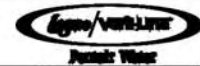
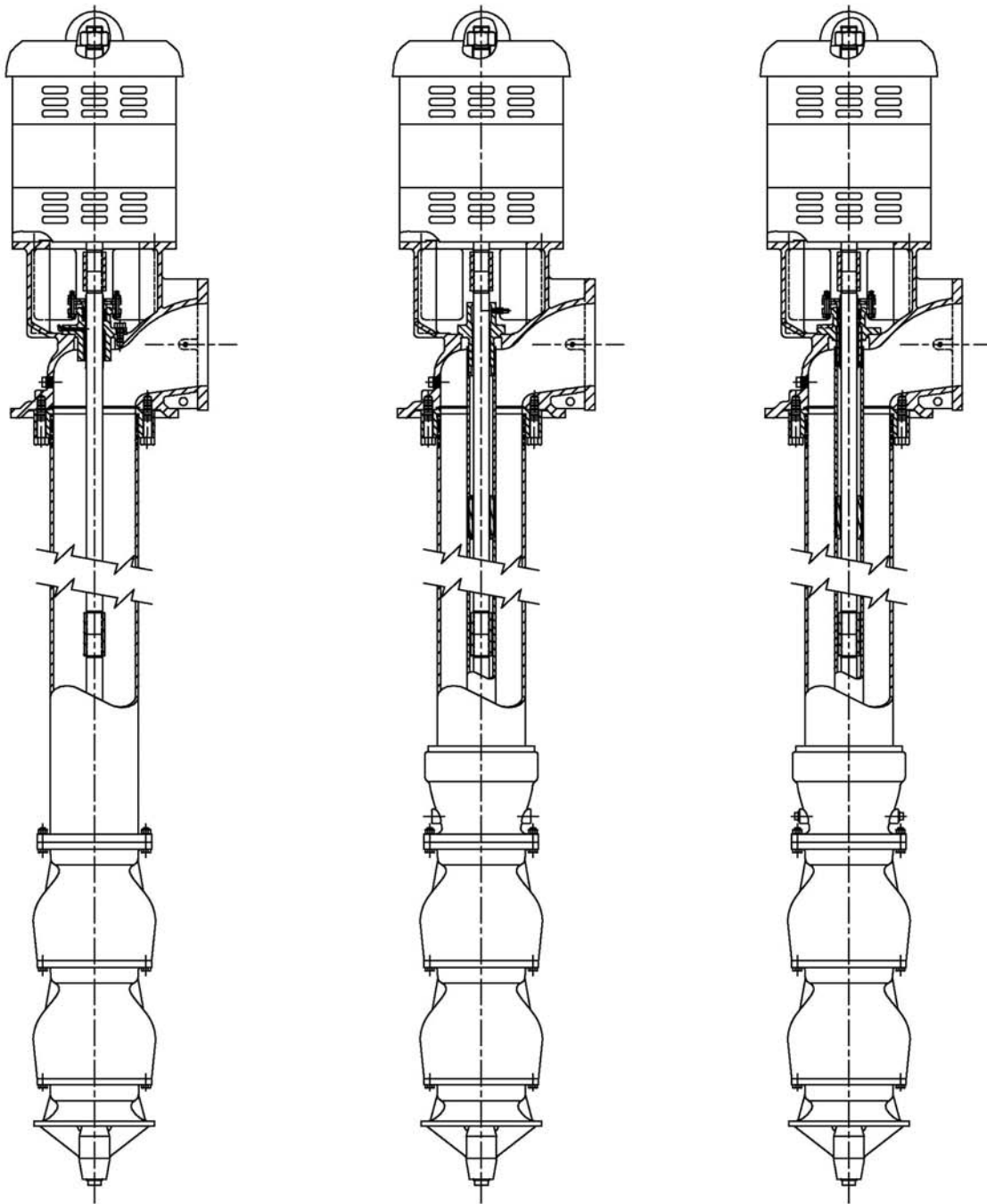


VSS MOTOR COUPLINGS



DWG NO	1100A091	REV NO	0
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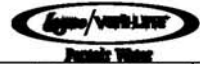


OPEN LINESHAFT
MULTI-STAGE

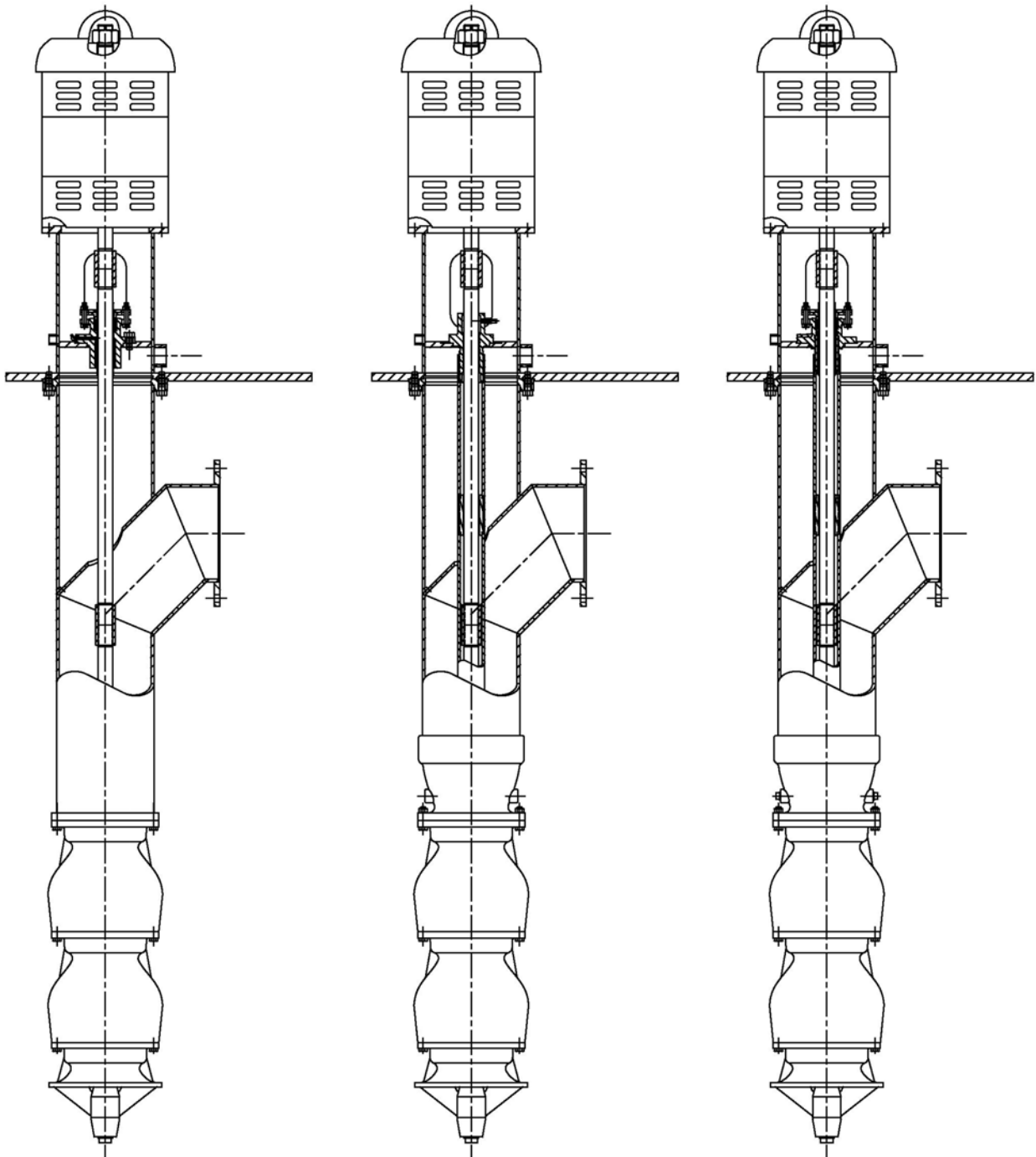
OIL LUBE
ENCLOSED LINESHAFT

WATER FLUSH
ENCLOSED LINESHAFT

TURBINE PUMP
ABOVEGROUND DISCHARGE



DWG NO 1100A001 REV NO 0

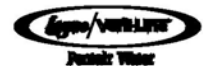


OPEN LINESHAFT
MULTI-STAGE

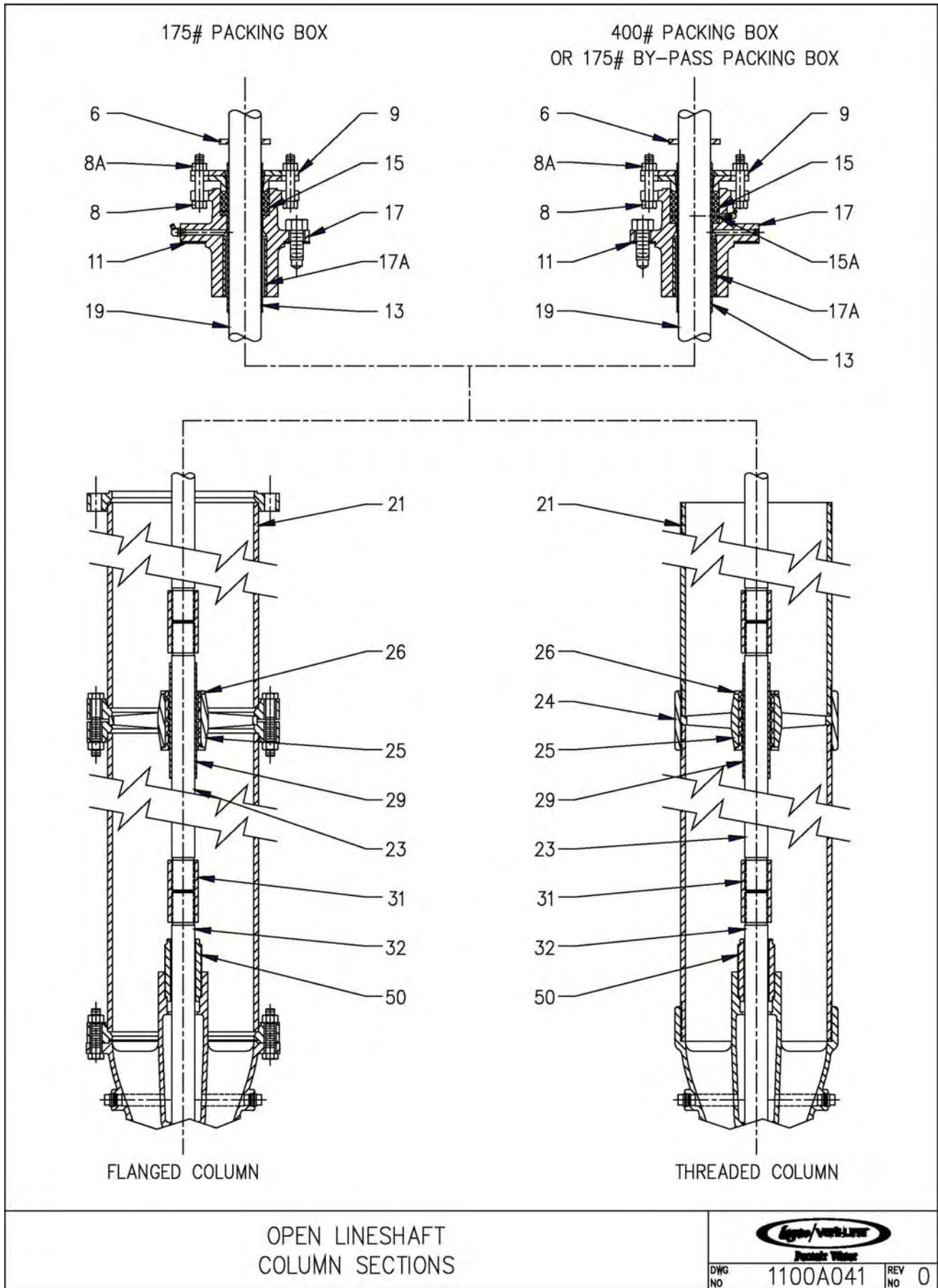
OIL LUBE
ENCLOSED LINESHAFT

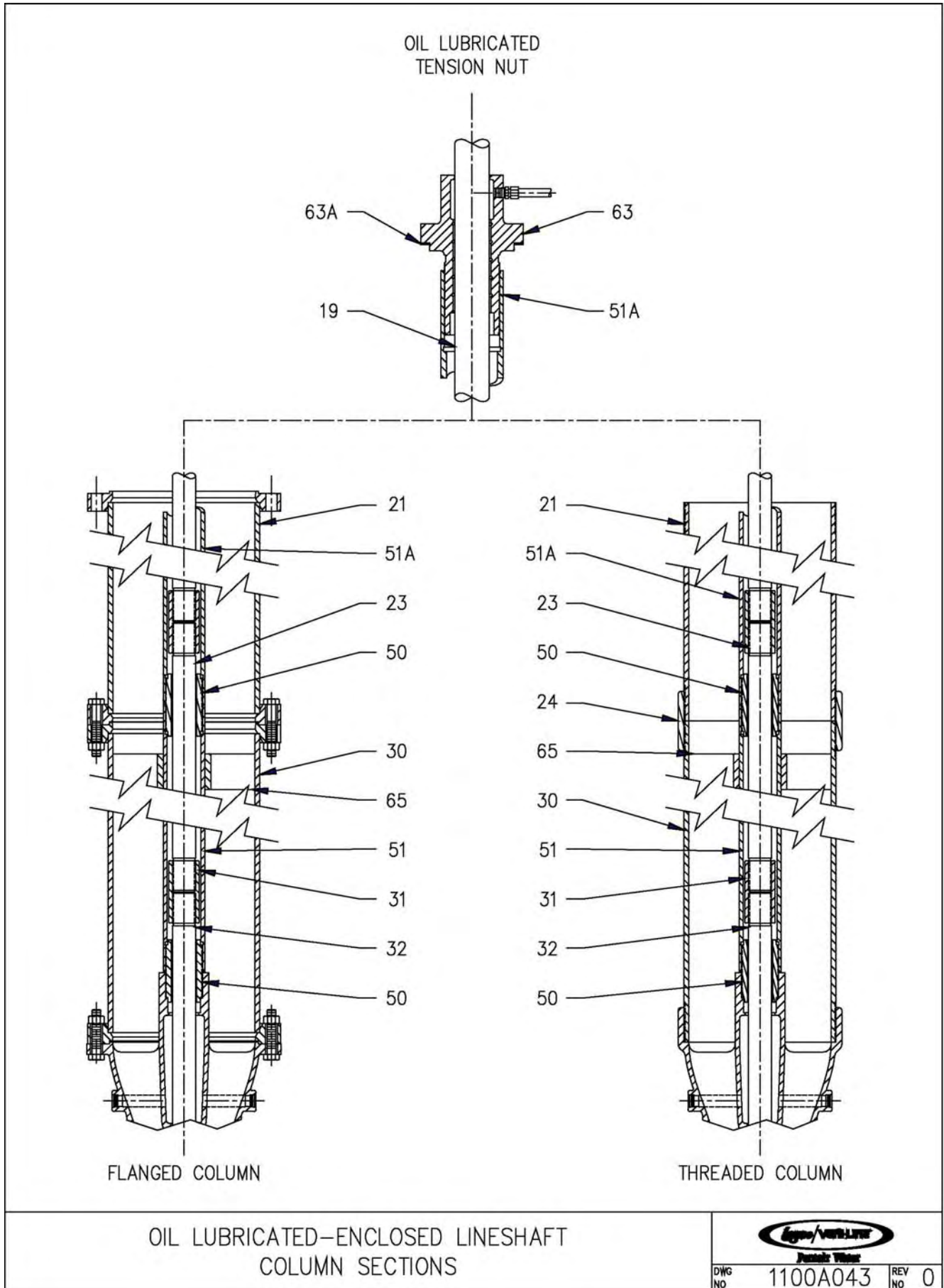
WATER FLUSH
ENCLOSED LINESHAFT

TURBINE PUMP
BELOW GROUND DISCHARGE

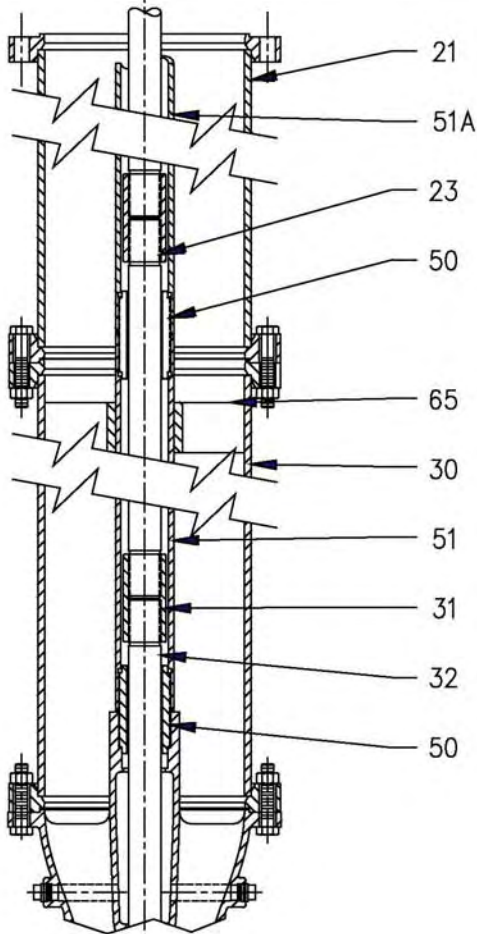
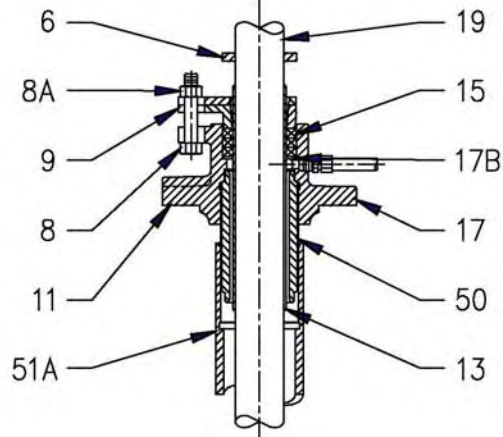


DWG NO 1100A002 REV NO 0

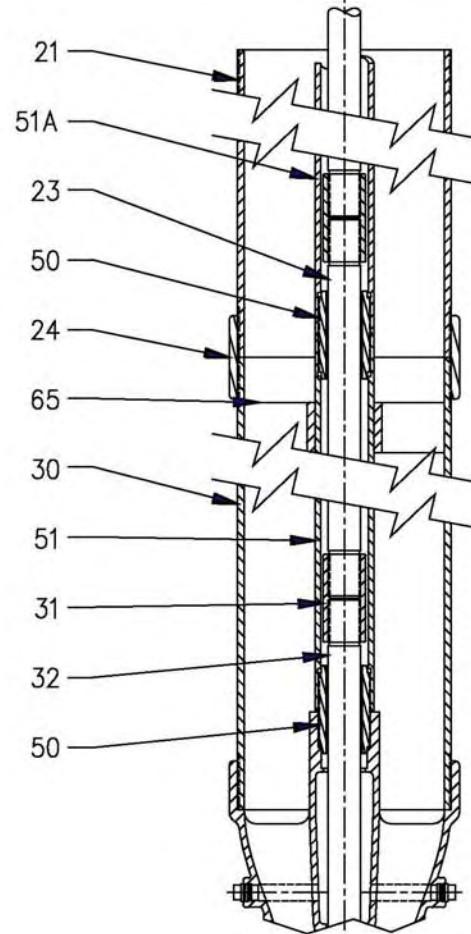




WATER FLUSH
PACKING BOX

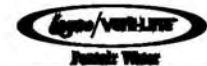


FLANGED COLUMN

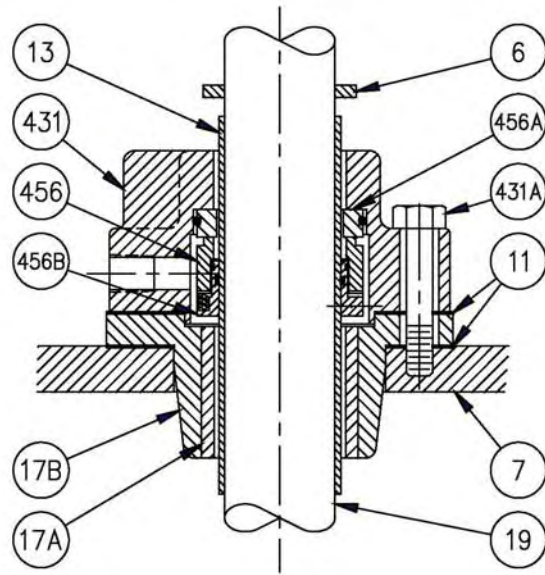


THREADED COLUMN

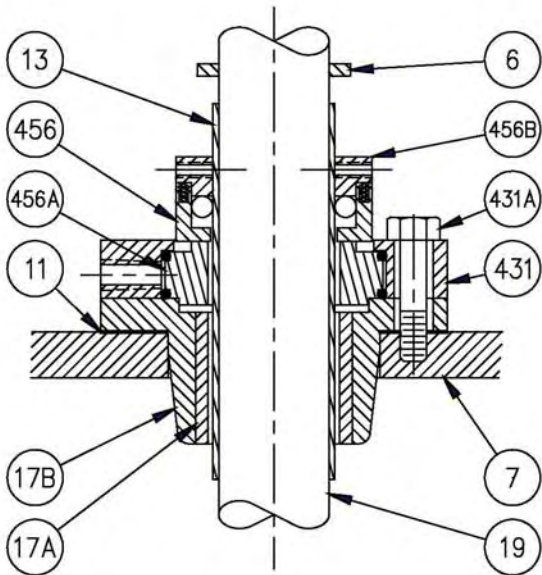
WATER FLUSH-ENCLOSED LINESHAFT
COLUMN SECTIONS



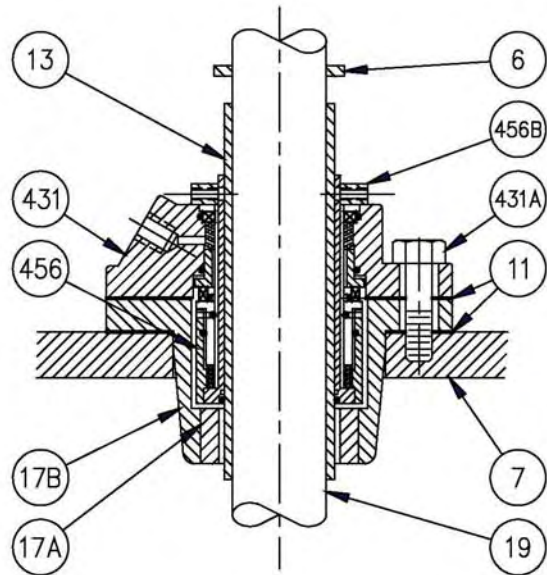
DWG NO	1100A045	REV NO	0
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BASIC MECHANICAL SEAL ASSEMBLY

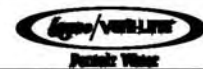


OUTSIDE MECHANICAL SEAL ASSEMBLY



CARTRIDGE MECHANICAL SEAL ASSEMBLY

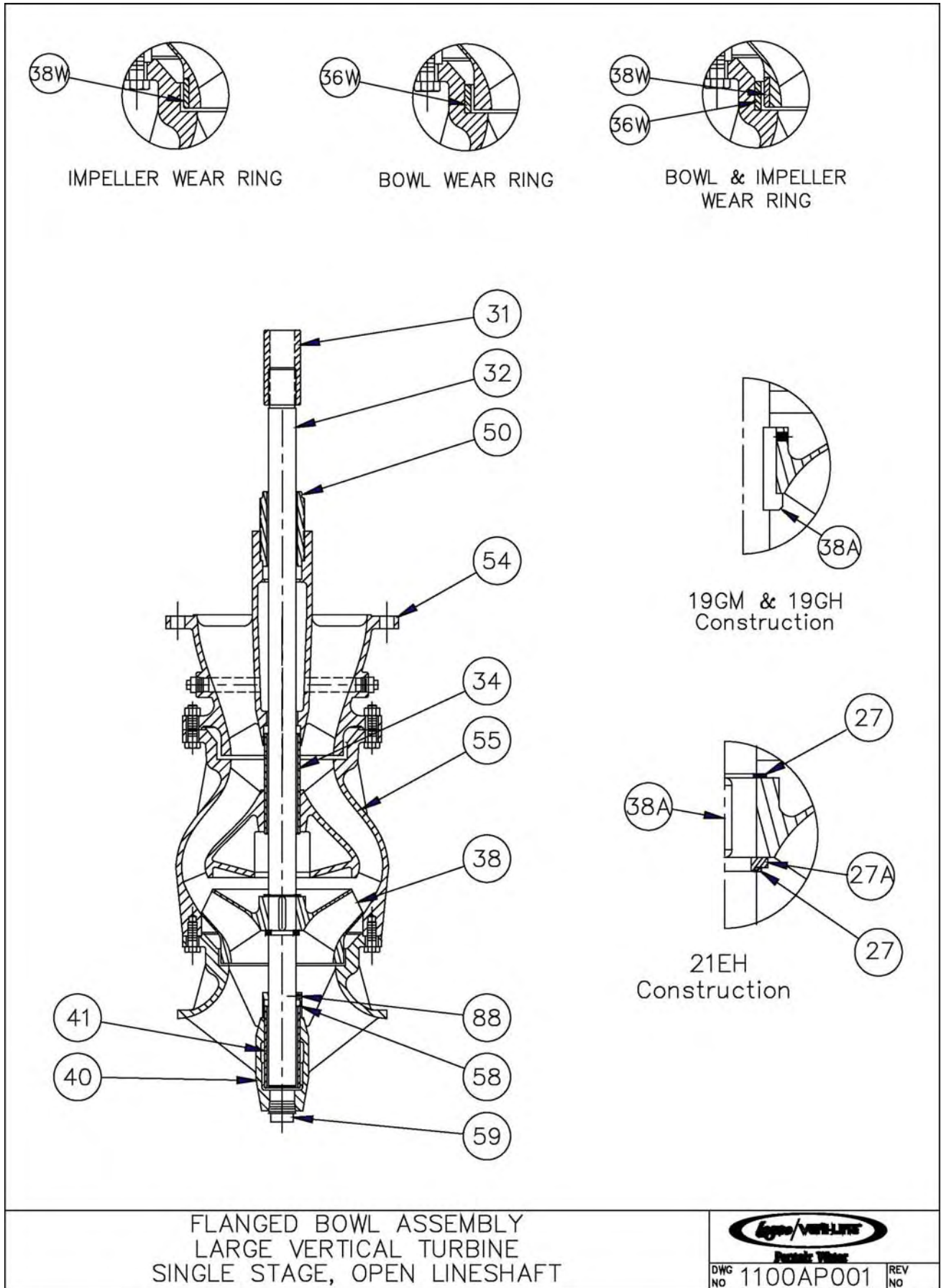
MECHANICAL SEALS

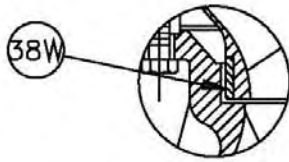


DWG NO 1100A081 REV NO 0

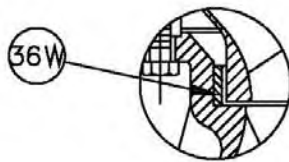
Column/Lineshaft/Seal Box Parts List

Part No.	Description
6	Slinger, Water
7	Discharge Head
8	Bolt, Gland
8A	Nut, Gland
9	Gland, Packing Box
11	Gasket, Packing Box
13	Sleeve, Top Shaft
15	Packing
15A	Ring, Water Seal
17	Packing Box
17A	Bushing, Packing Box
17B	Seal Housing
19	Shaft, Top
21	Column, Top
23	Lineshaft
24	Coupling, Threaded Column
25	Retainer, Bearing
26	Bearing, Lineshaft
29	Sleeve, Lineshaft
30	Column, Bottom
31	Coupling, Shaft
32	Shaft, Bowl
50	Bearing, Connector
51	Enclosing Tube, Bottom
51A	Enclosing Tube
63	Tension Nut, Enclosing Tube
63A	Gasket, Tension Nut
65	Stabilizer, Tube
431	Gland, Mechanical Seal
431A	Capscrews, Packing Box
456	Seat, Mechanical Seal Rotating
456A	Seat, Mechanical Seal Stationary
456B	Retainer, Mechanical Seal

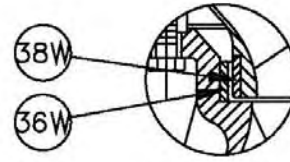




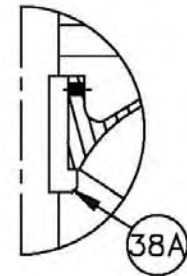
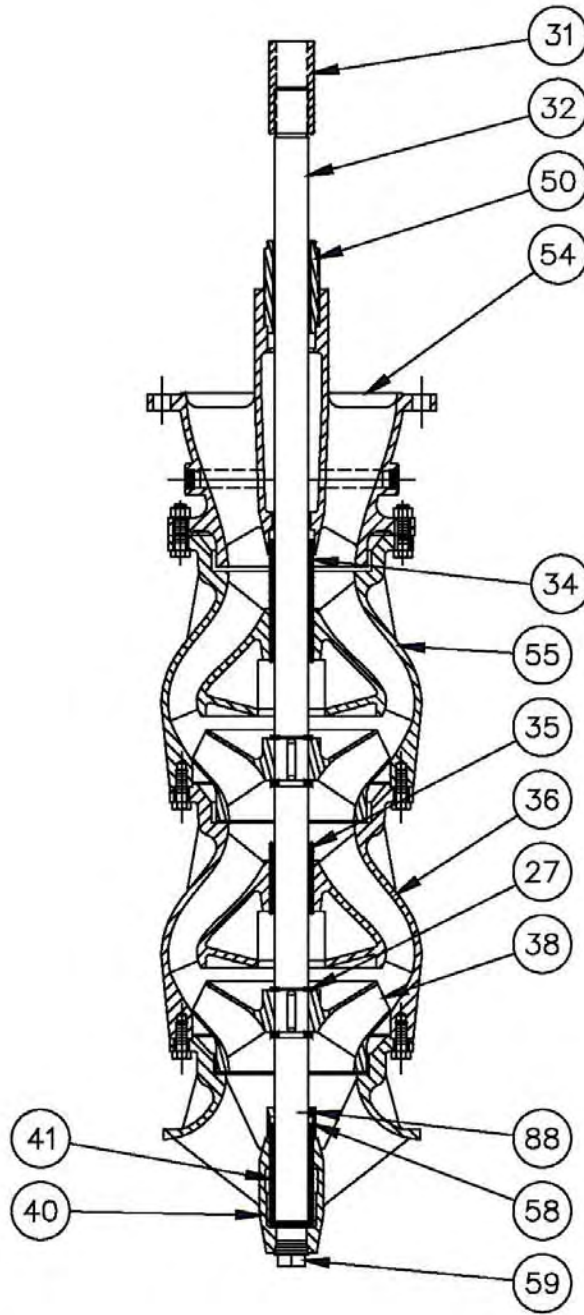
IMPELLER WEAR RING



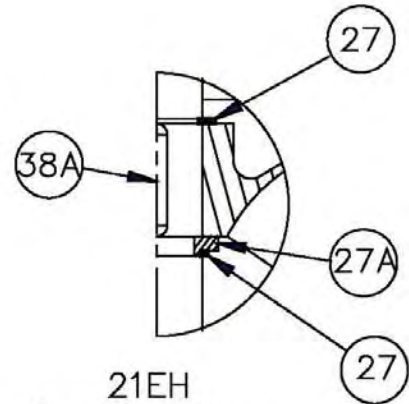
BOWL WEAR RING



BOWL & IMPELLER WEAR RING

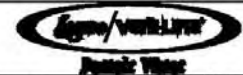


19GM & 19GH Construction

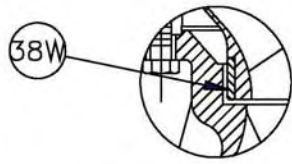


21EH Construction

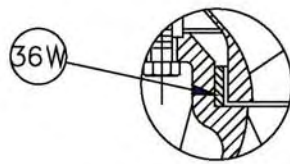
FLANGED BOWL ASSEMBLY
 LARGE VERTICAL TURBINE
 OPEN LINESHAFT



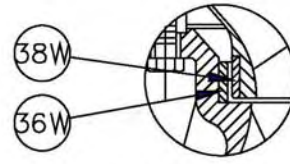
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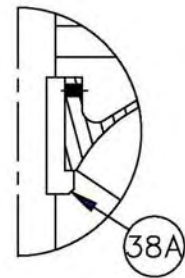
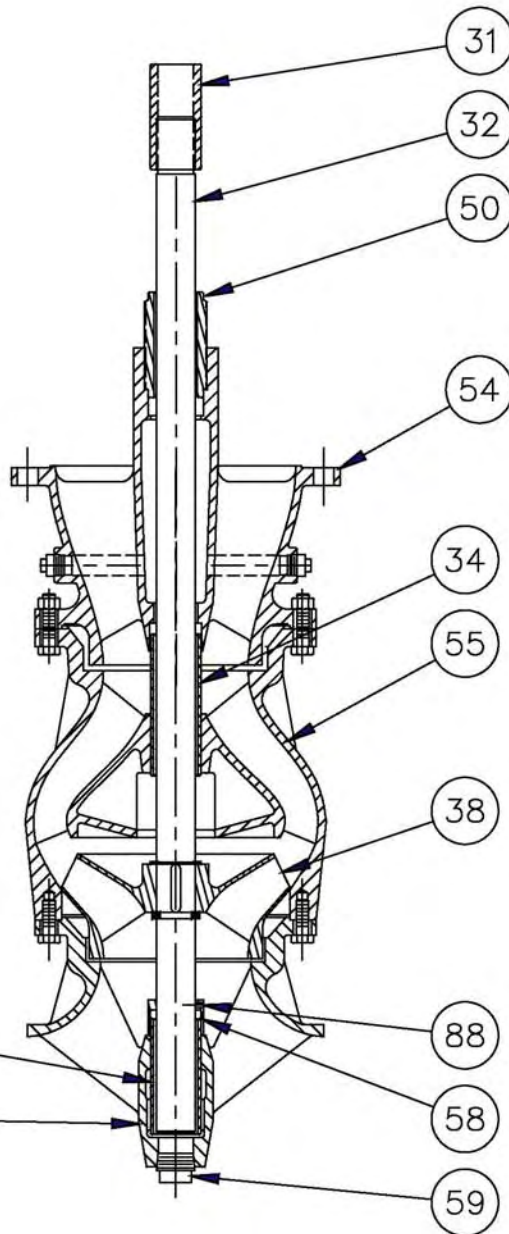
IMPELLER WEAR RING



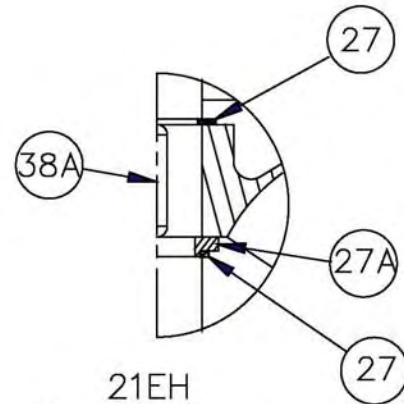
BOWL WEAR RING



BOWL & IMPELLER WEAR RING



19GM & 19GH Construction

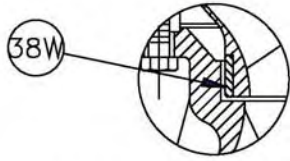


21EH Construction

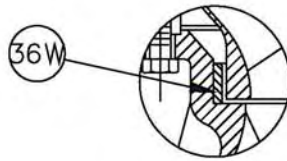
FLANGED BOWL ASSEMBLY
LARGE VERTICAL TURBINE
SINGLE STAGE, ENCLOSED LINESHAFT-WATER FLUSHED



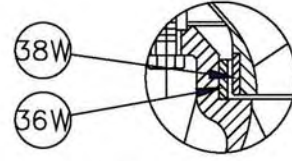
Part No. 1100AP005 REV NO



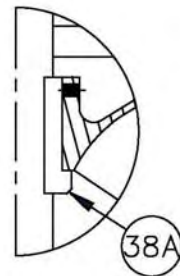
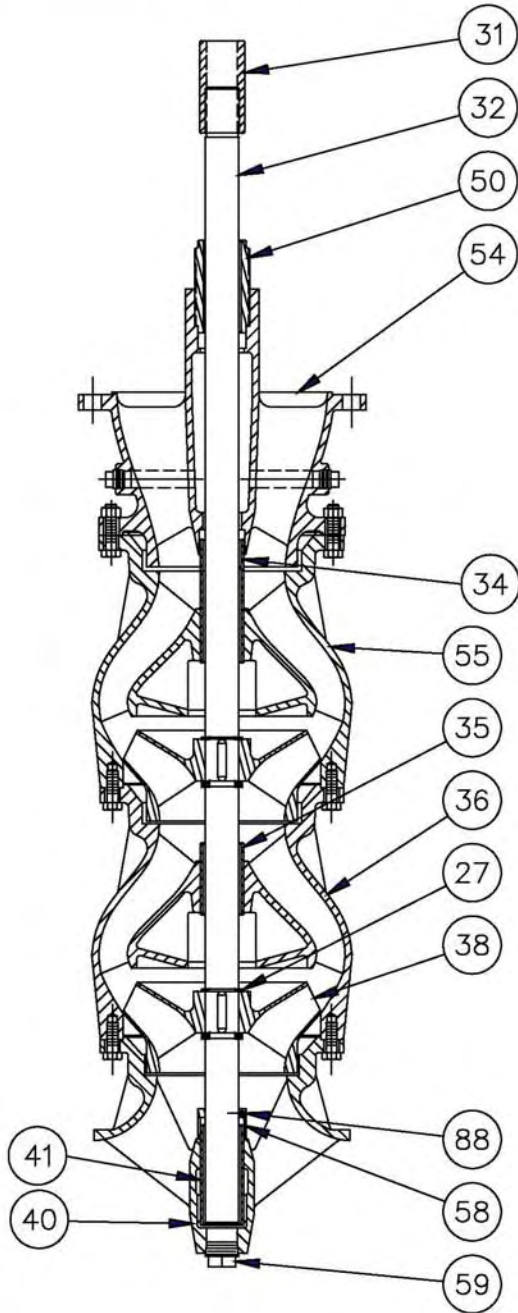
IMPELLER WEAR RING



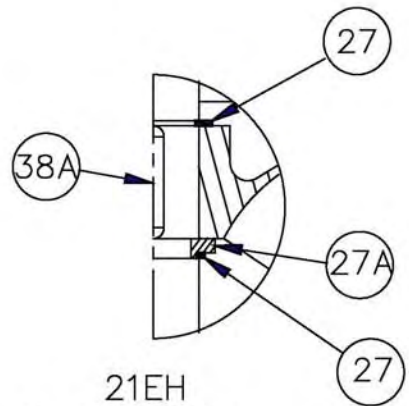
BOWL WEAR RING



BOWL & IMPELLER WEAR RING

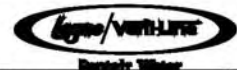


19GM & 19GH Construction

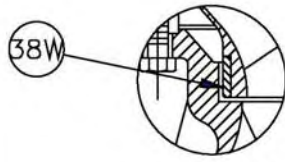


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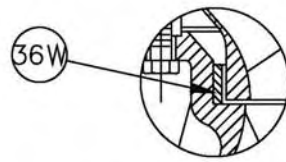
FLANGED BOWL ASSEMBLY
 LARGE VERTICAL TURBINE
 MULTI-STAGE, WATERFLUSH LINESHAFT



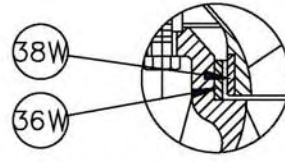
DWG NO 1100AP008 REV NO



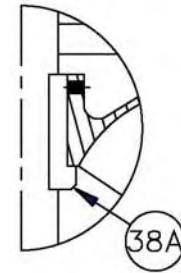
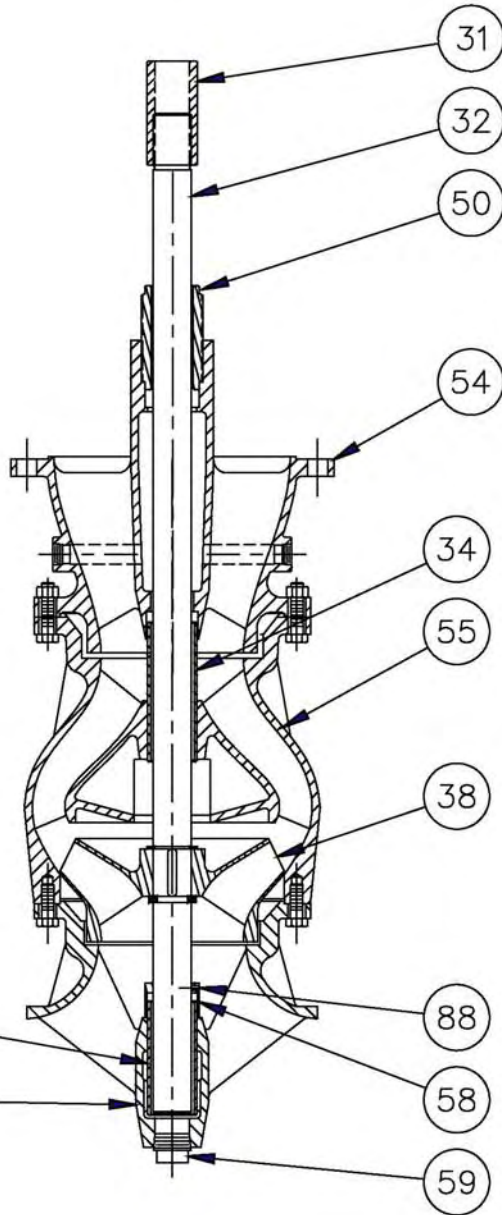
IMPELLER WEAR RING



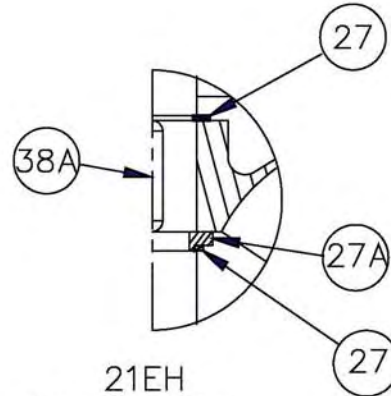
BOWL WEAR RING



BOWL & IMPELLER WEAR RING



19GM & 19GH Construction

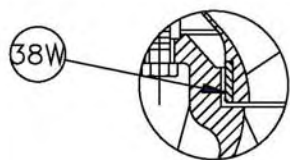


21EH Construction

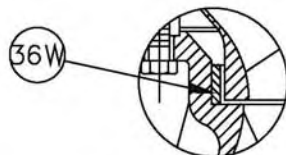
FLANGED BOWL ASSEMBLY
LARGE VERTICAL TURBINE
SINGLE STAGE, ENCLOSED LINESHAFT-OIL LUBRICATED



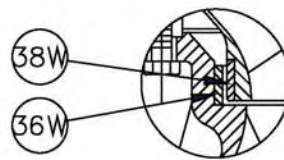
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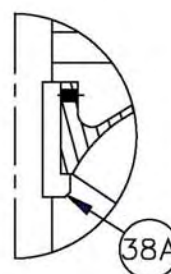
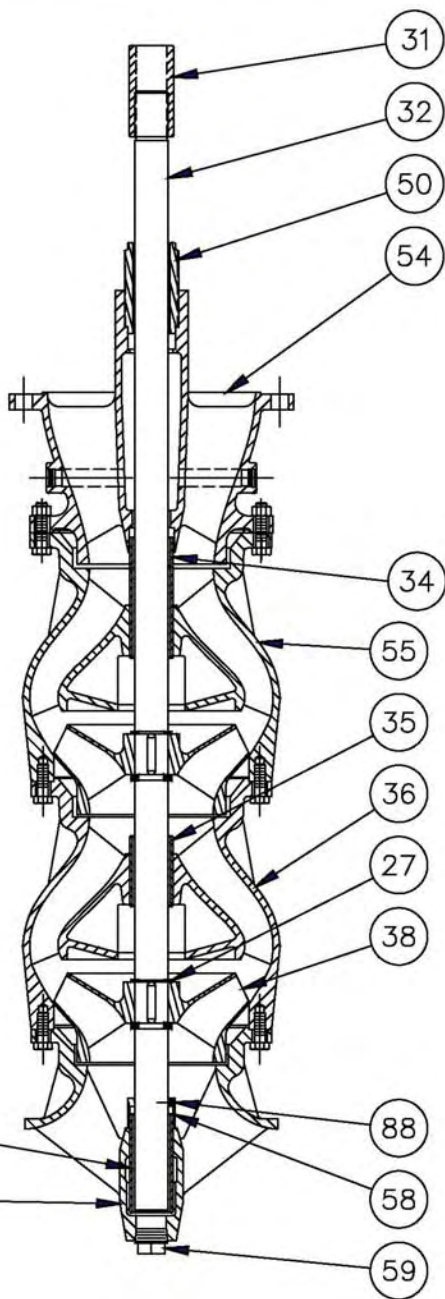
IMPELLER WEAR RING



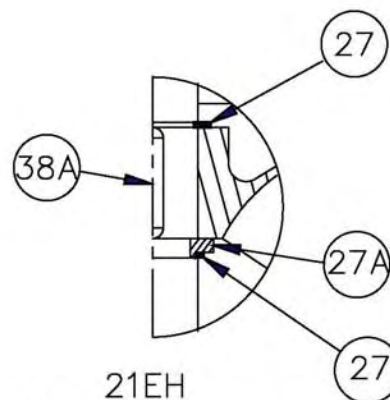
BOWL WEAR RING



BOWL & IMPELLER WEAR RING



19GM & 19GH Construction



21EH Construction

FLANGED BOWL ASSEMBLY
 LARGE VERTICAL TURBINE
 MULTI-STAGE, OIL LUBRICATED LINESHAFT

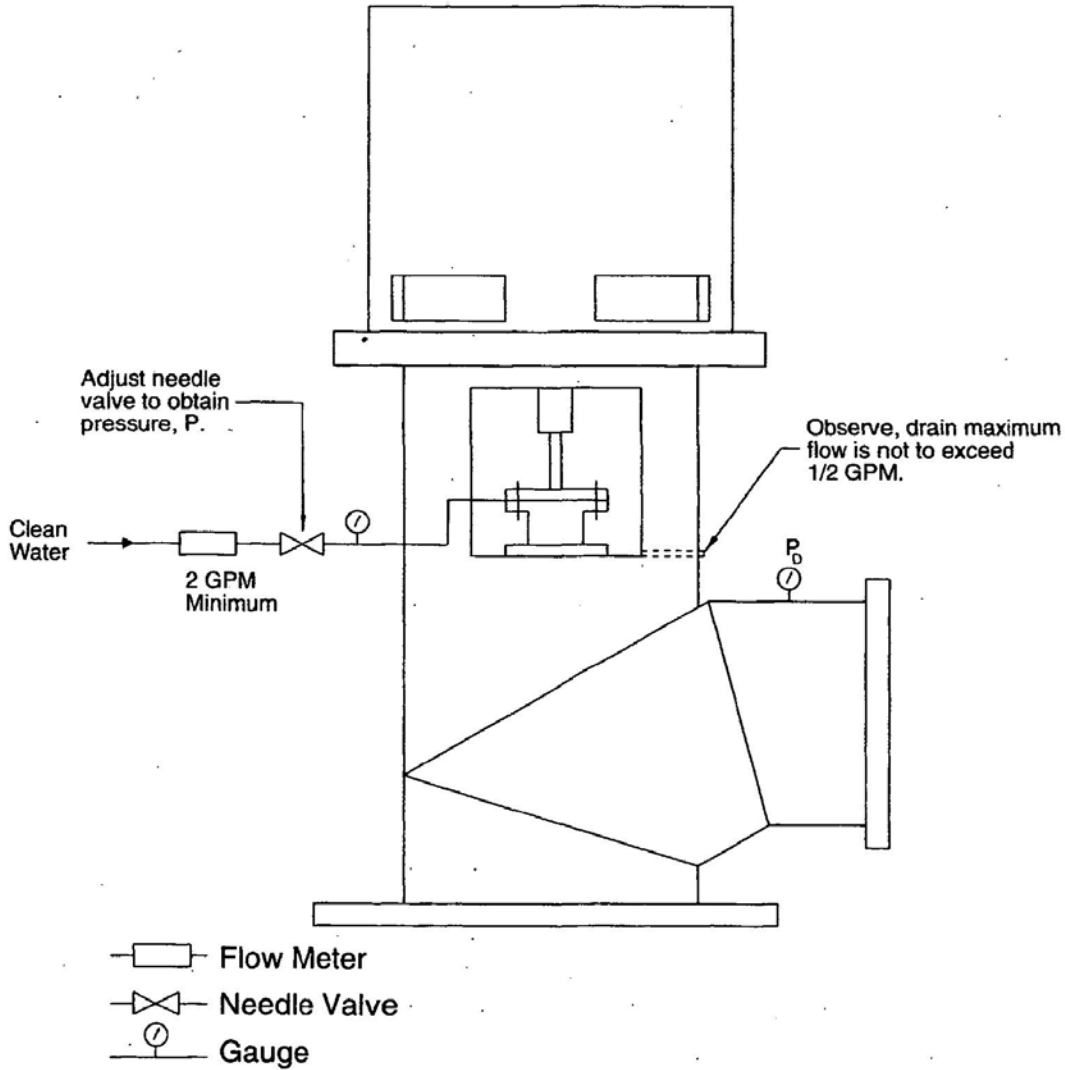


DWG NO 1100AP004 REV NO

Bowl Assembly Parts List

Part No.	Description
6	Deflector, Water
27	Snap Ring
27A	Thrust Ring
31	Coupling, Shaft
32	Shaft, Bowl
34	Bearing, Top Bowl
35	Bearing, Intermediate Bowl
36	Bowl, Intermediate
36W	Wear Ring, Bowl
38	Impeller
38A	Key, Impeller
38W	Wear Ring, Impeller
40	Suction Bell
41	Bearing, Suction Bell
50	Bearing, Connector
54	Discharge Case
54A	Lip Seal
A54	Adapter, Column
55	Bowl, Top Intermediate
58	Sand Collar
59	Plug, Suction Bell
88	Set Screw, Sand Collar

Water Flush System (Only for pump with packing)



P_D = Pressure at discharge

$P = 3 \text{ psi for each } 10 \text{ ft. of pump setting} + P_D + 5 \text{ psi}$

Example: 70 ft. setting
 $P_D = 52 \text{ psi}$

$$P = 3 \times \frac{70}{10} + 52 + 5$$

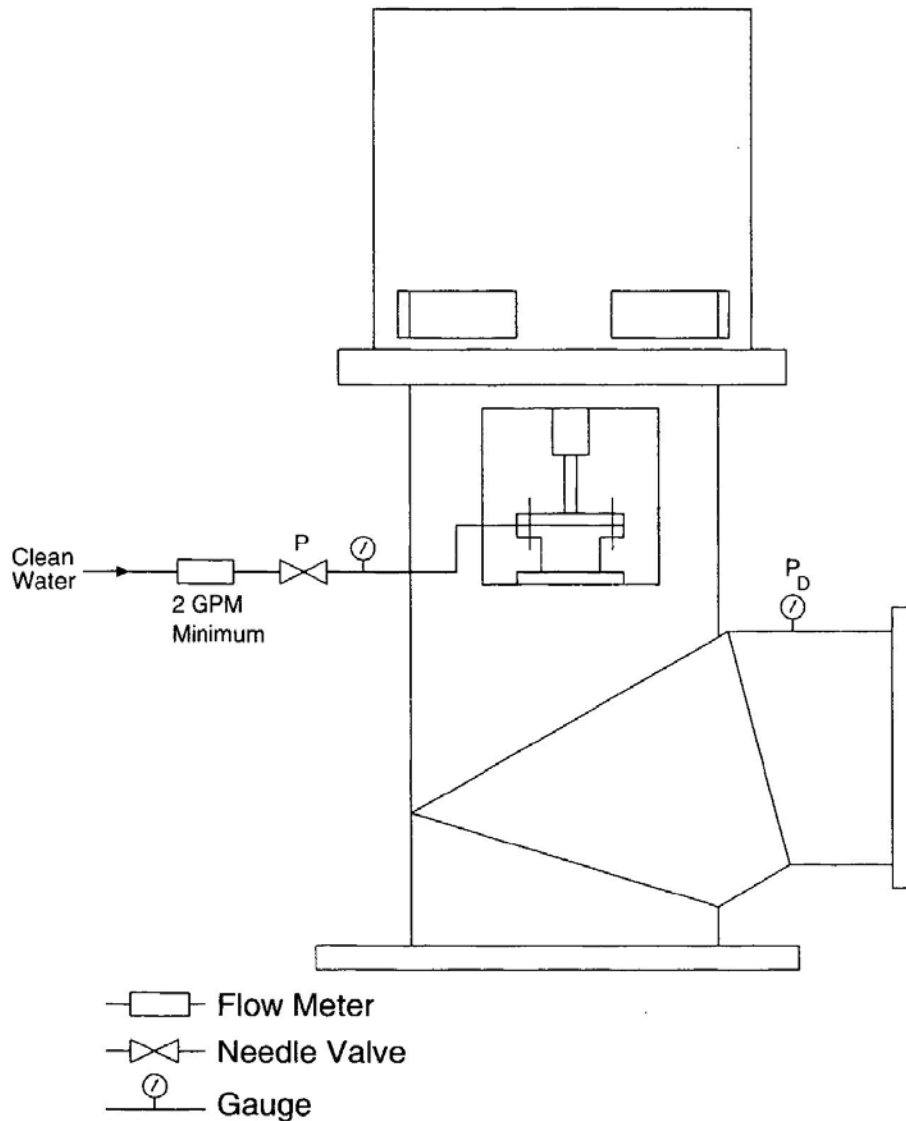
$$= 78 \text{ psi}$$

- Note: (1) Flush water is recommended at pump at all times, whether pump is operating or not.
 (2) Solenoid valves are not recommended.

Fig. #7

Water Flush System

(Only for pump with mechanical seal)



P_D = Pressure at discharge

$P = 3 \text{ psi for each } 10 \text{ ft. of pump setting} + P_D + 5 \text{ psi}$

Example: 70 ft. setting

$$P = 3 \times \frac{70}{10} + 52 + 5$$

$$= 78 \text{ psi}$$

- Note: (1) Flush water is recommended at pump at all times, whether pump is operating or not.
 (2) Solenoid valves are not recommended.

Fig. # 8

Open Lineshaft Water Vent System

(Only for pump with mechanical seal)

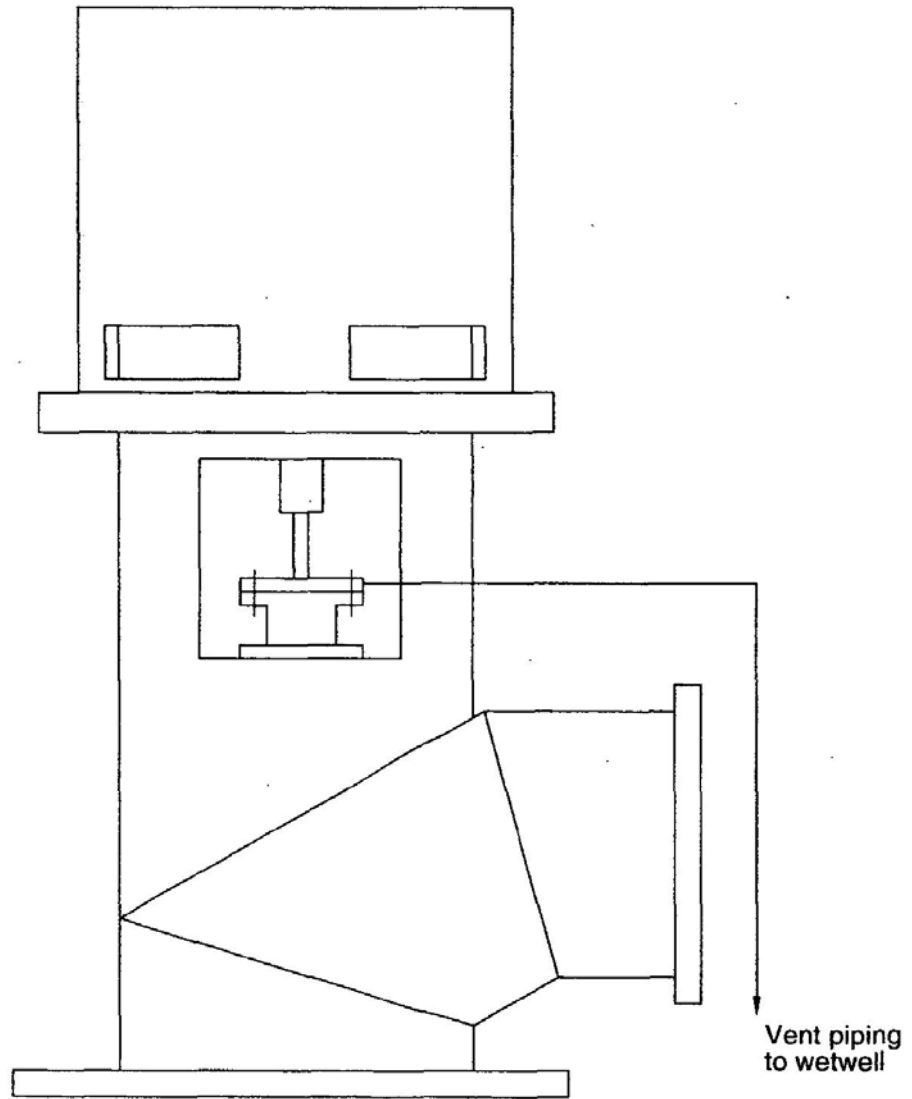


Fig. #9



Pentair Water

Layne/Verti-Line
3601 Fairbanks Avenue
Kansas City, KS 66106
913/371-5000
Fax 913/748-4030

LVL-105/08/05