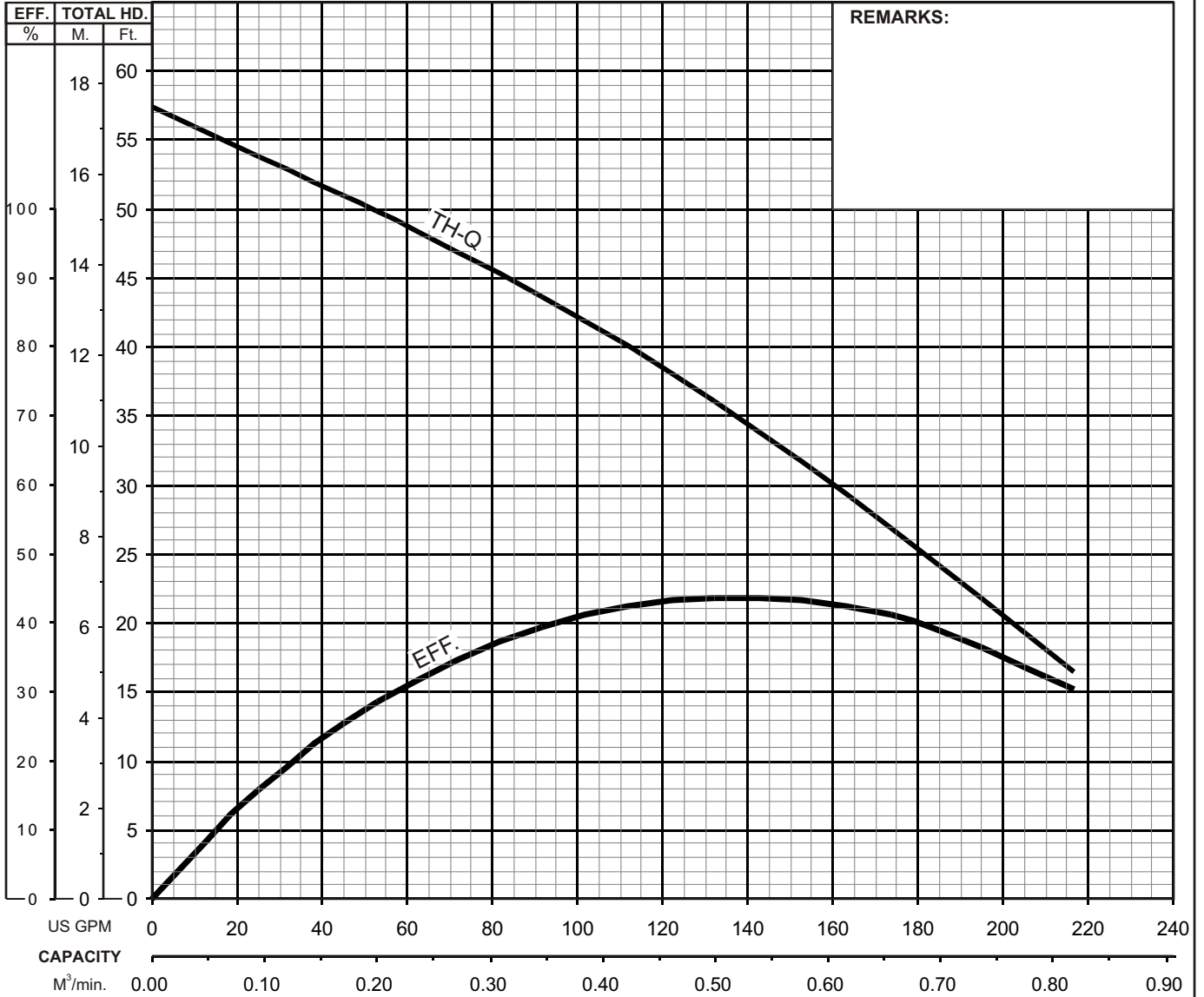




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## PERFORMANCE CURVE

MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
(TOS)80U22.2 -62	3"/80mm	3	2.2	3410	2.2"/ 56mm	Water	1.0	1.123 CST	60°F
PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS			
Semi-Vortex-Sewage&Wastewater	3	208-230/440/575	9.4-8.8 / 4.4 / 3.5	60	Direct On Line	F			
CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS		
-	-	-	-	-	-	-	-		



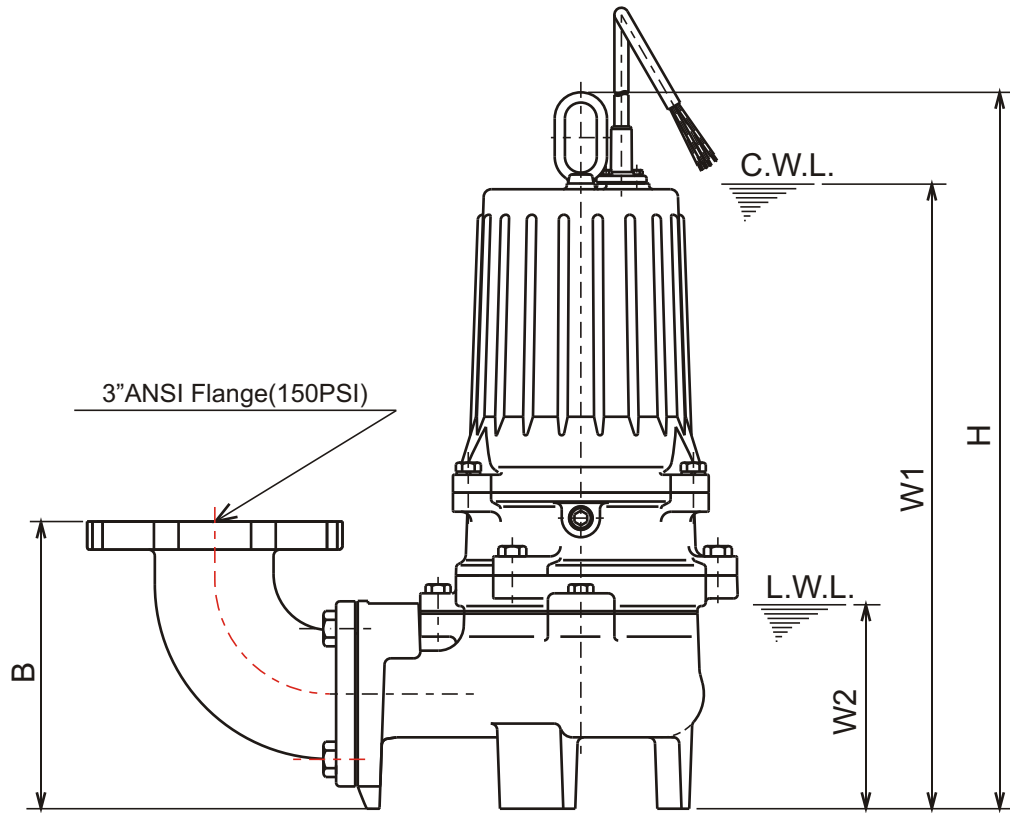
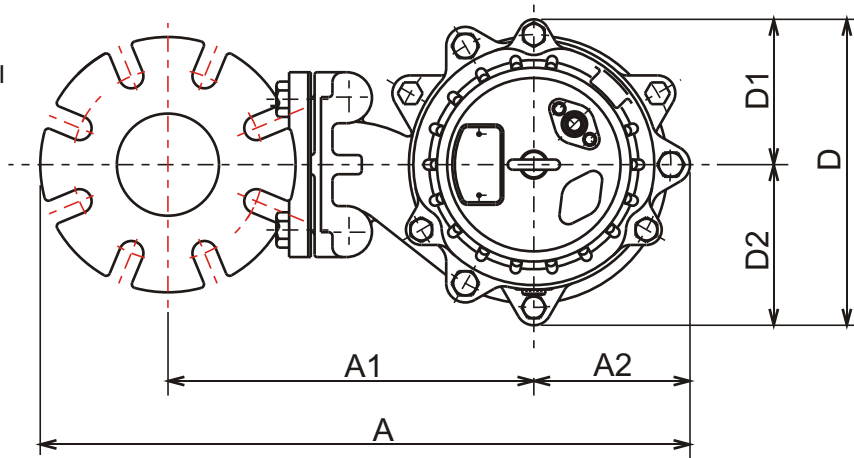


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**DIMENSIONS**

Bend model:  
BEND80-80 ANSI

**80U22.2-62**



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

**DIMENSIONS :USCS (Inch)**

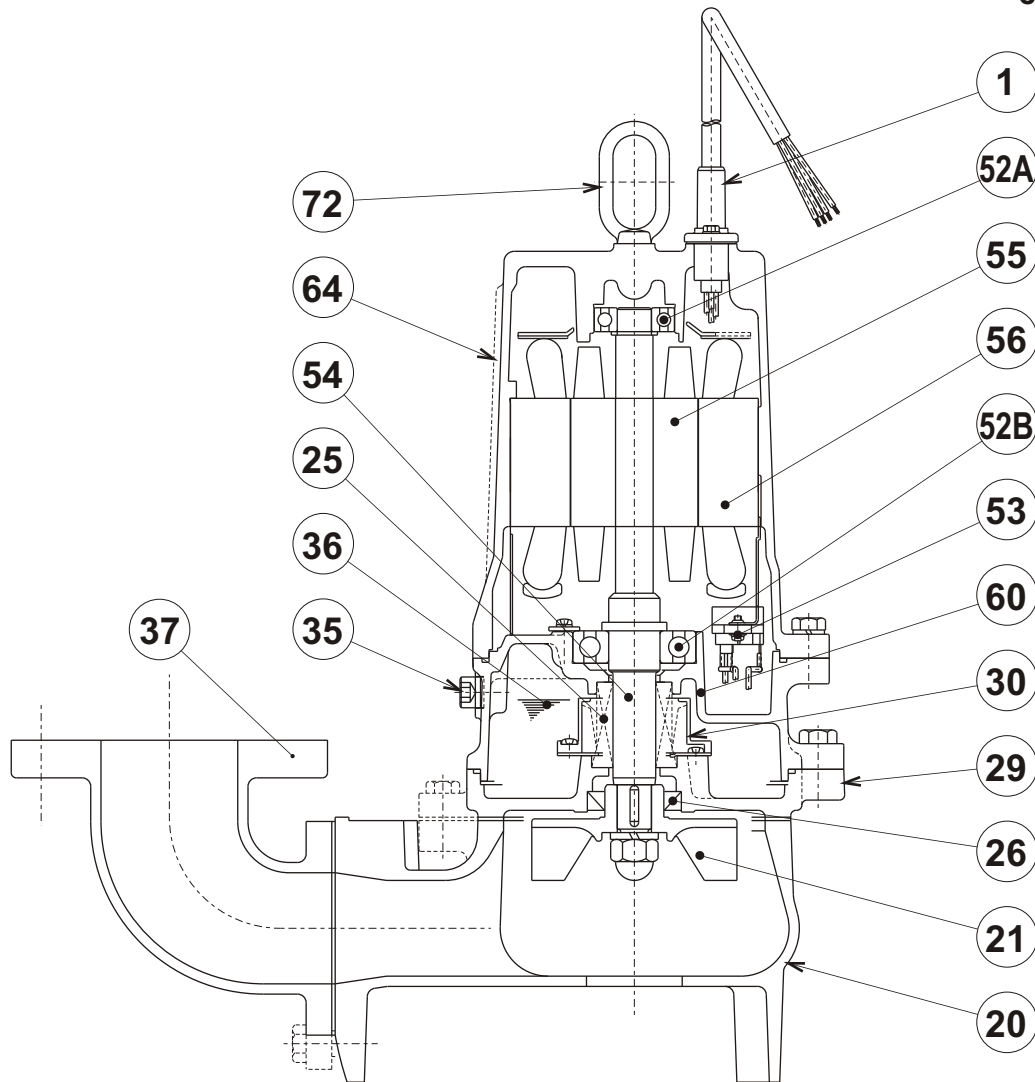
Model	HP	NOM. SIZE	Pump & Motor								C.W.L. W1	L.W.L. W2	*Wt. (lbs.)
			A	A1	A2	B	D	D1	D2	H			
80U22.2-62	3	3"	20 1/2	11 11/16	4 13/16	8 7/8	9 7/16	4 1/2	4 15/16	22 1/8	19 1/4	6 1/4	117

**DIMENSIONS :METRIC (m m)**

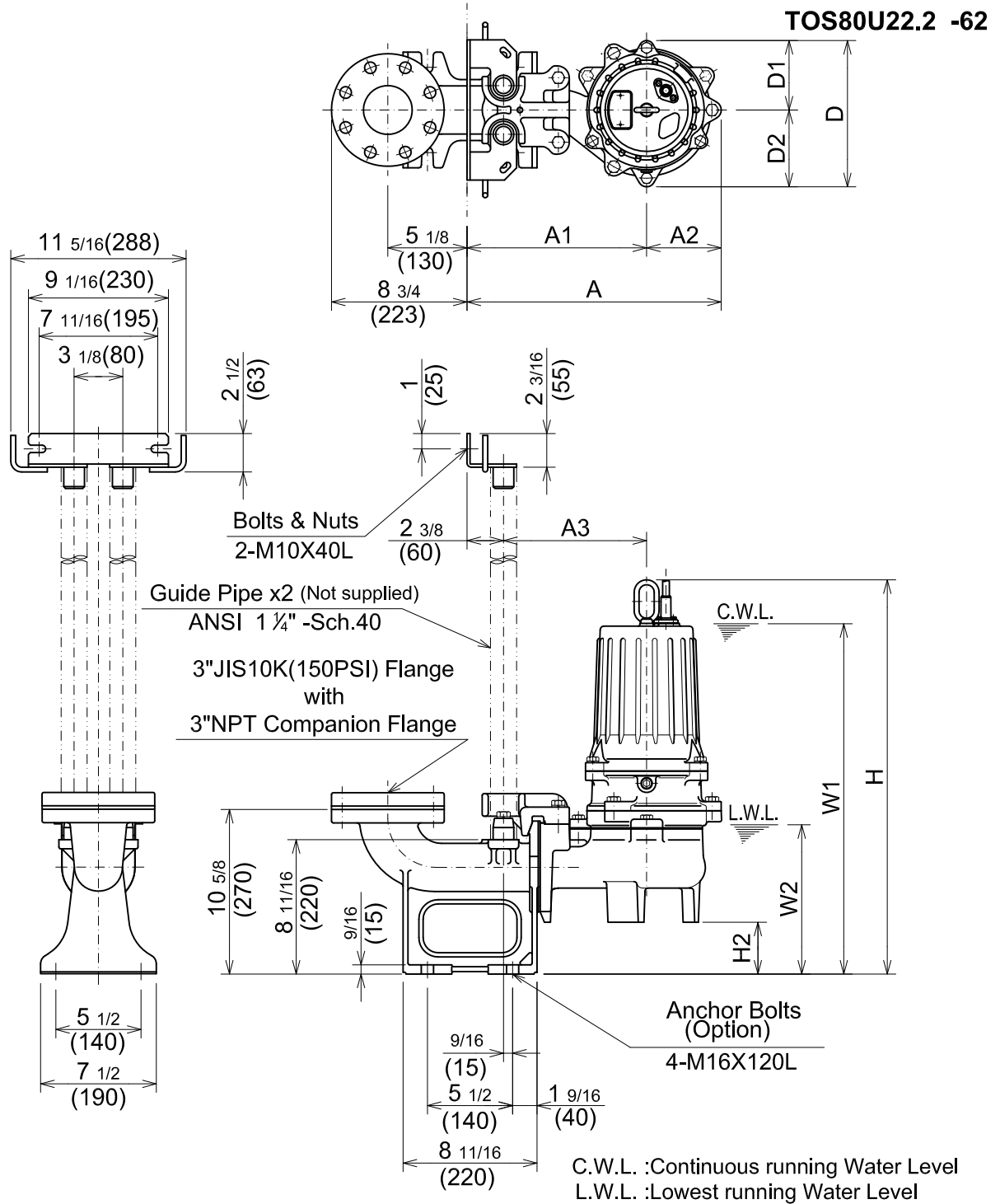
Model	kW	NOM. SIZE	Pump & Motor								C.W.L. W1	L.W.L. W2	*Wt. (kg)
			A	A1	A2	B	D	D1	D2	H			
80U22.2-62	2.2	80	520	297	123	225	240	114	126	562	490	160	53

\*Excluding Cable.

80U22.2-62



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	ASTM, AISI CODE	RELATED DIN CODE	QTY
1	Power Cable	PVC Sheath AWG14/4- 32ft			1
20	Pump Casing	Cast Iron	A48M Class30B	EN 1561 GJL-200	1
21	Impeller	Cast Iron	A48M Class30B	EN 1561 GJL-200	1
25	Mechanical Seal	Silicon Carbide / H-25			1
26	Oil Seal	NBR/TC355511			1
29	Oil Casing	Cast Iron	A48M Class30B	EN 1561 GJL-200	1
30	Oil Lifter	PBT Plastic W/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	Turbine Oil ISO VG32 or SAE 10W-20			
37	Discharge Bend	Cast Iron / 3"ANSI Flange(150PSI)	A48M Class30B	EN 1561 GJL-200	
52A	Upper Bearing	#6204ZZC3			1
52B	Lower Bearing	#6306ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 42000	1.4028	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Cast Iron	A48M Class25B	EN 1561 GJL-150	1
64	Motor Housing	Cast Iron	A48M Class25B	EN 1561 GJL-150	1
72	Lifting Lug Bolt	Stainless Steel	S 30400	1.4301	1



**DIMENSIONS:USCS(Inch)**

Model	HP	NOM. SIZE	Pump & Motor									C.W.L.	L.W.L.	Wt. (lbs.)
			A	A1	A2	A3	D	D1	D2	H	H2			
TOS80U22.2 -62	3	3"	16 7/16	11 5/8	4 13/16	9 1/4	9 7/16	4 1/2	4 15/16	25 1/2	3 3/8	22 5/8	9 5/8	112

**DIMENSIONS:METRIC(mm)**

Model	kW	NOM. SIZE	Pump & Motor									C.W.L.	L.W.L.	Wt. (kg)
			A	A1	A2	A3	D	D1	D2	H	H2			
TOS80U22.2 -62	2.2	80	418	295	123	235	240	114	126	647	85	575	245	51