TSURUMI PUMP

UZ - SERIES
VORTEX - SEWAGE & WASTE WATER PUMPS

SPECIFICATIONS

FEATURES

1. 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.

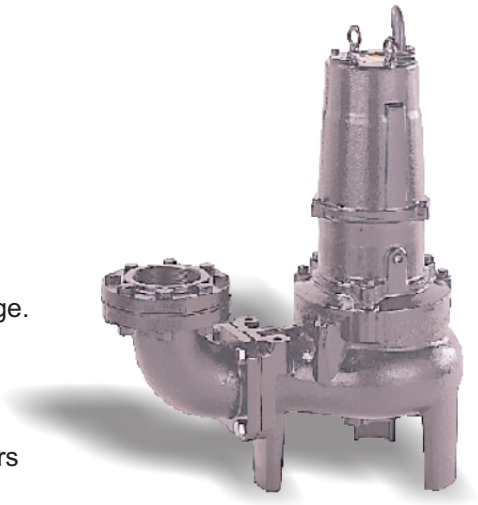
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

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.



OIL LIFTER (PAT. PEND) EQUIPPED

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

SPECIFICATIONS

Discharge Size	2 ~ 4” Npt (50 ~ 100 mm)
Horsepower Range	2 ~15 Hp. (1.5 ~ 11 kW)
Performance Range Capacity	26.4 ~ 740.0 Gpm. (.1 ~ 2.8 m^3/min)
Head	8.2 ~ 70.0Ft. (2.5 ~ 21.3 m)
Maximum water temperature	104 °F. (40 °C.)
Materials of Construction	
Casing	ASTM 48M Class 30B Cast Iron
Impeller	ASTM 48M Class 30B Cast Iron
Shaft	420,403 Stainless Steel
Motor Frame	ASTM 48M Class 30B Cast Iron
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Vortex, solids handling.
Solids Handling Capability	1.97 ~ 3.94” (50 ~ 100 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 1800 Rpm, 60 Hz.
Voltage, Phase	208-230, 460 or 575 V. (3 Phase)
Insulation	Class E, F
Accessories	Submersible Power Cable 32’ (10 m)
Operational Mode	Manual

STANDARD

Submersible Power Cable 32’ (10 m)

Manual

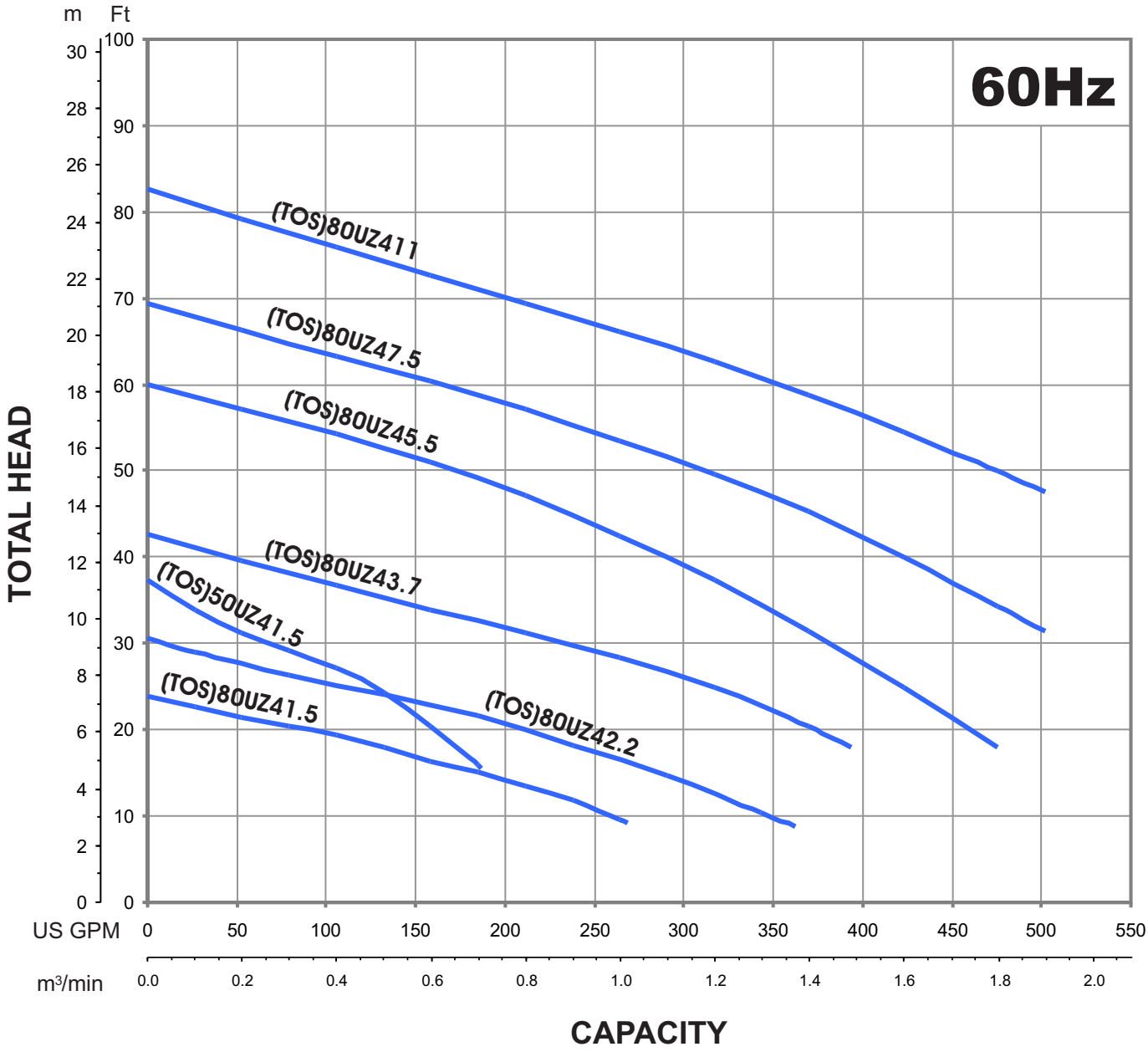
OPTIONS

Length as Required

TOS Slide rail system

TSURUMI PUMP	UZ series 2” - 3”	PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



TSURUMI PUMP

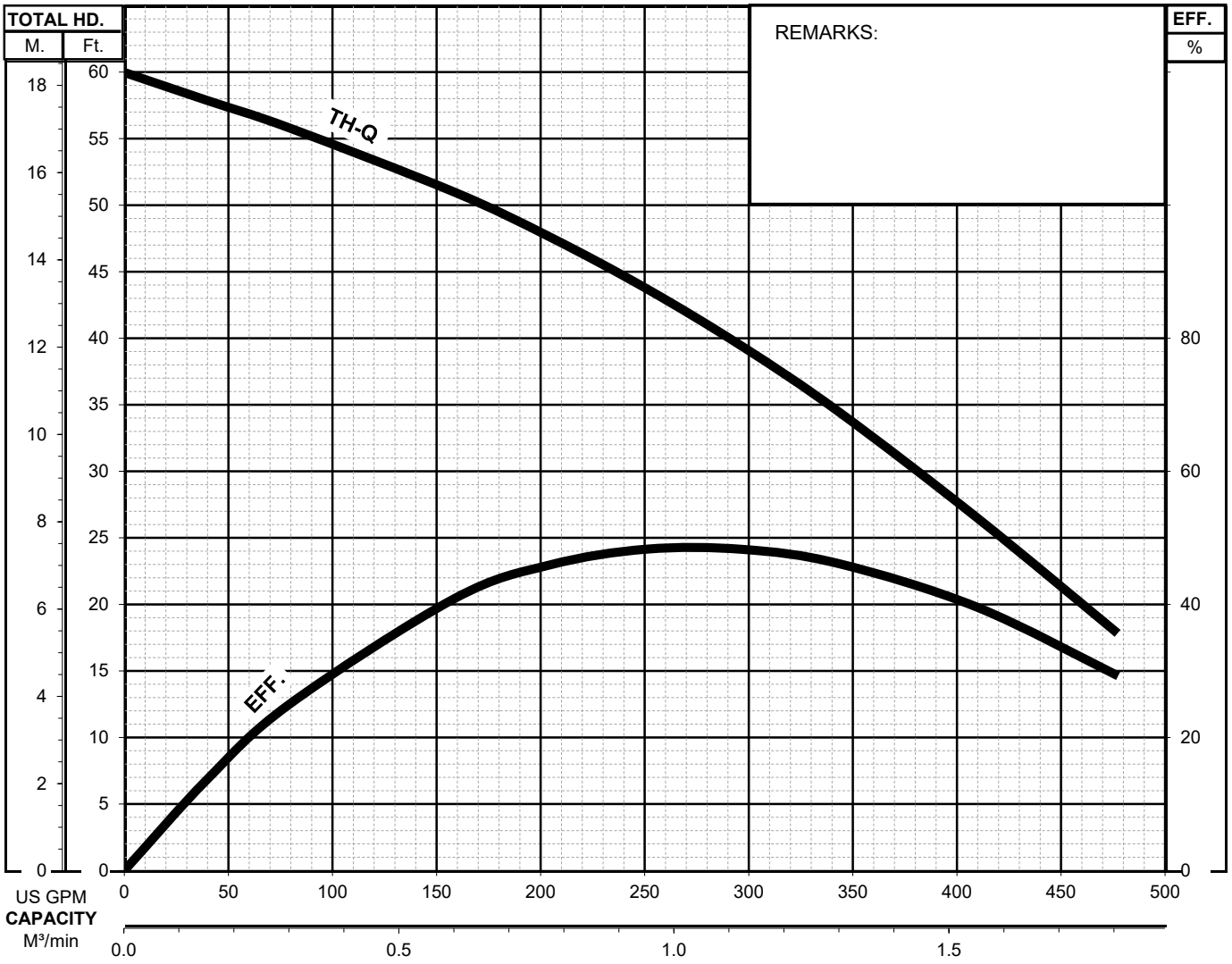
UZ - SERIES

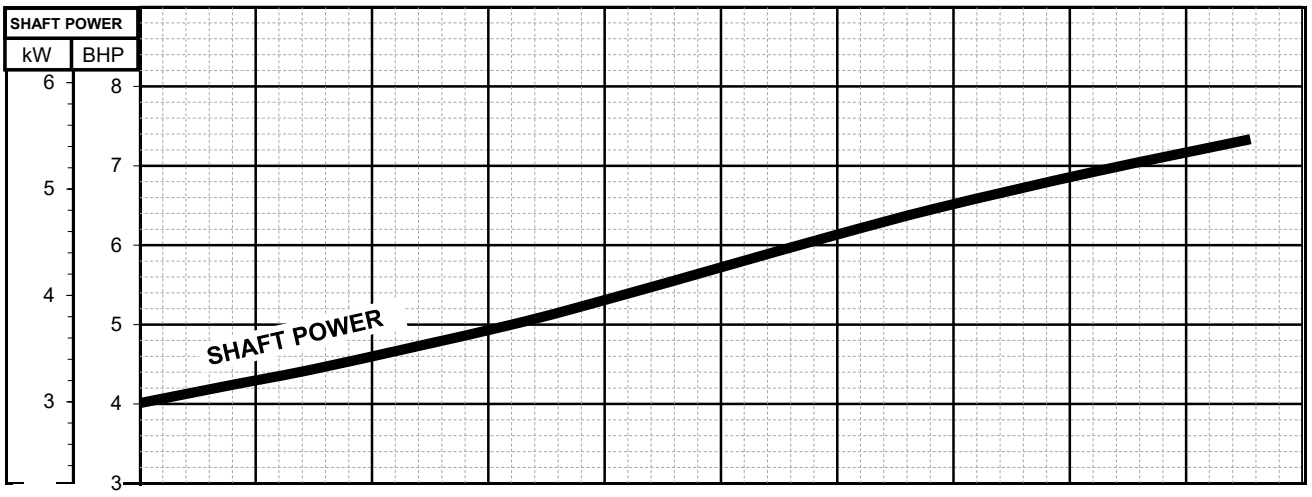
VORTEX - SEWAGE & WASTERWATER PUMPS

PERFORMANCE CURVE

MODEL		BORE	HP	kW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
(TOS)80UZ45.5-65		3"/80mm	7.5	5.5	1731	3.15"/80mm	Water	1.0	1.123cSt.	60°F
PUMP TYPE		**PHASE**	**VOLTAGE**		**AMPERAGE**		**HZ**	**STARTING METHOD**		**INS. CLASS**
Vortex-Sewage&Wastewater		3	208-230/460/575		22.2-20.8 / 10.4 / 8.3		60	Direct On Line		F
CURVE No.	**DATE**	**PHASE**	**VOLTAGE**		**AMPERAGE**		**HZ**	**STARTING METHOD**		**INS. CLASS**
-	-	-	-		-		-	-		-

REMARKS:





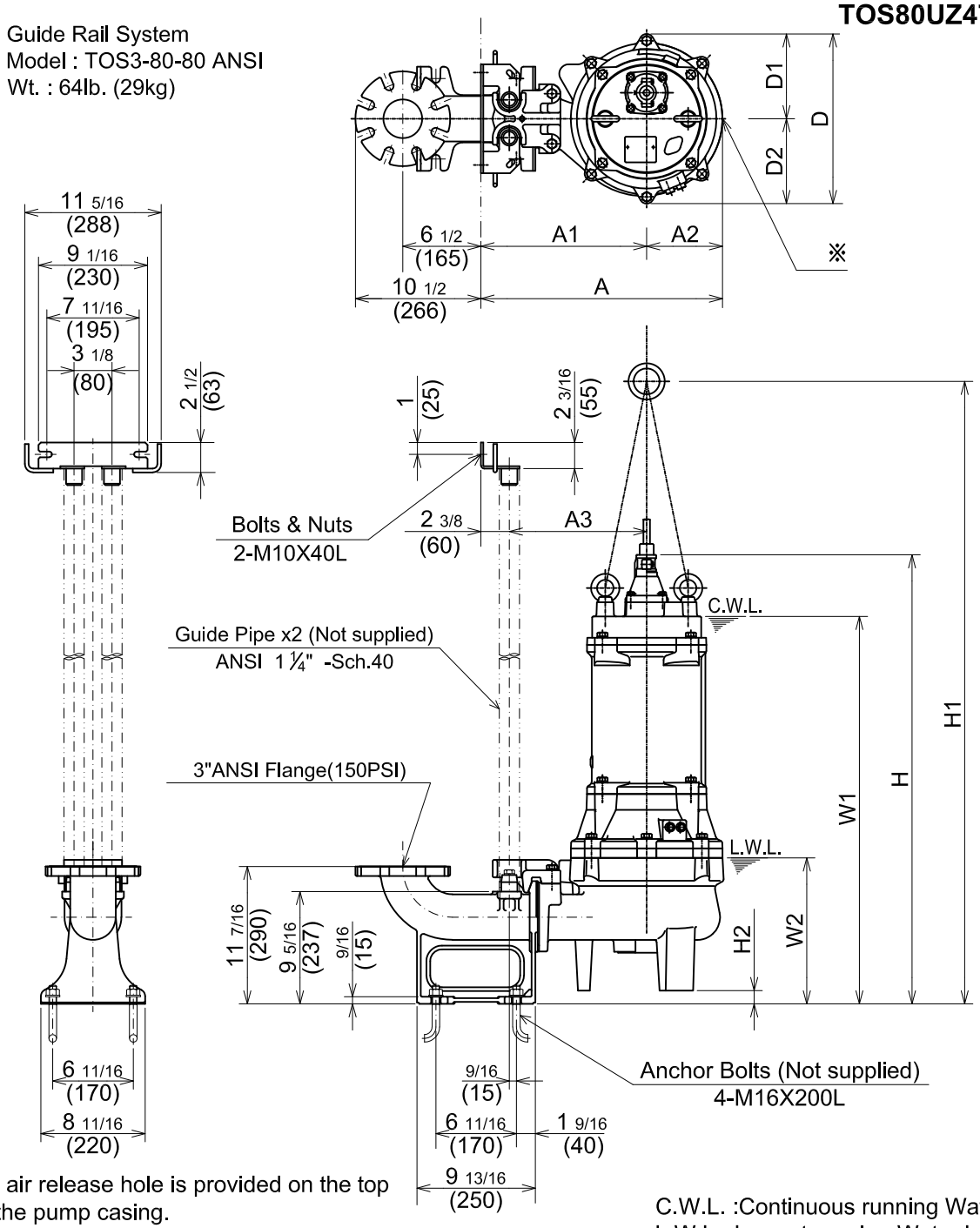
TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

TOS80UZ45.5 -65
TOS80UZ47.5 -65

Guide Rail System
Model : TOS3-80-80 ANSI
Wt. : 64lb. (29kg)



※An air release hole is provided on the top of the pump casing.

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

DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor										C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	(lbs.)
TOS80UZ45.5-65	7.5	3"	20 1/16	13 3/4	6 5/16	11 7/16	14 1/8	7 1/16	7 1/16	36 1/2	50 3/4	1 1/8	31 3/4	12 1/4	273
TOS80UZ47.5-65	10	3"	20 1/16	13 3/4	6 5/16	11 7/16	14 1/8	7 1/16	7 1/16	37 5/16	51 3/4	1 1/8	32 1/2	12 1/4	302

DIMENSIONS:METRIC (mm) *Excluding TOS & Cable

Model	kW	NOM.	Pump & Motor										C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	(kg)
TOS80UZ45.5-65	5.5	80	510	350	160	290	358	179	179	927	1289	28	805	310	124
TOS80UZ47.5-65	7.5	80	510	350	160	290	358	179	179	948	1314	28	825	310	137

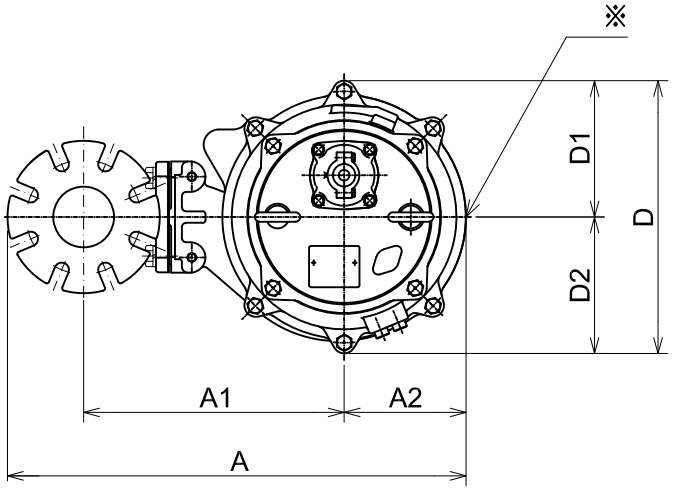
TSURUMI PUMP

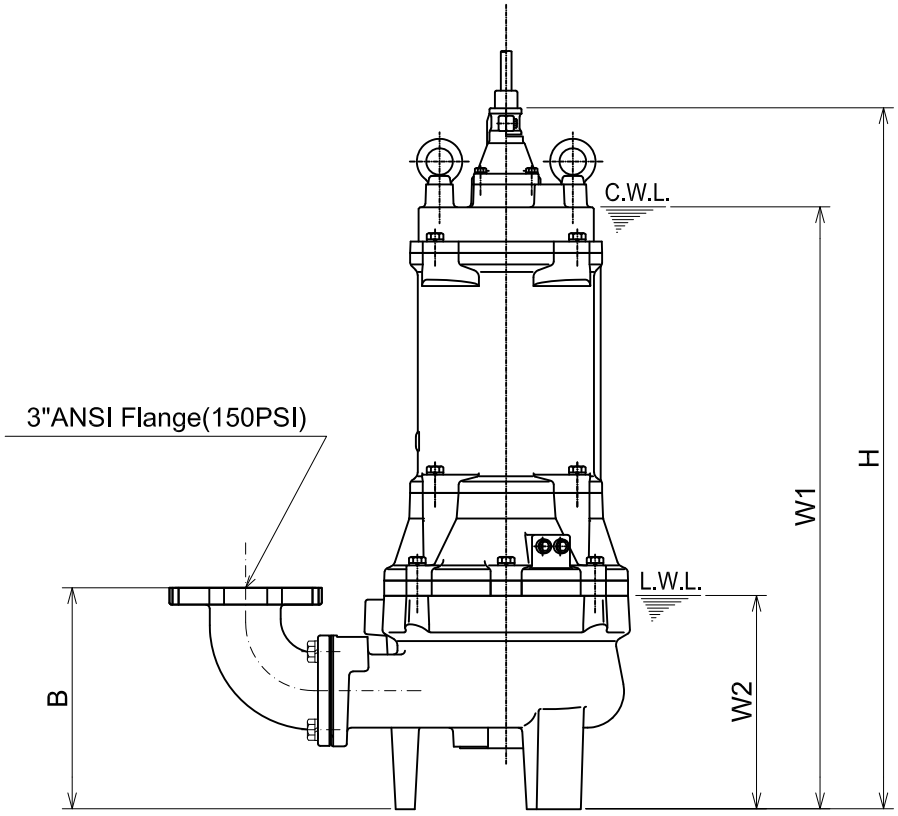
UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

80UZ45.5 -65
80UZ47.5 -65

Bend model:
BEND80-80 ANSI





※An air release hole is provided on the top of the pump casing.

C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water 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.)
80UZ45.5-65	7.5	3"	24 1/8	13 7/8	6 5/16	11 7/16	14 1/8	7 1/16	7 1/16	35 3/8	30 1/2	11	277
80UZ47.5-65	10	3"	24 1/8	13 7/8	6 5/16	11 7/16	14 1/8	7 1/16	7 1/16	36 1/4	31 1/4	11	300

DIMENSIONS:METRIC (mm) *Excluding Cable

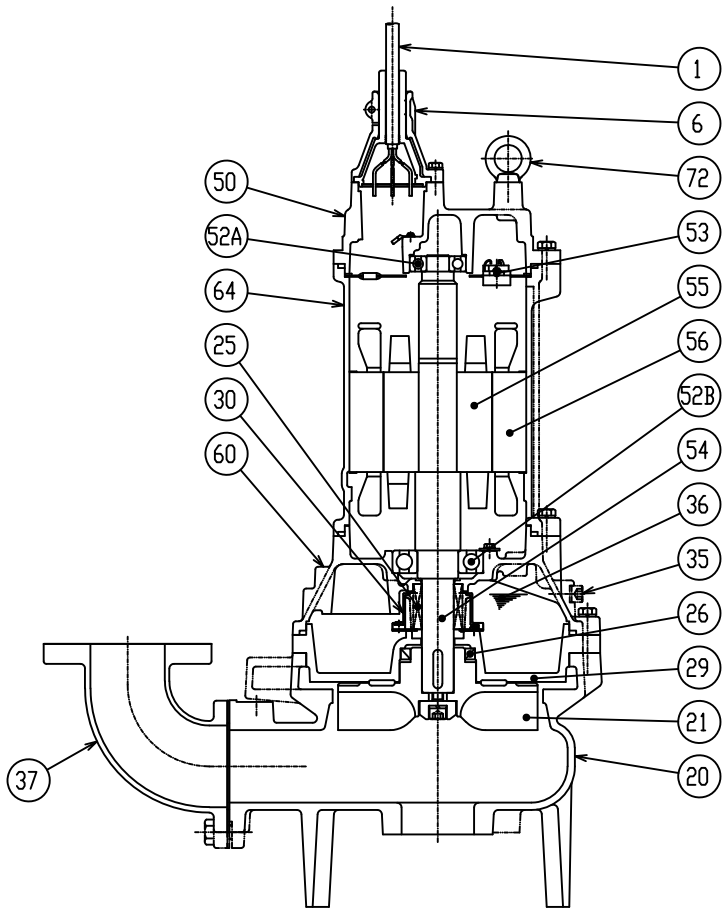
Model	kW	NOM.	Pump & Motor								C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
80UZ45.5-65	5.5	80	613	352	160	290	358	179	179	899	775	280	126
80UZ47.5-65	7.5	80	613	352	160	290	358	179	179	920	795	280	136

TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

SECTIONAL VIEW

80UZ45.5 -65
80UZ47.5 -65
100UZ45.5 -65
100UZ47.5 -65



	UZ45.5	UZ47.5
* 1	AWG 12/4-32ft	AWG 10/4-32ft
* 2	#AC-6305ZZC3	#AC-6306ZZC3

PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	Chloroprene Sheath *1			1
6	Stuffing Box	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
20	Pump Casing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
21	Impeller	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
25	Mechanical Seal	Silicon Carbide / H-35A			1
26	Oil Seal	NBR / TC608212			1
29	Oil Casing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
30	Oil Lifter	PBT Plastic w/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	2
36	Lubricant	Turbine Oil ISO VG32 or SAE10W-20			
37	Discharge Bend	Cast Iron / 3" or 4" ANSI Flange(150PSI)	A48M Class 30B	EN 1561 GJL-200	1
50	Motor Bracket	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
52A	Upper Bearing	*2			1
52B	Lower Bearing	#6309ZZC3			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 Class 30B	EN 1561 GJL-200	1
64	Motor Housing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
72	Lifting Lug Bolt	Steel	A283 Grade D	EN 10025 S275	2

TSURUMI PUMP	UZ - SERIES 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^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, 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^2) flat face flange and NPT companion flange. Impellers shall be of the 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 or F 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

UZ - SERIES
VORTEX - SEWAGE & WASTE WATER PUMPS

SPECIFICATIONS

FEATURES

1. 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.

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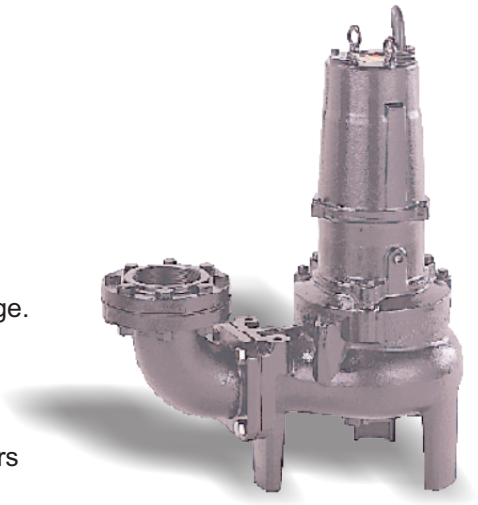


OIL LIFTER (PAT. PEND) EQUIPPED

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

SPECIFICATIONS

Discharge Size	2 ~ 4” Npt (50 ~ 100 mm)
Horsepower Range	2 ~15 Hp. (1.5 ~ 11 kW)
Performance Range Capacity	26.4 ~ 740.0 Gpm. (.1 ~ 2.8 m^3/min)
Head	8.2 ~ 70.0Ft. (2.5 ~ 21.3 m)
Maximum water temperature	104 °F. (40 °C.)
Materials of Construction	
Casing	ASTM 48M Class 30B Cast Iron
Impeller	ASTM 48M Class 30B Cast Iron
Shaft	420,403 Stainless Steel
Motor Frame	ASTM 48M Class 30B Cast Iron
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Vortex, solids handling.
Solids Handling Capability	1.97 ~ 3.94” (50 ~ 100 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 1800 Rpm, 60 Hz.
Voltage, Phase	208-230, 460 or 575 V. (3 Phase)
Insulation	Class E, F
Accessories	Submersible Power Cable 32’ (10 m)
Operational Mode	Manual

STANDARD

Submersible Power Cable 32’ (10 m)

Manual

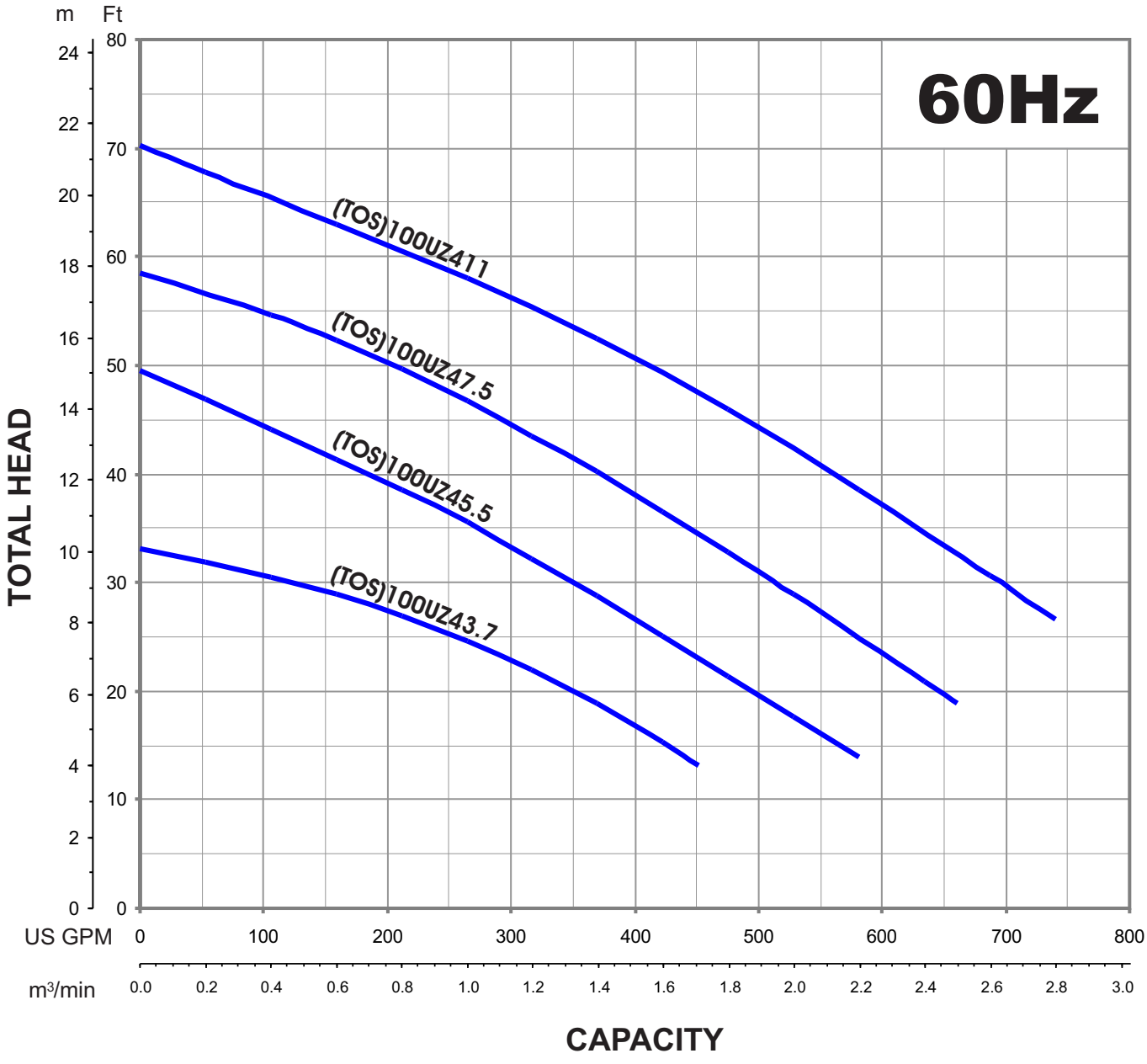
OPTIONS

Length as Required

TOS Slide rail system

TSURUMI PUMP	UZ series 4”	PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



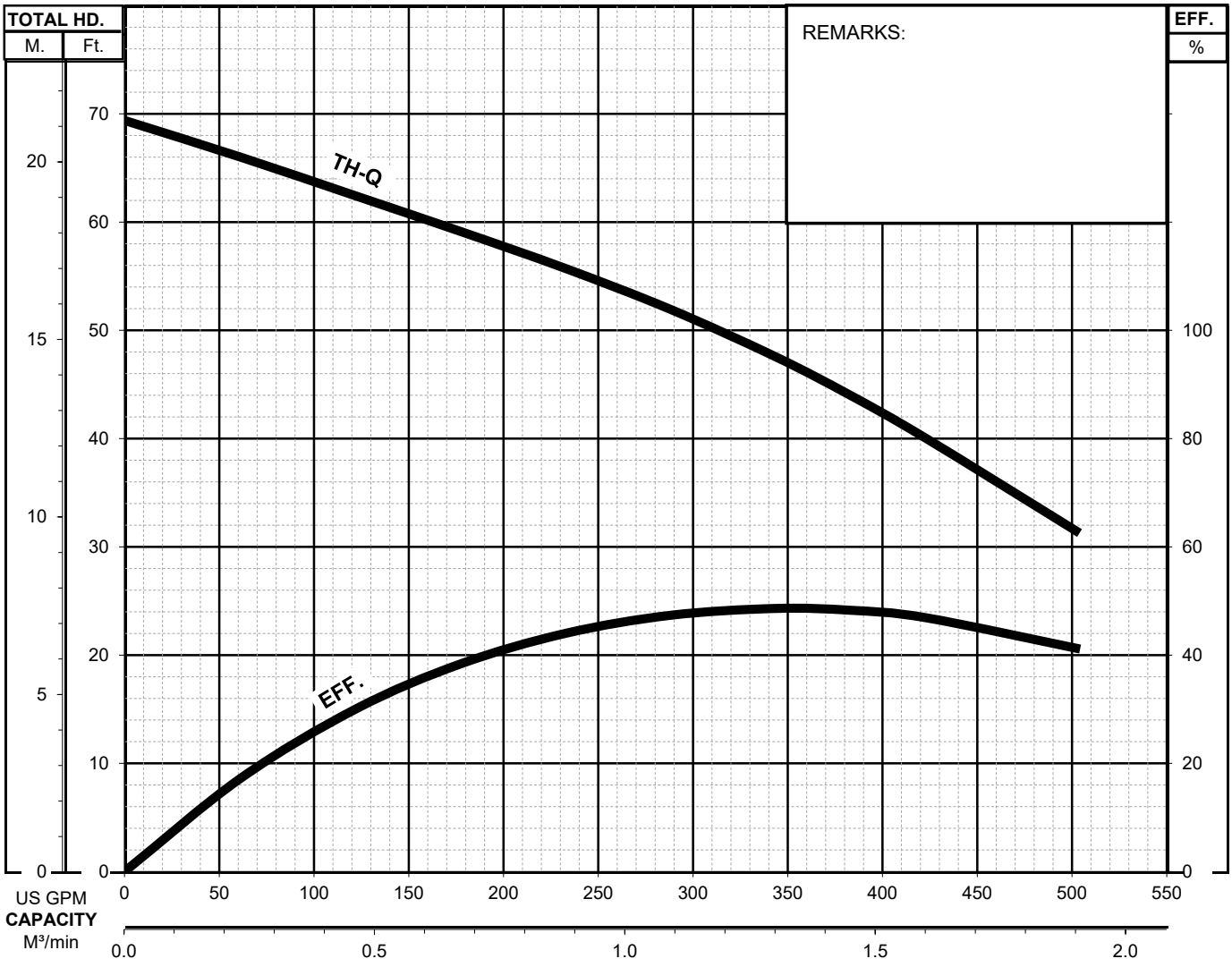
TSURUMI PUMP

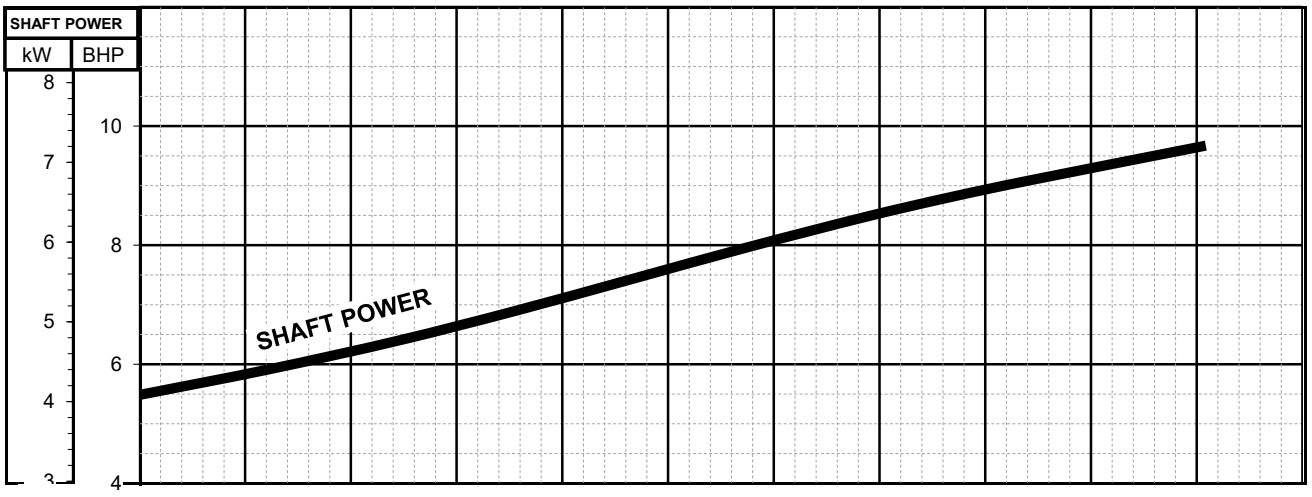
UZ - SERIES

VORTEX - SEWAGE & WASTERWATER PUMPS

PERFORMANCE CURVE

MODEL		BORE	HP	kW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
(TOS)80UZ47.5-65		3"/80mm	10	7.5	1735	3.15"/80mm	Water	1.0	1.123cSt.	60°F
PUMP TYPE		**PHASE**	**VOLTAGE**		**AMPERAGE**	**HZ**	**STARTING METHOD**			**INS. CLASS**
Vortex-Sewage&Wastewater		3	208-230/460/575		29.8-28.0 / 14.0 / 11.5	60	Direct On Line			F
CURVE No.	**DATE**	**PHASE**	**VOLTAGE**		**AMPERAGE**	**HZ**	**STARTING METHOD**			**INS. CLASS**
-	-	-	-		-	-	-			-





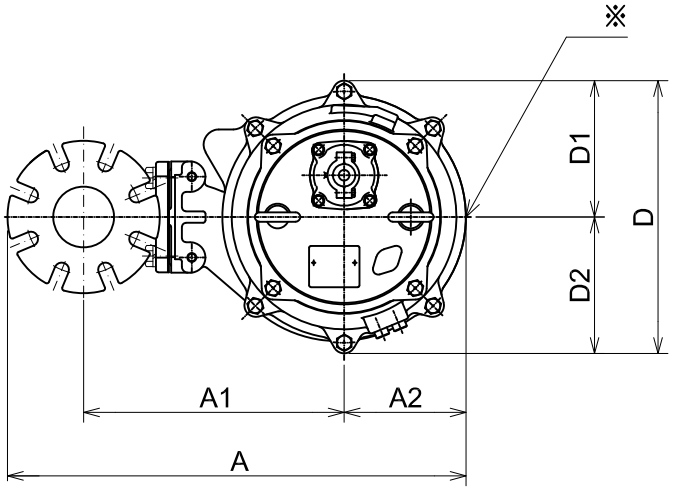
TSURUMI PUMP

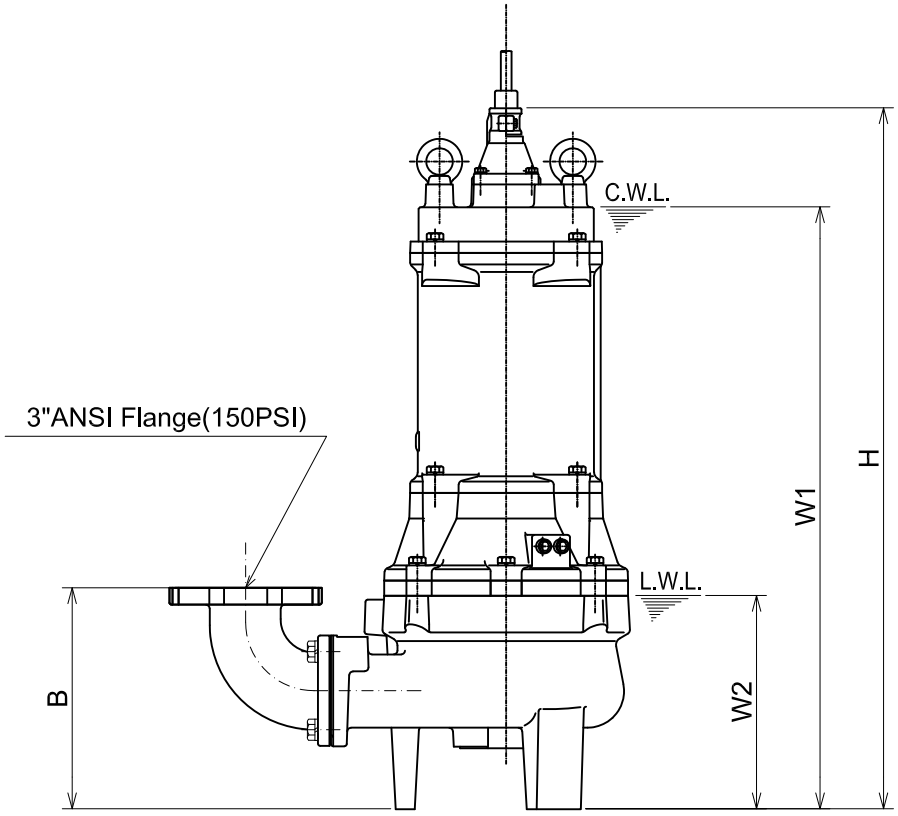
UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

80UZ45.5 -65
80UZ47.5 -65

Bend model:
BEND80-80 ANSI





※An air release hole is provided on the top of the pump casing.

C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water 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.)
80UZ45.5-65	7.5	3"	24 1/8	13 7/8	6 5/16	11 7/16	14 1/8	7 1/16	7 1/16	35 3/8	30 1/2	11	277
80UZ47.5-65	10	3"	24 1/8	13 7/8	6 5/16	11 7/16	14 1/8	7 1/16	7 1/16	36 1/4	31 1/4	11	300

DIMENSIONS:METRIC (mm) *Excluding Cable

Model	kW	NOM.	Pump & Motor								C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
80UZ45.5-65	5.5	80	613	352	160	290	358	179	179	899	775	280	126
80UZ47.5-65	7.5	80	613	352	160	290	358	179	179	920	795	280	136

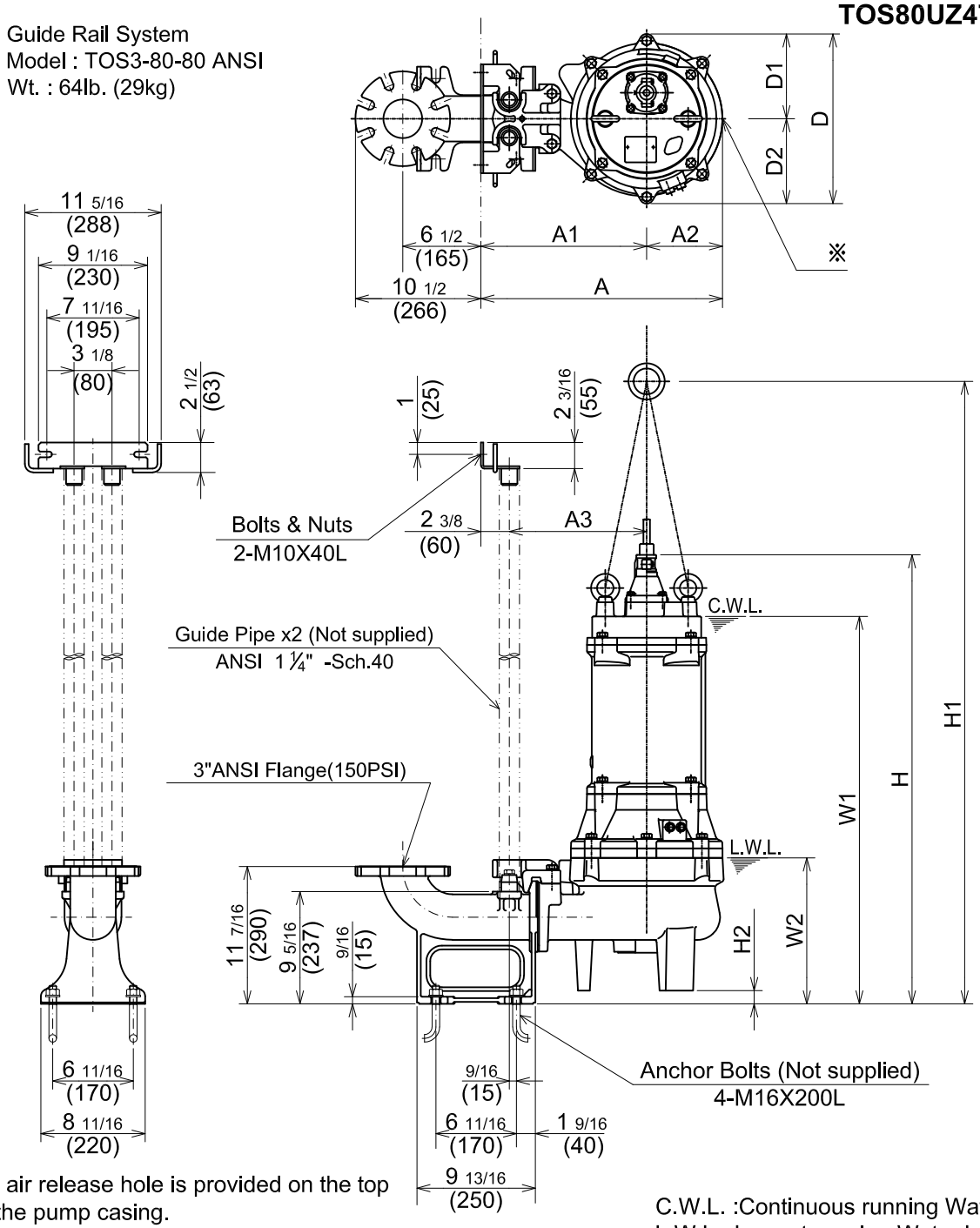
TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

TOS80UZ45.5 -65
TOS80UZ47.5 -65

Guide Rail System
Model : TOS3-80-80 ANSI
Wt. : 64lb. (29kg)



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

DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor										C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	(lbs.)
TOS80UZ45.5-65	7.5	3"	20 1/16	13 3/4	6 5/16	11 7/16	14 1/8	7 1/16	7 1/16	36 1/2	50 3/4	1 1/8	31 3/4	12 1/4	273
TOS80UZ47.5-65	10	3"	20 1/16	13 3/4	6 5/16	11 7/16	14 1/8	7 1/16	7 1/16	37 5/16	51 3/4	1 1/8	32 1/2	12 1/4	302

DIMENSIONS:METRIC (mm) *Excluding TOS & Cable

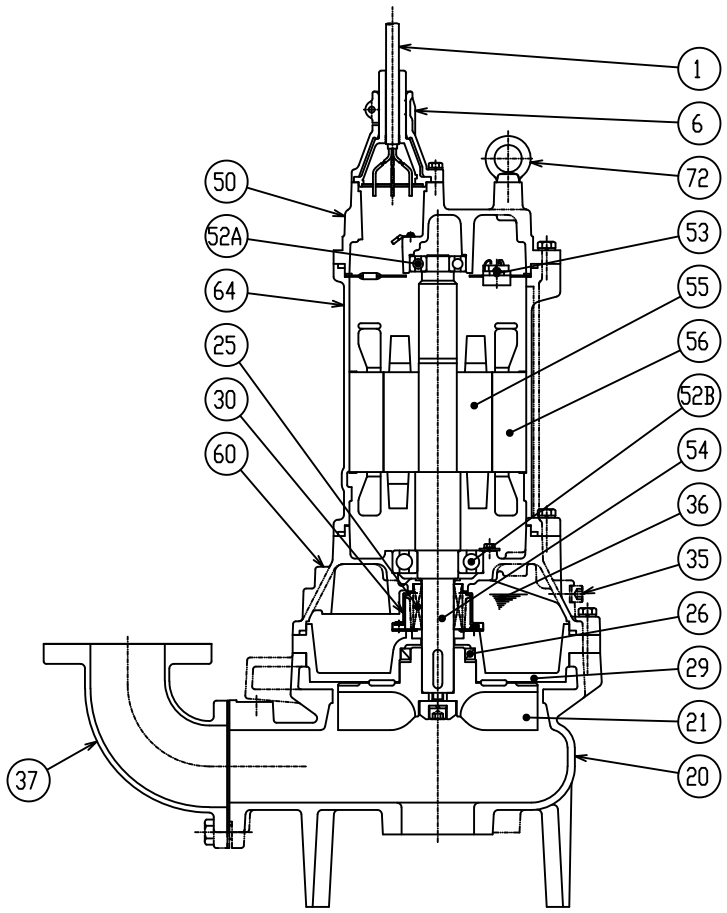
Model	kW	NOM.	Pump & Motor										C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	(kg)
TOS80UZ45.5-65	5.5	80	510	350	160	290	358	179	179	927	1289	28	805	310	124
TOS80UZ47.5-65	7.5	80	510	350	160	290	358	179	179	948	1314	28	825	310	137

TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

SECTIONAL VIEW

80UZ45.5 -65
80UZ47.5 -65
100UZ45.5 -65
100UZ47.5 -65



	UZ45.5	UZ47.5
* 1	AWG 12/4-32ft	AWG 10/4-32ft
* 2	#AC-6305ZZC3	#AC-6306ZZC3

PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	Chloroprene Sheath *1			1
6	Stuffing Box	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
20	Pump Casing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
21	Impeller	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
25	Mechanical Seal	Silicon Carbide / H-35A			1
26	Oil Seal	NBR / TC608212			1
29	Oil Casing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
30	Oil Lifter	PBT Plastic w/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	2
36	Lubricant	Turbine Oil ISO VG32 or SAE10W-20			
37	Discharge Bend	Cast Iron / 3" or 4" ANSI Flange(150PSI)	A48M Class 30B	EN 1561 GJL-200	1
50	Motor Bracket	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
52A	Upper Bearing	*2			1
52B	Lower Bearing	#6309ZZC3			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 Class 30B	EN 1561 GJL-200	1
64	Motor Housing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
72	Lifting Lug Bolt	Steel	A283 Grade D	EN 10025 S275	2

TSURUMI PUMP	UZ - SERIES 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^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, 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^2) flat face flange and NPT companion flange. Impellers shall be of the 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 or F 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

UZ - SERIES
VORTEX - SEWAGE & WASTE WATER PUMPS

SPECIFICATIONS

FEATURES

1. 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.

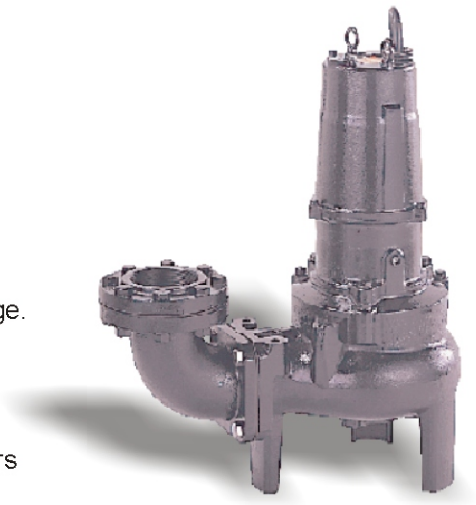
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

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.



OIL LIFTER EQUIPPED

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

SPECIFICATIONS

Discharge Size	2 ~ 4" Npt (50 ~ 100 mm)
Horsepower Range	2 ~15 Hp. (1.5 ~ 11 Kw)
Performance Range Capacity	26.4 ~ 740.0 Gpm. (.1 ~ 2.8 m^3/min)
Head	8.2 ~ 70.0Ft. (2.5 ~ 21.3 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing	ASTM 48 Class 35 Cast Iron
Impeller	ASTM 48 Class 35 Cast Iron
Shaft	420,403 Stainless Steel
Motor Frame	ASTM 48 Class 35 Cast Iron
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Vortex, solids handling.
Solids Handling Capability	1.97 ~ 3.94" (50 ~ 100 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 1800 Rpm, 60 Hz.
Voltage, Phase	208-230, 460 or 575 V. (3 Phase)
Insulation	Class E, F
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Manual

STANDARD

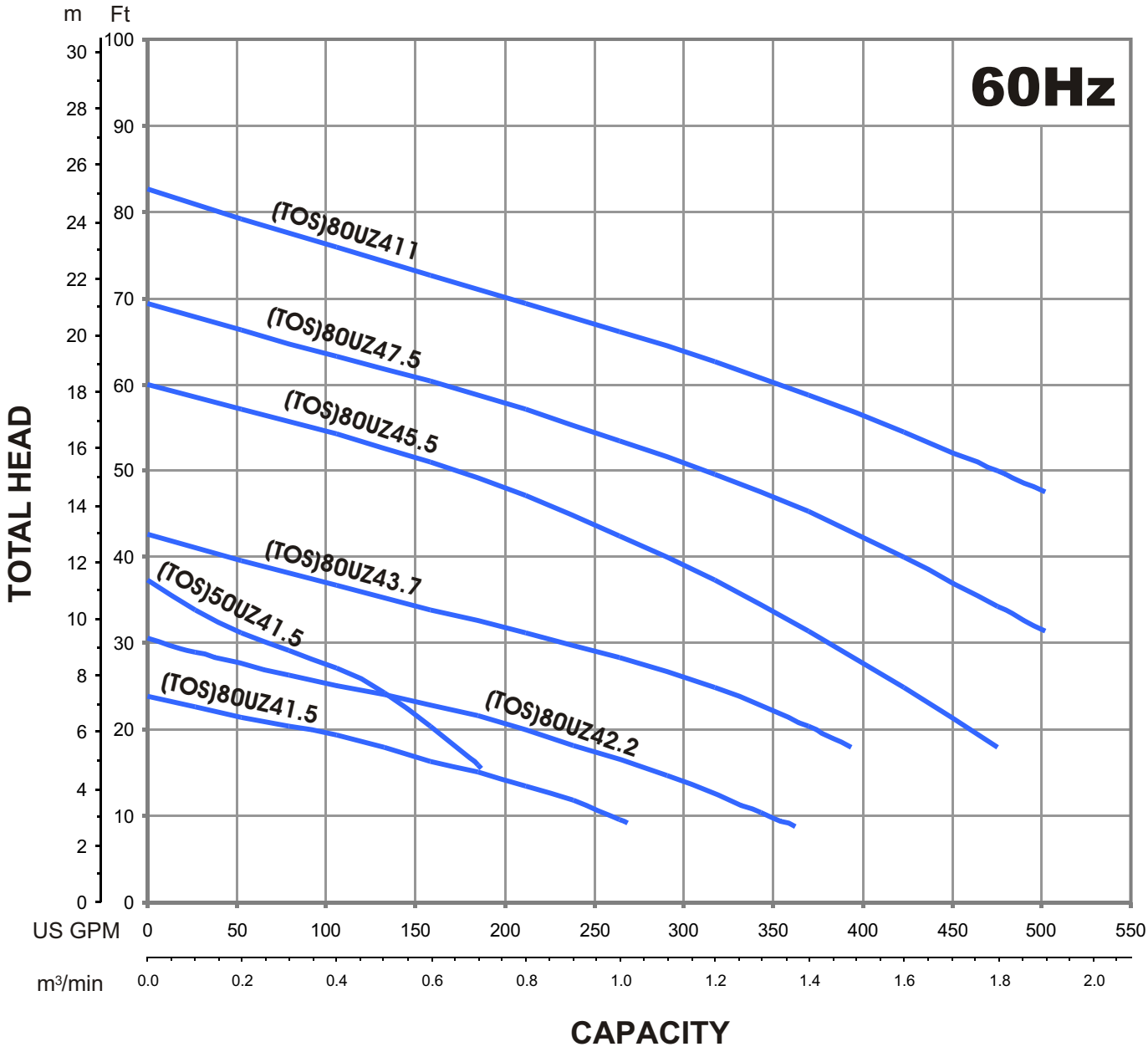
OPTIONS

Length as Required

TOS Slide rail system

TSURUMI PUMP	UZ series 2″ - 3″	PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

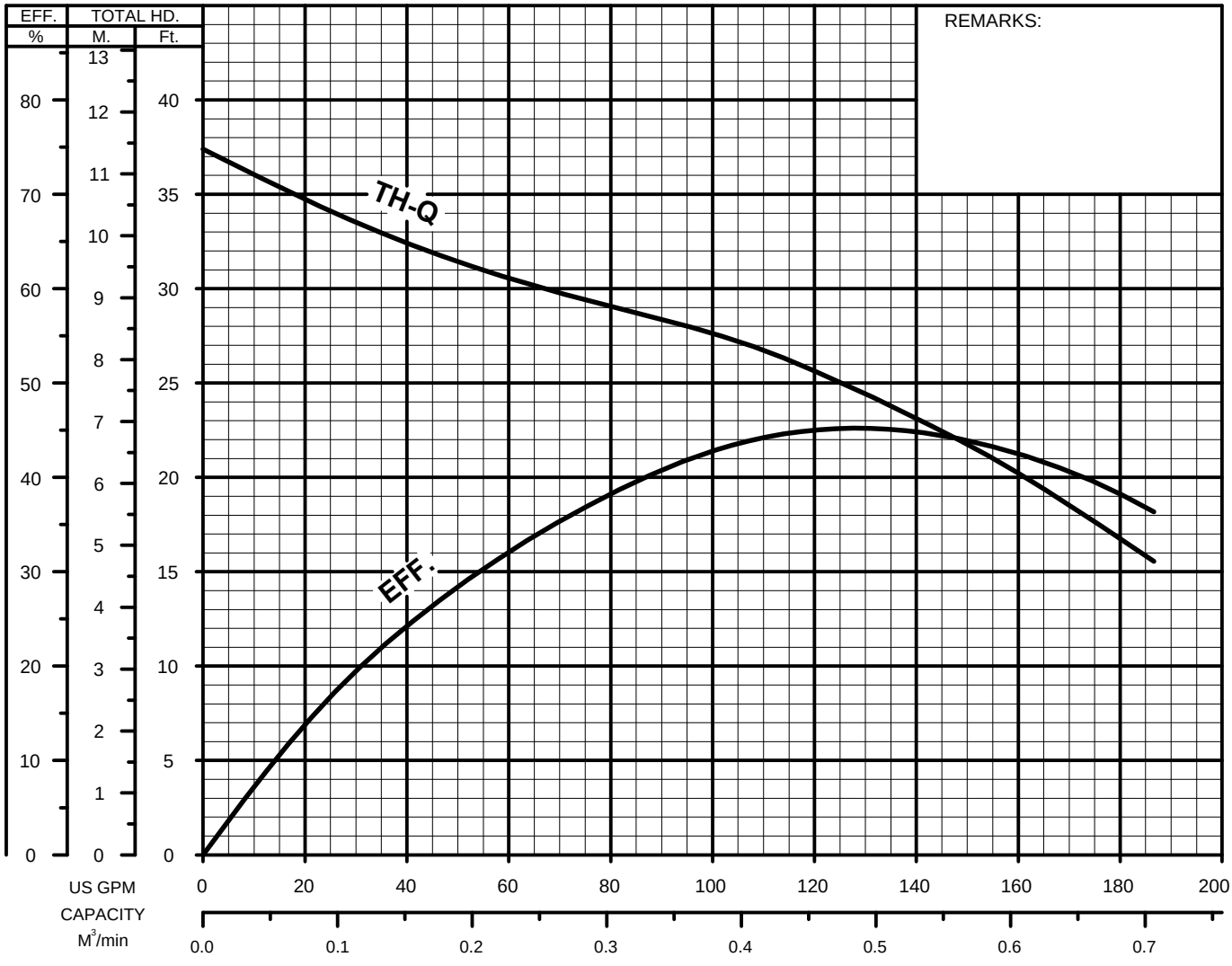
PERFORMANCE CURVE

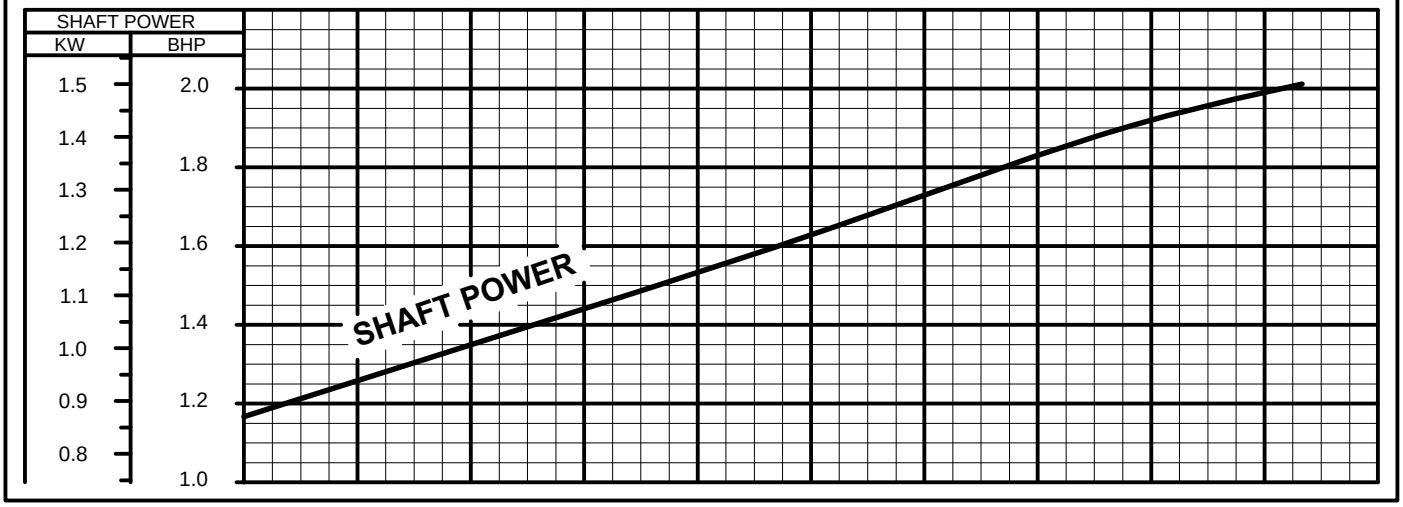
MODEL	BORE	HP	KW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
(TOS)50UZ41.5 -61	2"/50mm	2	1.5	1700	1.97"/50mm	Water	1.0	1.123cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS.CLASS
Vortex-Sewage&Wastewater	3	208-230/460/575	7.3-7.0/3.5/2.9	60	Direct On Line	E

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

REMARKS:



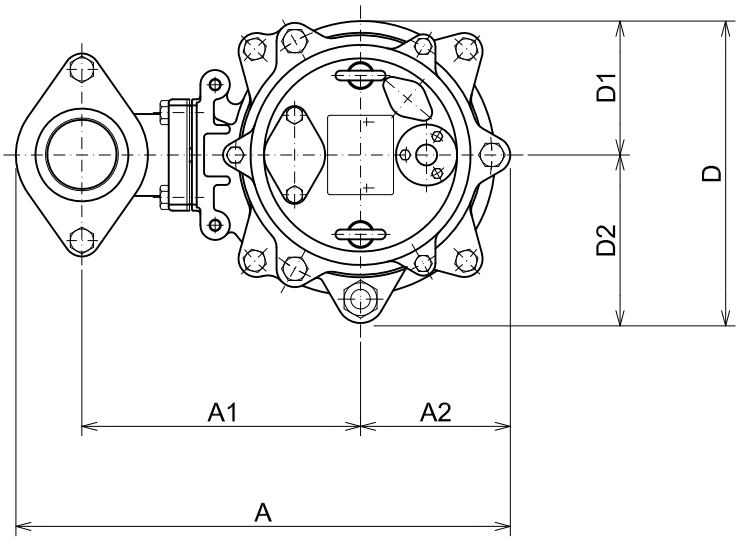


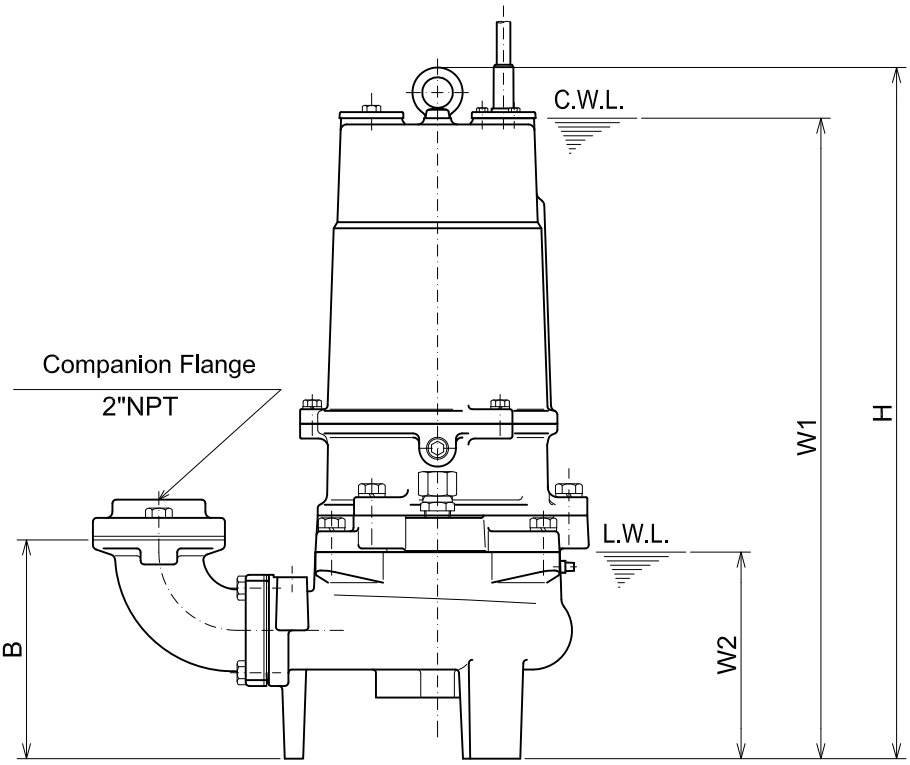
TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

50UZ41.5 -61





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.)
50UZ41.5 -61	2	2"	15 15/16	9	4 13/16	7 1/16	9 3/4	4 5/16	5 7/16	22 5/16	20 5/8	6 3/4	115

*Excluding Cable.

DIMENSIONS:METRIC(mm)

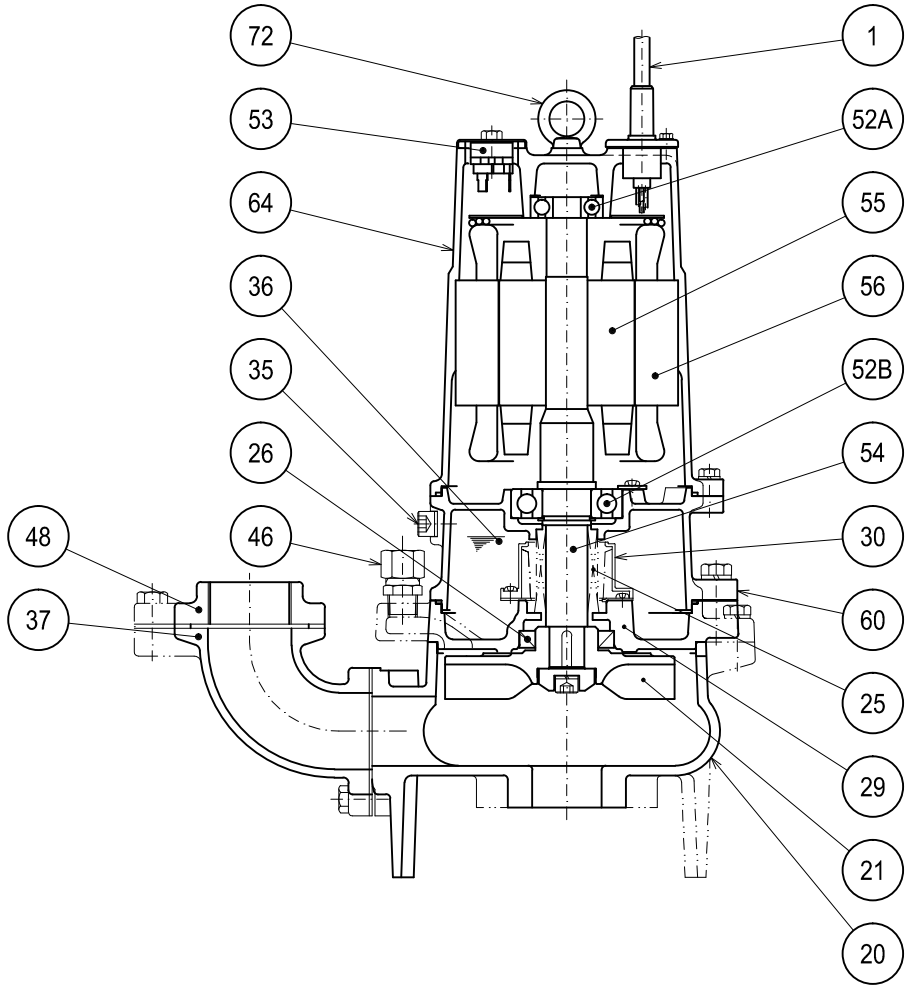
Model	kW	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	*Wt.
			A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
50UZ41.5 -61	1.5	50	405	228	123	179	248	110	138	566	525	170	52

TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

SECTIONAL VIEW

50UZ41.5 -61



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM,AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG 16/4-32ft			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-30A			1
26	Oil Seal	NBR / TC456812			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	S 42000	EN 1561 GJL-200	1
46	Air Release Valve	Stainless Steel	S 30400	1.4301	1
48	Companion Flange	Cast Iron / NPT 2"	A48M Class30B	EN 1561 GJL-200	1
52A	Upper Bearing	AC-#6304ZZC3			1
52B	Lower Bearing	#6307ZZC3			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	2

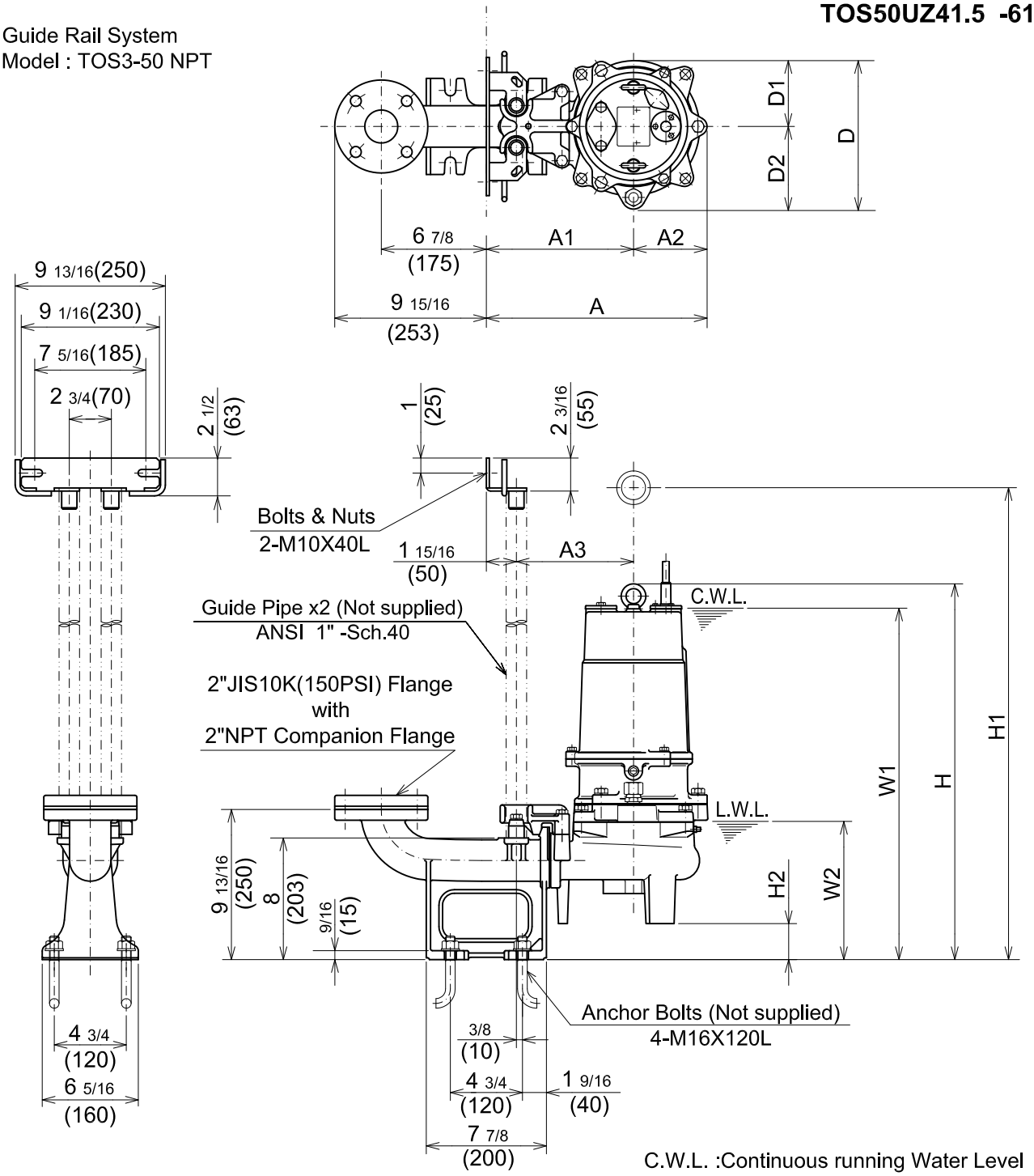
TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

TOS50UZ41.5 -61

Guide Rail System
Model : TOS3-50 NPT



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. (lbs.)
			A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	
TOS50UZ41.5 -61	2	2"	14 1/2	9 5/8	4 13/16	7 11/16	9 3/4	4 5/16	5 7/16	24 5/8	29 7/16	2 3/8	23	9	110

*Excluding Cable & TOS

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	H1	H2	W1	W2	
TOS50UZ41.5 -61	1.5	50	368	245	123	195	248	110	138	626	747	60	585	230	50

TSURUMI PUMP	UZ - SERIES 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^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, and discharge elbow shall be manufactured from gray cast iron, ASTM A48 CLASS 30. 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^2) flat face flange and NPT companion flange. Impellers shall be of the 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 or F 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 25. 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

UZ - SERIES
VORTEX - SEWAGE & WASTE WATER PUMPS

SPECIFICATIONS

FEATURES

1. 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.

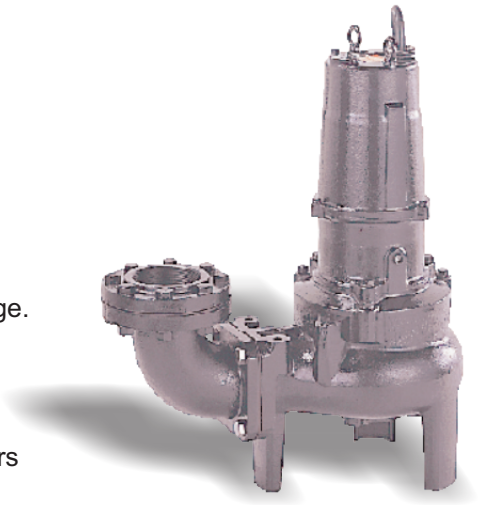
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

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.



OIL LIFTER (PAT. PEND) EQUIPPED

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

SPECIFICATIONS

Discharge Size	2 ~ 4” Npt (50 ~ 100 mm)
Horsepower Range	2 ~15 Hp. (1.5 ~ 11 kW)
Performance Range Capacity	26.4 ~ 740.0 Gpm. (.1 ~ 2.8 m^3/min)
Head	8.2 ~ 70.0Ft. (2.5 ~ 21.3 m)
Maximum water temperature	104 °F. (40 °C.)
Materials of Construction	
Casing	ASTM 48M Class 30B Cast Iron
Impeller	ASTM 48M Class 30B Cast Iron
Shaft	420,403 Stainless Steel
Motor Frame	ASTM 48M Class 30B Cast Iron
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Vortex, solids handling.
Solids Handling Capability	1.97 ~ 3.94” (50 ~ 100 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 1800 Rpm, 60 Hz.
Voltage, Phase	208-230, 460 or 575 V. (3 Phase)
Insulation	Class E, F
Accessories	Submersible Power Cable 32’ (10 m)
Operational Mode	Manual

STANDARD

Submersible Power Cable 32’ (10 m)

Manual

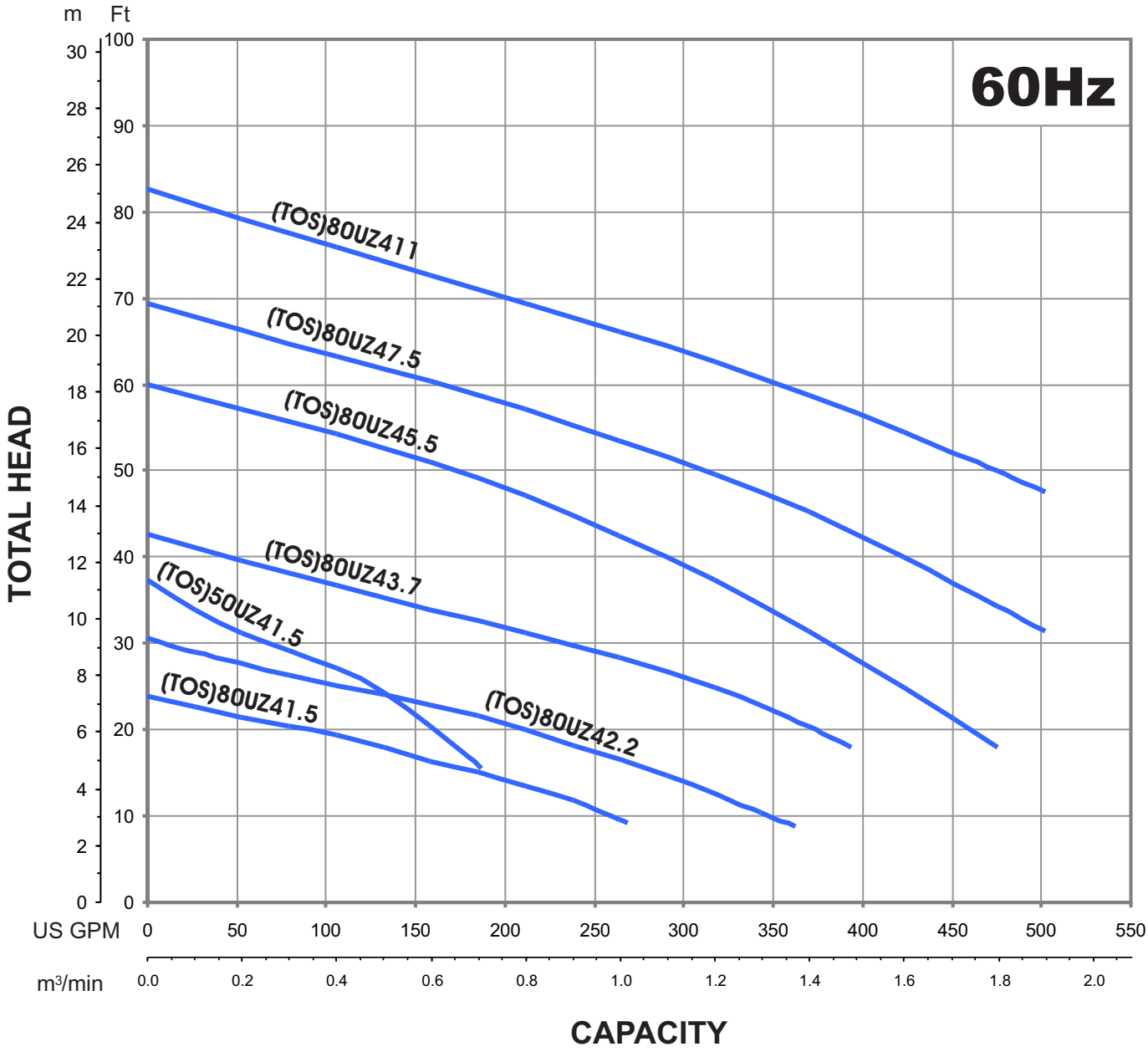
OPTIONS

Length as Required

TOS Slide rail system

TSURUMI PUMP	UZ series 2” - 3”	PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

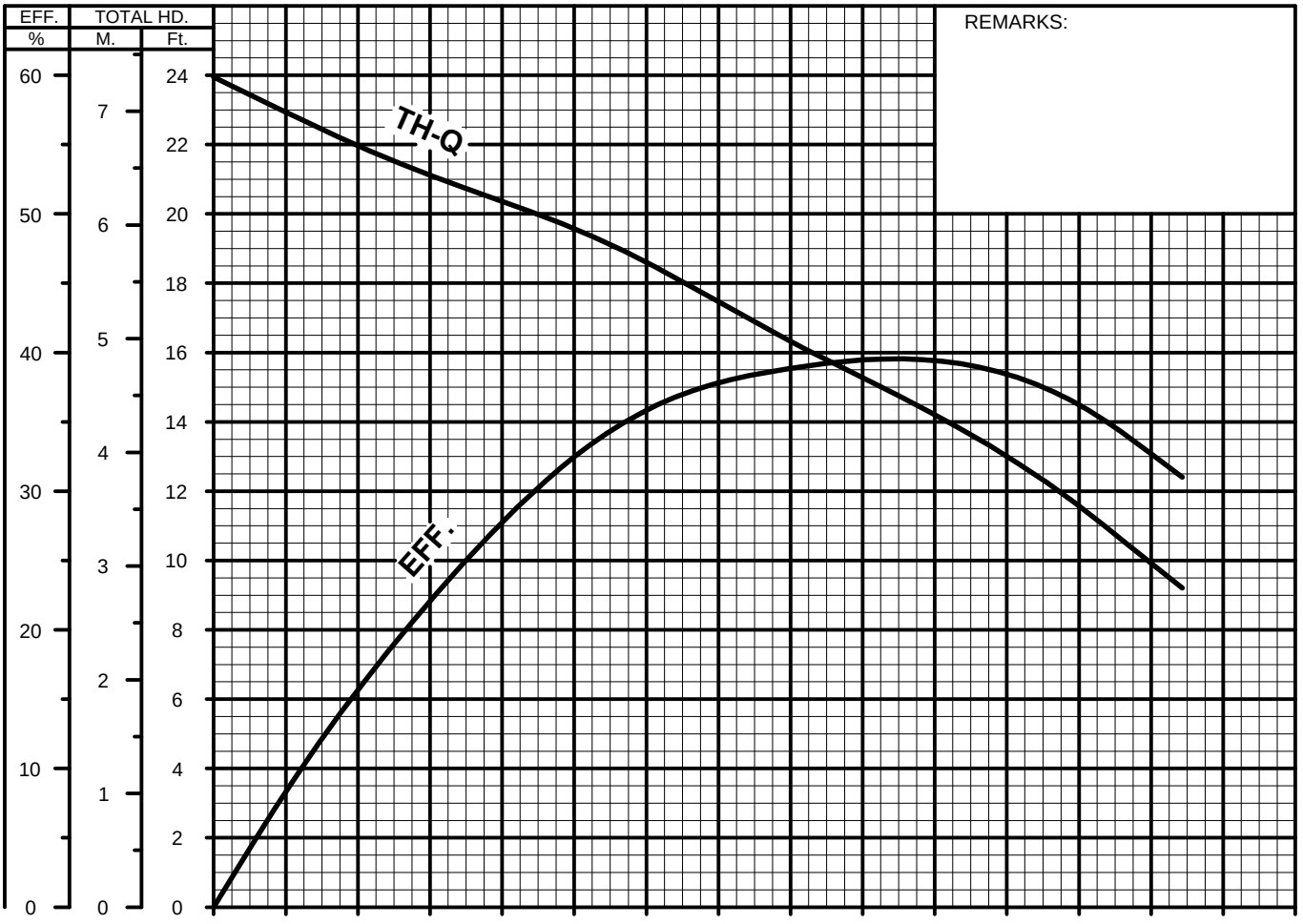
PERFORMANCE CURVE

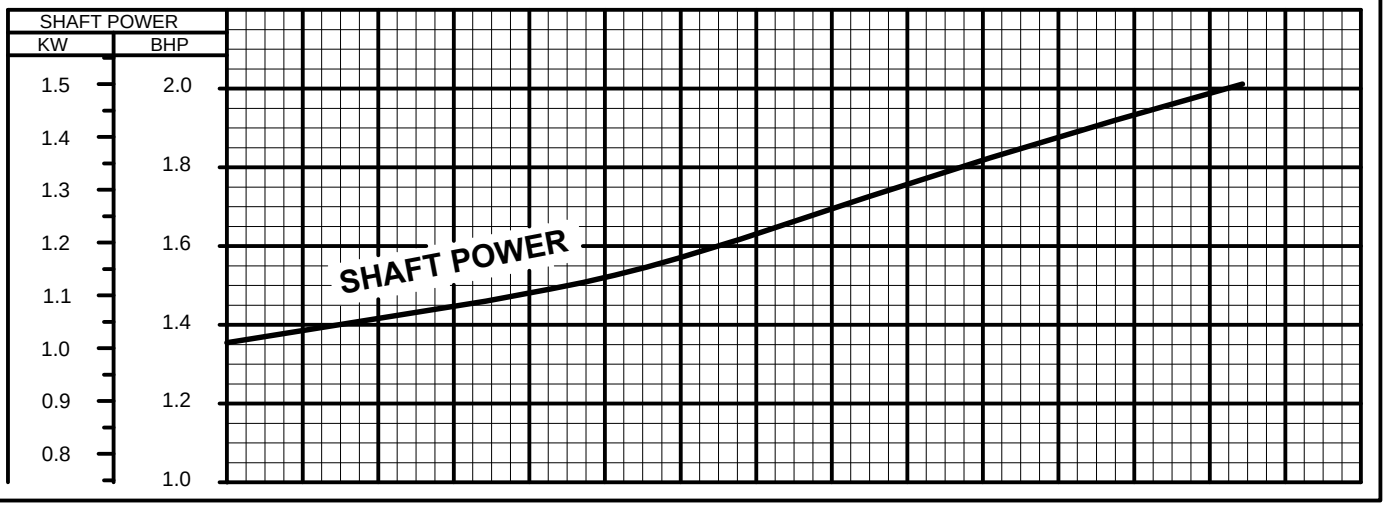
MODEL	BORE	HP	KW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
(TOS)80UZ41.5 -61	3"/80mm	2	1.5	1700	3.15"/80mm	Water	1.0	1.123cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS.CLASS
Vortex-Sewage&Wastewater	3	208-230/460/575	7.3-7.0/3.5/2.9	60	Direct On Line	E

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

REMARKS:





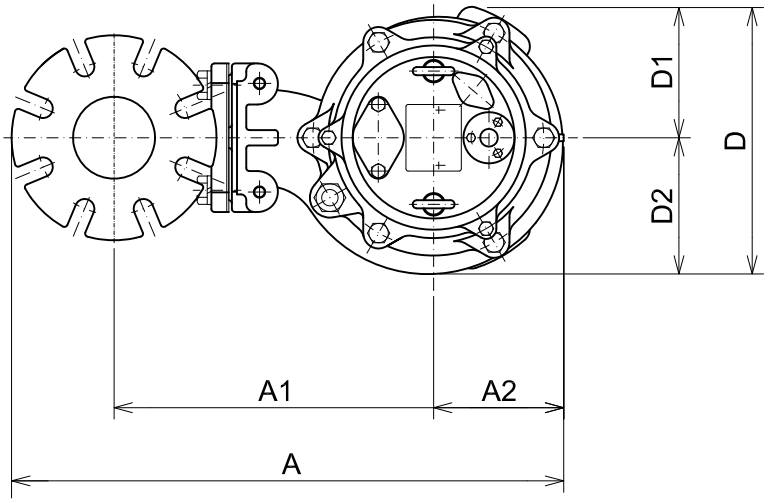
TSURUMI PUMP

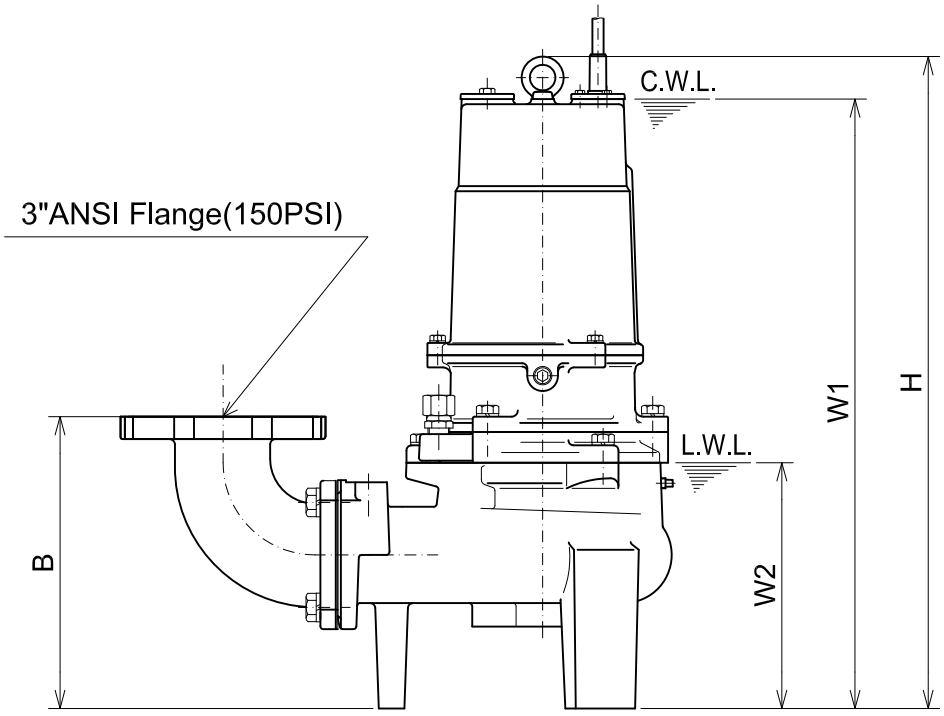
UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

80UZ41.5 -61
80UZ42.2 -61

Bend model:
BEND80-80 ANSI





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.)
80UZ41.5 -61	2	3"	21 5/8	12 11/16	5	11 1/4	10 1/4	5 1/16	5 1/4	25 1/16	23 3/8	9 1/2	141
80UZ42.2 -61	3	3"	21 5/8	12 11/16	5	11 1/4	10 1/4	5 1/16	5 1/4	25 1/16	23 3/8	9 1/2	141

*Excluding Cable.

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)
80UZ41.5 -61	1.5	80	549	322	127	285	261	128	133	637	595	240	64
80UZ42.2 -61	2.2	80	549	322	127	285	261	128	133	637	595	240	64

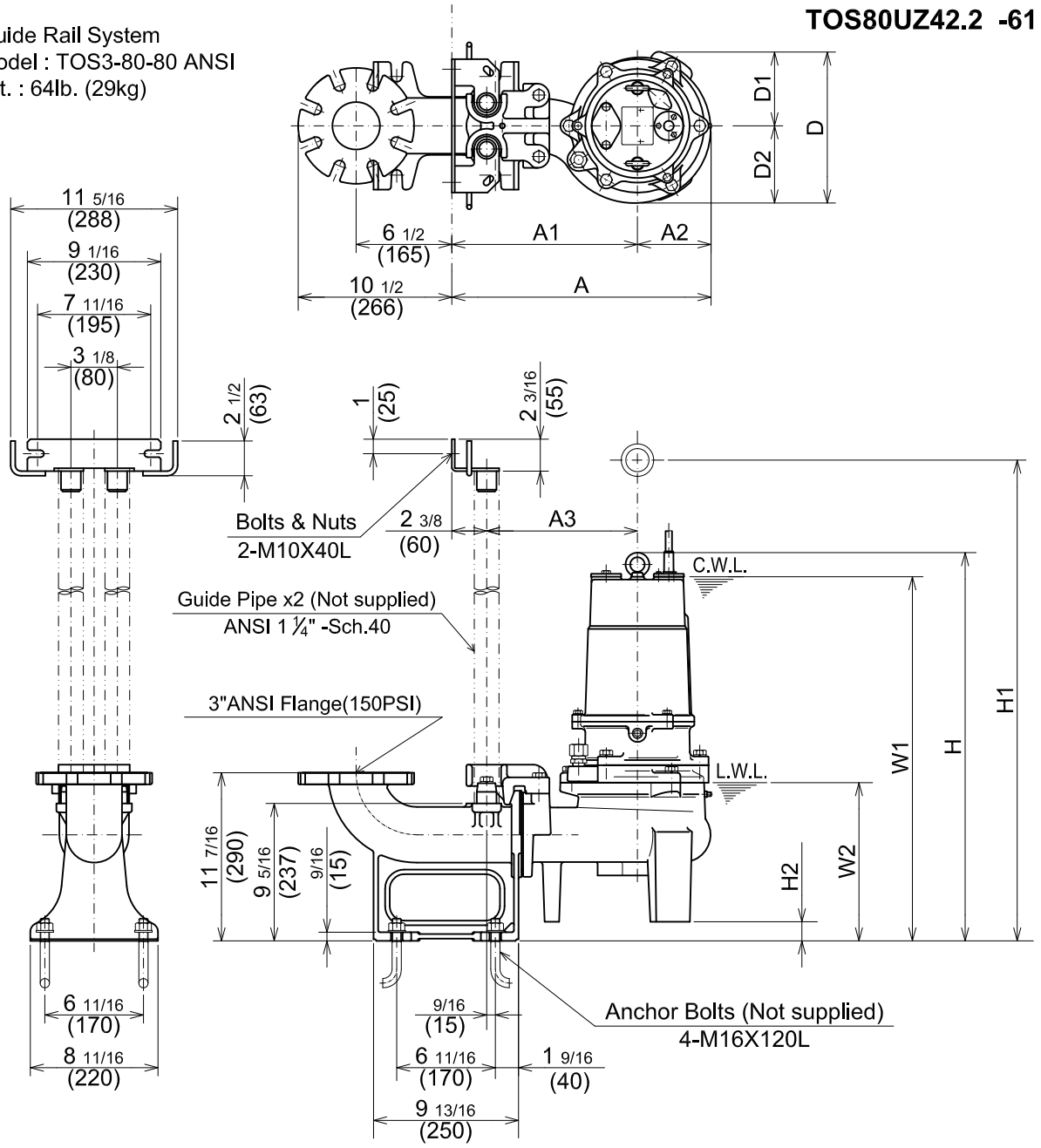
TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

TOS80UZ41.5 -61
TOS80UZ42.2 -61

Guide Rail System
Model : TOS3-80-80 ANSI
Wt. : 64lb. (29kg)



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. (lbs.)
			A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	
TOS80UZ41.5 -61	2	3"	17 5/8	12 5/8	5	10 1/4	10 1/4	5 1/16	5 1/4	26 3/8	31 1/8	1 5/16	24 3/4	10 7/8	123
TOS80UZ42.2 -61	3	3"	17 5/8	12 5/8	5	10 1/4	10 1/4	5 1/16	5 1/4	26 3/8	31 1/8	1 5/16	24 3/4	10 7/8	126

*Excluding TOS & Cable.

DIMENSIONS:METRIC(mm)

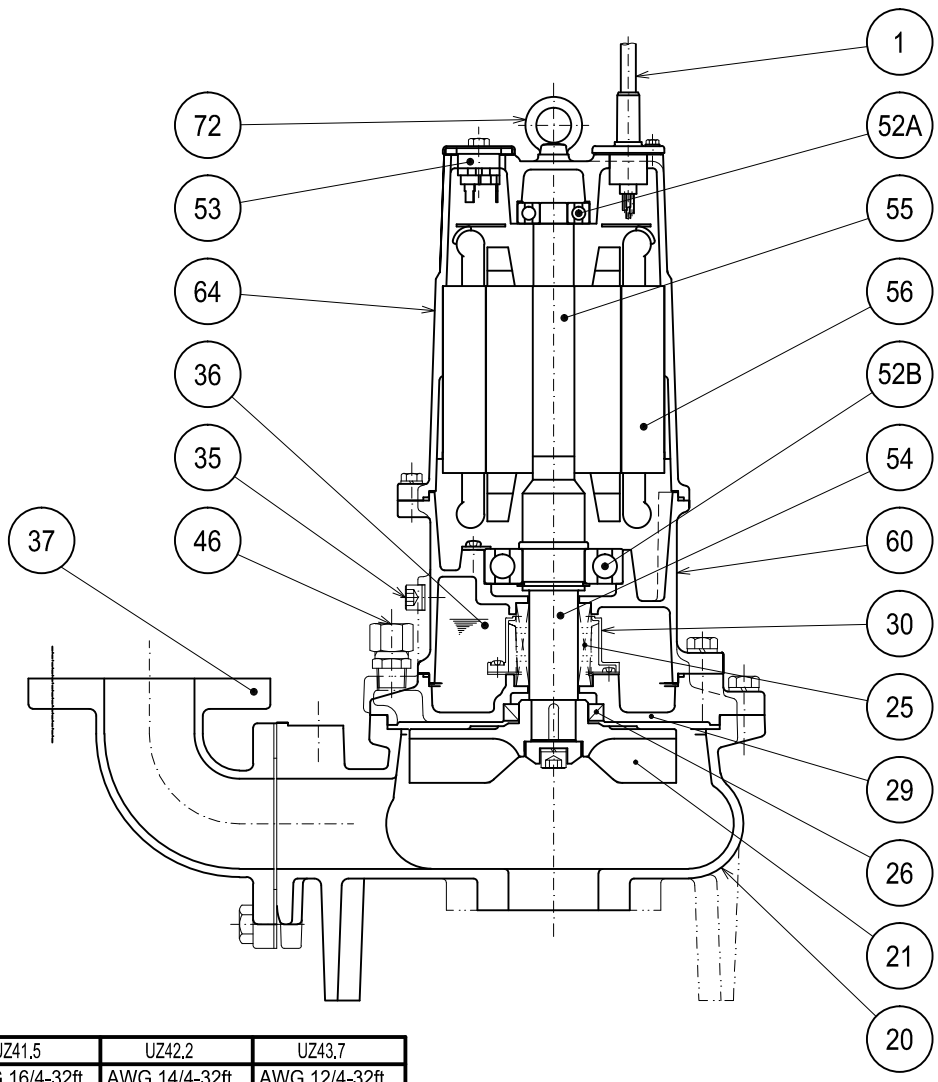
Model	kW	NOM. SIZE	Pump & Motor										C.W.L.	L.W.L.	*Wt. (kg)
			A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	
TOS80UZ41.5 -61	1.5	80	447	320	127	260	261	128	133	670	791	33	630	275	56
TOS80UZ42.2 -61	2.2	80	447	320	127	260	261	128	133	670	791	33	630	275	57

TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

SECTIONAL VIEW

80UZ41.5 -61
80UZ42.2 -61
80UZ43.7 -61



	UZ41.5	UZ42.2	UZ43.7
＊1	AWG 16/4-32ft	AWG 14/4-32ft	AWG 12/4-32ft
＊2	H-30A	H-30A	H-35A
＊3	TC456812	TC456812	TC507212
＊4	#6307ZZC3	#6307ZZC3	#6309ZZC3

PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM,AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath ＊1			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 / ＊2			1
26	Oil Seal	NBR / ＊3			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	1
46	Air Release Valve	Stainless Steel	S 30400	1.4301	1
52A	Upper Bearing	AC-#6304ZZC3			1
52B	Lower Bearing	＊4			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	2

TSURUMI PUMP	UZ - SERIES 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^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, 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^2) flat face flange and NPT companion flange. Impellers shall be of the 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 or F 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

UZ - SERIES
VORTEX - SEWAGE & WASTE WATER PUMPS

SPECIFICATIONS

FEATURES

1. 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.

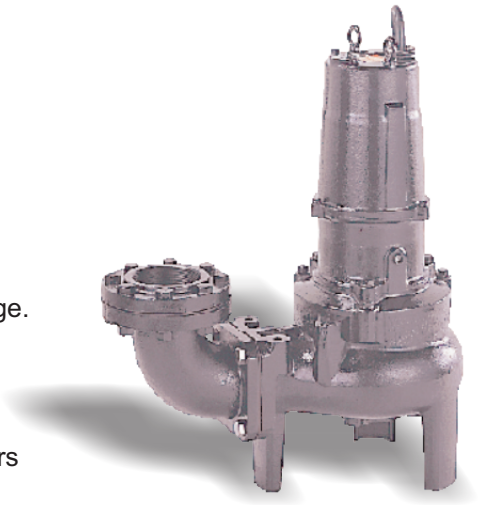
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

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.



OIL LIFTER (PAT. PEND) EQUIPPED

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

SPECIFICATIONS

Discharge Size	2 ~ 4” Npt (50 ~ 100 mm)
Horsepower Range	2 ~15 Hp. (1.5 ~ 11 kW)
Performance Range Capacity	26.4 ~ 740.0 Gpm. (.1 ~ 2.8 m^3/min)
Head	8.2 ~ 70.0Ft. (2.5 ~ 21.3 m)
Maximum water temperature	104 °F. (40 °C.)
Materials of Construction	
Casing	ASTM 48M Class 30B Cast Iron
Impeller	ASTM 48M Class 30B Cast Iron
Shaft	420,403 Stainless Steel
Motor Frame	ASTM 48M Class 30B Cast Iron
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Vortex, solids handling.
Solids Handling Capability	1.97 ~ 3.94” (50 ~ 100 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 1800 Rpm, 60 Hz.
Voltage, Phase	208-230, 460 or 575 V. (3 Phase)
Insulation	Class E, F
Accessories	Submersible Power Cable 32’ (10 m)
Operational Mode	Manual

STANDARD

Submersible Power Cable 32’ (10 m)

Manual

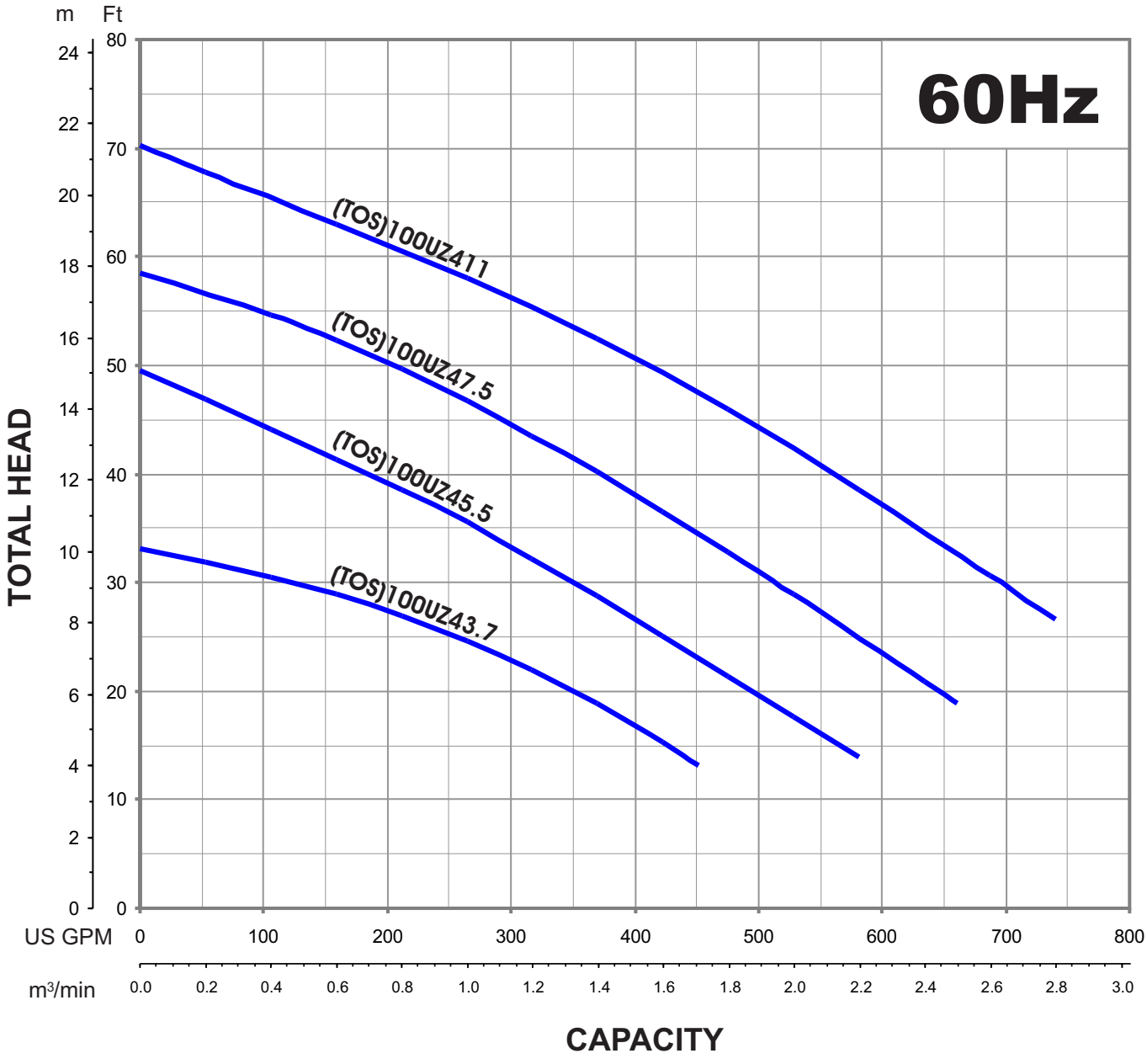
OPTIONS

Length as Required

TOS Slide rail system

TSURUMI PUMP	UZ series 4”	PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

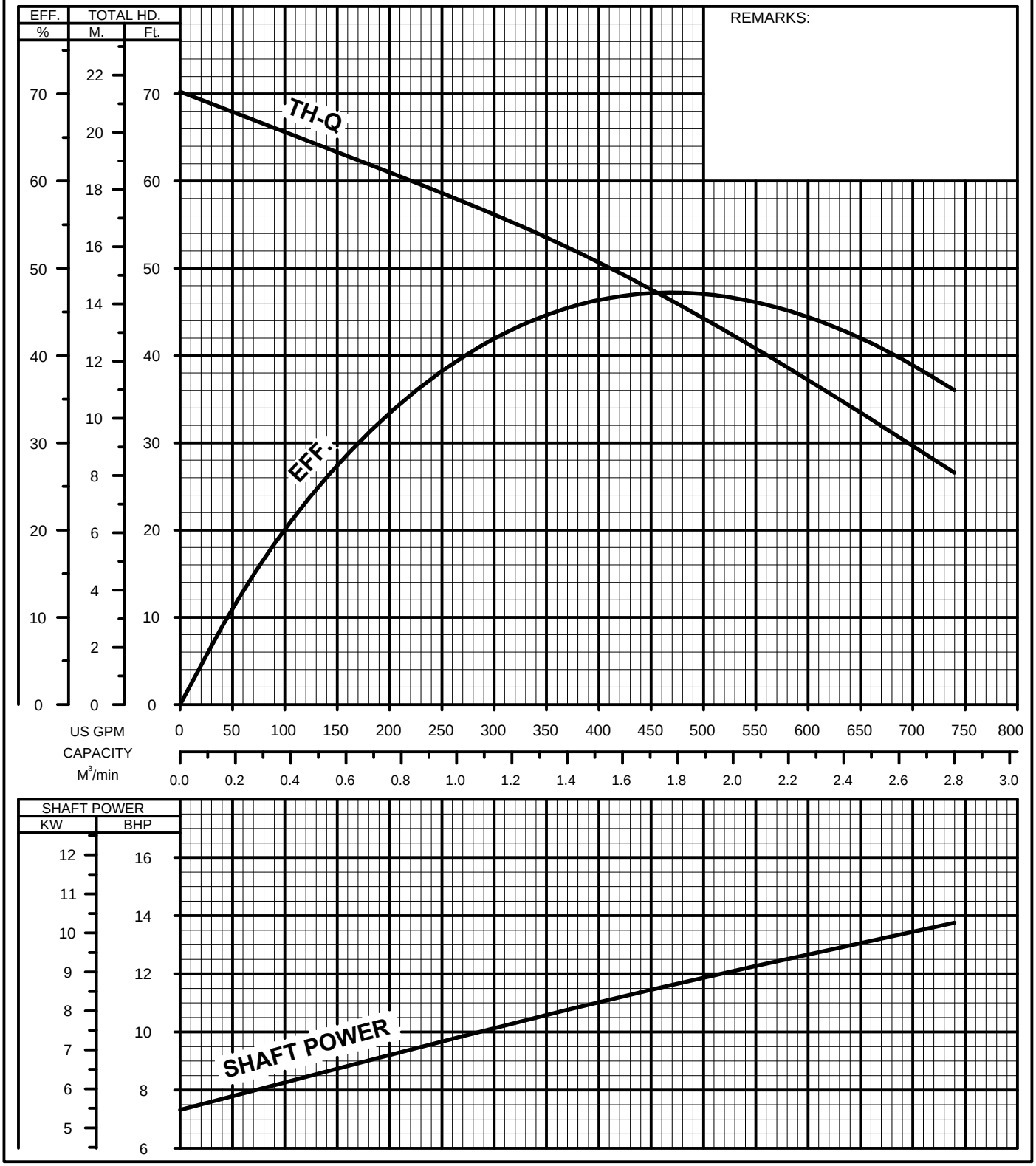
PERFORMANCE CURVE

MODEL	BORE	HP	KW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
(TOS)100UZ411 -64	4"/100mm	15	11	1733	3.94"/100mm	Water	1.0	1.123cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS.CLASS
Vortex-Sewage&Wastewater	3	208-230/460/575	42.2-39.2/19.5/15.7	60	Star-Delta	F

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

REMARKS:



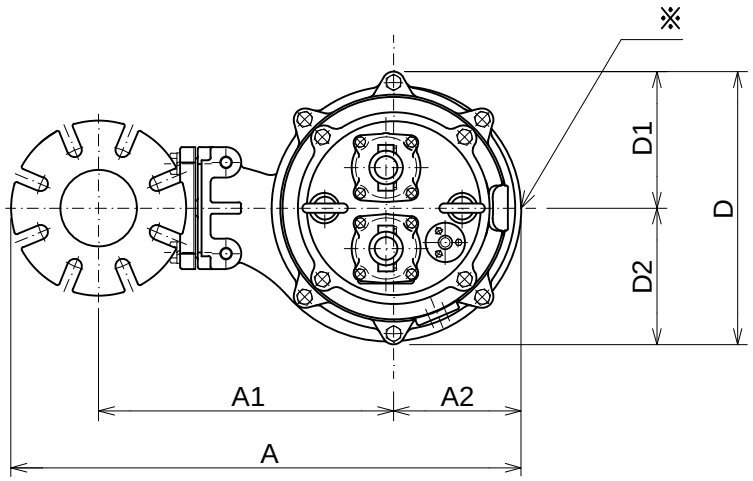
TSURUMI PUMP

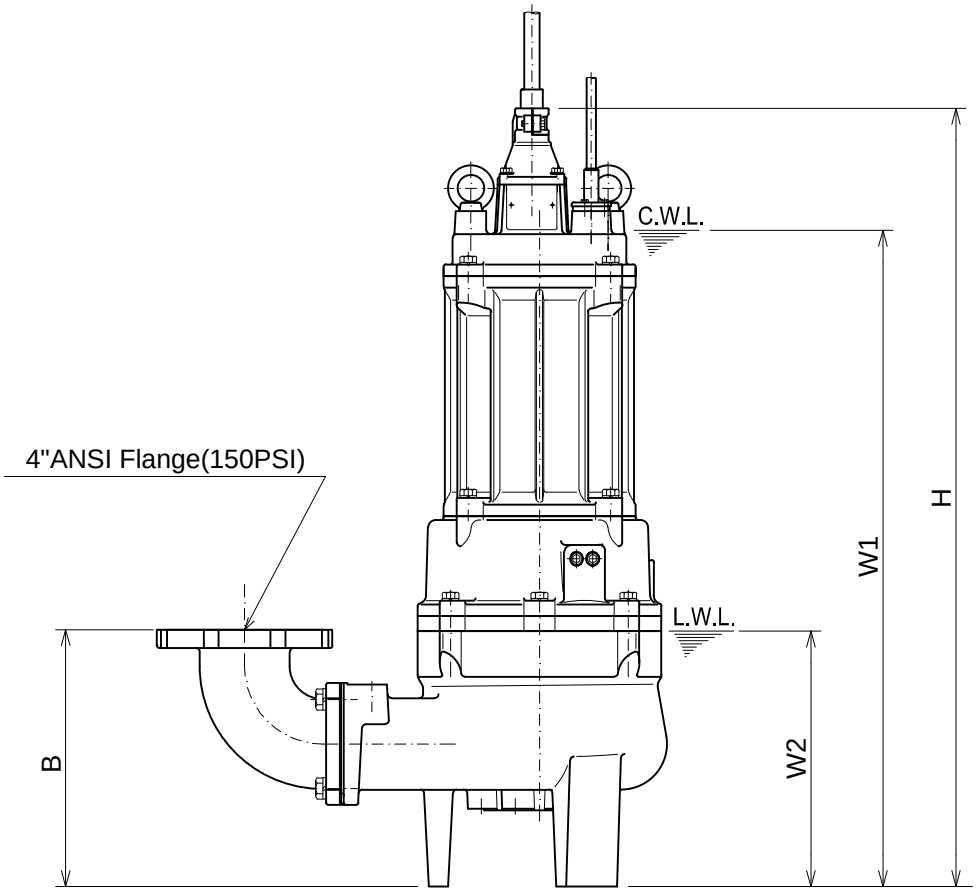
UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

100UZ411 -64

Bend model:
BEND100-100 ANSI





※An air release hole is provided on the top of the pump casing.

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. (lbs.)
			A	A1	A2	B	D	D1	D2	H	W1	W2	
100UZ411 -64	15	4"	26 3/4	15 5/8	6 5/8	13 1/4	14 1/8	7 1/16	7 1/16	40 3/16	34	13 1/4	406

*Excluding Cable.

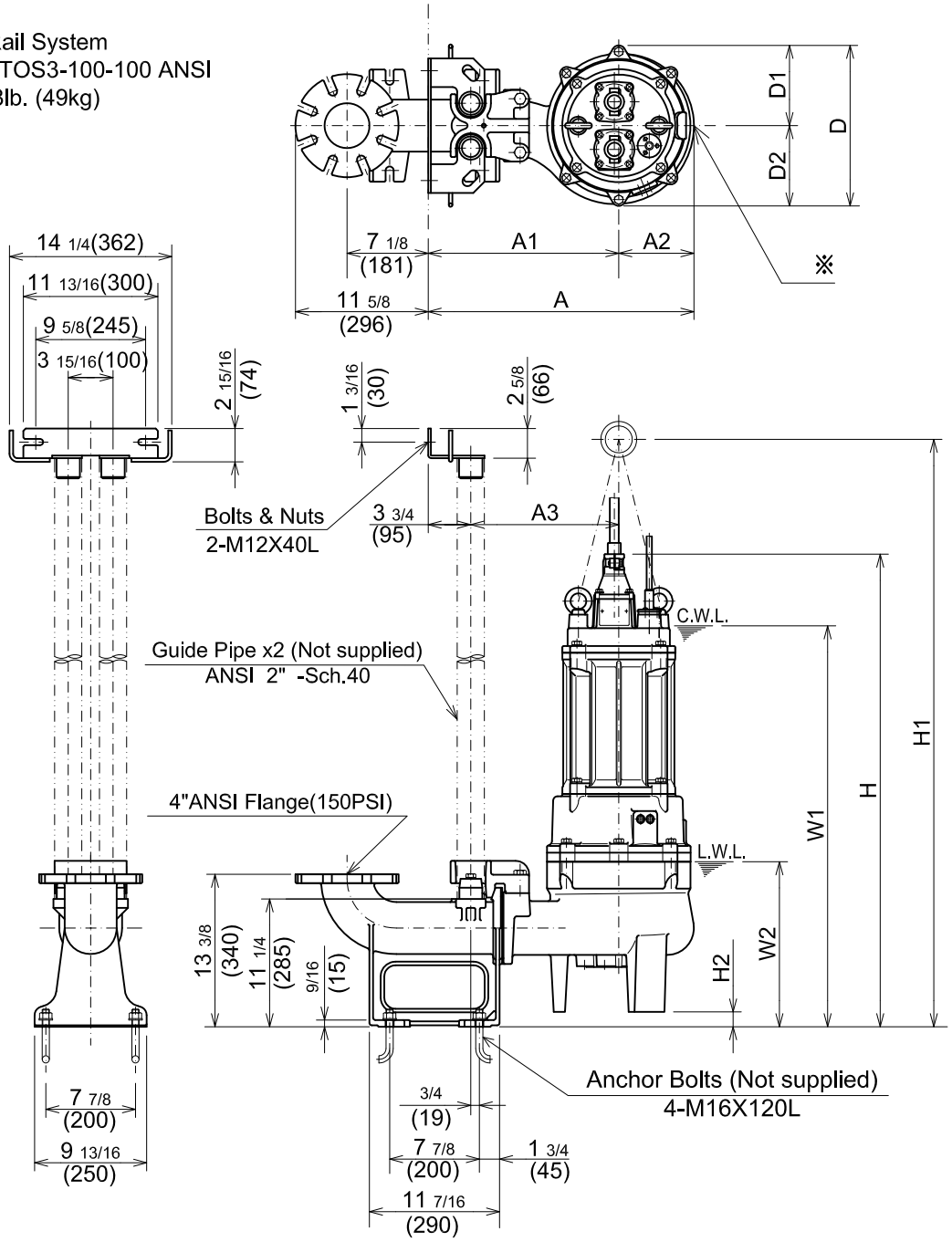
DIMENSIONS:METRIC(mm)

Model	kW	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	*Wt. (kg)
			A	A1	A2	B	D	D1	D2	H	W1	W2	
100UZ411 -64	11	100	680	397	168	337	358	179	179	1021	865	335	184

TSURUMI PUMP | UZ-SERIES VORTEX - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

TOS100UZ411 -64

Guide Rail System
Model : TOS3-100-100 ANSI
Wt : 108lb. (49kg)



※An air release hole is provided on the top of the pump casing.

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	A3	D	D1	D2	H	H1	H2	W1	W2	(lbs.)
TOS100UZ411 -64	15	4"	23 3/8	16 3/4	6 5/8	13	14 1/8	7 1/16	7 1/16	41 1/2	54 1/2	1 5/16	35 1/4	14 5/8	392

*Excluding TOS & Cable.

DIMENSIONS:METRIC(mm)

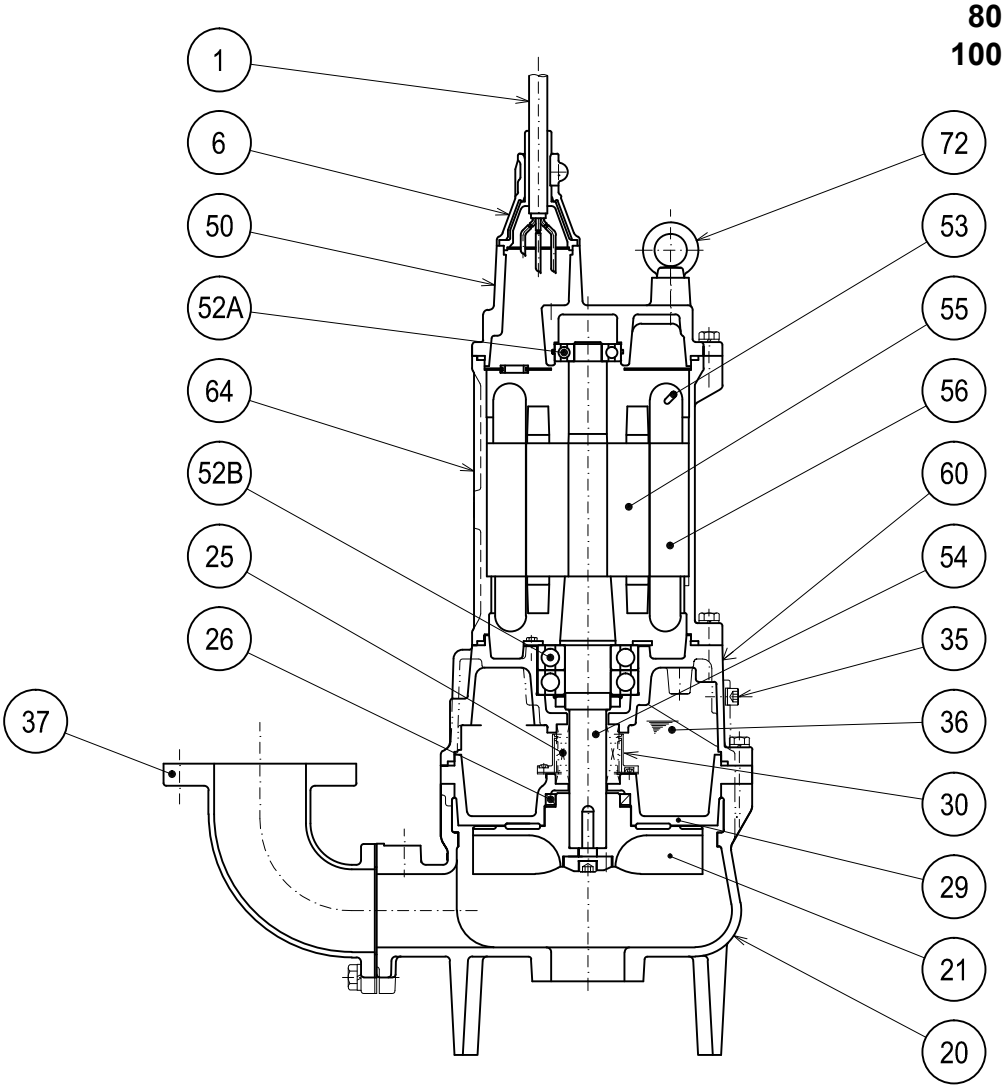
Model	kW	NOM. SIZE	Pump & Motor										C.W.L.	L.W.L.	*Wt.
			A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	(kg)
TOS100UZ411 -64	11	100	593	425	168	330	358	179	179	1054	1385	33	895	370	178

TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

SECTIONAL VIEW

80UZ411 -64
100UZ411 -64



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM,AISI CODE	RELATED EN CODE	QTY
1	Power Cable	Chloroprene Sheath AWG 12/4-32ft			1
	Power Cable	Chloroprene Sheath AWG 12/3-32ft			1
	Control Cable	Chloroprene Sheath AWG 16/2-32ft			1
6	Stuffing Box	Cast Iron	A48M Class30B	EN 1561 GJL-200	2
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-40			1
26	Oil Seal	NBR / TC709212			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	2
36	Lubricant	Turbine Oil ISO VG32 or SAE 10W-20			
37	Discharge Bend	Cast Iron / 3" or 4"ANSI Flange(150PSI)	A48M Class30B	EN 1561 GJL-200	1
50	Motor Bracket	Cast Iron	A48M Class30B	EN 1561 GJL-200	1
52A	Upper Bearing	AC-#6306ZZC3			1
52B	Lower Bearing	#6310ZZD2C3			1
53	Motor Protector				3
54	Shaft	Stainless Steel	S 42000	1.4028	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Cast Iron	A48M Class30B	EN 1561 GJL-200	1
64	Motor Housing	Cast Iron	A48M Class30B	EN 1561 GJL-200	1
72	Lifting Lug Bolt	Steel	A283 Grade D	EN 10025 S275	2

TSURUMI PUMP	UZ - SERIES 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^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, 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^2) flat face flange and NPT companion flange. Impellers shall be of the 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 or F 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

UZ - SERIES
VORTEX - SEWAGE & WASTE WATER PUMPS

SPECIFICATIONS

FEATURES

1. 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, or accidental run-dry conditions.

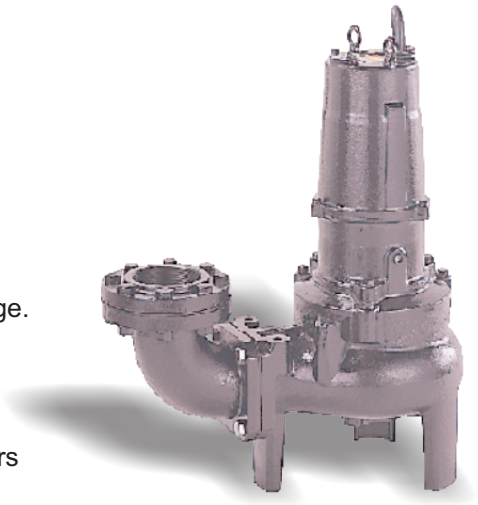
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

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.



OIL LIFTER (PAT. PEND) EQUIPPED

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

SPECIFICATIONS

Discharge Size	2 ~ 4” NPT (50 ~ 100 mm)
Horsepower Range	2 ~15 HP (1.5 ~ 11 kW)
Performance Range Capacity	26.4 ~ 740.0 GPM (.1 ~ 2.8 m^3/min)
Head	8.2 ~ 70.0Ft. (2.5 ~ 21.3 m)
Maximum water temperature	104 °F. (40 °C.)
Materials of Construction	
Casing	ASTM 48M Class 30B Cast Iron
Impeller	ASTM 48M Class 30B Cast Iron
Shaft	420 Stainless Steel
Motor Frame	ASTM 48M Class 25B Cast Iron
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitrile BUNA Rubber)
Impeller Type	Vortex, solids handling
Solids Handling Capability	1.97 ~ 3.94” (50 ~ 100 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 1800 RPM, 60 Hz
Voltage, Phase	208-230, 460 or 575V (3 Phase)
Insulation	Class E, F
Accessories	Submersible Power Cable 32’ (10 m)
Operational Mode	Manual

STANDARD

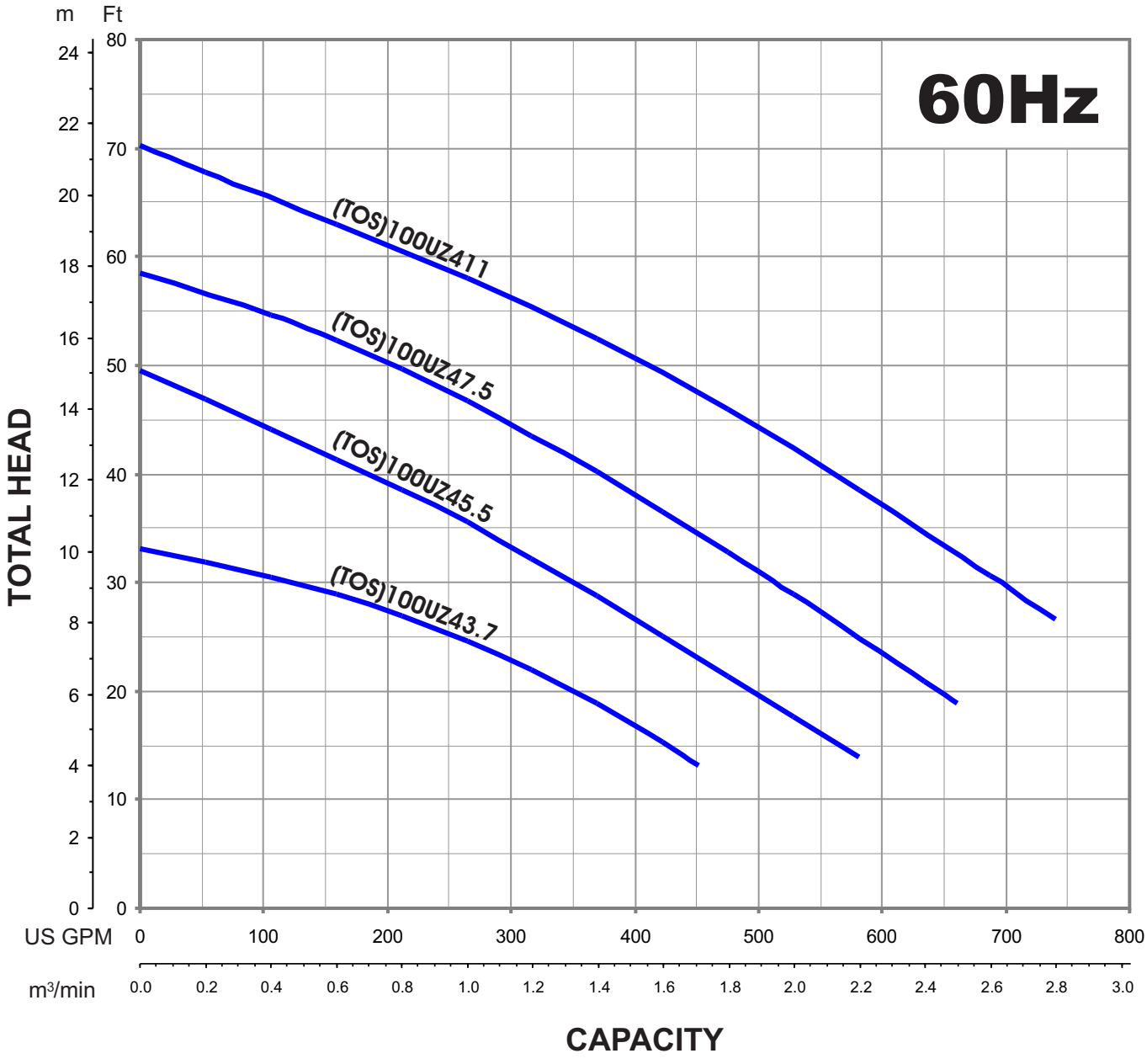
OPTIONS

Length as Required

TOS Slide rail system

TSURUMI PUMP	UZ series 4”	PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



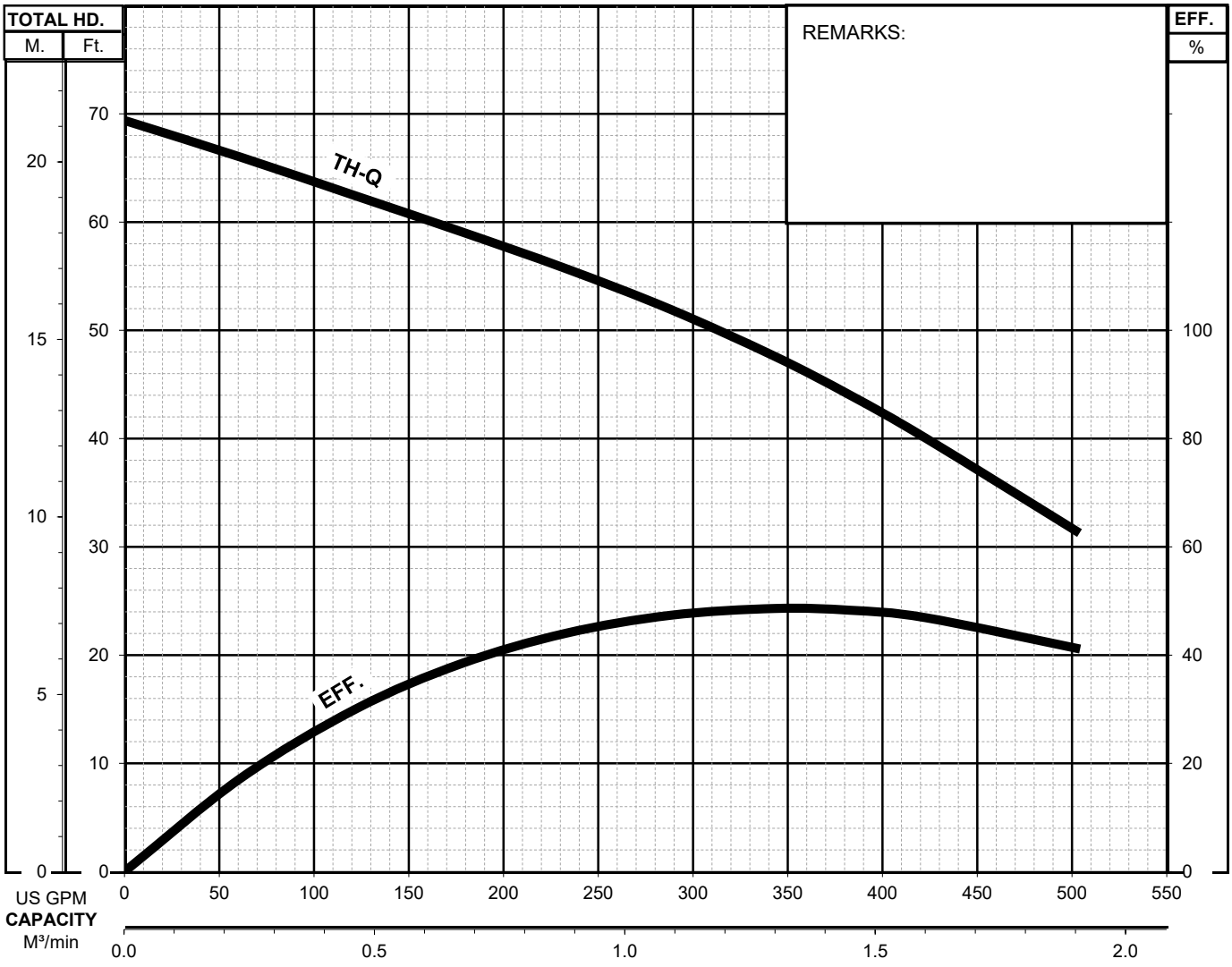
TSURUMI PUMP

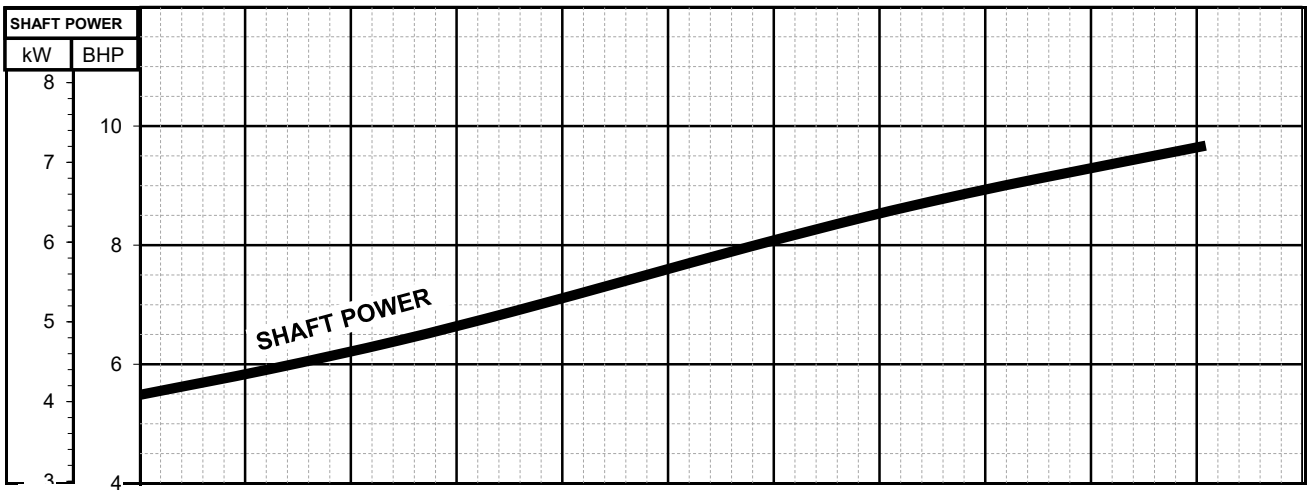
UZ - SERIES

VORTEX - SEWAGE & WASTERWATER PUMPS

PERFORMANCE CURVE

MODEL		BORE	HP	kW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
(TOS)80UZ47.5-65		3"/80mm	10	7.5	1735	3.15"/80mm	Water	1.0	1.123cSt.	60°F
PUMP TYPE		**PHASE**	**VOLTAGE**		**AMPERAGE**	**HZ**	**STARTING METHOD**			**INS. CLASS**
Vortex-Sewage&Wastewater		3	208-230/460/575		29.8-28.0 / 14.0 / 11.5	60	Direct On Line			F
CURVE No.	**DATE**	**PHASE**	**VOLTAGE**		**AMPERAGE**	**HZ**	**STARTING METHOD**			**INS. CLASS**
-	-	-	-		-	-	-			-





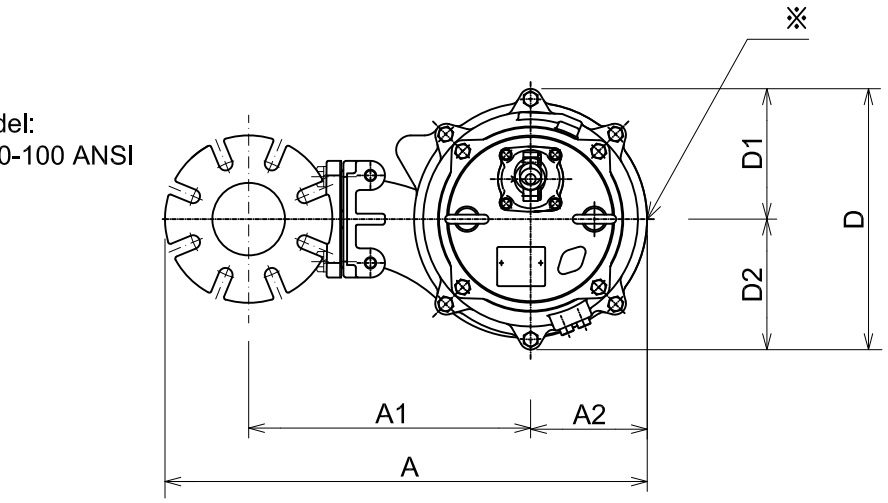
TSURUMI PUMP

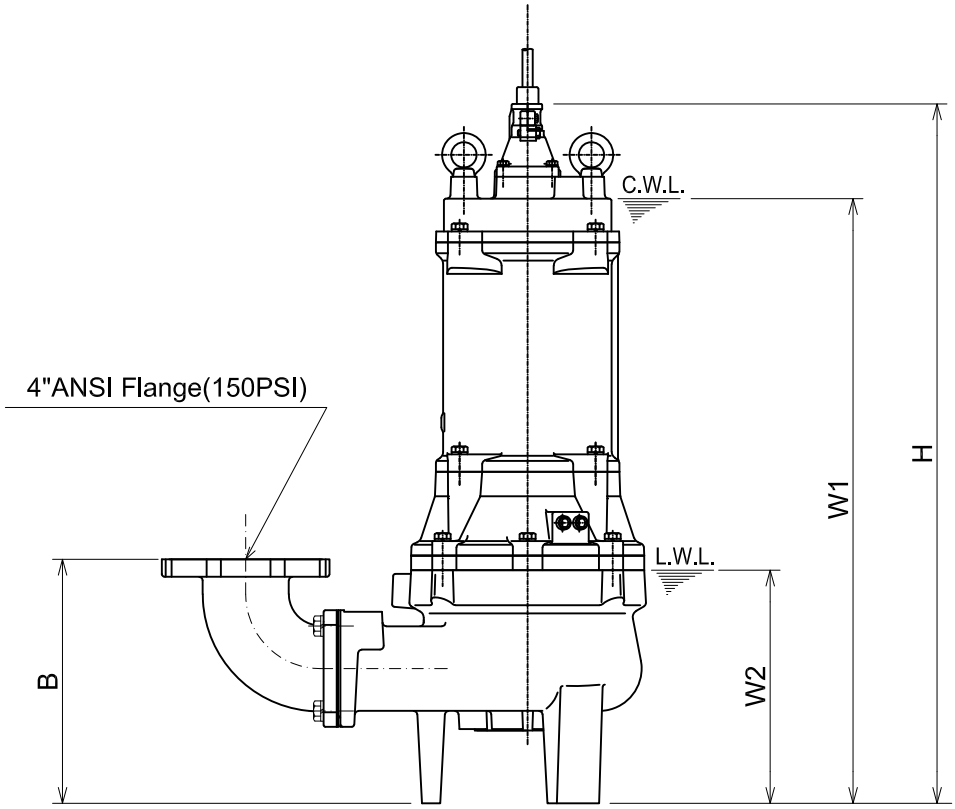
UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

100UZ45.5 -65
100UZ47.5 -65

Bend model:
BEND 100-100 ANSI





※An air release hole is provided on the top of the pump casing.

C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water 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.)
100UZ45.5-65	7.5	4"	26 7/16	15 5/8	6 5/16	13 3/16	14 1/8	7 1/16	7 1/16	36 15/16	32 1/8	12 5/8	288
100UZ47.5-65	10	4"	26 7/16	15 5/8	6 5/16	13 3/16	14 1/8	7 1/16	7 1/16	37 13/16	32 7/8	12 5/8	304

DIMENSIONS:METRIC (mm) *Excluding Cable

Model	kW	NOM.	Pump & Motor								C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
100UZ45.5-65	5.5	100	672	397	160	335	358	179	179	939	815	320	131
100UZ47.5-65	7.5	100	672	397	160	335	358	179	179	960	835	320	138

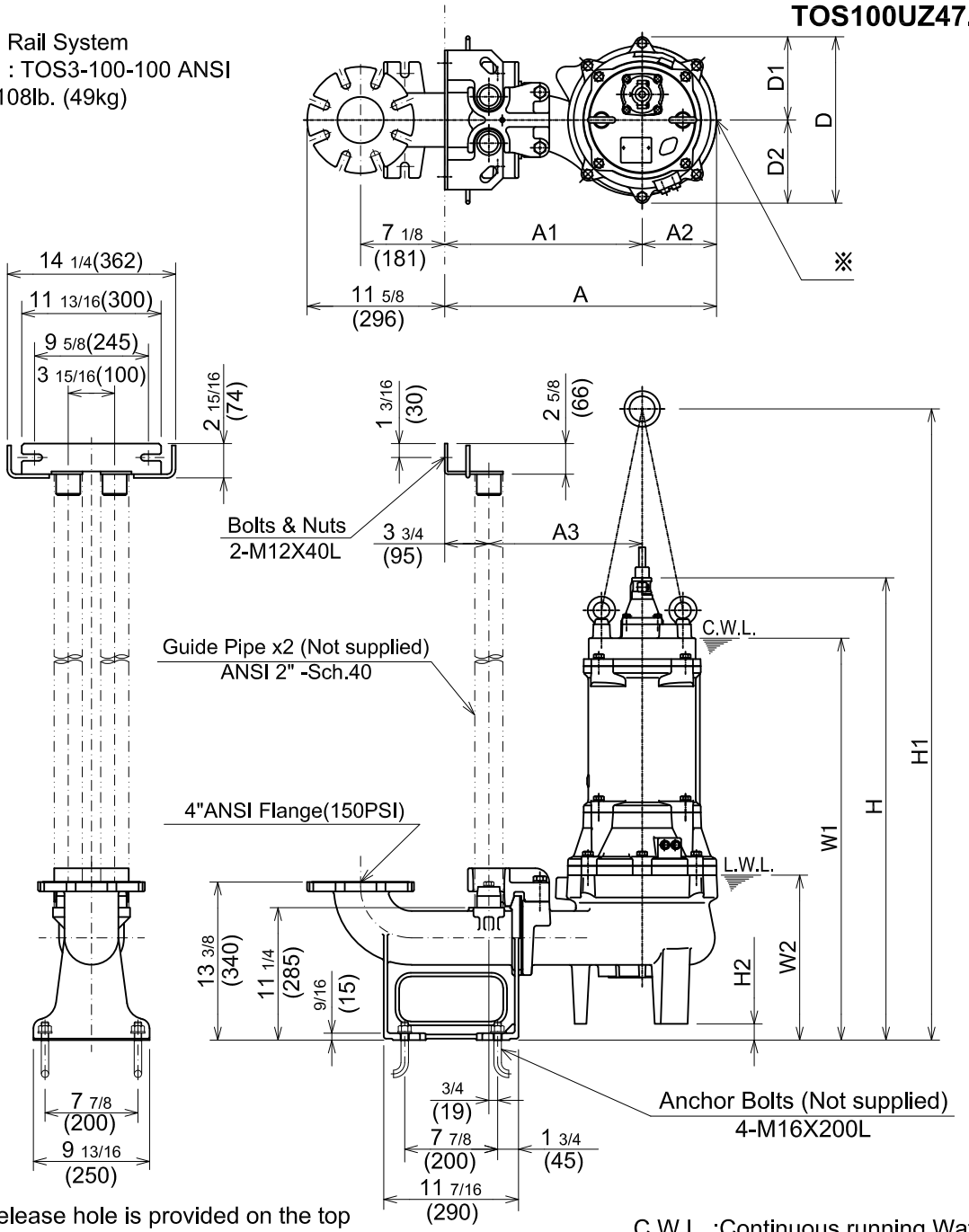
TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

TOS100UZ45.5 -65
TOS100UZ47.5 -65

Guide Rail System
Model : TOS3-100-100 ANSI
Wt. : 108lb. (49kg)



※An air release hole is provided on the top of the pump casing.

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

DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor										C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	A3	D	D1	D2	H	H	H2	W1	W2	(lbs.)
TOS100UZ45.5-65	7.5	4"	23 1/16	16 3/4	6 5/16	13	14 1/8	7 1/16	7 1/16	38 3/8	52 5/8	1 3/8	33 1/2	14	295
TOS100UZ47.5-65	10	4"	23 1/16	16 3/4	6 5/16	13	14 1/8	7 1/16	7 1/16	39 3/16	53 1/2	1 3/8	34 1/4	14	326

DIMENSIONS:METRIC (mm) *Excluding TOS & Cable

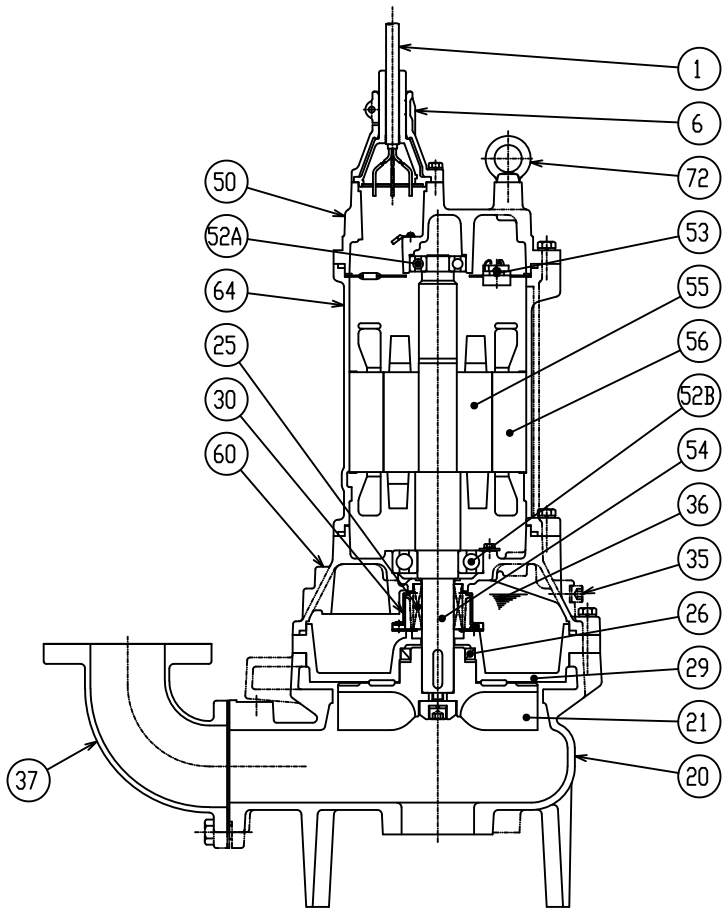
Model	kW	NOM.	Pump & Motor										C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	A3	D	D1	D2	H	H	H2	W1	W2	(kg)
TOS100UZ45.5-65	5.5	100	585	425	160	330	358	179	179	974	1336	35	850	355	134
TOS100UZ47.5-65	7.5	100	585	425	160	330	358	179	179	995	1359	35	870	355	148

TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

SECTIONAL VIEW

80UZ45.5 -65
80UZ47.5 -65
100UZ45.5 -65
100UZ47.5 -65



	UZ45.5	UZ47.5
* 1	AWG 12/4-32ft	AWG 10/4-32ft
* 2	#AC-6305ZZC3	#AC-6306ZZC3

PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	Chloroprene Sheath *1			1
6	Stuffing Box	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
20	Pump Casing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
21	Impeller	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
25	Mechanical Seal	Silicon Carbide / H-35A			1
26	Oil Seal	NBR / TC608212			1
29	Oil Casing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
30	Oil Lifter	PBT Plastic w/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	2
36	Lubricant	Turbine Oil ISO VG32 or SAE10W-20			
37	Discharge Bend	Cast Iron / 3" or 4" ANSI Flange(150PSI)	A48M Class 30B	EN 1561 GJL-200	1
50	Motor Bracket	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
52A	Upper Bearing	*2			1
52B	Lower Bearing	#6309ZZC3			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 Class 30B	EN 1561 GJL-200	1
64	Motor Housing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
72	Lifting Lug Bolt	Steel	A283 Grade D	EN 10025 S275	2

TSURUMI PUMP	UZ - SERIES 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^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, 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^2) flat face flange and NPT companion flange. Impellers shall be of the 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 or F 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

UZ - SERIES
VORTEX - SEWAGE & WASTE WATER PUMPS

SPECIFICATIONS

FEATURES

1. 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.

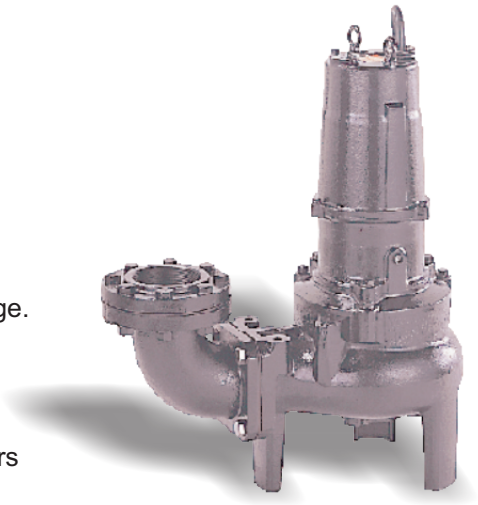
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

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.



OIL LIFTER (PAT. PEND) EQUIPPED

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

SPECIFICATIONS

Discharge Size	2 ~ 4” Npt (50 ~ 100 mm)
Horsepower Range	2 ~15 Hp. (1.5 ~ 11 kW)
Performance Range Capacity	26.4 ~ 740.0 Gpm. (.1 ~ 2.8 m^3/min)
Head	8.2 ~ 70.0Ft. (2.5 ~ 21.3 m)
Maximum water temperature	104 °F. (40 °C.)
Materials of Construction	
Casing	ASTM 48M Class 30B Cast Iron
Impeller	ASTM 48M Class 30B Cast Iron
Shaft	420,403 Stainless Steel
Motor Frame	ASTM 48M Class 30B Cast Iron
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Vortex, solids handling.
Solids Handling Capability	1.97 ~ 3.94” (50 ~ 100 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 1800 Rpm, 60 Hz.
Voltage, Phase	208-230, 460 or 575 V. (3 Phase)
Insulation	Class E, F
Accessories	Submersible Power Cable 32’ (10 m)
Operational Mode	Manual

STANDARD

Submersible Power Cable 32’ (10 m)

Manual

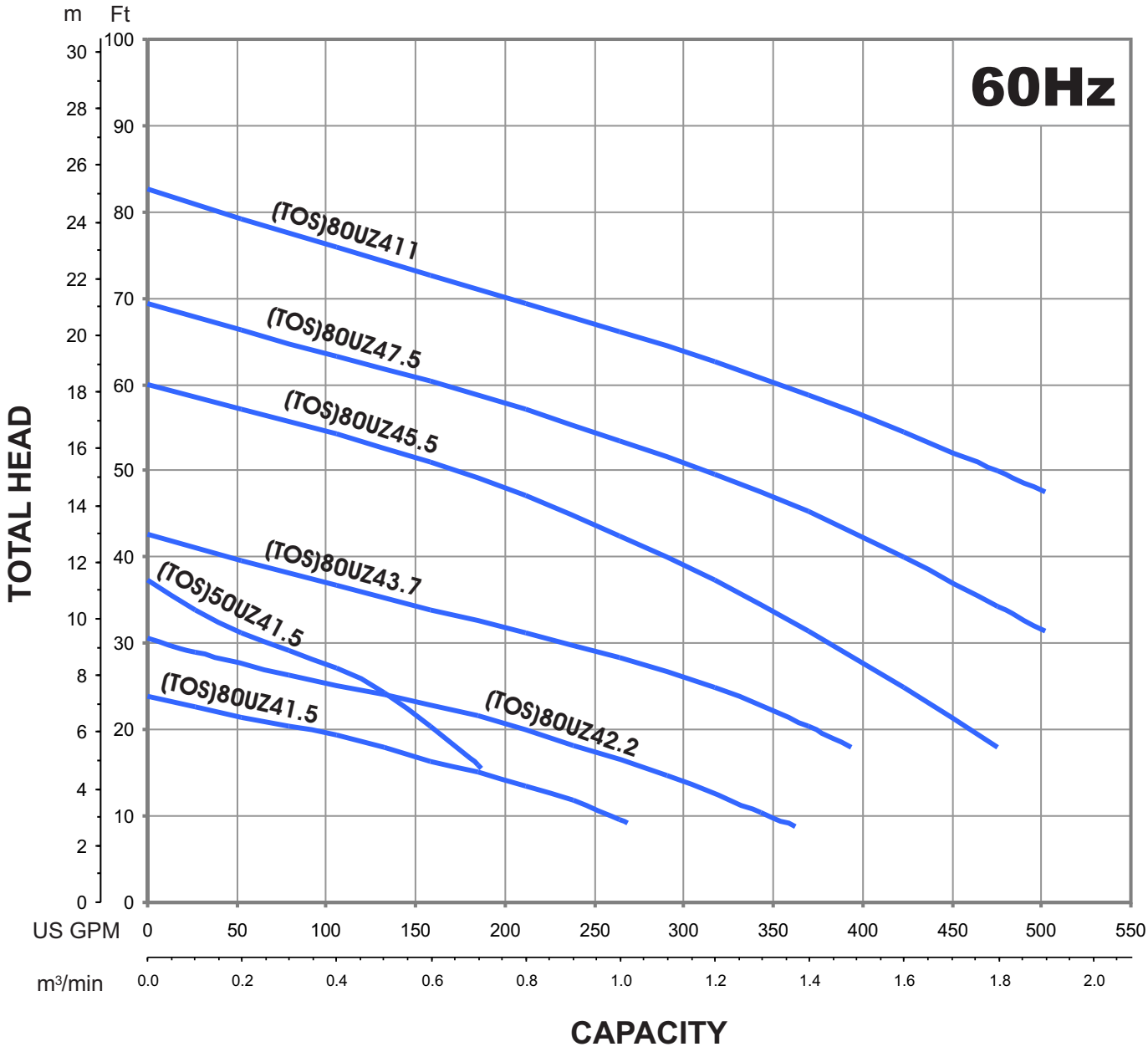
OPTIONS

Length as Required

TOS Slide rail system

TSURUMI PUMP	UZ series 2” - 3”	PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

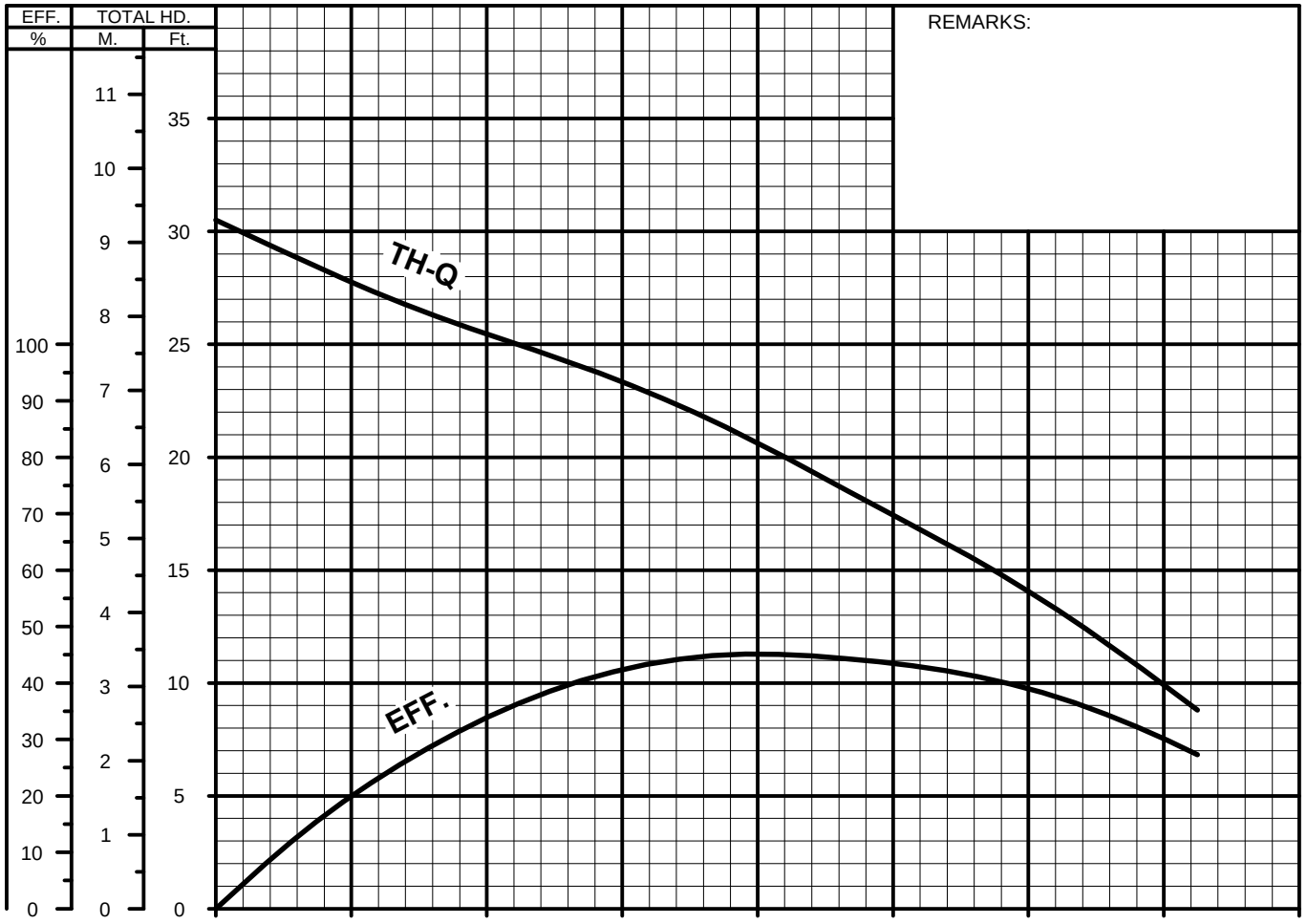
PERFORMANCE CURVE

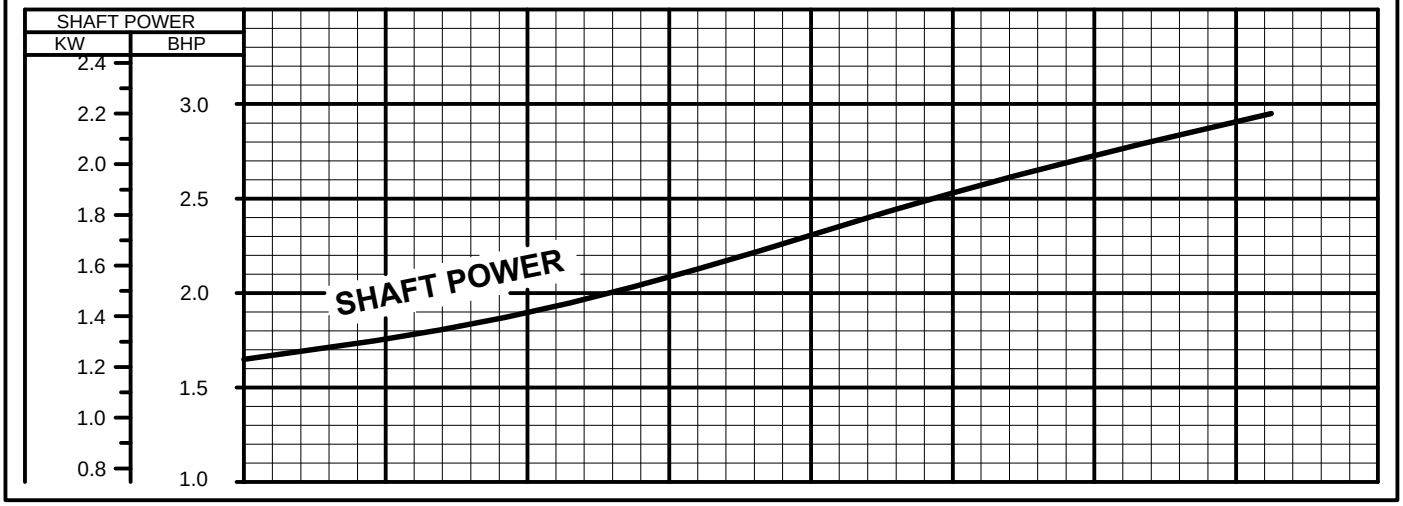
MODEL	BORE	HP	KW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
(TOS)80UZ42.2 -61	3"/80mm	3	2.2	1700	3.15"/80mm	Water	1.0	1.123cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS.CLASS
Vortex-Sewage&Wastewater	3	208-230/460/575	9.2-8.6/4.3/3.5	60	Direct On Line	E

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

REMARKS:





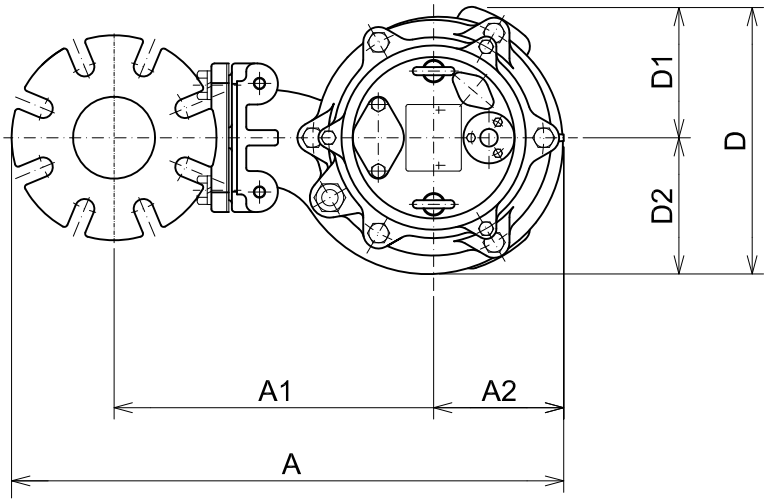
TSURUMI PUMP

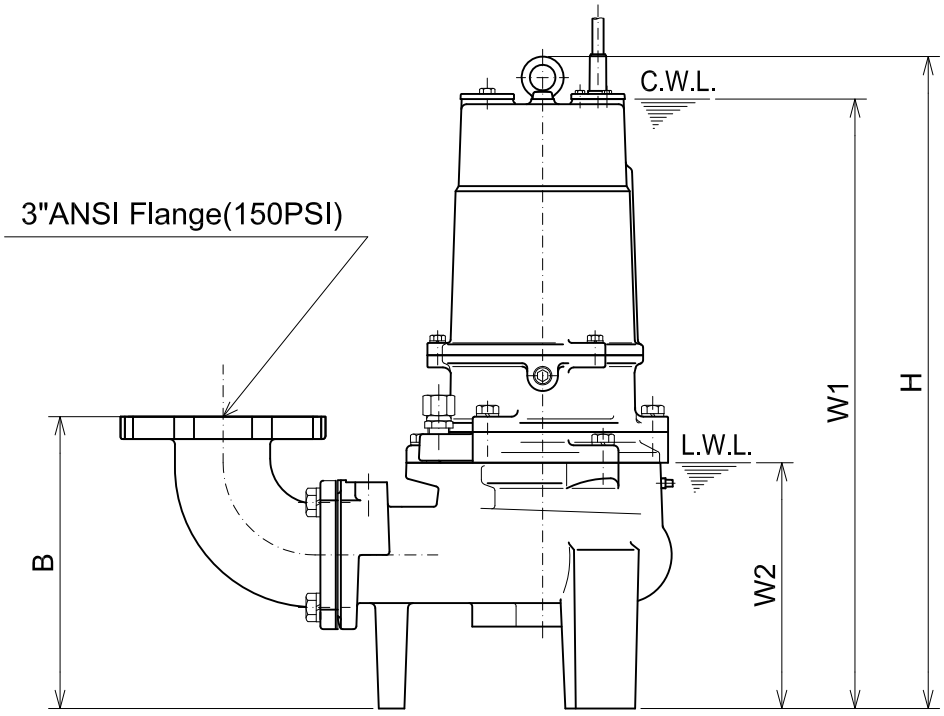
UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

80UZ41.5 -61
80UZ42.2 -61

Bend model:
BEND80-80 ANSI





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.)
80UZ41.5 -61	2	3"	21 5/8	12 11/16	5	11 1/4	10 1/4	5 1/16	5 1/4	25 1/16	23 3/8	9 1/2	141
80UZ42.2 -61	3	3"	21 5/8	12 11/16	5	11 1/4	10 1/4	5 1/16	5 1/4	25 1/16	23 3/8	9 1/2	141

*Excluding Cable.

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)
80UZ41.5 -61	1.5	80	549	322	127	285	261	128	133	637	595	240	64
80UZ42.2 -61	2.2	80	549	322	127	285	261	128	133	637	595	240	64

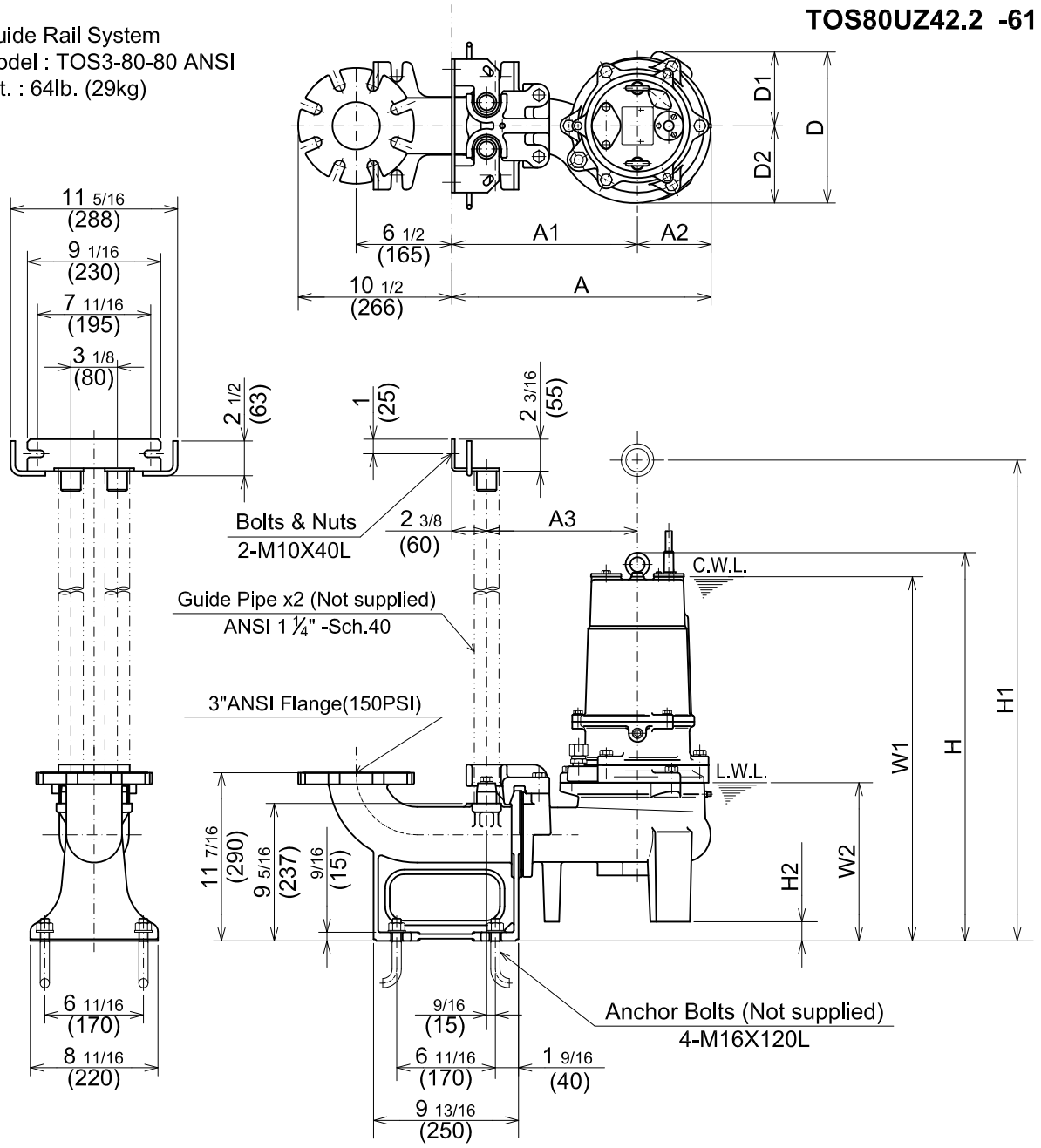
TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

TOS80UZ41.5 -61
TOS80UZ42.2 -61

Guide Rail System
Model : TOS3-80-80 ANSI
Wt. : 64lb. (29kg)



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. (lbs.)
			A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	
TOS80UZ41.5 -61	2	3"	17 5/8	12 5/8	5	10 1/4	10 1/4	5 1/16	5 1/4	26 3/8	31 1/8	1 5/16	24 3/4	10 7/8	123
TOS80UZ42.2 -61	3	3"	17 5/8	12 5/8	5	10 1/4	10 1/4	5 1/16	5 1/4	26 3/8	31 1/8	1 5/16	24 3/4	10 7/8	126

*Excluding TOS & Cable.

DIMENSIONS:METRIC(mm)

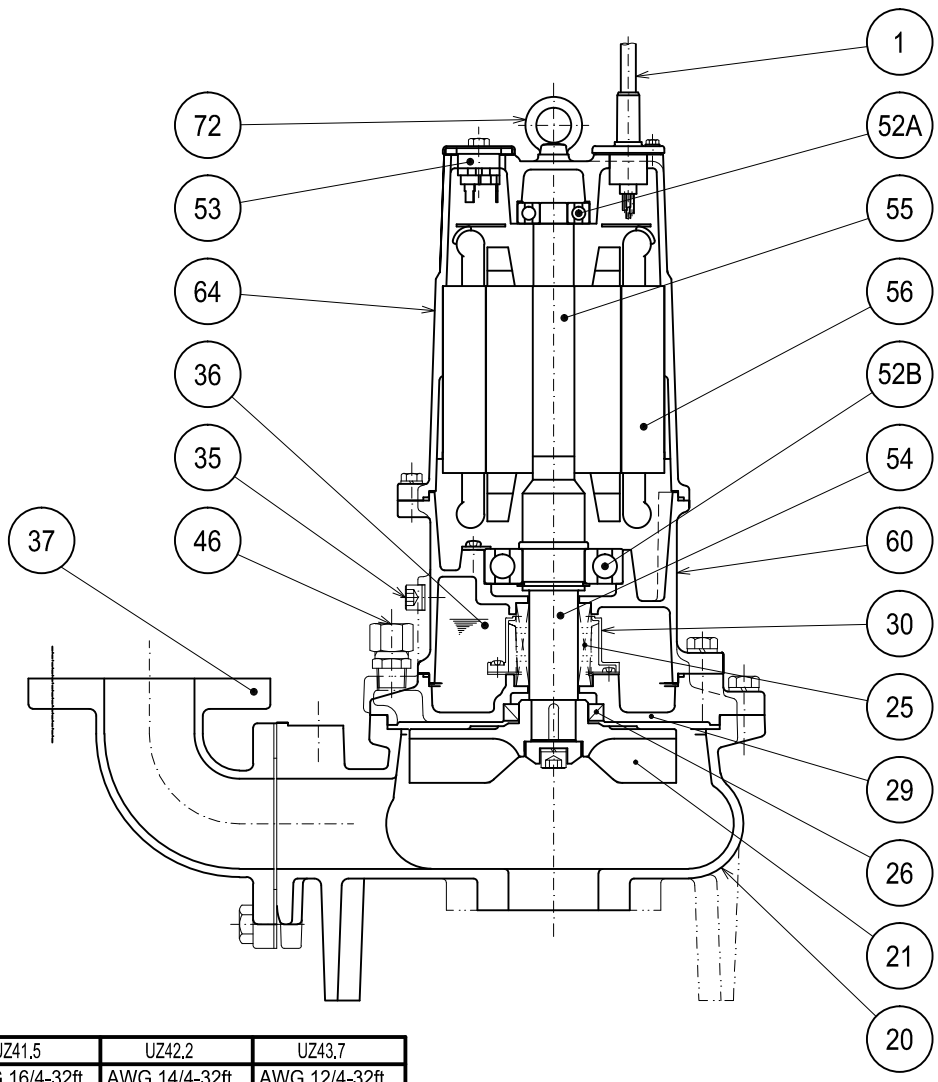
Model	kW	NOM. SIZE	Pump & Motor										C.W.L.	L.W.L.	*Wt. (kg)
			A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	
TOS80UZ41.5 -61	1.5	80	447	320	127	260	261	128	133	670	791	33	630	275	56
TOS80UZ42.2 -61	2.2	80	447	320	127	260	261	128	133	670	791	33	630	275	57

TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

SECTIONAL VIEW

80UZ41.5 -61
80UZ42.2 -61
80UZ43.7 -61



	UZ41.5	UZ42.2	UZ43.7
＊1	AWG 16/4-32ft	AWG 14/4-32ft	AWG 12/4-32ft
＊2	H-30A	H-30A	H-35A
＊3	TC456812	TC456812	TC507212
＊4	#6307ZZC3	#6307ZZC3	#6309ZZC3

PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM,AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath ＊1			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 / ＊2			1
26	Oil Seal	NBR / ＊3			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	1
46	Air Release Valve	Stainless Steel	S 30400	1.4301	1
52A	Upper Bearing	AC-#6304ZZC3			1
52B	Lower Bearing	＊4			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	2

TSURUMI PUMP	UZ - SERIES 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^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, 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^2) flat face flange and NPT companion flange. Impellers shall be of the 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 or F 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

UZ - SERIES
VORTEX - SEWAGE & WASTE WATER PUMPS

SPECIFICATIONS

FEATURES

1. 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.

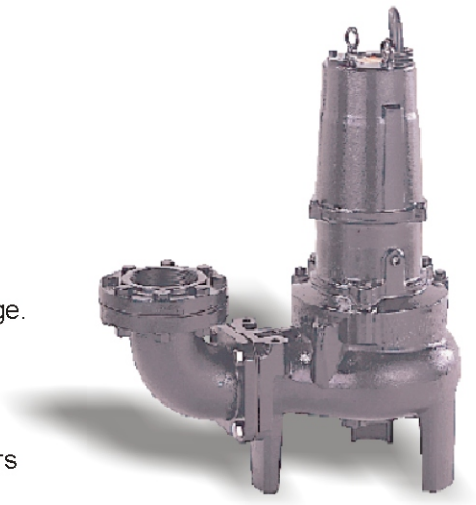
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

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.



OIL LIFTER EQUIPPED

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

SPECIFICATIONS

Discharge Size	2 ~ 4" Npt (50 ~ 100 mm)
Horsepower Range	2 ~15 Hp. (1.5 ~ 11 Kw)
Performance Range Capacity	26.4 ~ 740.0 Gpm. (.1 ~ 2.8 m^3/min)
Head	8.2 ~ 70.0Ft. (2.5 ~ 21.3 m)
Maximum water temperature	104^0 F. (40^0 C.)
Materials of Construction	
Casing	ASTM 48 Class 35 Cast Iron
Impeller	ASTM 48 Class 35 Cast Iron
Shaft	420,403 Stainless Steel
Motor Frame	ASTM 48 Class 35 Cast Iron
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Vortex, solids handling.
Solids Handling Capability	1.97 ~ 3.94" (50 ~ 100 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 1800 Rpm, 60 Hz.
Voltage, Phase	208-230, 460 or 575 V. (3 Phase)
Insulation	Class E, F
Accessories	Submersible Power Cable 32' (10 m)
Operational Mode	Manual

STANDARD

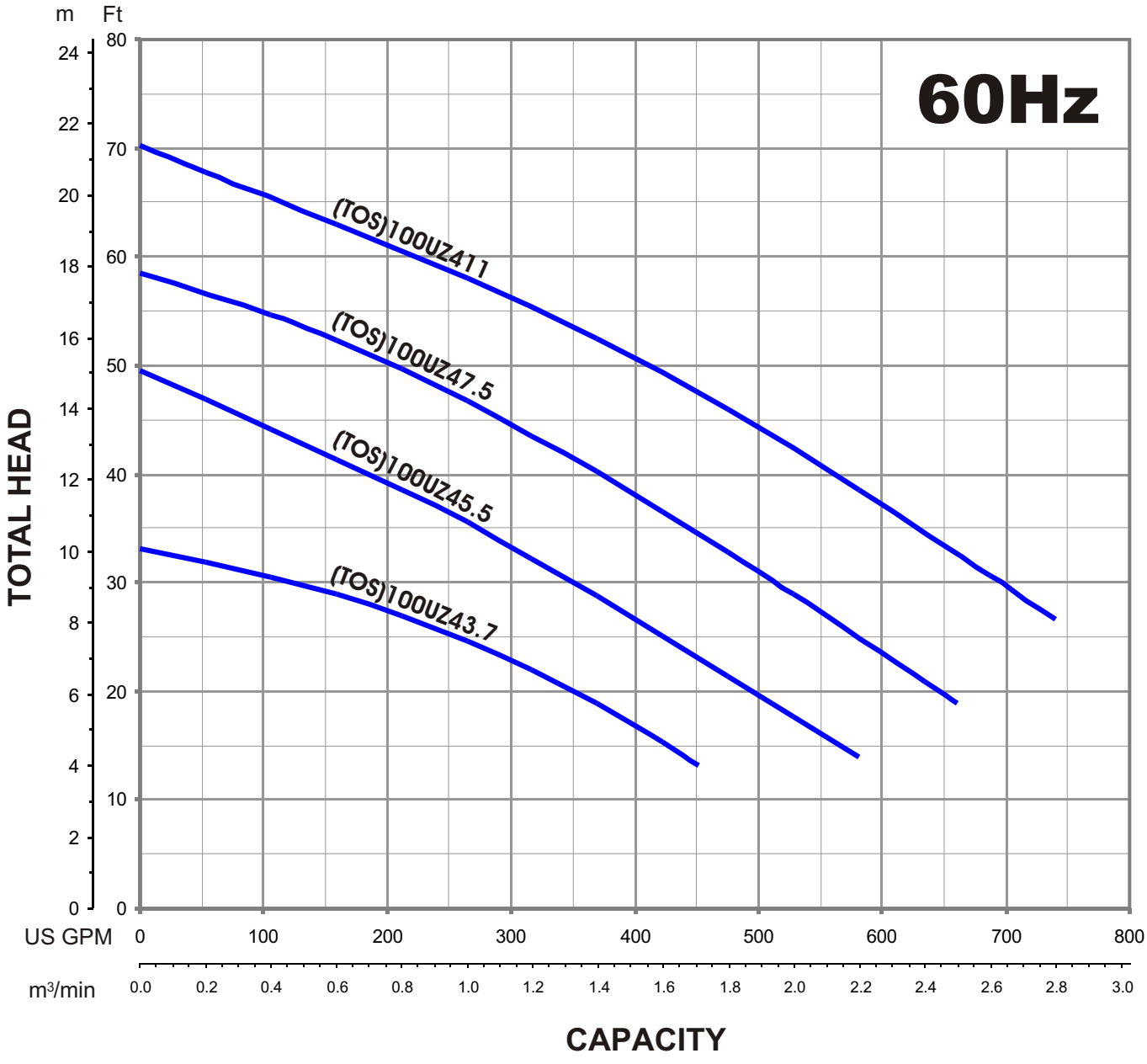
OPTIONS

Length as Required

TOS Slide rail system

TSURUMI PUMP	UZ series 4″	PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

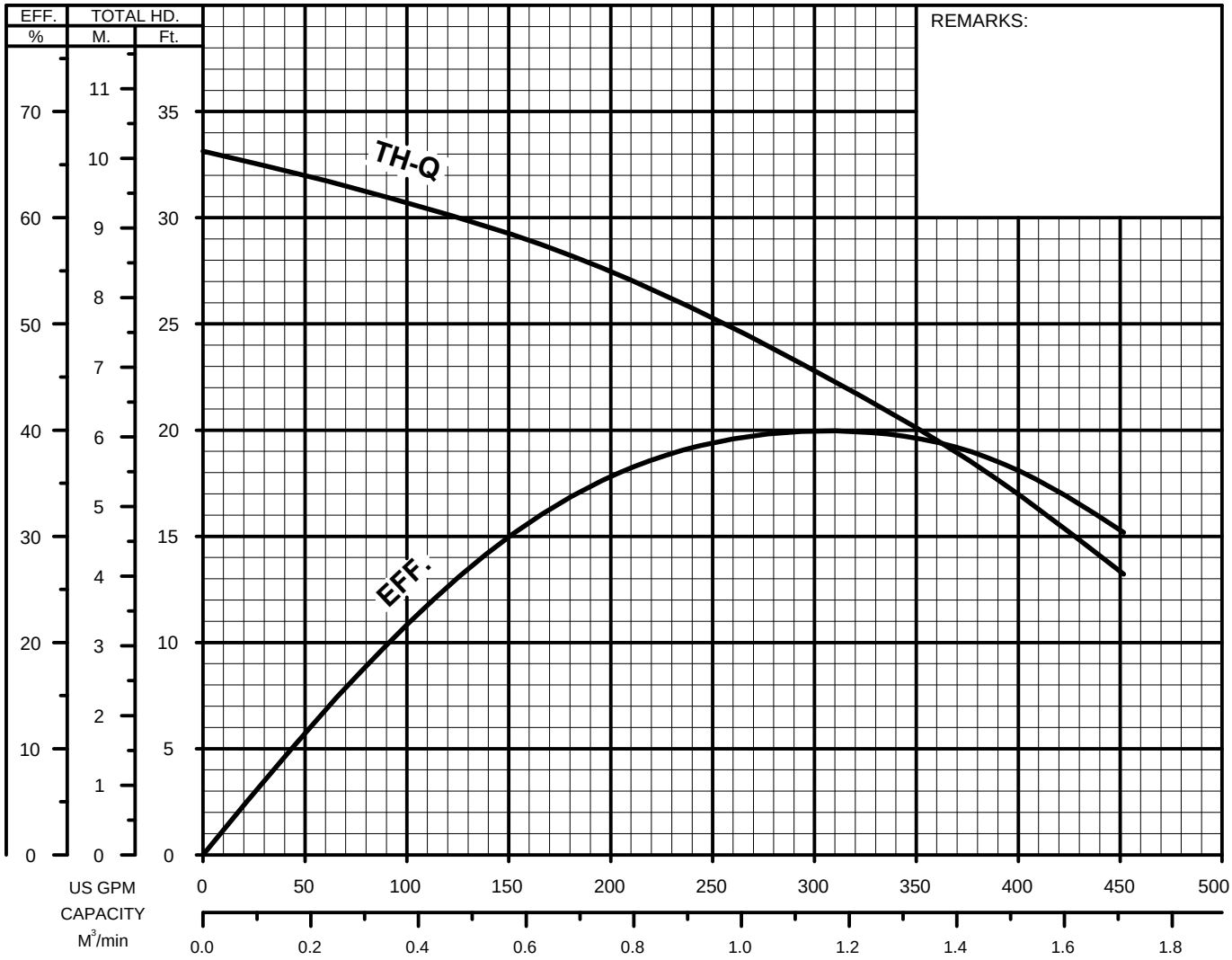
PERFORMANCE CURVE

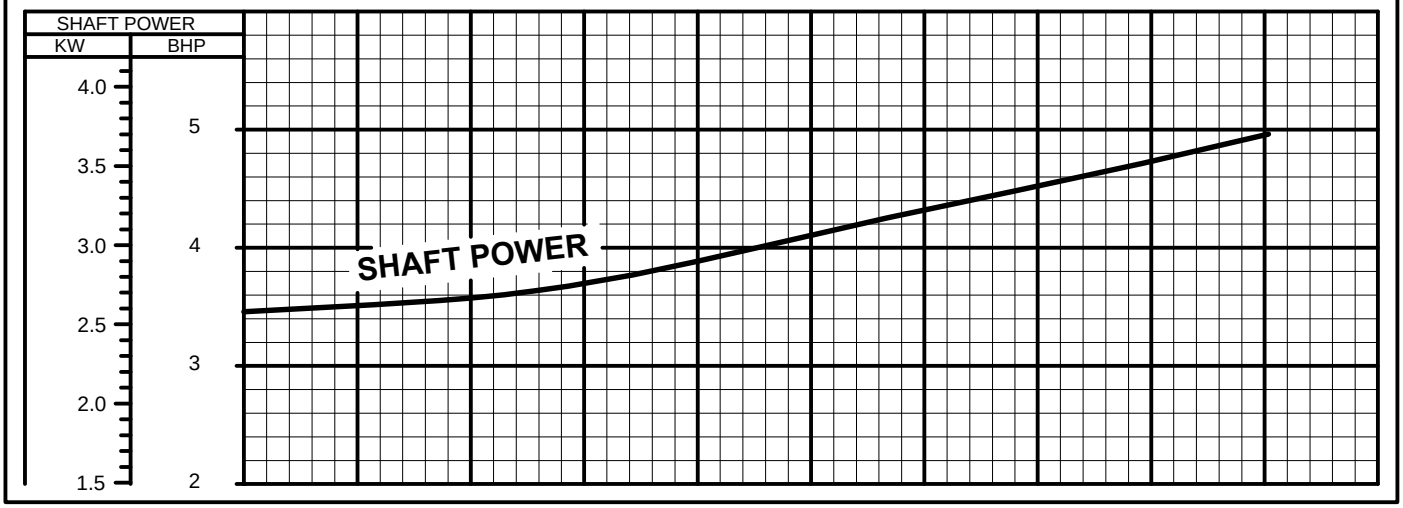
MODEL	BORE	HP	KW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
(TOS)100UZ43.7 -61	4"/100mm	5	3.7	1690	3.94"/100mm	Water	1.0	1.123cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS.CLASS
Vortex-Sewage&Wastewater	3	208-230/460/575	14.8-14.2/6.9/5.4	60	Direct On Line	E

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

REMARKS:

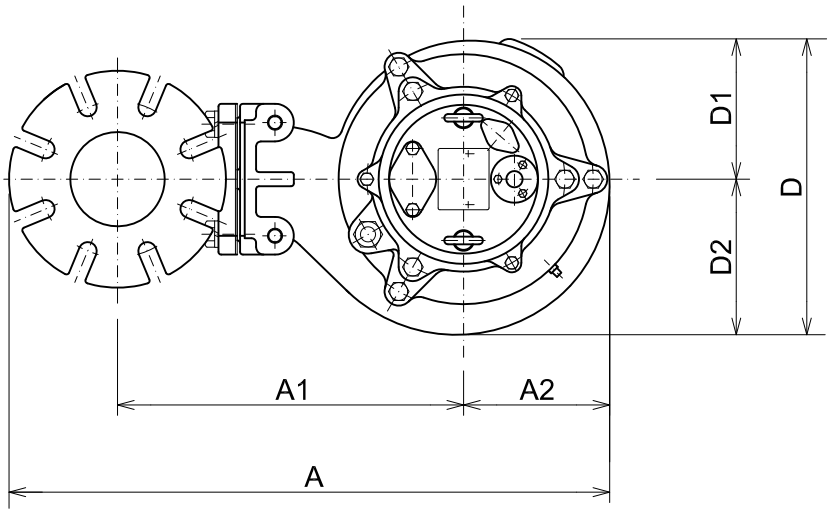


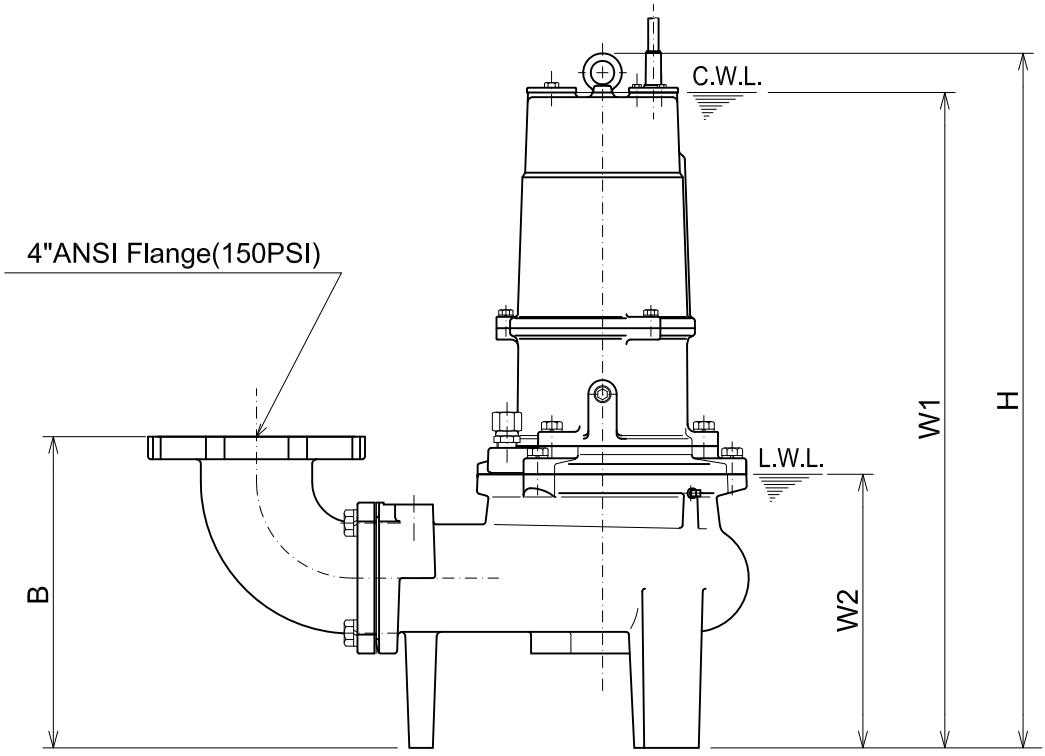


TSURUMI PUMP | UZ-SERIES VORTEX - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

100UZ43.7 -61

Bend model:
BEND100-100 ANSI





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. (lbs.)
			A	A1	A2	B	D	D1	D2	H	W1	W2	
100UZ43.7 -61	5	4"	25 1/2	14 13/16	6 1/8	13	12 3/8	5 7/8	6 1/2	29	27 3/8	11 3/8	163

*Excluding Cable.

DIMENSIONS:METRIC(mm)

Model	kW	NOM. SIZE	Pump & Motor								C.W.L.	L.W.L.	*Wt. (kg)
			A	A1	A2	B	D	D1	D2	H	W1	W2	
100UZ43.7 -61	3.7	100	647	377	155	330	314	149	165	737	695	290	74

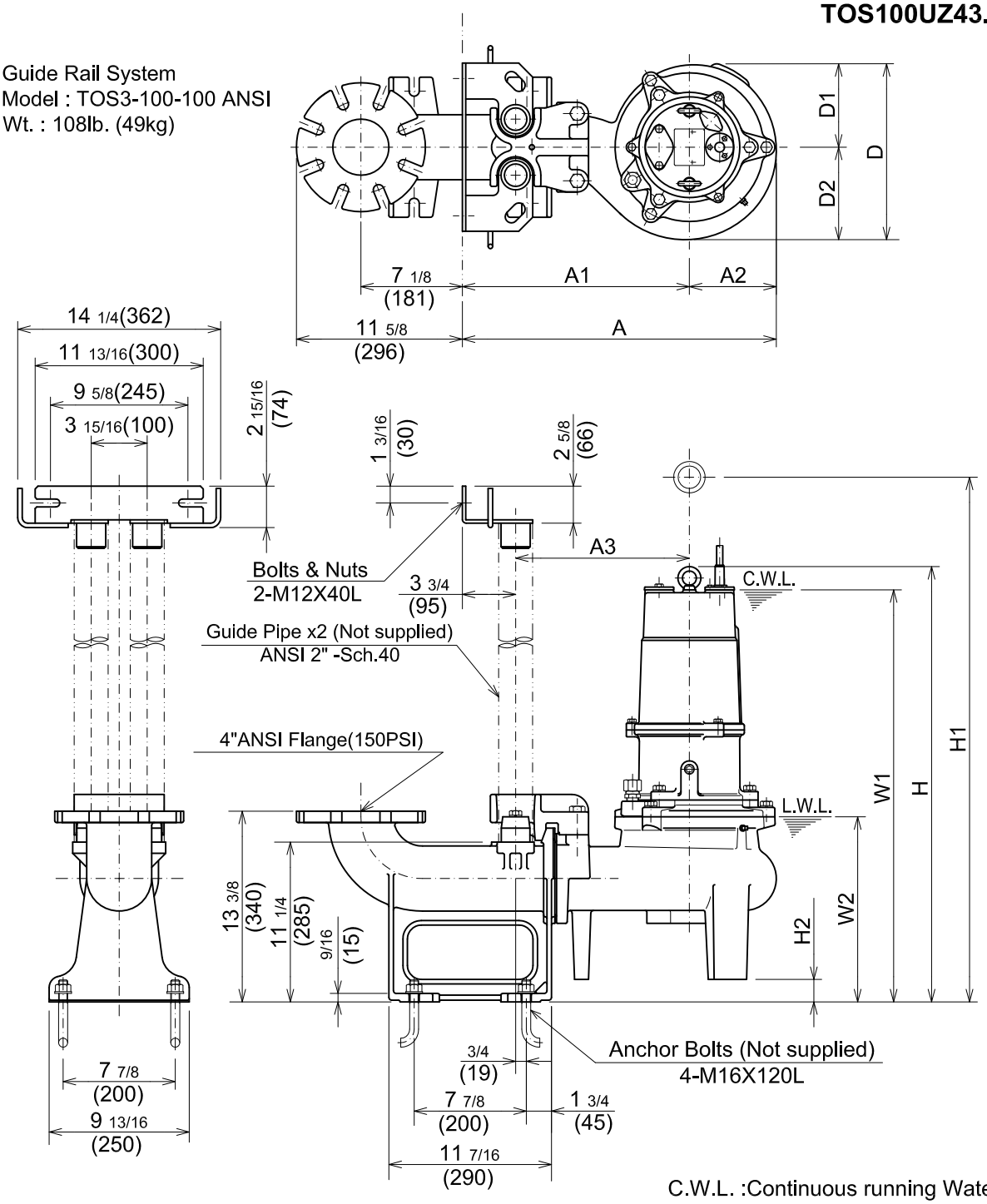
TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

TOS100UZ43.7 -61

Guide Rail System
Model : TOS3-100-100 ANSI
Wt. : 108lb. (49kg)



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. (lbs.)
			A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	
TOS100UZ43.7 -61	5	4"	22 1/16	15 15/16	6 1/8	12 3/16	12 3/8	5 7/8	6 1/2	30 9/16	35 3/8	1 9/16	28 7/8	13	154

*Excluding TOS & Cable.

DIMENSIONS:METRIC(mm)

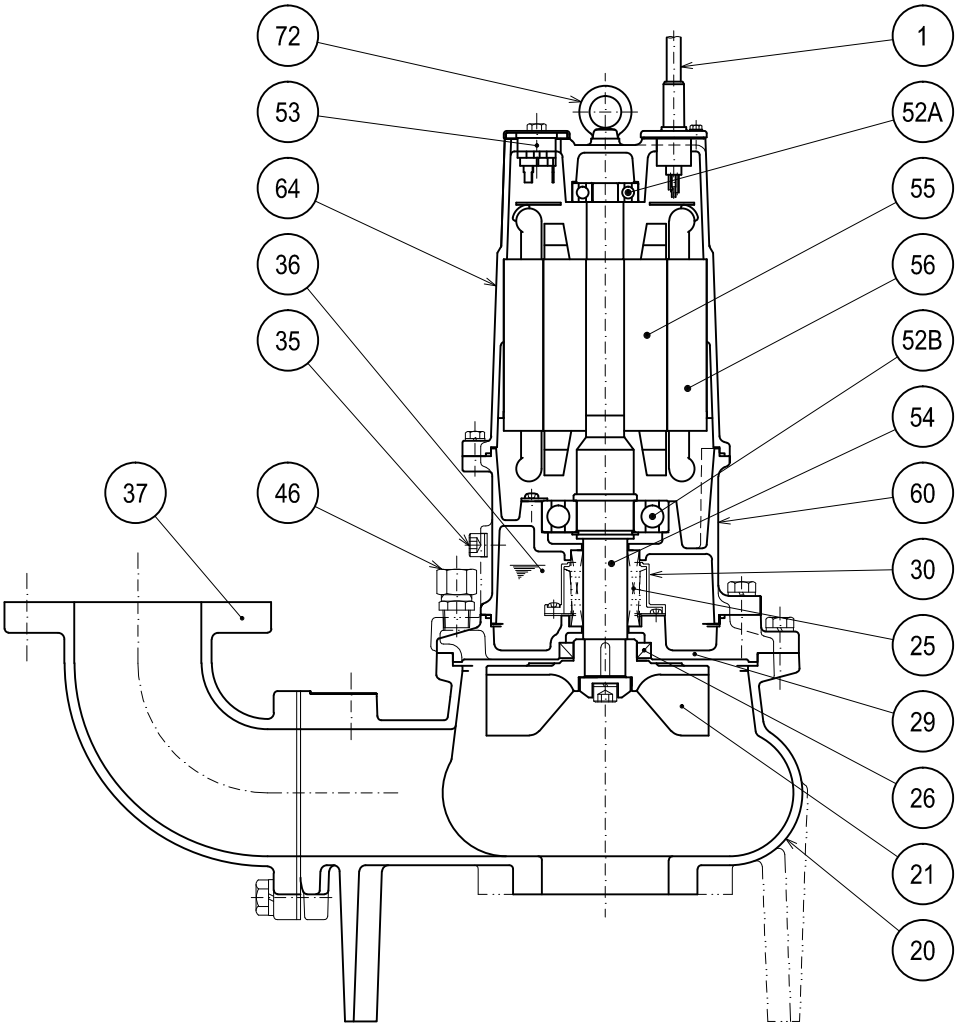
Model	kW	NOM. SIZE	Pump & Motor										C.W.L.	L.W.L.	*Wt. (kg)
			A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	
TOS100UZ43.7 -61	3.7	100	560	405	155	310	314	149	165	777	898	40	735	330	70

TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

SECTIONAL VIEW

100UZ43.7 -61



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM,AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG 12/4-32ft			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-35A			1
26	Oil Seal	NBR / TC507212			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 / 4"ANSI Flange(150PSI)	A48M Class30B	EN 1561 GJL-200	1
46	Air Release Valve	Stainless Steel	S 30400	1.4301	1
52A	Upper Bearing	AC-#6304ZZC3			1
52B	Lower Bearing	#6309ZZC3			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	2

TSURUMI PUMP	UZ - SERIES 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^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, and discharge elbow shall be manufactured from gray cast iron, ASTM A48 CLASS 30. 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^2) flat face flange and NPT companion flange. Impellers shall be of the 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 or F 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 25. 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

UZ - SERIES
VORTEX - SEWAGE & WASTE WATER PUMPS

SPECIFICATIONS

FEATURES

1. 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.

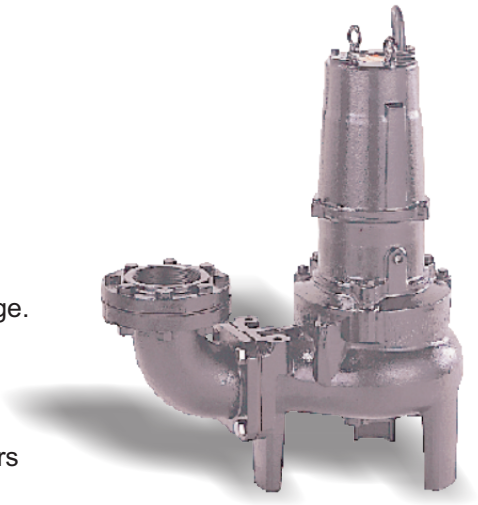
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

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.



OIL LIFTER (PAT. PEND) EQUIPPED

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

SPECIFICATIONS

Discharge Size	2 ~ 4” Npt (50 ~ 100 mm)
Horsepower Range	2 ~15 Hp. (1.5 ~ 11 kW)
Performance Range Capacity	26.4 ~ 740.0 Gpm. (.1 ~ 2.8 m^3/min)
Head	8.2 ~ 70.0Ft. (2.5 ~ 21.3 m)
Maximum water temperature	104 °F. (40 °C.)
Materials of Construction	
Casing	ASTM 48M Class 30B Cast Iron
Impeller	ASTM 48M Class 30B Cast Iron
Shaft	420,403 Stainless Steel
Motor Frame	ASTM 48M Class 30B Cast Iron
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Vortex, solids handling.
Solids Handling Capability	1.97 ~ 3.94” (50 ~ 100 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 1800 Rpm, 60 Hz.
Voltage, Phase	208-230, 460 or 575 V. (3 Phase)
Insulation	Class E, F
Accessories	Submersible Power Cable 32’ (10 m)
Operational Mode	Manual

STANDARD

Submersible Power Cable 32’ (10 m)

Manual

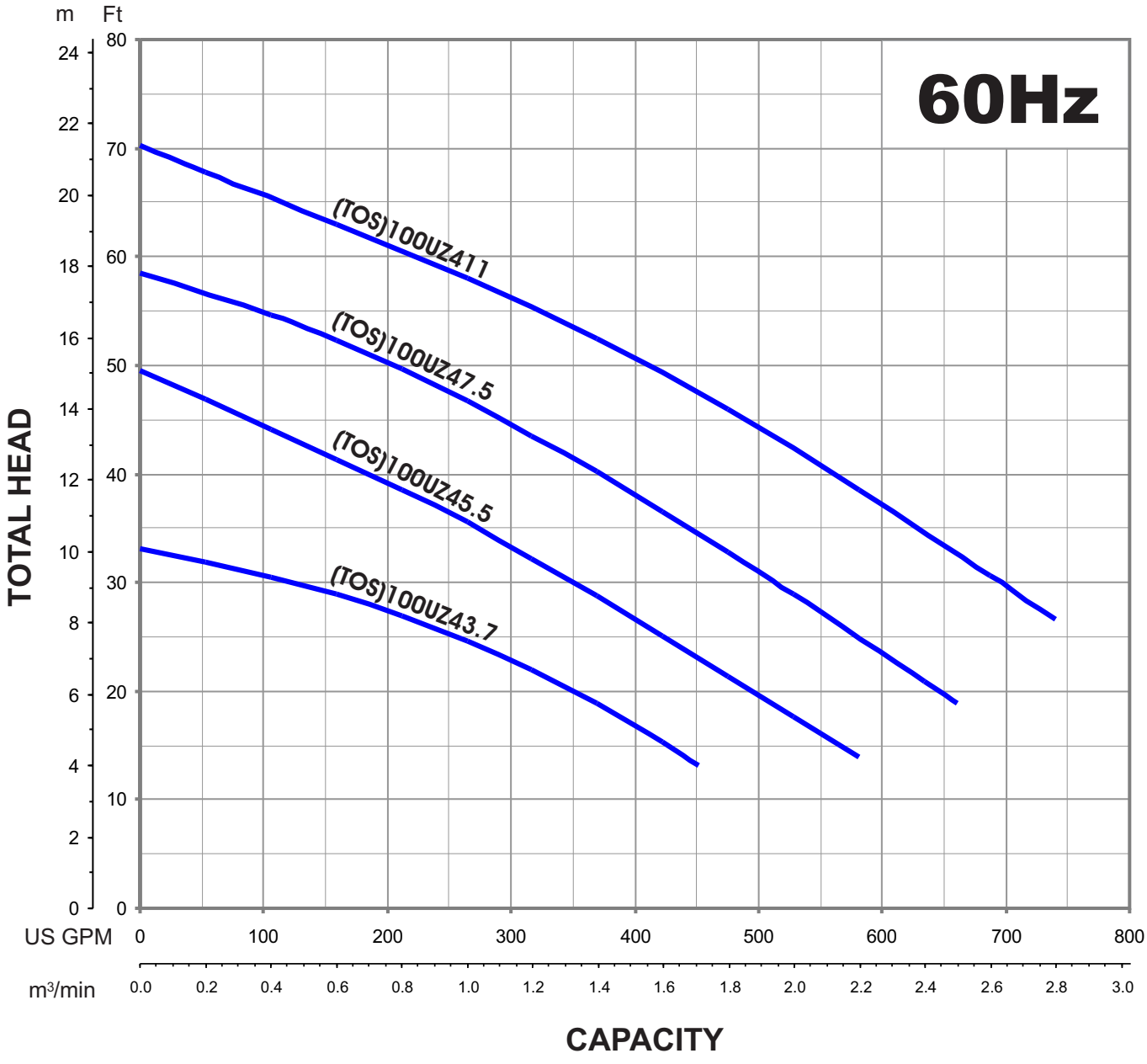
OPTIONS

Length as Required

TOS Slide rail system

TSURUMI PUMP	UZ series 4”	PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



TSURUMI PUMP

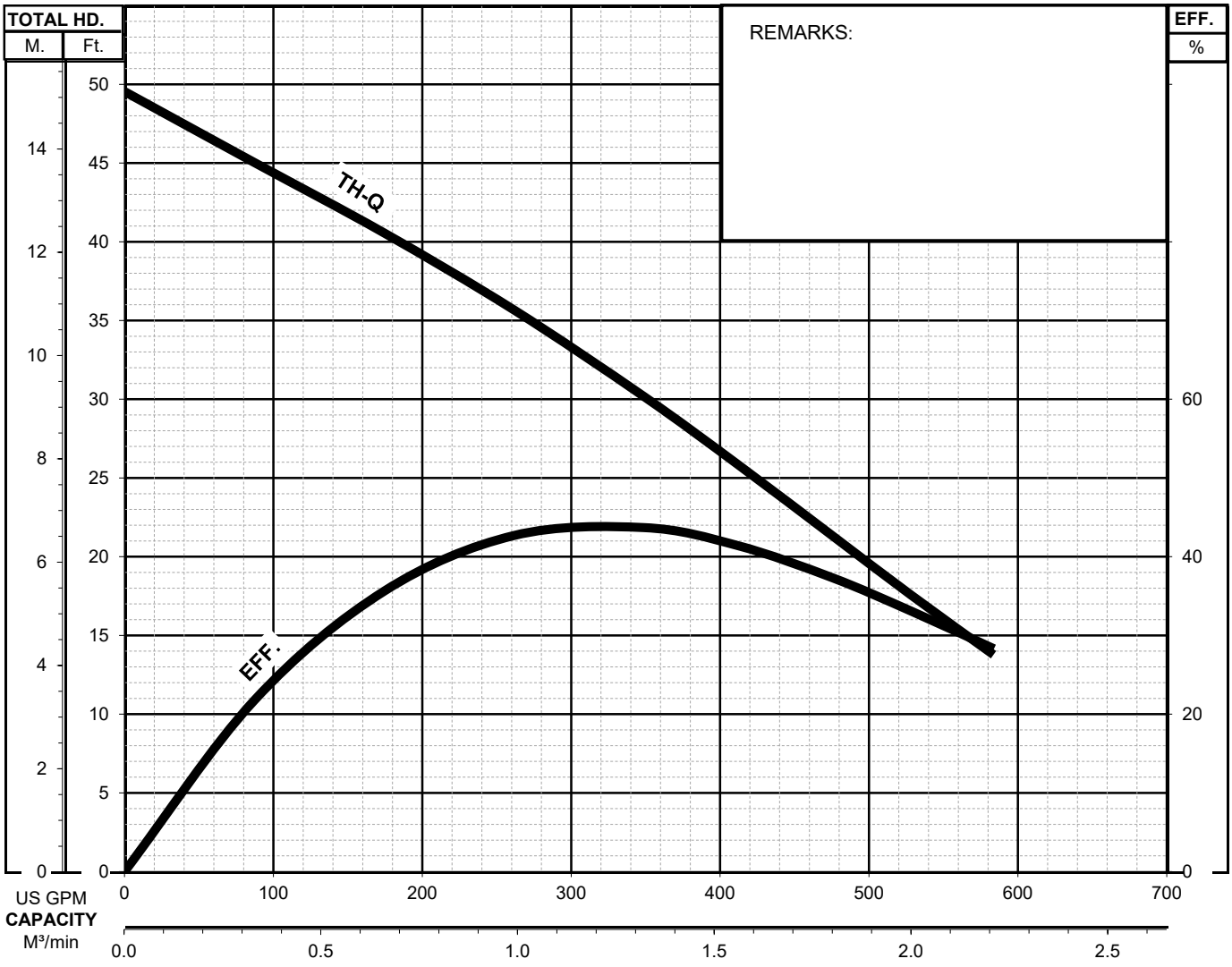
UZ - SERIES

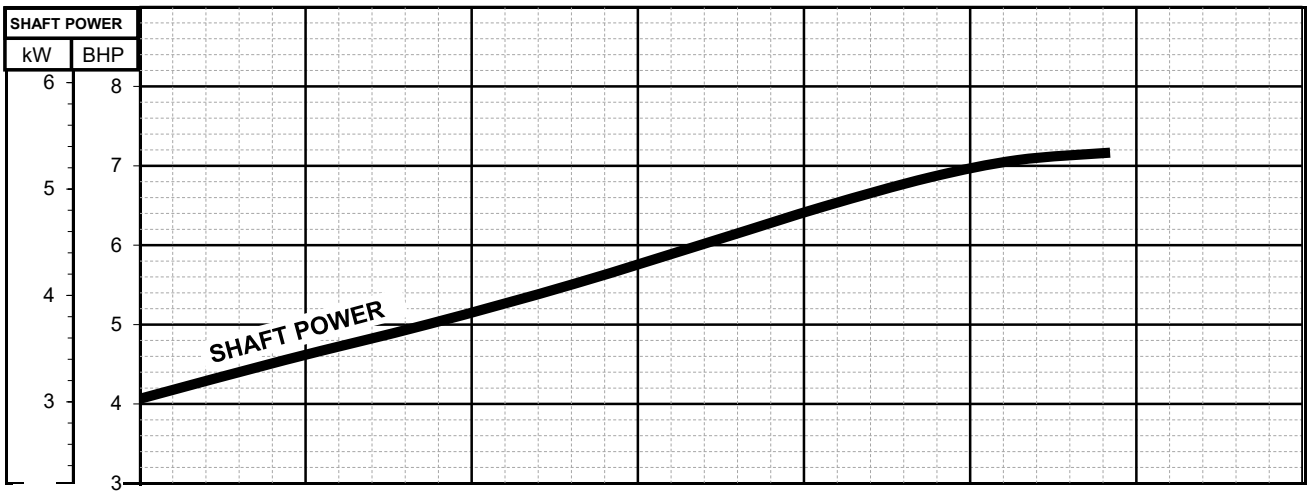
VORTEX - SEWAGE & WASTERWATER PUMPS

PERFORMANCE CURVE

MODEL		BORE	HP	kW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
(TOS)100UZ45.5-65		4"/100mm	7.5	5.5	1731	3.94"/100mm	Water	1.0	1.123cSt.	60°F
PUMP TYPE		**PHASE**	**VOLTAGE**		**AMPERAGE**	**HZ**	**STARTING METHOD**			**INS. CLASS**
Vortex-Sewage&Wastewater		3	208-230/460/575		22.2-20.8 / 10.4 / 8.3	60	Direct On Line			F
CURVE No.	**DATE**	**PHASE**	**VOLTAGE**		**AMPERAGE**	**HZ**	**STARTING METHOD**			**INS. CLASS**
-	-	-	-		-	-	-			-

REMARKS:





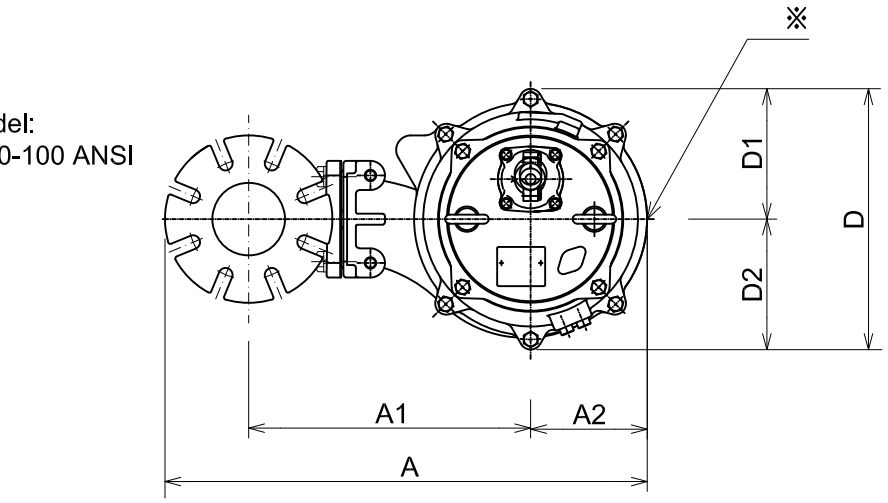
TSURUMI PUMP

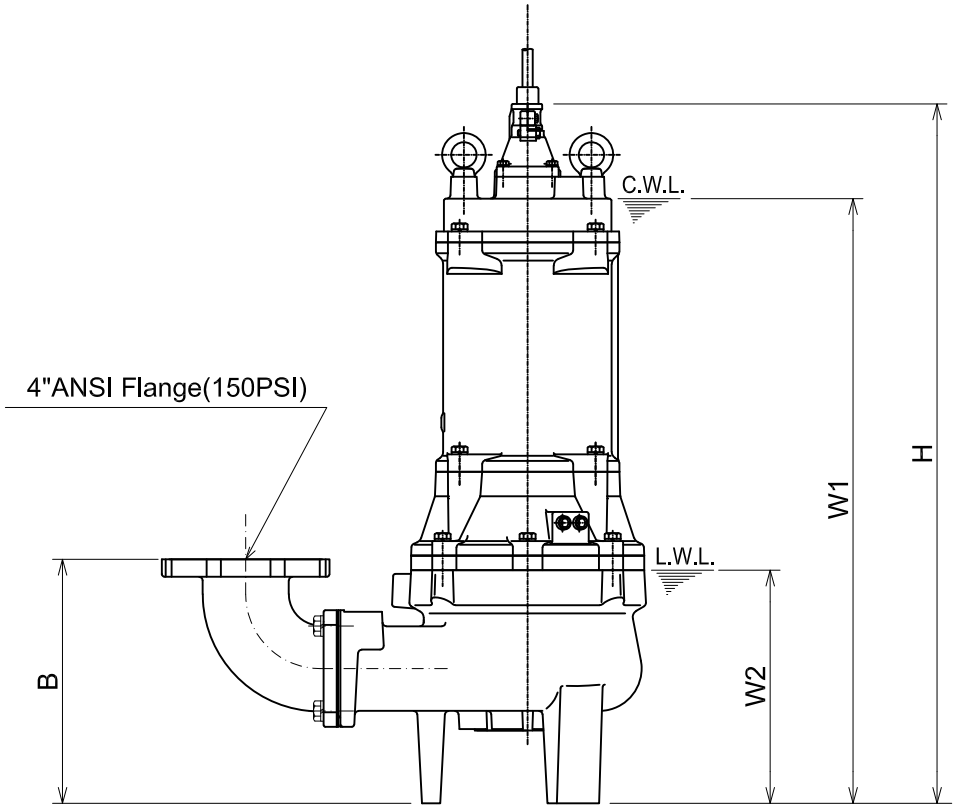
UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

100UZ45.5 -65
100UZ47.5 -65

Bend model:
BEND 100-100 ANSI





※An air release hole is provided on the top of the pump casing.

C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water 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.)
100UZ45.5-65	7.5	4"	26 7/16	15 5/8	6 5/16	13 3/16	14 1/8	7 1/16	7 1/16	36 15/16	32 1/8	12 5/8	288
100UZ47.5-65	10	4"	26 7/16	15 5/8	6 5/16	13 3/16	14 1/8	7 1/16	7 1/16	37 13/16	32 7/8	12 5/8	304

DIMENSIONS:METRIC (mm) *Excluding Cable

Model	kW	NOM.	Pump & Motor								C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	B	D	D1	D2	H	W1	W2	(kg)
100UZ45.5-65	5.5	100	672	397	160	335	358	179	179	939	815	320	131
100UZ47.5-65	7.5	100	672	397	160	335	358	179	179	960	835	320	138

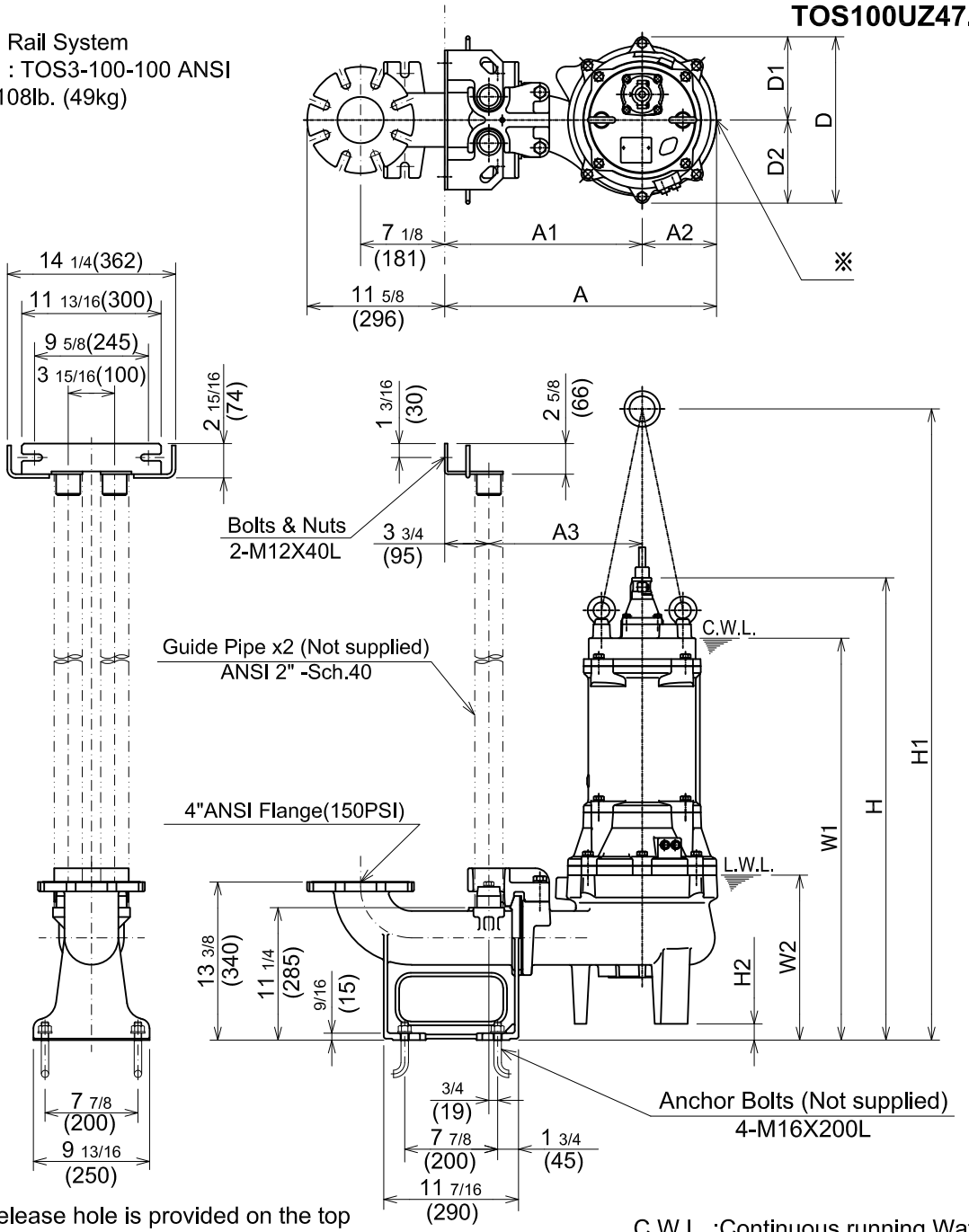
TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

TOS100UZ45.5 -65
TOS100UZ47.5 -65

Guide Rail System
Model : TOS3-100-100 ANSI
Wt. : 108lb. (49kg)



※An air release hole is provided on the top of the pump casing.

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

DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor										C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	A3	D	D1	D2	H	H	H2	W1	W2	(lbs.)
TOS100UZ45.5-65	7.5	4"	23 1/16	16 3/4	6 5/16	13	14 1/8	7 1/16	7 1/16	38 3/8	52 5/8	1 3/8	33 1/2	14	295
TOS100UZ47.5-65	10	4"	23 1/16	16 3/4	6 5/16	13	14 1/8	7 1/16	7 1/16	39 3/16	53 1/2	1 3/8	34 1/4	14	326

DIMENSIONS:METRIC (mm) *Excluding TOS & Cable

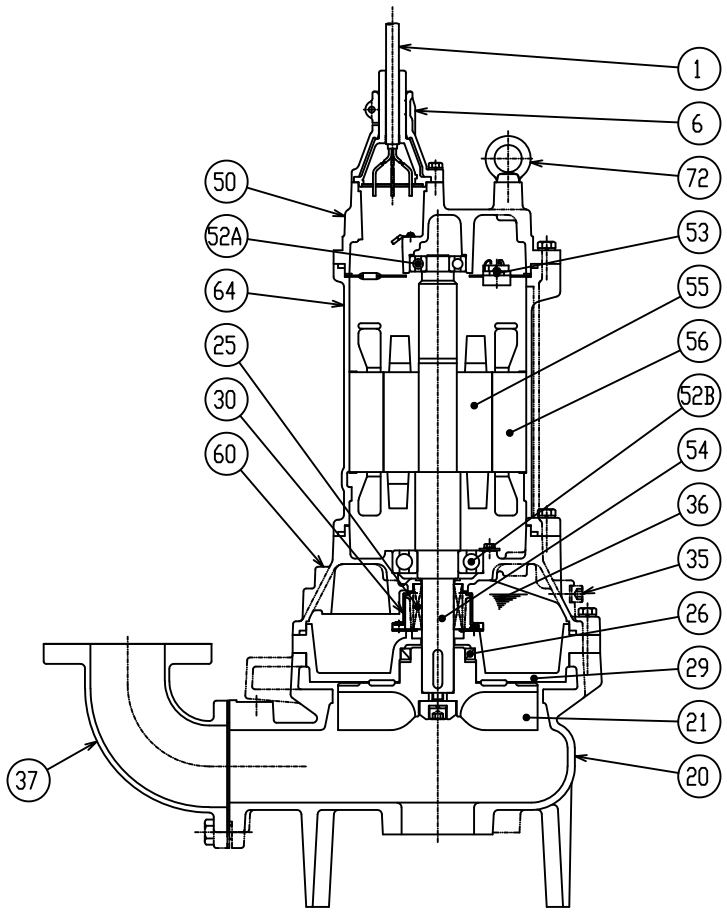
Model	kW	NOM.	Pump & Motor										C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	A3	D	D1	D2	H	H	H2	W1	W2	(kg)
TOS100UZ45.5-65	5.5	100	585	425	160	330	358	179	179	974	1336	35	850	355	134
TOS100UZ47.5-65	7.5	100	585	425	160	330	358	179	179	995	1359	35	870	355	148

TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

SECTIONAL VIEW

80UZ45.5 -65
80UZ47.5 -65
100UZ45.5 -65
100UZ47.5 -65



	UZ45.5	UZ47.5
* 1	AWG 12/4-32ft	AWG 10/4-32ft
* 2	#AC-6305ZZC3	#AC-6306ZZC3

PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	Chloroprene Sheath *1			1
6	Stuffing Box	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
20	Pump Casing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
21	Impeller	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
25	Mechanical Seal	Silicon Carbide / H-35A			1
26	Oil Seal	NBR / TC608212			1
29	Oil Casing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
30	Oil Lifter	PBT Plastic w/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	2
36	Lubricant	Turbine Oil ISO VG32 or SAE10W-20			
37	Discharge Bend	Cast Iron / 3" or 4" ANSI Flange(150PSI)	A48M Class 30B	EN 1561 GJL-200	1
50	Motor Bracket	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
52A	Upper Bearing	*2			1
52B	Lower Bearing	#6309ZZC3			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 Class 30B	EN 1561 GJL-200	1
64	Motor Housing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
72	Lifting Lug Bolt	Steel	A283 Grade D	EN 10025 S275	2

TSURUMI PUMP	UZ - SERIES 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^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, 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^2) flat face flange and NPT companion flange. Impellers shall be of the 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 or F 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

UZ - SERIES
VORTEX - SEWAGE & WASTE WATER PUMPS

SPECIFICATIONS

FEATURES

1. 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.

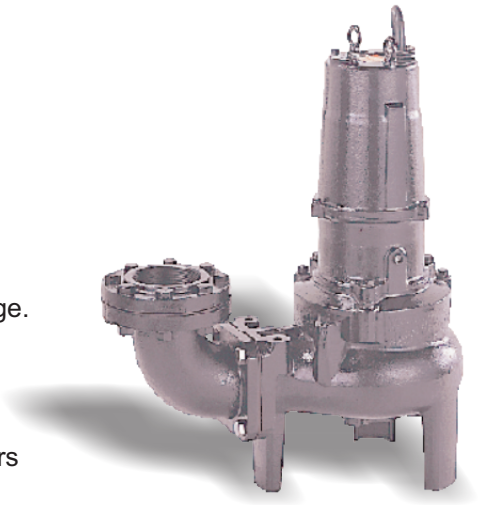
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

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.



OIL LIFTER (PAT. PEND) EQUIPPED

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

SPECIFICATIONS

Discharge Size	2 ~ 4” Npt (50 ~ 100 mm)
Horsepower Range	2 ~15 Hp. (1.5 ~ 11 kW)
Performance Range Capacity	26.4 ~ 740.0 Gpm. (.1 ~ 2.8 m^3/min)
Head	8.2 ~ 70.0Ft. (2.5 ~ 21.3 m)
Maximum water temperature	104 °F. (40 °C.)
Materials of Construction	
Casing	ASTM 48M Class 30B Cast Iron
Impeller	ASTM 48M Class 30B Cast Iron
Shaft	420,403 Stainless Steel
Motor Frame	ASTM 48M Class 30B Cast Iron
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Vortex, solids handling.
Solids Handling Capability	1.97 ~ 3.94” (50 ~ 100 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 1800 Rpm, 60 Hz.
Voltage, Phase	208-230, 460 or 575 V. (3 Phase)
Insulation	Class E, F
Accessories	Submersible Power Cable 32’ (10 m)
Operational Mode	Manual

STANDARD

Submersible Power Cable 32’ (10 m)

Manual

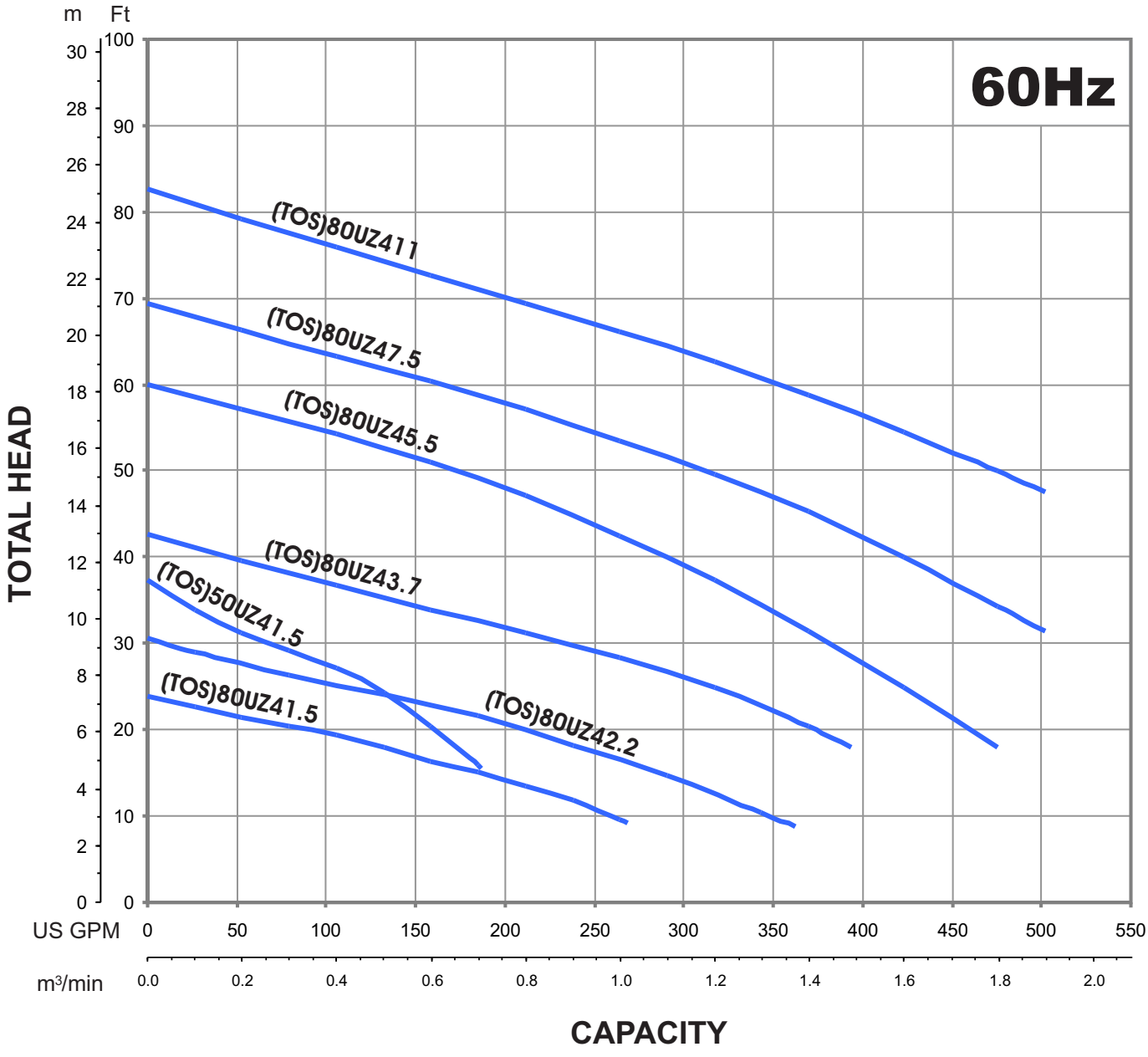
OPTIONS

Length as Required

TOS Slide rail system

TSURUMI PUMP	UZ series 2” - 3”	PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



Jun-21

TSURUMI PUMP

UZ - SERIES

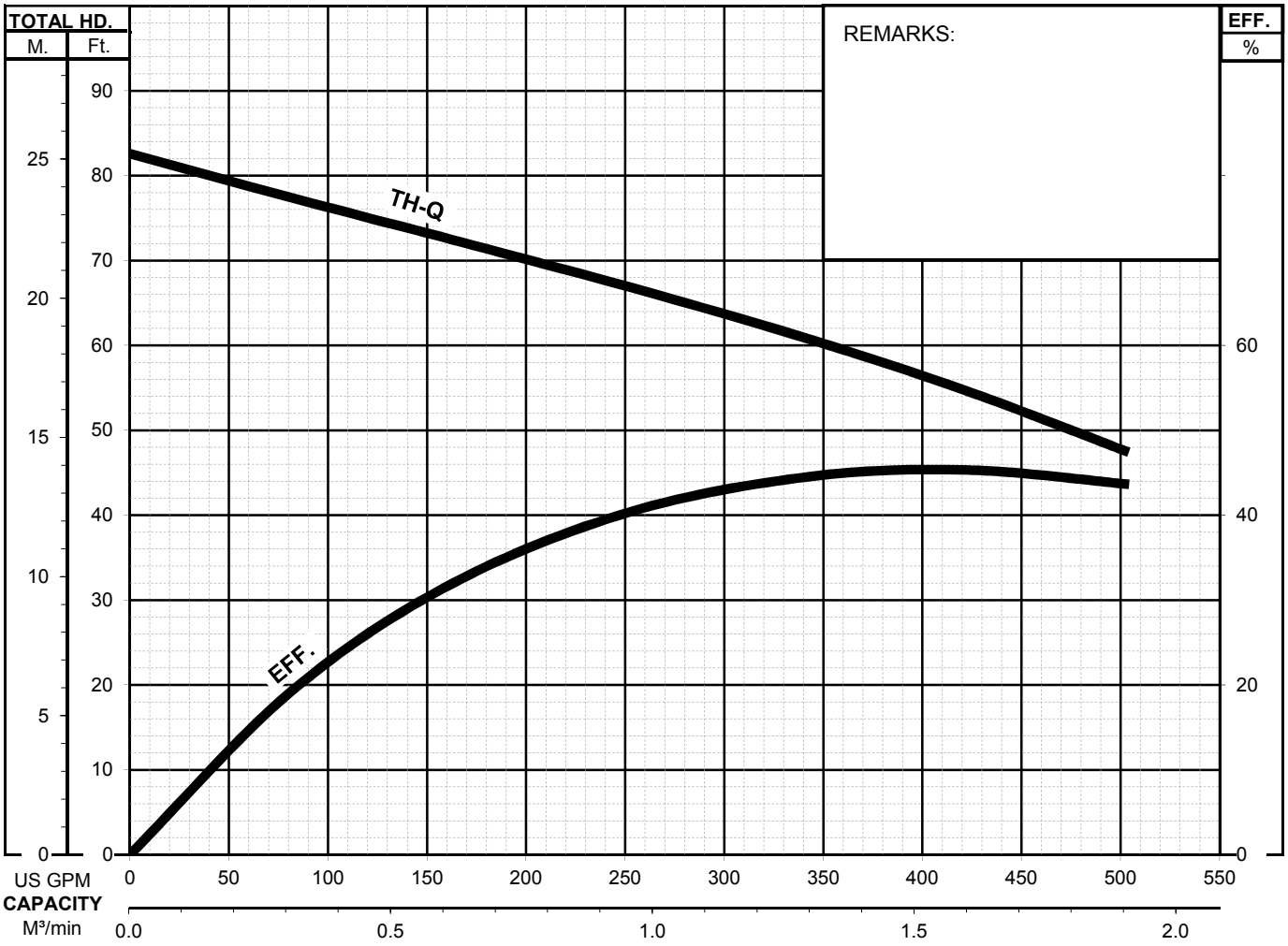
VORTEX - SEWAGE & WASTERWATER PUMPS

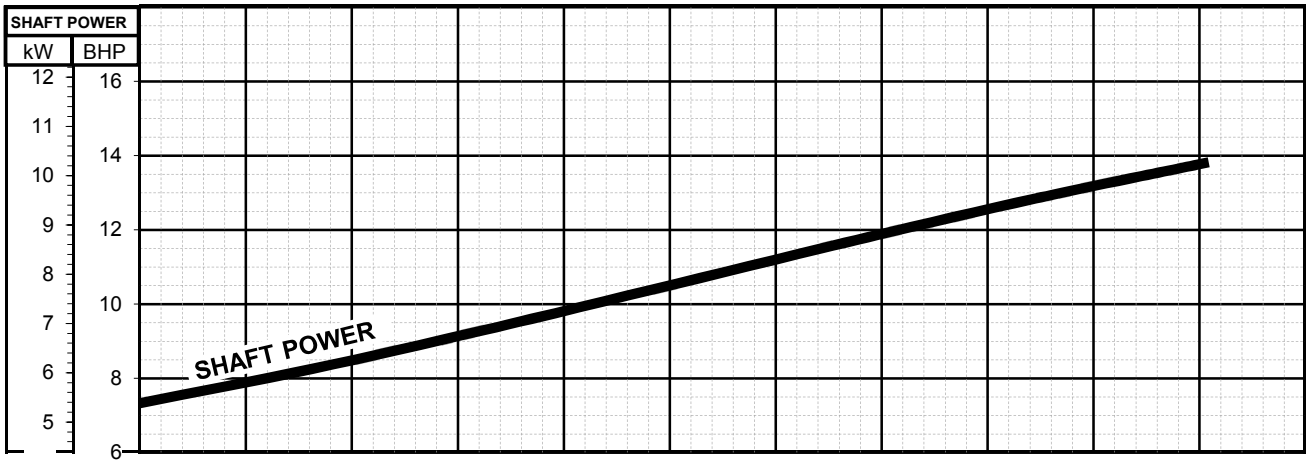
PERFORMANCE CURVE

MODEL	BORE	HP	kW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
(TOS) 80UZ411-65	3"/80mm	15	11	1739	3.15"/80mm	Water	1.0	1.123cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Vortex-Sewage&Wastewater	3	208-230/460/575	41.4-38 / 19 / 14.7	60	Star-Delta	F

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



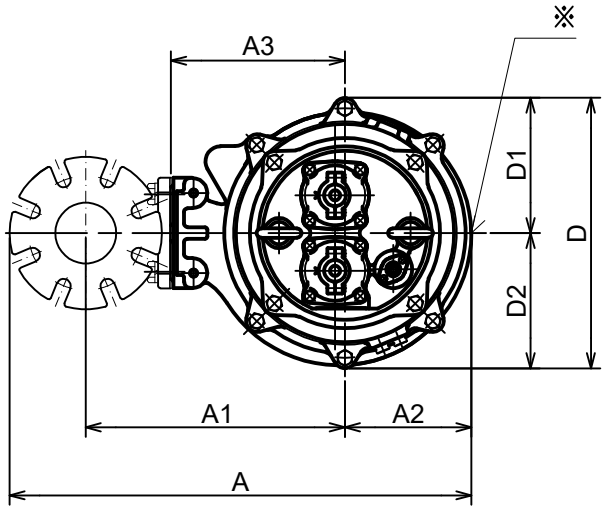


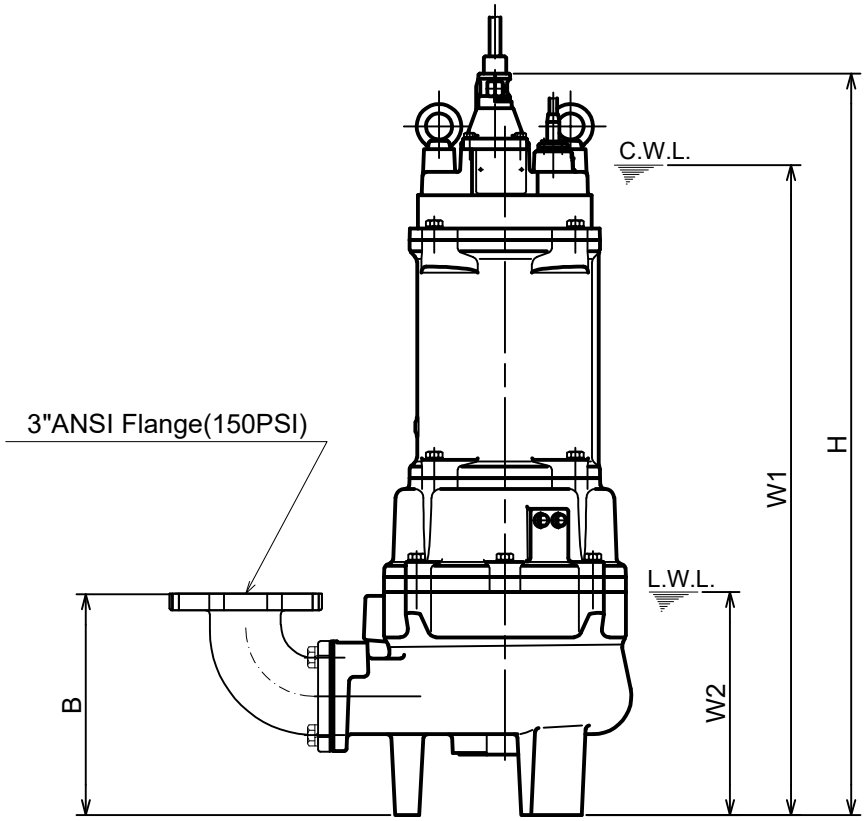
Jun.2021

TSURUMI PUMP	UZ-SERIES VORTEX - SEWAGE & WASTEWATER PUMPS	DIMENSIONS

80UZ411 -65

Bend model:
BEND80-80 ANSI





※An air release hole is provided on the top of the pump casing.

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

DIMENSIONS:USCS (Inch)

Model	HP	NOM.	Pump & Motor									C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	A3	B	D	D1	D2	H	W1	W2	(lbs.)
80UZ411-65	15	3"	24 7/16	13 7/8	6 5/8	9 1/16	11 1/2	14 1/8	7 1/16	7 1/16	38 5/8	33 7/8	11 5/8	370

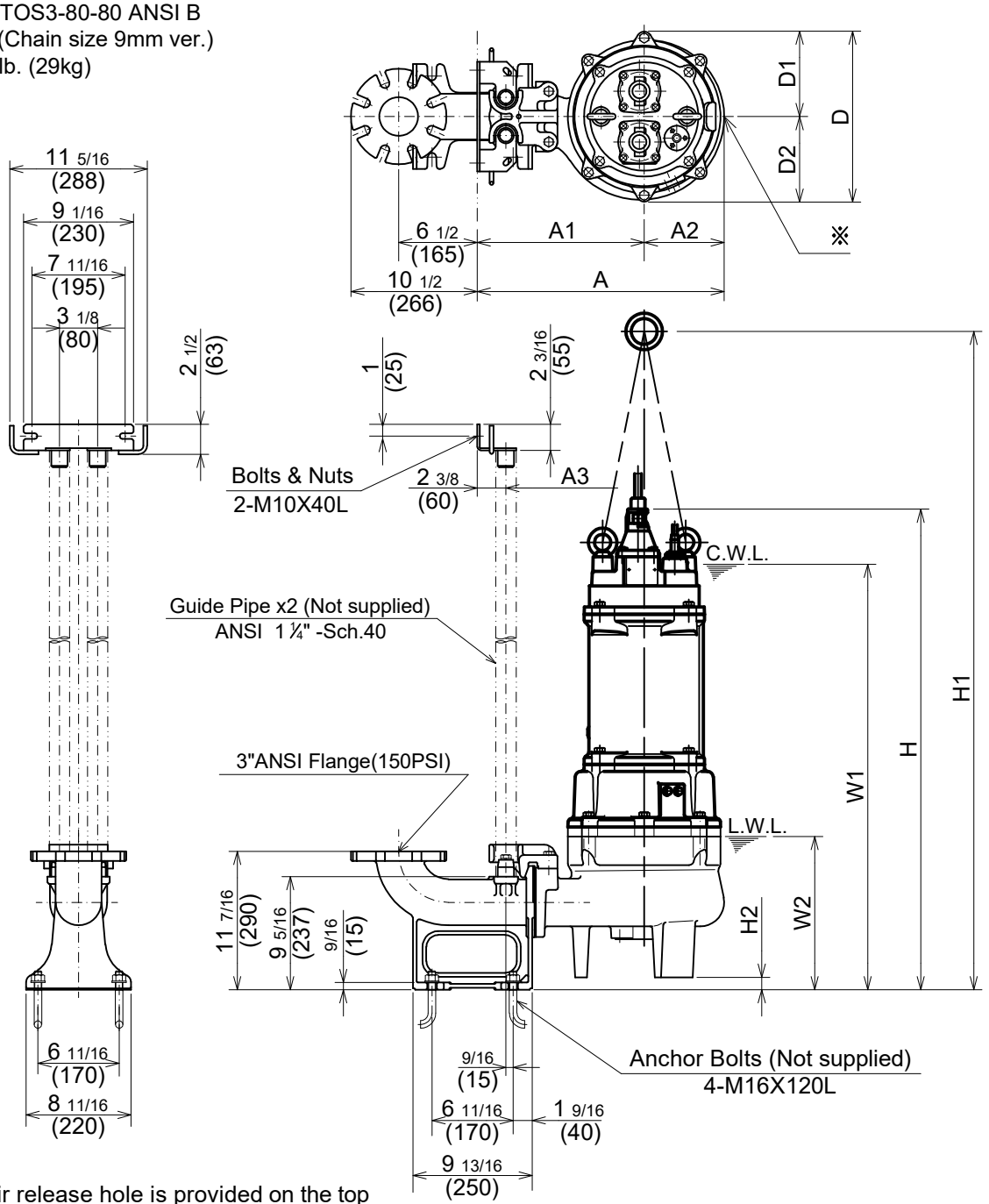
DIMENSIONS:METRIC (mm) *Excluding Cable

Model	kW	NOM.	Pump & Motor									C.W.L.	L.W.L.	*Wt.
		SIZE	A	A1	A2	A3	B	D	D1	D2	H	W1	W2	(kg)
80UZ411-65	11	80	620	352	168	230	292	358	179	179	981	860	295	168

TSURUMI PUMP | **UZ-SERIES** VORTEX - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

TOS80UZ411 -65

Guide Rail System
Model : TOS3-80-80 ANSI B
(Chain size 9mm ver.)
Wt. : 64lb. (29kg)



※An air release hole is provided on the top of the pump casing.

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	A3	D	D1	D2	H	H1	H2	W1	W2	(lbs.)
TOS80UZ411-65	15	3"	20 3/8	13 3/4	6 5/8	11 7/16	14 1/8	7 1/16	7 1/16	39 5/8	54 1/16	1	34 7/8	12 3/4	377

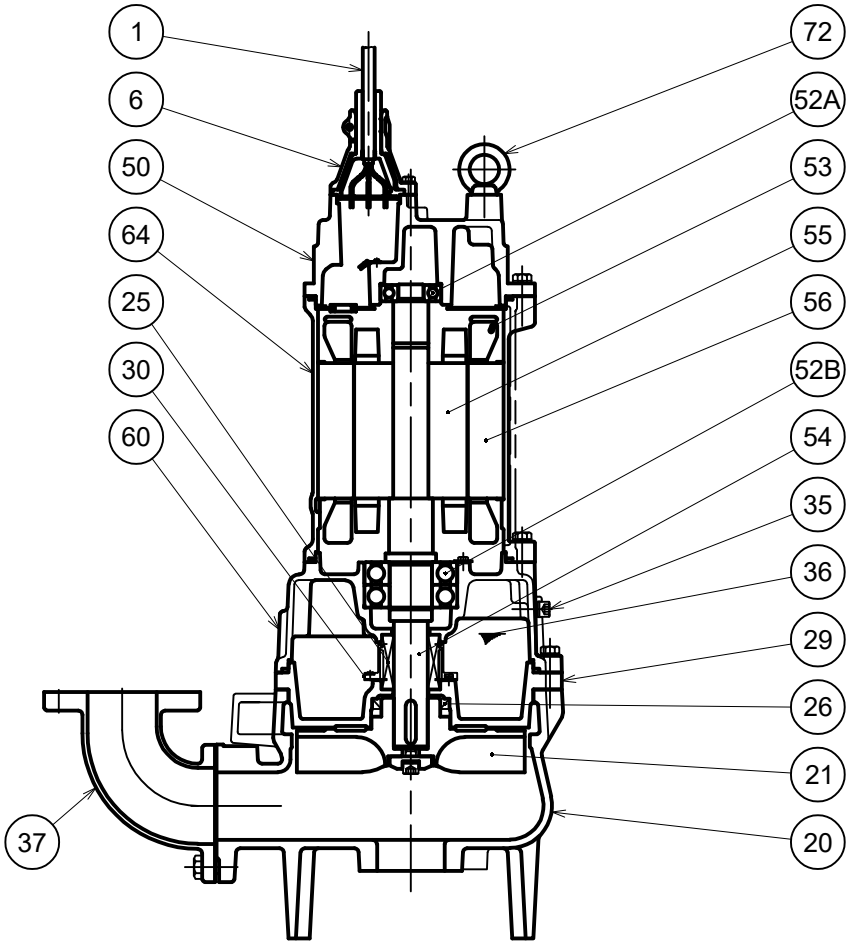
DIMENSIONS:METRIC (mm) *Excluding TOS & Cable

Model	kW	NOM. SIZE	Pump & Motor										C.W.L.	L.W.L.	*Wt.
			A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	(kg)
TOS80UZ411-65	11	100	518	350	168	290	358	179	179	1007	1373	26	885	325	171

Jun.2021

TSURUMI PUMP	UZ-SERIES VORTEX - SEWAGE & WASTEWATER PUMPS	SECTIONAL VIEW

80UZ411 -65
100UZ411 -65



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	Chloroprene Sheath AWG 12/4-32ft			1
	Power Cable	Chloroprene Sheath AWG 12/3-32ft			1
	Control Cable	PVC Sheath AWG 16/2-32ft			1
6	Stuffing Box	Cast Iron	A48M Class 30B	EN 1561 GJL-200	2
20	Pump Casing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
21	Impeller	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
25	Mechanical Seal	Silicon Carbide / H-40X			1
26	Oil Seal	NBR / TC709212			1
29	Oil Casing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
30	Oil Lifter	PBT Plastic w/(GF+MD)40			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	2
36	Lubricant	Turbine Oil ISO VG32 or SAE10W-20			
37	Discharge Bend	Cast Iron / 3" or 4" ANSI Flange(150PSI)	A48M Class 30B	EN 1561 GJL-200	1
50	Motor Bracket	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
52A	Upper Bearing	#6306ZZC3			1
52B	Lower Bearing	#6310ZZC3			2
53	Motor Protector				3
54	Shaft	Stainless Steel	S 42000	1.4028	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
64	Motor Housing	Cast Iron	A48M Class 30B	EN 1561 GJL-200	1
72	Lifting Lug Bolt	Stainless Steel	S 30400	1.4301	2

TSURUMI PUMP	UZ - SERIES 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^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, 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^2) flat face flange and NPT companion flange. Impellers shall be of the 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 or F 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

UZ - SERIES
VORTEX - SEWAGE & WASTE WATER PUMPS

SPECIFICATIONS

FEATURES

1. 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.

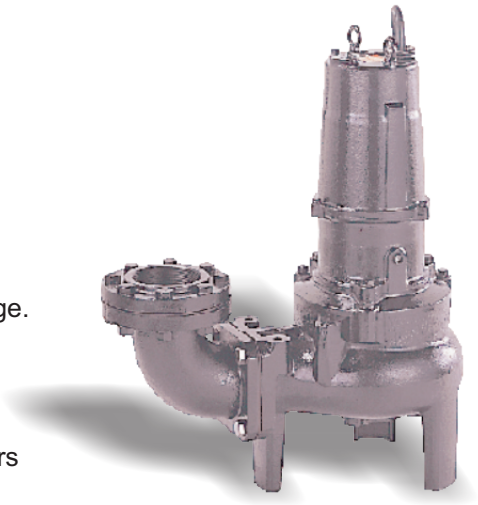
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

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.



OIL LIFTER (PAT. PEND) EQUIPPED

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

SPECIFICATIONS

Discharge Size	2 ~ 4” Npt (50 ~ 100 mm)
Horsepower Range	2 ~15 Hp. (1.5 ~ 11 kW)
Performance Range Capacity	26.4 ~ 740.0 Gpm. (.1 ~ 2.8 m^3/min)
Head	8.2 ~ 70.0Ft. (2.5 ~ 21.3 m)
Maximum water temperature	104 °F. (40 °C.)
Materials of Construction	
Casing	ASTM 48M Class 30B Cast Iron
Impeller	ASTM 48M Class 30B Cast Iron
Shaft	420,403 Stainless Steel
Motor Frame	ASTM 48M Class 30B Cast Iron
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Vortex, solids handling.
Solids Handling Capability	1.97 ~ 3.94” (50 ~ 100 mm)
Bearings	Pre-lubricated, Double Shielded
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 1800 Rpm, 60 Hz.
Voltage, Phase	208-230, 460 or 575 V. (3 Phase)
Insulation	Class E, F
Accessories	Submersible Power Cable 32’ (10 m)
Operational Mode	Manual

STANDARD

Submersible Power Cable 32’ (10 m)

Manual

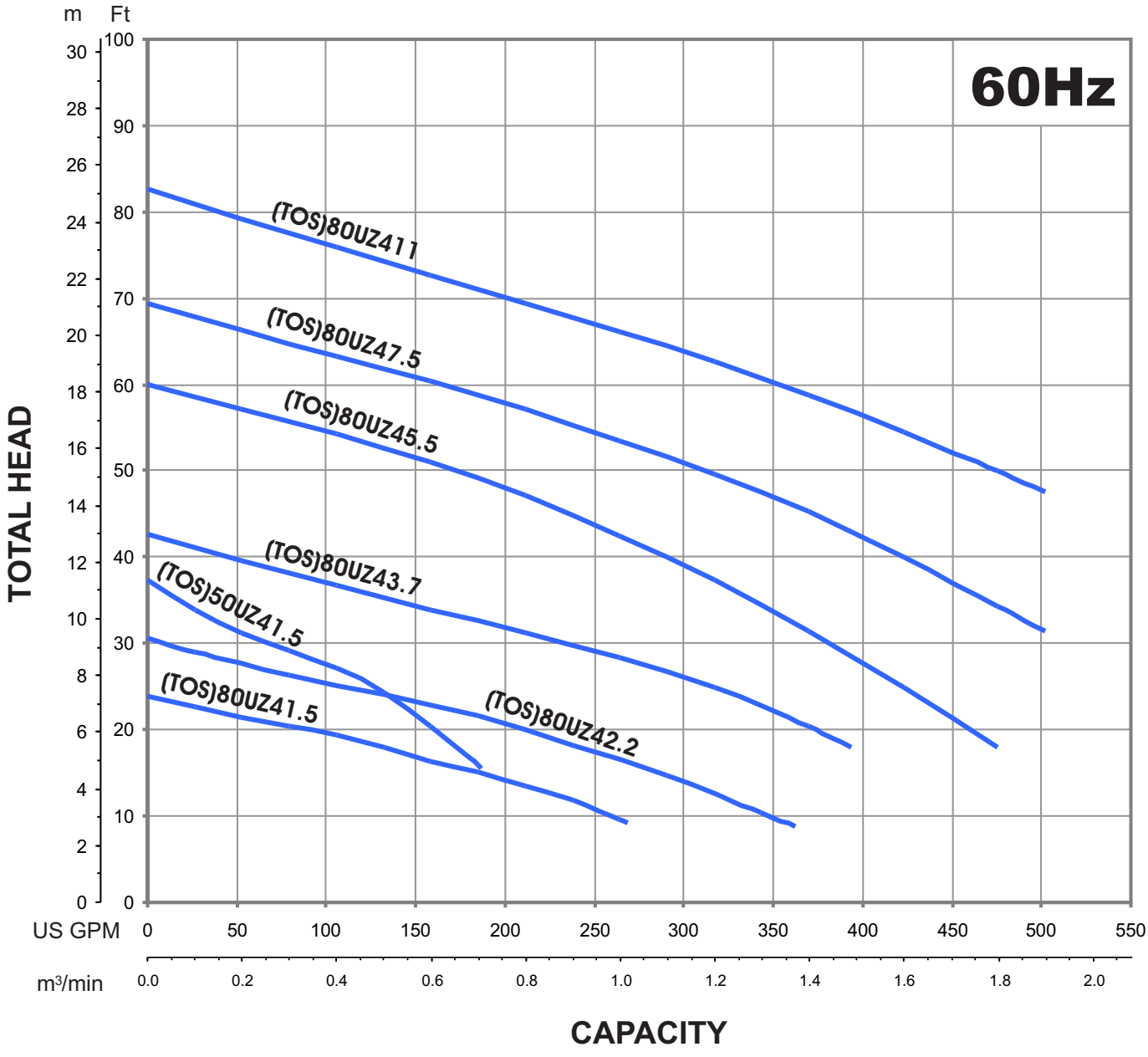
OPTIONS

Length as Required

TOS Slide rail system

TSURUMI PUMP	UZ series 2” - 3”	PERFORMANCE RANGE

GROUP PERFORMANCE RANGE



TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

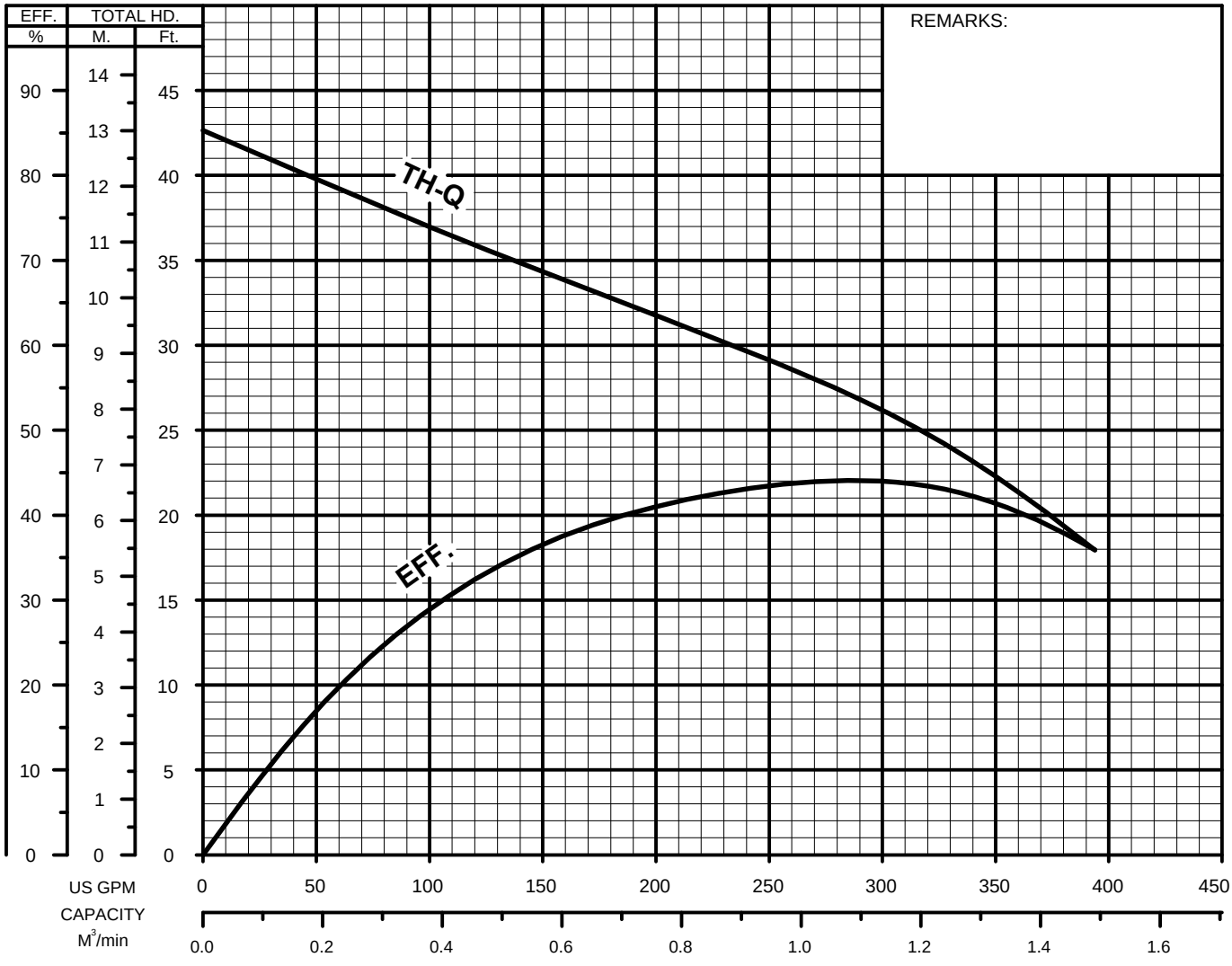
PERFORMANCE CURVE

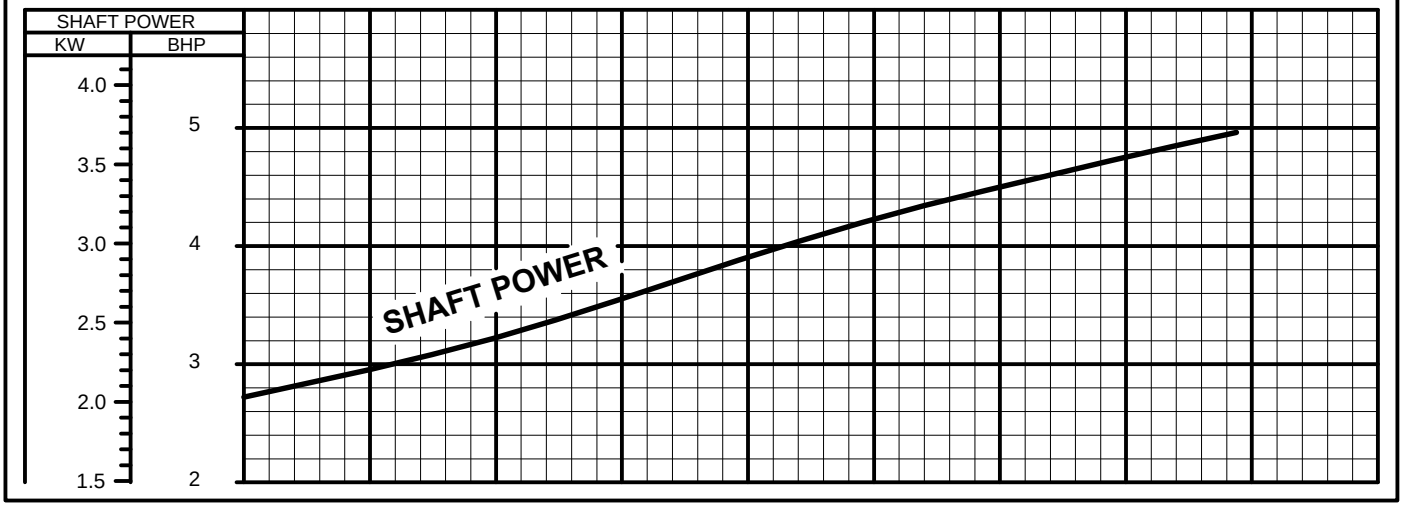
MODEL	BORE	HP	KW	RPM	SOLIDS DIA.	LIQUID	SG.	VISCOSITY	TEMP.
(TOS)80UZ43.7 -61	3"/80mm	5	3.7	1690	3.15"/80mm	Water	1.0	1.123cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS.CLASS
Vortex-Sewage&Wastewater	3	208-230/460/575	14.8-14.2/6.9/5.4	60	Direct On Line	E

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

REMARKS:

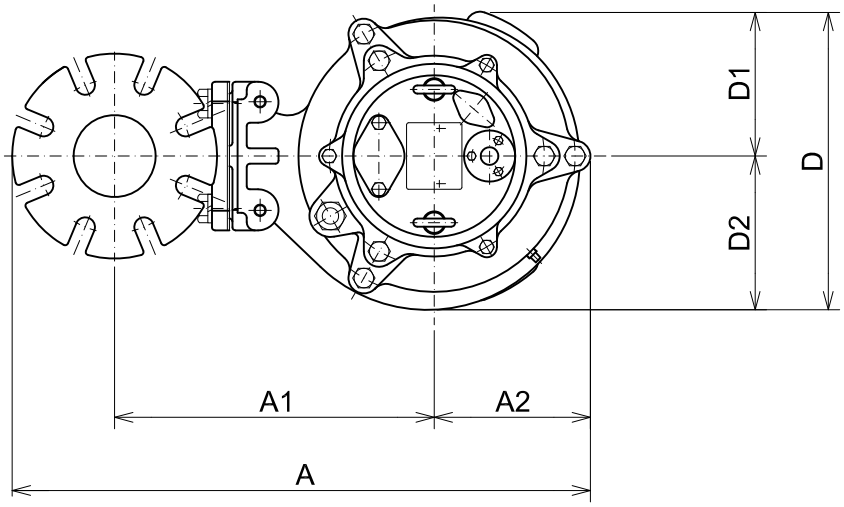


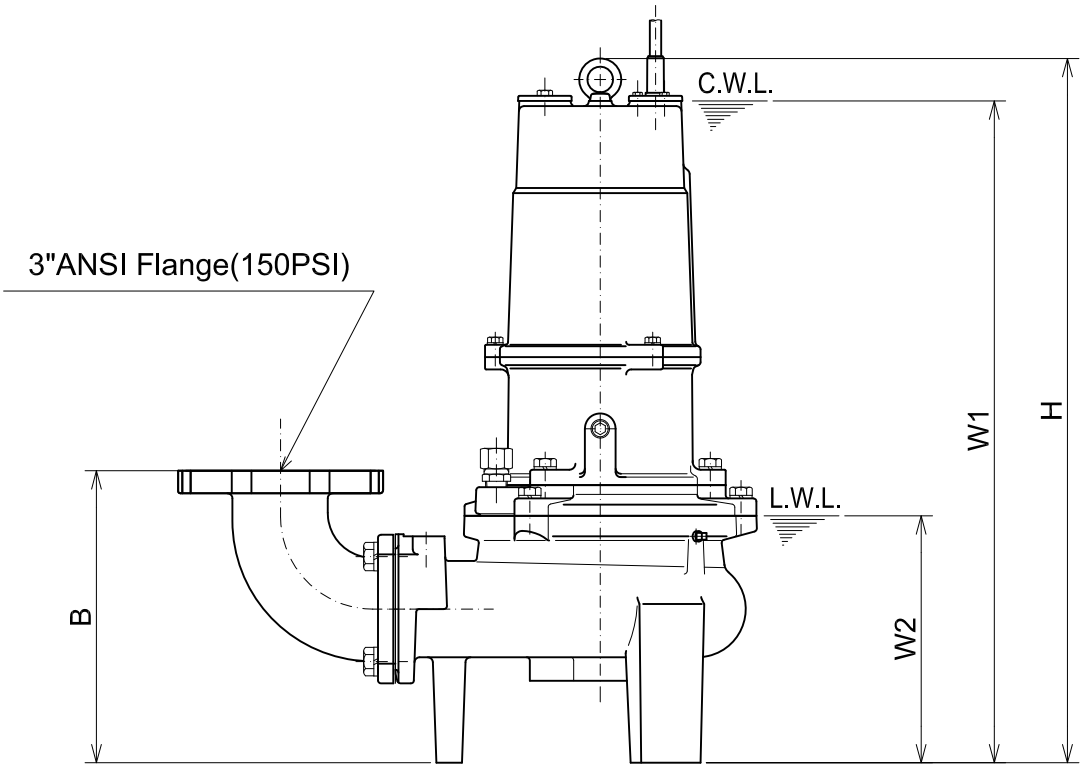


TSURUMI PUMP | UZ-SERIES VORTEX - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

80UZ43.7 -61

Bend model:
BEND80-80 ANSI





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.)
80UZ43.7 -61	5	3"	22 11/16	12 11/16	6	11 1/4	11 7/16	5 9/16	5 7/8	27 1/16	25 3/8	9 1/2	154

*Excluding Cable.

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)
80UZ43.7 -61	3.7	80	577	322	153	285	291	141	150	688	645	240	70

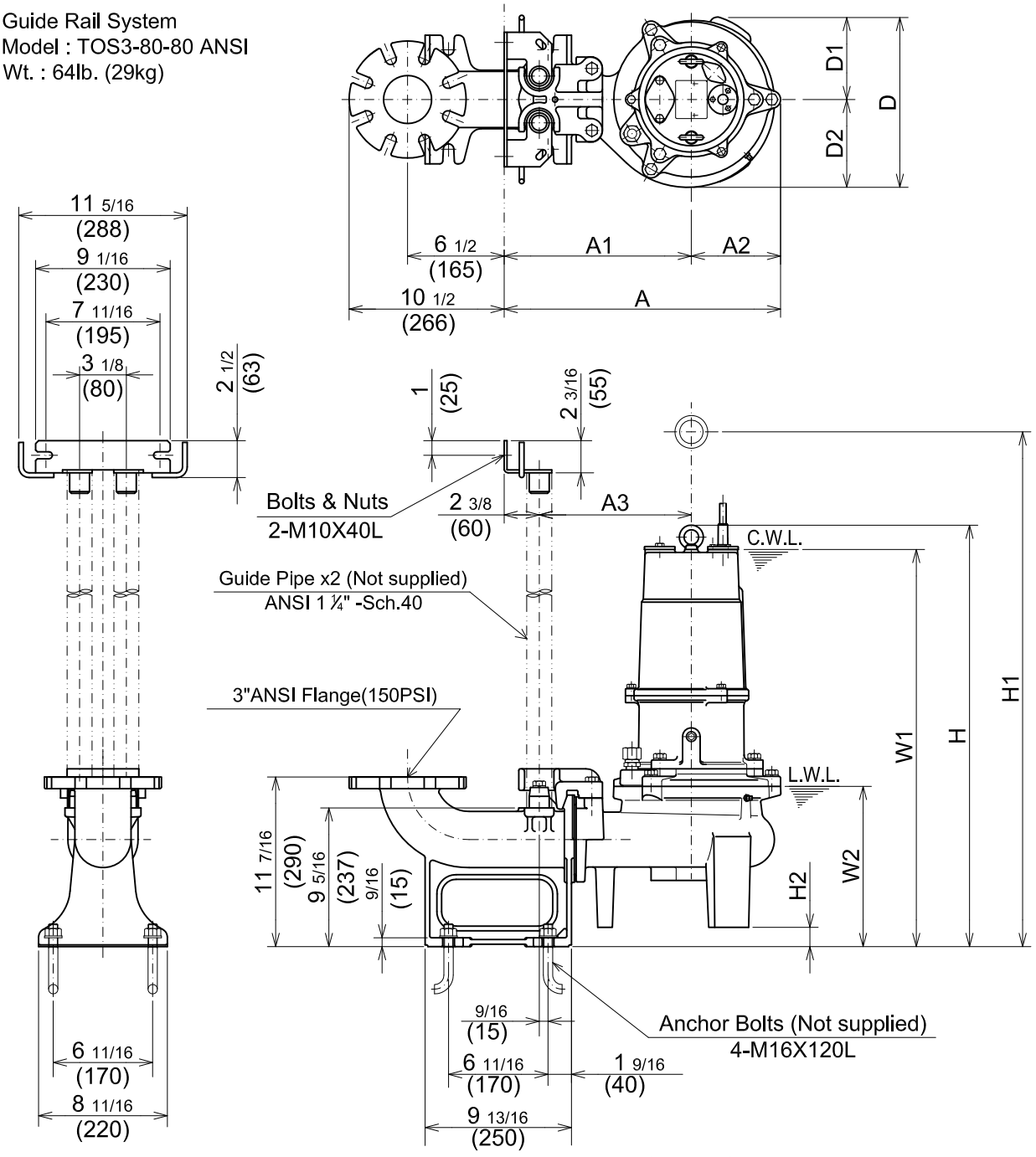
TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

TOS80UZ43.7 -61

Guide Rail System
Model : TOS3-80-80 ANSI
Wt. : 64lb. (29kg)



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. (lbs.)
			A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	
TOS80UZ43.7 -61	5	3"	18 5/8	12 5/8	6	10 1/4	11 7/16	5 9/16	5 7/8	28 3/8	33 1/8	1 5/16	26 3/4	10 7/8	139

*Excluding TOS & Cable.

DIMENSIONS:METRIC(mm)

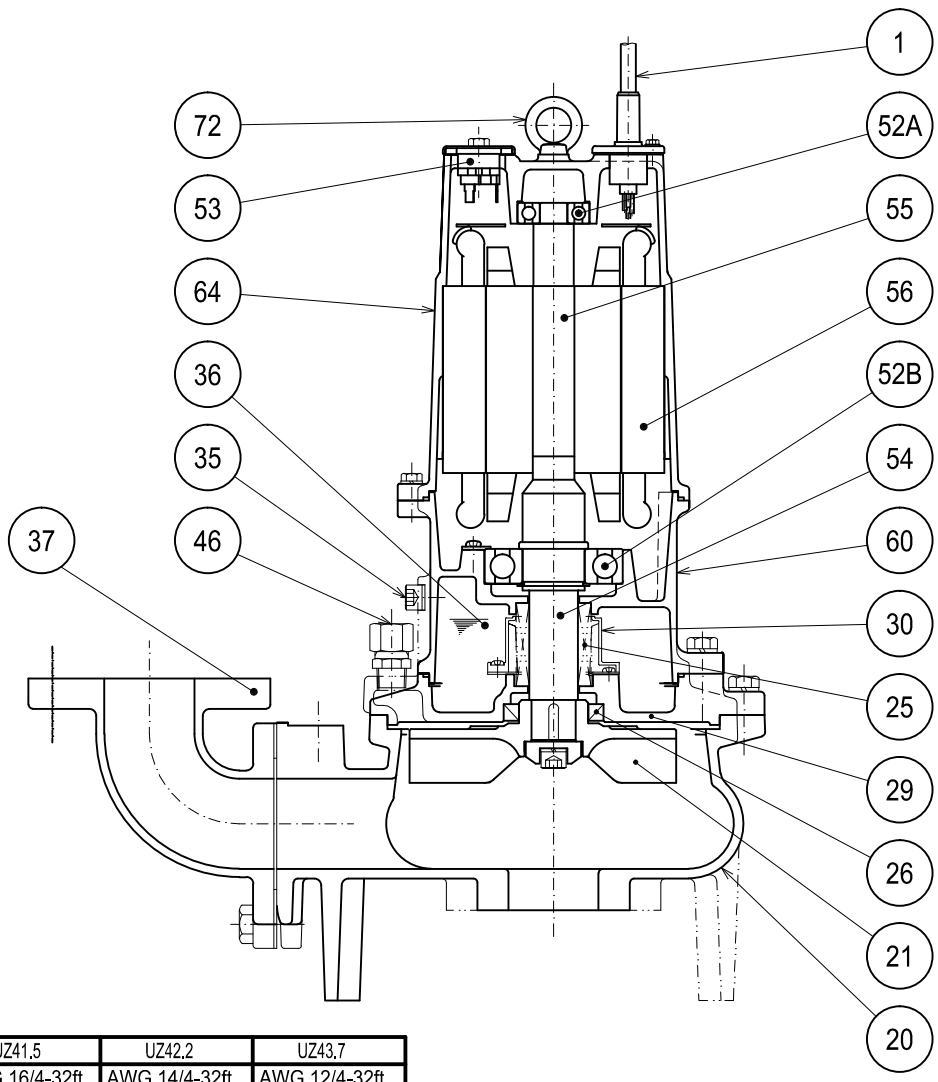
Model	kW	NOM. SIZE	Pump & Motor										C.W.L.	L.W.L.	*Wt. (kg)
			A	A1	A2	A3	D	D1	D2	H	H1	H2	W1	W2	
TOS80UZ43.7 -61	3.7	80	473	320	153	260	291	141	150	721	842	33	680	275	63

TSURUMI PUMP

UZ-SERIES
VORTEX - SEWAGE & WASTEWATER PUMPS

SECTIONAL VIEW

80UZ41.5 -61
80UZ42.2 -61
80UZ43.7 -61



	UZ41.5	UZ42.2	UZ43.7
＊1	AWG 16/4-32ft	AWG 14/4-32ft	AWG 12/4-32ft
＊2	H-30A	H-30A	H-35A
＊3	TC456812	TC456812	TC507212
＊4	#6307ZZC3	#6307ZZC3	#6309ZZC3

PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM,AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath ＊1			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 / ＊2			1
26	Oil Seal	NBR / ＊3			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	1
46	Air Release Valve	Stainless Steel	S 30400	1.4301	1
52A	Upper Bearing	AC-#6304ZZC3			1
52B	Lower Bearing	＊4			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	2

TSURUMI PUMP	UZ - SERIES 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^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, 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^2) flat face flange and NPT companion flange. Impellers shall be of the 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 or F 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.