

May 19, 2023

Stephen H. Lee, Director
Louisiana Department of Natural Resources
Injection and Mining Division
617 N. 3rd Street
Baton Rouge, Louisiana 70802

**Re: Response No.2 to Notice of Deficiencies in Reference to the LDNR's
April 19, 2023 Response to the 1st Supplement to
Compliance Order No. IMD 2022-027
Eagle US 2, LLC – Well 6X (SN 57788) & Well 7B (SN 67270)**

Dear Mr. Lee,

This response letter is submitted on behalf of Westlake US 2, LLC (“Westlake”) who received the second Notice of Deficiencies (“NOD”) letter on April 19, 2023; in reference to the Response to the 1st Supplement to Compliance Order No. IMD 2022-027. The NOD required a response within thirty (30) days from receipt of letter, unless otherwise stated.

NOD's:

Attachment A – USDW/Surface Water Impacts & Monitoring Plan:

1. No action required.
2. Refer to Number 23 response.
 - Note that the NOD letter stated to refer to Number 25, which we interpreted as a typo, needing to be Number 23.
3. Refer to Westlake response to 2nd Supplement of CO 2022-027.
 - The water well survey is being prepared, with an expected mailing date by the end of May. The timeline for the water well survey completion is expected to be 30 days following the original mailing, toward the end of June 2023.
4. Per verbal communications with LDNR on May 4, 2023, the water well sampling is on a monthly schedule. Currently, the 5 industrial water wells are being sampled monthly, as well as the Cottages well located west of Cavern 7. The analytical data will be submitted to IMD following receipt of the final lab reports.
5. No action required.
 - Nickel and vanadium have been added to the analyst lists and were included as analytes for the samples collected in April. Going forward, all water samples will include nickel and vanadium.
6. Bubble sites located on the well pads are very difficult to locate during dry conditions. On May 17, the bubble site located at the Brine Well 7A location was

identified by pouring water on the location. A gas cap was used to attempt to isolate the bubbling gas. A gas sample was collected. The results of the effectiveness of this method are pending. After receipt of the lab results, additional adjustments may be needed to the sampling procedure to isolate the gas.

The bubble site observed near SN 110159 was not located during the May 17, 2023 site visit. Multiple areas were checked by pouring water into holes, gaps, and cracks. However, none of these locations produced visible bubbling. Future attempts to identify the location of the gas seep will be made so samples can be collected.

7. No action required.
8. No action required.
9. Refer to Westlake response to 2nd Supplement of CO 2022-027.
10. While there may be some minor influence of atmospheric air, the dissolved gas samples have generally contained enough methane to evaluate the stable isotopes of methane. Composition of the gas is more difficult to constrain with the dissolved gas samples, but the stable isotopes can be determined. There are several reasons for using the dissolved gas analysis:
 - Attempts have been made to trap gas to collect a sample. However, the volume of gas and pressure of the gas is too low to effectively trap the gas for sampling.
 - Handling water samples is much lower risk to health and safety. Shipping water samples to the lab is more time effective as gas samples must be shipped under hazardous goods and can take much longer to get to the lab.

The sampling procedure is continuing to be modified to try and get a gas sample from the Central Lake. To date, all attempts have failed so dissolved gas samples are continuing to be collected. If a suitable method is identified, gas samples can be collected.

11. The 1992 Environmental Remedial Evaluation Report was received and reviewed. According to this report, the surface water tends to drain toward the Central Lake or other small ponds near the dome. Shallow groundwater (upper 30 feet below ground surface) also generally flows toward the Central Lake. Salt Lake, the large water body west of the salt dome, also receives surface water runoff. However, there is no natural connection between the Central Lake and Salt Lake, nor any apparent connection between Salt Lake and other receiving water bodies under normal conditions. Extreme flood events might provide temporary connection between the lakes and ponds near the salt dome. Bayou d'Inde is the only drainage feature for flood water. There is no evidence that the surface water within the operational area or surrounding the dome is connected to any other receiving water bodies, with the exception of Bayou d'Inde.
12. The first data submittal was provided to IMD on May 9, 2023, containing all laboratory data received to that date. Additional submittals will be made as laboratory reports are received.

13. Refer to Number 6 response.
14. Water parameters of pH, specific conductivity (SC), oxidation-reduction potential (ORP), and temperature will be collected from the upper, middle, and deep portions of the water column and the deepest area of the Central Lake using a hand-held field meter.
15. See *Attachment A*.
16. Refer to Number 25 response.
17. No action required.
18. No action required.
19. Refer to Number 27 response.
 - Note that the NOD letter stated to refer to Number 26, which we interpreted as a typo, needing to be Number 27.
20. Refer to Number 28 response.
21. No action required.
 - Serial number of Yellowrock FEE 969 provided to IMD as 189416.
22. No action required.
 - Projected time of completion for a fault plane map is in September 2023.
23. No action required. Response within Second Supplement to CO No. IMD 2022-027.
24. No action required.
 - IMD has since approved/accepted the Westlake Emergency Response Plan.
25. Regarding quantity of Sulphur Mines Dome caverns included in the Geomechanical Study Plan:
 - As of the May 4, 2023 conference call with IMD, the understanding is that Westlake will continue with the current geomechanical model path in that not all caverns within Sulphur Mines dome will be included in the model in an effort to obtain a geomechanical evaluation more promptly. This is based upon RESPEC's opinion that for the purposes of evaluating low pressure conditions of Cavern 6 and 7 and the associated salt stability, the inclusion of caverns a greater distance away from the subject Caverns will not influence the results.
 - An additional model inclusive of all caverns within Sulphur Mines Dome will be considered at a later date, and the scope of that study will incorporate the learnings from the above-mentioned study.

Regarding utilization of a more representative core for the Geomechanical Study:

- RESPEC has conducted two rock mechanical testing programs on salt core recovered from the Sulphur Mines salt dome. The first testing program was performed in 2010 on salt core from PetroLogistics Well Nos. 1 & 2. The second testing program was performed in 2015 on salt core recovered from PPG Well No. 22. Each of the RESPEC testing programs provided valid and reliable sets of test data for estimating the mechanical properties of the Sulphur Mines salt. Specifically, the RESPEC testing provided data that can

be used to estimate the elastic properties, dilation strength, and creep properties of the Sulphur Mines salt. The salt core from PPG Well No. 22 was recovered from a depth interval beginning at 3,520 ft, which is approximately 200 ft below the floor of Cavern No. 7. Furthermore, PPG Well No. 22 is approximately 250 ft from Cavern No. 7 in plan view, while the PetroLogistics wells are more than 1,500 ft from Cavern Nos. 6 & 7. Therefore, the salt core from PPG Well No. 22 is considered to be the most representative available core for estimating the mechanical properties of the salt stock near Cavern Nos. 6 & 7.

- The TerraTek testing conducted in 2008 on salt core recovered from LGS Well No. 2A was also reviewed for potential use in estimating mechanical properties of the Sulphur Mines salt. Unfortunately, the test specimens and testing methods employed in this testing program do not provide sufficient, accurate data to estimate the mechanical properties of the Sulphur Mines salt. The elastic properties were incorrectly estimated based on fits to triaxial tests during load-up sequences, without the necessary unload-reload cycle within the elastic regime to properly estimate elastic properties. The reported elastic modulus is significantly lower than the expected value for rock salt and the estimated Poisson's ratio has substantial variation. The reported dilation strength of the salt from the TerraTek testing is estimated based on the volumetric strain of the specimens during triaxial tests using the Mohr-Coulomb failure criterion. This method does not accurately estimate the dilation strength of rock salt. The reported salt creep testing method and results do not provide sufficient data to evaluate the estimated steady-state creep rates. The test specimens are described as sidewall cores, which implies they were likely 1-inch diameter specimens. Based on our knowledge of Sulphur Mines salt, these specimens may have consisted of 1 or 2 grains of salt across their diameter, which is not sufficient for measuring the creep deformation of the salt. Consequently, RESPEC has very little confidence in the testing that was conducted in 2008 and the validity of the data set to estimate mechanical properties of the Sulphur Mines salt.

Summary of Core Data Reviewed To-Date:

- PPG Well No. 22
 - RESPEC report RSI-2533 (2015) – Mechanical Properties Testing
 - Brazilian indirect tensile strength (BRZ) – 5 tests
 - Constant mean stress dilation tests in triaxial compression (CMC) – 8 tests
 - Triaxial compression creep tests – 6 tests
 - Salt core recovered from depths of 3,520 ft through 5,415 ft
 - Standard 4-inch salt core

- Testing resulted in a good dataset to use for estimating mechanical properties of Sulphur Mines salt.
 - PetroLogistics Well Nos. 1 & 2
 - RESPEC report RSI-2085 (2010) – Mechanical Properties Testing
 - Brazilian indirect tensile strength (BRZ) – 6 tests
 - Constant strain rate (CSR) unconfined compressive strength tests – 5 tests
 - Constant mean stress dilation tests (CMS) – 18 tests
 - Triaxial compression creep tests – 4 tests
 - X-ray diffraction (XRD) analyses
 - Salt core recovered from depths of 3,995 ft through 4,620 ft
 - Standard 4-inch salt core
 - Testing resulted in a good dataset to use for estimating mechanical properties of Sulphur Mines salt.
 - LGS Well No. 2A
 - TerraTek report TR08-402338 (2008) – Failure & Petrographic Characterization and Creep Testing
 - Unconfined (1) & triaxial compression (4) tests to determine Mohr-Coulomb failure envelope delineation
 - Triaxial compression creep tests – 1 test for 19 days, 1 test for 30 days
 - Petrographic analyses
 - X-ray diffraction (XRD) analyses
 - Salt core recovered from 2,462 ft through 2,520 ft
 - Sidewall plugs (likely 1-inch diameter) used for testing
 - Testing does not provide a valid dataset for estimating mechanical properties of Sulphur Mines salt.
 - PPG Well No. 18
 - TerraTek report TR09-402721 – Petrographic and Core Evaluation
 - Samples taken from core recovered from depths of 4,000 ft, 4,015 ft, and 4,027 ft
 - No rock mechanical testing documentation found to-date.
26. No action required.
27. Full TREA report provided to IMD on April 21, 2023 (Fall 2022 Sulphur Subsidence Survey).
28. No action required.
29. Westlake confirms visual observations for the Central Lake are being performed daily. Within 14 days of the letter, Westlake secured an air boat to perform inspections of the Lake on a two-week frequency.
30. Within 14 days of the letter, Westlake secured a device capable of monitoring and detecting VOC's. Additionally, daily FID readings are collected at each well pad and bubbling location, and included in the daily reports to IMD.

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Compliance Order No. IMD 2022-027
05/19/2023 - Page 6 of 7

If there are any questions, please contact Josh Bradley (Westlake US 2, LLC) or Coleman Hale (Lonquist & Co., LLC).

Sincerely,



R. Coleman Hale
Vice President
Lonquist & Co., LLC

ATTACHMENT LIST

A. Central Lake Pond Pump Specifications

ATTACHMENT A

Central Lake Pond Pump Specifications

WESTLAKE CHEMICAL2190 WEST BURTON
SULPHUR, LOUISIANA, 70663

March 8, 2023

EXISTING POND PUMP - TECHNICAL DATA PKG**REF. Original Pump SN-746C547.28 (supplied in 1984)****REF. Pump Repair by ITT Goulds Repair Shop (Jan 2023)****MODEL: 3796 MTi SIZE: 6x6-13/6V QTY: 1****Operating Conditions**

SERVICE	Electric Pond Pump
LIQUID	Water , Rated Temp. 70.0 deg F, SP.GR 1.000, Viscosity 1.000 cp, Rated/Max. suction pressure 0.0 / 0.0 psi g
CAPACITY Rated	800.0 gpm
HEAD	82.0 (ft)
Performance at 1775 RPM per HI 14.6 1B basis power	
PUBLISHED EFFY	68.5% (CDS)
RATED EFFY	68.5%
RATED POWER	24.4 hp (Run out 27.2 hp)
NPSHR	14.2 ft
DISCH PRESSURE (R)	35.9 psi g (42.4 psi g @ Shut off) based on 0.0 psi g rated suction pressure
PERF. CURVE	3127-2 (Rotation CW viewed from coupling end)
SHUT OFF HEAD	97.9 ft
MIN. FLOW	Continuous Stable: 295.4 gpm Hydraulic: 295.4 gpm Thermal: N/A

Materials

CONSTRUCTION	316SS
CASING	316SS (max.casing pressure @ rated temperature 275.0 psi g)
ST.BOX COVER	316SS
IMPELLER	316SS - Open (10.1250 in rated, max=12.6250 in, min=10.0000 in)
CASING GASKETS	Aramid Fiber with EPDM and Silicate Filler
IMPELLER O-RING	Teflon
SHAFT MATERIAL	SAE 4140
SHAFT SLEEVE	316SS
LUBRICATION	Flood oil
SEAL CHAMBER	Standard non cooled
BEARINGS	6309 (Inboard) / 3309 (Outboard)

Sealing Method

MECHANICAL SEAL	John Crane
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Casing Connections

Casing drain tapped

Casing filler

Flanges

150# flat face

Liquid End Features

Impeller balance holes

Frame Connections

Bearing frame drain

Frame cooler access

Oil fill connection

Frame Features

Ductile iron frame adapter

Inpro VBXX-D Hybrid Bearing Isolators

Premium Severe Duty Thrust Bearings

Assembly and Testing

Casing & Cover - Standard hydro test

Impeller balanced to ISO G6.3

Piping

CPI Plan 7354 No piping furnished by Goulds

Painting

Goulds Blue standard painting

Noise Level Data

Maximum predicted sound pressures level pump only in Decibels (db) Re 0.0002 microbars measured 3ft horizontally and 5ft from the floor per QCP 580

Noise Level	31.5	63	125	250	500	1k	2k	4k	8k	A
Pump	57.0	60.0	72.0	68.0	70.0	72.0	73.0	76.0	78.0	85.0

Driver : Electric motor Manufacturer : Siemens

FURNISHED BY	Pump Mfg	MOUNTED BY	Pump Mfg
RATING	30.0 hp (22.4 KW)	ENCLOSURE	IEEE841 Severe Duty Premium Efficient
PHASE/FREQ/VOLTS	3/60 Hz/460	SPEED	1800 RPM
INSULATION/SF	F/1.15	FRAME	286T

Weights and Measurements (pump & motor unit)

TOTAL NET UNIT WEIGHT / VOLUME	1,115.0 lb / 10.8 ft ³
TOTAL GROSS UNIT WEIGHT / GROSS VOLUME	1,260.0 lb / 28.9 ft ³

COMMENTS / CLARIFICATIONS:

All information provided is based on original records of original pump units supplied (SN-746C547.28), combined with information specific for recent repair job.

No records of the original specified hydraulic requirement are available. The specified design operating point (800 gpm @ 82 ft TDH) is estimated, based on the known pump model/size, operating speed and impeller diameter.

Hydraulic Details

Item No ITEM 001
Proposal # AC23-03-08 01

Pump Type 3796

Liquid Characteristics

Service Electric Pond Pump
Liquid Water
Specific Gravity 1.000
Temperature 70.0 deg F
Solids size

Hydraulic Requirements

Rated capacity 800.0 gpm
NPSHa
Suct. pressure
Viscosity 1.000 cp

GENERAL PUMP DATA	VALUE	PROTECTED
ERP Material Code	1203	
ERP Size Code		
Case thickness (in)	0.6875	
Maximum Suction Head (ft)	34.0	
Maximum Solids Size (in)	1.0000	
Max Drive Power per 100 RPM (hp)	3.42	
Maximum RPM	1,800	
Disch. Size	6"	
Suction Size	6"	
Suction Specific Speed	8,795 gpm(US) ft	
Maximum casing pressure at 70.0 (deg F)	275.0 psi g	
Volute	Single	

WEIGHTS / MEASUREMENTS	VALUE	PROTECTED
Bare Pump Weight (lb)	710.0	
Total Unit Weight (bare pump, driver, etc) (lb)	1,115.0	
Gross Total Weight (lb)	1,260.0	
Net Volume (ft ³)	10.8	
Gross Volume (ft ³)	28.9	

SHAFT DATA	VALUE	PROTECTED
Shaft diameter between bearings (in)	2.1250	
Shaft diameter at coupling (in)	1.1250	
Shaft diameter at impeller (in)	1.0000	
Shaft diameter at stuffing box less sleeve (in)	1.7500	
Shaft diameter at stuffing box with sleeve (in)	1.5000	
Shaft overhang (in)	8.3750	
Shaft separation (in)	3.7500	
Sleeve diameter (in)	1.7500	

IMPELLER DATA	VALUE	PROTECTED
Maximum Impeller diameter (in)	12.6250	
Minimum Impeller diameter (in)	10.0000	

SEAL / DYN. SEAL	VALUE	PROTECTED
Diameter of mechanical seal with sleeve (in)	1.7500	

Hydraulic Details

BEARING DATA	VALUE	PROTECTED
Inboard bearing	6309	
Outboard bearing	3309	
Bearing Span (in)	6.7500	

TEMPERATURES	VALUE	PROTECTED
Max Temperature Limit (deg F)	350.0	
Min Temperature Limit (deg F)	-350.0	

Viscosity Factors	VALUE	PROTECTED
Flow viscosity correction factor (rated)-1st stage	1.000	
Head viscosity correction factor (rated)-1st stage	1.000	
Efficiency viscosity correction factor (rated)-1st stage	1.000	

Motor Data	VALUE	PROTECTED
(C) Length of driver including shaft (in)	27.00	
(D) Motor dim. (in)	7.00	
(O) Driver O dimension (in)	14.50	
(U) Driver Shaft Diameter (in)	1.8750	
(AK) Inner diameter of motor mounting flange (in)	7.8800	
(B) Motor dim. (in)	14.00	
Driver Weight (lb)	405.0	

Noise Level Data

Maximum predicted sound pressures level pump only in Decibels (db) Re 0.0002 microbars measured 3ft horizontally and 5ft from the floor per QCP 580

Noise Level	31.5	63	125	250	500	1k	2k	4k	8k	A
Pump	57.0	60.0	72.0	68.0	70.0	72.0	73.0	76.0	78.0	85.0
Motor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Program Version 1.76.0.0

Standard Datasheet

CENTRIFUGAL PUMP SPECIFICATION

CLIENT	WESTLAKE CHEMICAL	CONTRACT NO:	
ADDRESS:	Sulphur, LA	BY: Adam Carpenter	DATE: 3/8/2023
PLANT LOCATION:	UNITED STATES		
ITEM:	ITEM 001 -- ELECTRIC POND PUMP		

PUMPING CONDITIONS			
FLUID PUMPED: Water		PUMP MATERIAL CLASS 316SS	
PUMPING TEMP. (PT)	21.1 deg C 70.0 deg F	VISCOSITY @ PT	1.000 CP PH
SPECIFIC GRAVITY @ PT	1.000	DENSITY @ PT	0.00 Lb/ft³
VAPOR PRESS. @ PT	mmHg 0.00 PSI ABS	SOLIDS CONTENT	%WT

PERFORMANCE CHARACTERISTICS			
CAPACITY, GPM	RATED 800.0	MIN. HYDRAULIC 295.4	
TDH, FT: NORMAL	RATED 82.0	DISCH.PRESSURE	35.9 PSI G
SUCTION PRESS., PSI G	RATED 0.0	MAXIMUM 0.0	
NPSH, FT ABS: AVAIL.(NORMAL)	0.0 (RATED)	14.2 REQD	BY PUMP CURVE NO. 3127-2
BHP, hp (RATED)	24.4 (MAX) 27.2	EFFICIENCY (NORMAL)	(RATED) 68.5

PUMP DESCRIPTION			
TYPE 3796 MTi	SIZE 6x6-13	RPM 1775	ROTATION <input checked="" type="checkbox"/> CW <input type="checkbox"/> CCW
IMPELLER TYPE Open	DIA. in (RATED) 10.1250 (MAX) 12.6250	(MIN BY MFR) 10.0000	
<input type="checkbox"/> PACKING TYPE	SIZE	NO. OF RINGS 0	SEAL CAGE <input type="checkbox"/> YES <input type="checkbox"/> NO
<input checked="" type="checkbox"/> MECH.SEAL MFR and MODEL/DYN SEAL			
SUCTION <input checked="" type="checkbox"/> FLGD <input type="checkbox"/> SCRD	SIZE 6"	ANSI 150# LB.ASA	FACING FF POSITION <input checked="" type="checkbox"/> CL <input type="checkbox"/> SIDE <input type="checkbox"/> FACING UP
DISCHARGE <input checked="" type="checkbox"/> FLGD <input type="checkbox"/> SCRD	SIZE 6"	ANSI 150# LB.ASA	FACING FF POSITION <input checked="" type="checkbox"/> TOP CTR <input type="checkbox"/> TANGENT <input type="checkbox"/> SIDE
BEARINGS (MFR AND TYPE): RADIAL 6309		THRUST 3309	(VERT.) THRUST <input type="checkbox"/> UP <input type="checkbox"/> DOWN
MATERIAL: CASING 316SS		IMPELLER 316SS	SHAFT/SLEEVE SAE 4140 / 316SS

SPECIAL MATERIAL			
CASING: <input type="checkbox"/> VENT	NPT <input checked="" type="checkbox"/> DRAIN 2	NPT	GAGE CONN. <input type="checkbox"/> SUCTION <input type="checkbox"/> DISCHARGE 3/8 / 3/8 NPT
STUFF.BOX: <input type="checkbox"/> TAP FOR FLUSH	NPT <input type="checkbox"/> TAP FOR DRAIN	NPT	<input type="checkbox"/> JACKETED NPT CONN:COOL WATER RQD GPM
CASING: NO OF STAGE 1	MOUNTING: <input type="checkbox"/> CENTERLINE <input checked="" type="checkbox"/> FOOT	<input type="checkbox"/> BRACKET	<input type="checkbox"/> VERTICAL
CASING SPLIT: <input type="checkbox"/> HORZ <input checked="" type="checkbox"/> VERTICAL	TYPE OF VOLUTE: <input checked="" type="checkbox"/> SINGLE <input type="checkbox"/> DOUBLE <input type="checkbox"/> DIFFUSER		
COVER PLATE <input type="checkbox"/> JACKETED	NPT CONN. <input type="checkbox"/> GLAND COOLING NPT CONN.	BEARING HOUSING <input type="checkbox"/> JACKETED	NPT
PUMP BUILT TO: <input checked="" type="checkbox"/> ANSI <input type="checkbox"/> API STD 610	<input type="checkbox"/> SPECIAL	SPECIFICATIONS	
COUPLING TYPE: Spacer		MAKE: /	GUARD:
LUBRICATION: Flood oil	HYDROSTATIC TEST PRESSURE: 0.0 PSI G		
WEIGHT (LB): PUMP 710.0	DRIVER 405.0	BASEPLATE 0.0	
PUMP SERIAL NO.:			
PUMP CURVE NO.: 3127-2			
SECTIONAL DWG.NO.:			

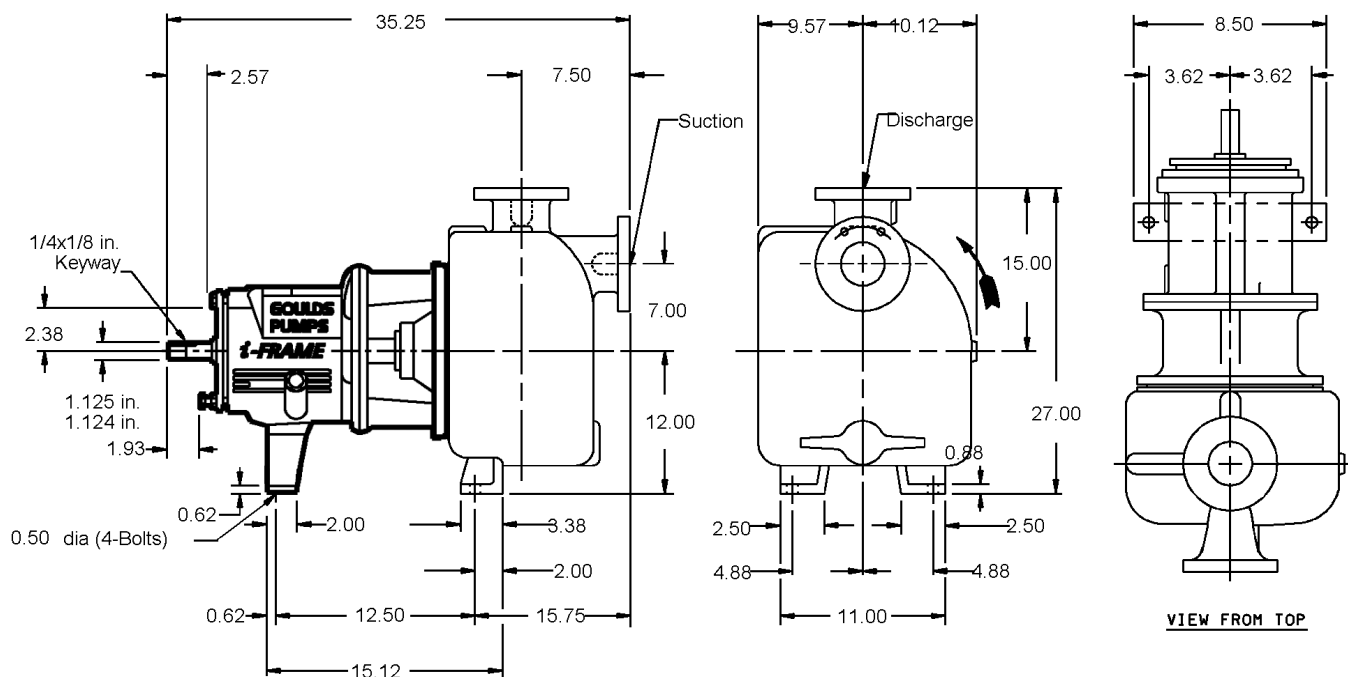
DRIVER			
<input checked="" type="checkbox"/> ELECTRIC MOTOR	30.0 HP	460 V	3 PH CPS 1800 RPM EQUIP #
MFR Siemens	CLASS		DIVISION
<input type="checkbox"/> STEAM TURBINE MFR	STEAM	PSI G	EXHAUST PSI G
<input type="checkbox"/> SPECIAL: MFR			

REMARKS:

COMMENTS / CLARIFICATIONS:

All information provided is based on original records of original pump units supplied (SN-746C547.28), combined with information specific for recent repair job.

No records of the original specified hydraulic requirement are available. The specified design operating point (800 gpm @ 82 ft TDH) is estimated, based on the known pump model/size, operating speed and impeller diameter.



Pump Specification

SUCT.FLANGE SIZE	6"	DRILLING	ANSI 150#	FACING	FF	FINISH	SERRATED
DISCH.FLANGE SIZE	6"	DRILLING	ANSI 150#	FACING	FF	FINISH	SERRATED
PUMP ROTATION (LOOKING AT PUMP FROM MOTOR)	CW						
TYPE OF LUBRICATION	FLOOD OIL					COOLED	NO
TYPE OF STUFFING BOX	STANDARD NON COOLED					COOLED	NO
TYPE OF SEALING	MECHANICAL SEAL						

Weights and Measurements

PUMP	710.0 lb
MOTOR	405.0 lb
BASEPLATE	1b
TOTAL	1,115.0 lb
GR.VOLUME w/BOX	28.9 ft ³
GR.WEIGHT w/BOX	1,260.0 lb

Motor Specification

MOTOR BY	PUMP MFG	MOUNT BY	PUMP MFG	MFG.	SIEMENS
FRAME	286T	POWER	30.0 hp	RPM	1800
PHASE	3	FREQUENCY	60 HZ	VOLTS	460
INSULATION	F	S.F.	1.15		
ENCLOSURE	IEEE841 SEVERE DUTY PREMIUM EFFICIENT				

Auxiliary Specification

COUPLING BY	CUSTOMER	CPLG TYPE	
CPL GUARD BY		CPLG GUARD MATL	
BASEPLATE			
MECH.SEAL	BY CUSTOMER		

Notes and References

FOR PUMP TAPPED OPENINGS REFER TO DWG.: TAC23-03-08 01 / ITEM 001
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DRAWING IS FOR REFERENCE ONLY.

Customer: WESTLAKE CHEMICAL
End User: WESTLAKE - SULPHUR
Service: Electric Pond Pump
REF. ORIGINAL PUMP SN-746C547.28

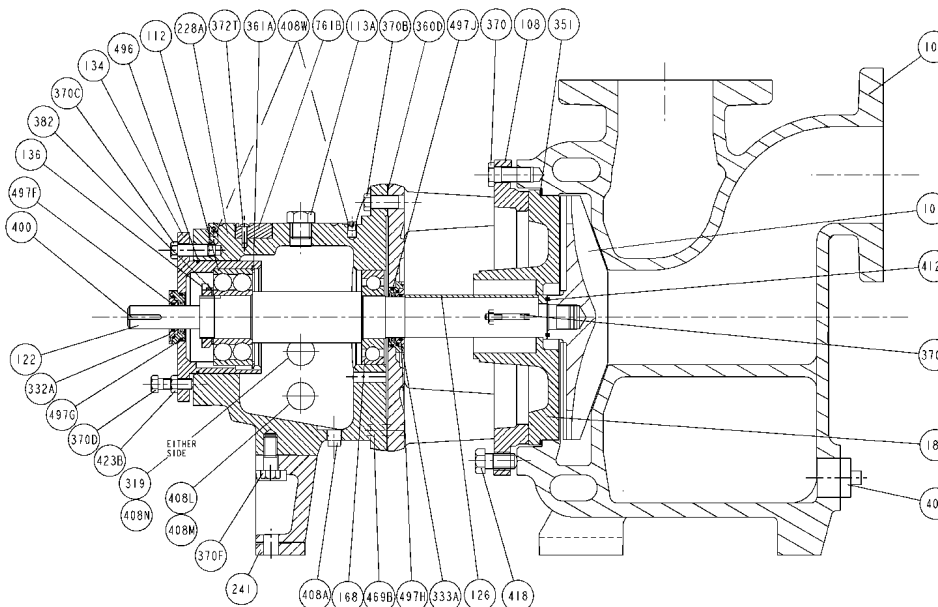
Copyright 2023
ITT Corp

DRAWING NO AC23-03-08 01/ITEM 001

All dimensions are in inches.
Drawing is not to scale
Weights (lbs) are approximate

CROSS SECTIONAL DRAWING

Model 3796 MTi
Size 6x6-13

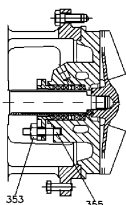


BILL OF MATERIAL

ITEM	QTY	PART NAME	MATERIAL	ASTM#
100	1 *	CASING	Austenitic Stainless Steel 31	A744 GRADE CF-8M
101	1 *	IMPELLER W/O-RING	Austenitic Stainless Steel 31	A744 GRADE CF-8M
108	1	FRAME ADAPTER	Ductile Iron	A536-84 GRADE 60-42-10
112	1 *	BALL BEARING OUTBOARD		
113A	1 *	PIPE, PLUG OIL FILL	Carbon Steel	A108 GRADE 1213
122	1	SHAFT	ALLOY STEEL	A414 GRADE 4140 CLASS BC
126	1 *	SHAFT SLEEVE	STAINLESS STEEL	A276 TYPE 316 CONDITION A
134	1 *	BEARING HOUSING	Gray Iron	A48 CLASS 25B
136	1	BEARING LOCK NUT	STEEL	
168	1 *	BALL BEARING (INBOARD)		
184	1	ST BOX COVER	Austenitic Stainless Steel 31	A744 GRADE CF-8M
228A	1 *	FRAME	CAST IRON	A48 CLASS 30B
241	1 *	FR. FOOT OR Y BASE	Gray Iron	A48 CLASS 25B
319	1 *	SIGHT WINDOW		
319N	1 *	PLUG, PIPE	STAINLESS STEEL	A276 TYPE 316 CONDITION A
332A	1	LAB SEAL OB		
333A	1	LAB SEAL IB		
351	1 *	CASE GASKET	Aramid Fibers with EPDM R	
353	4 *	GLAND STUD	304 Stainless Steel	A276/F594 TYPE 304
355	4 *	HEX NUT (GLAND STUD)	304 Stainless Steel	A276/F594 TYPE 304
357K	2 *	NUT, HEX (COVER TO ADAPT)	304 Stainless Steel	A276/F594 TYPE 304
358	1 *	PIPE PLUG (CASING-DRAIN)	STAINLESS STEEL	A276 TYPE 316 CONDITION A
358A	1 *	PLUG, PIPE (FLUSH CONN ST BOX COVER)	STAINLESS STEEL	A276 TYPE 316 CONDITION A
360D	1	GASKET, ADAPTER	Nitrile Rubber	
361A	1	RETAINING, RING/CLAMP RING	CARBON STEEL	
370	16 *	H CAP SCREW (FRAME-CASE)	PTFE	A193 GRADE B7
370B	4 *	H CAP SCREW (FRAME-ADPTR RING)	304 Stainless Steel	A276/F594 TYPE 304
370C	3 *	H CAP SCREW (BRG HSG-FRAME)	304 Stainless Steel	A276/F594 TYPE 304
370D	3 *	H CAP SCREW (IMPLR ADJ)	304 Stainless Steel	A276/F594 TYPE 304
370F	2 *	H CAP SCREW (FR-FR. FOOT)	304 Stainless Steel	A276/F594 TYPE 304
370H	2 *	STUD COVER/FRAME	304 Stainless Steel	A276/F594 TYPE 304
382	1	BEARING LOCKWASHER	STEEL	
400	1	SQ END KEY (CPLG)	CARBON STEEL	A108 GRADE 1018 OR 1020
408	1 *	PIPE PLUG (CASING-VENT)	STAINLESS STEEL	A276 TYPE 316 CONDITION A
408A	1 *	PIPE PLUG (OIL DRAIN)		
408L	1 *	PIPE PLUG (FRAME CLG IN)	MAL IRON	
408M	1 *	PIPE PLUG (COOLER OUTLET)	MAL IRON	
408N	1 *	PIPE PLUG (SIGHT OILER)	MAL IRON	
412A	1 *	O-RING IMPLR	Teflon	GRADE 6C
418	3 *	BOLT, HEX TAP	304 Stainless Steel	A276/F594 TYPE 304
423B	3 *	JAM NUT (BRG HSG)	304 Stainless Steel	A276/F594 TYPE 304
469B	2 *	DOWEL PIN (FRAME-ADPTR)		
496	1 *	O-RING BRG HOUSING	Nitrile	
497F	1 *	O-RING	FLUOROCARBON	
497G	1 *	O-RING OUTBOARD STATIONARY	Nitrile	
497H	1 *	O-RING	FLUOROCARBON	
497J	1 *	O-RING	Nitrile	
497L	1 *	O-RING	FLUOROCARBON	
497N	1 *	O-RING	FLUOROCARBON	
528A	2 *	LOCKWASHER	304 Stainless Steel	A276/F594 TYPE 304
902	1 *	KIT, MAINTENANCE		
906	1 *	KIT, REPAIR (GRS) MTI		
920A	1 #	END, PWR OIL/L SLV C20SFT		

SEAL CHAMBER

STUFFING BOX
NON-JACKETED



* Recommended spare parts
Items not illustrated

Customer: WESTLAKE CHEMICAL
End User: WESTLAKE - SULPHUR
Service: Electric Pond Pump
REF. ORIGINAL PUMP SN-746C547.28

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ITT Corp

DRAWING NO

AC23-03-08 01/ITEM 001

Model: 3796**Size: 6x6-13****Group: MTi****60Hz****RPM: 1775****Stages: 1**

REF. Original Pump SN-746C547.28 (supplied in 1984)

End User: WESTLAKE - SULPHUR

Issued by : Adam Carpenter

Date : 03/08/2023

Item/Equip.No. : ITEM 001 (Base Offer)

Service : Electric Pond Pump

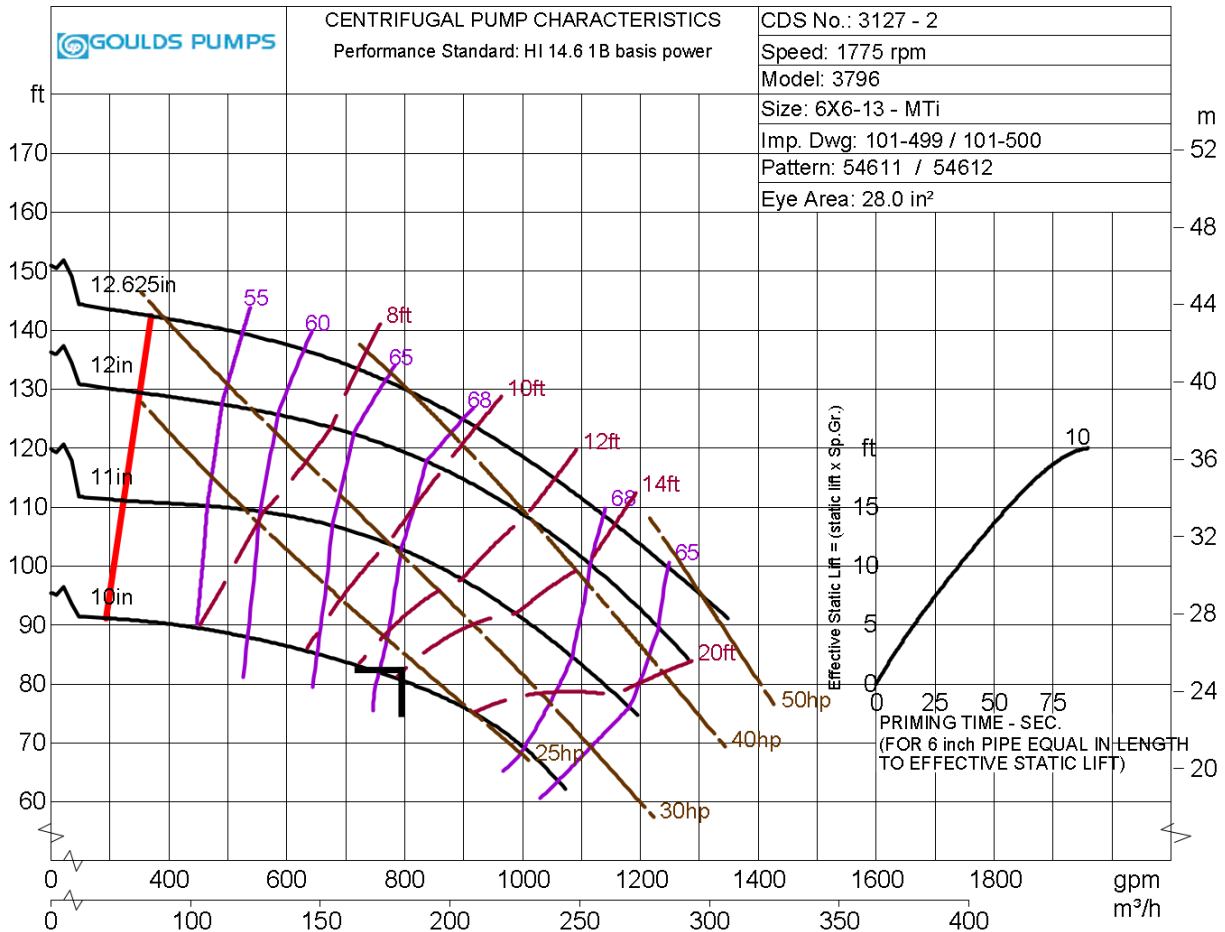
Operating Conditions

Liquid: Water
Temp.: 70.0 deg F
S.G./Visc.: 1.000/1.000 cp
Flow: 800.0 gpm
TDH: 82.0 ft
NPSHa:
Solid size:
% Susp. Solids
(by wtg):

Pump Performance

Published Efficiency: 68.5 %
Rated Pump Efficiency: 68.5 %
Rated Total Power: 24.4 hp
Non-Overloading Power: 27.2 hp
Imp. Dia. First 1 Stg(s): 10.1250 in
NPSHr: 14.2 ft
Shut off Head: 97.9 ft
Vapor Press:
Suction Specific Speed: 8,795 gpm(US) ft
Min. Hydraulic Flow: 295.4 gpm
Max. Solids Size: 1.0000 in

- Notes:**
1. Power and efficiency losses are not reflected on the curve below.
 2. Curve shown is at ambient temperature conditions.



Model: 3796**Size: 6x6-13****Group: MTi****60Hz****RPM: 1775****Stages: 1**

REF. Original Pump SN-746C547.28 (supplied in 1984)

End User : WESTLAKE - SULPHUR

Issued by : Adam Carpenter

Date : 03/08/2023

Item/Equip.No. : ITEM 001 (Base Offer)

Service : Electric Pond Pump

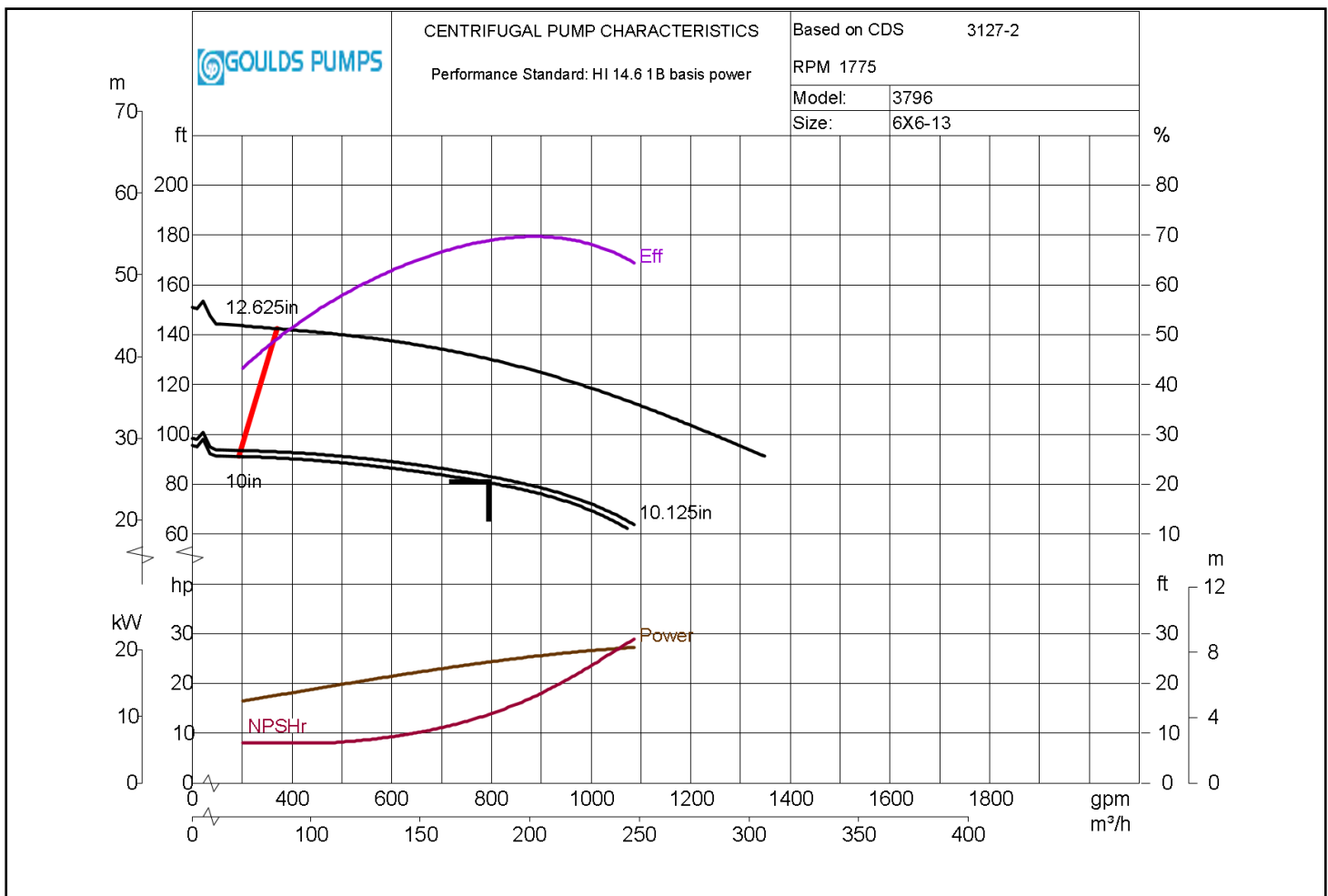
Operating Conditions

Liquid: Water
 Temp.: 70.0 deg F
 S.G./Visc.: 1.000/1.000 cp
 Flow: 800.0 gpm
 TDH: 82.0 ft
 NPSHa:
 Solid size:

Pump Performance

Published Efficiency: 68.5 %
 Rated Pump Efficiency: 68.5 %
 Rated Total Power: 24.4 hp
 Non-Overloading Power: 27.2 hp
 Imp. Dia. First 1 Stg(s): 10.1250 in
 NPSHr: 14.2 ft
 Max. Solids Size: 1.0000 in
 Suction Specific Speed: 8,795 gpm(US) ft
 Min. Hydraulic Flow: 295.4 gpm
 Min. Thermal Flow: N/A
 Shut off Head: 97.9 ft
 % Susp. Solids (by wtg):

Vapor Press:

Notes: 1. Curve shown is at ambient temperature conditions.

Viscosity corrections have been performed in accordance with HI 9.6.7-2015

REF. Original Pump SN-746C547.28 (supplied in 1984)

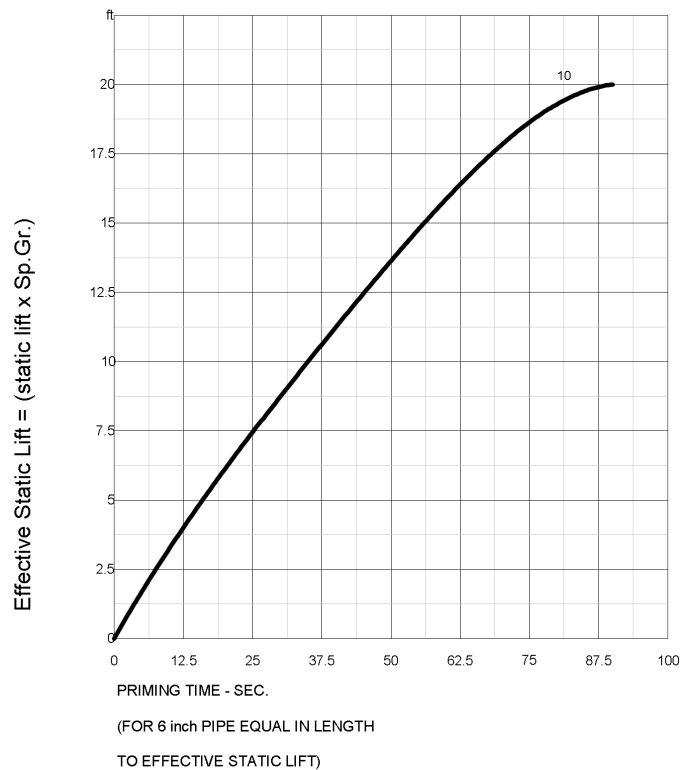
End User : WESTLAKE - SULPHUR

Item/Equip.No. : ITEM 001

Service : Electric Pond Pump

Issued by : Adam Carpenter

Date : 03/08/2023



This priming time data must be corrected for suction pipe diameters different from the pump suction and for suction pipe lengths greater than the effective static lift.

Formulas to calculate the total system priming time:

$$(1) PT_T = PT_{Les} \times \frac{SPL}{L_{es}} \times \left(\frac{D_p}{D_s}\right)^2$$

$$(2) L_{es} = L_s \times S.G.$$

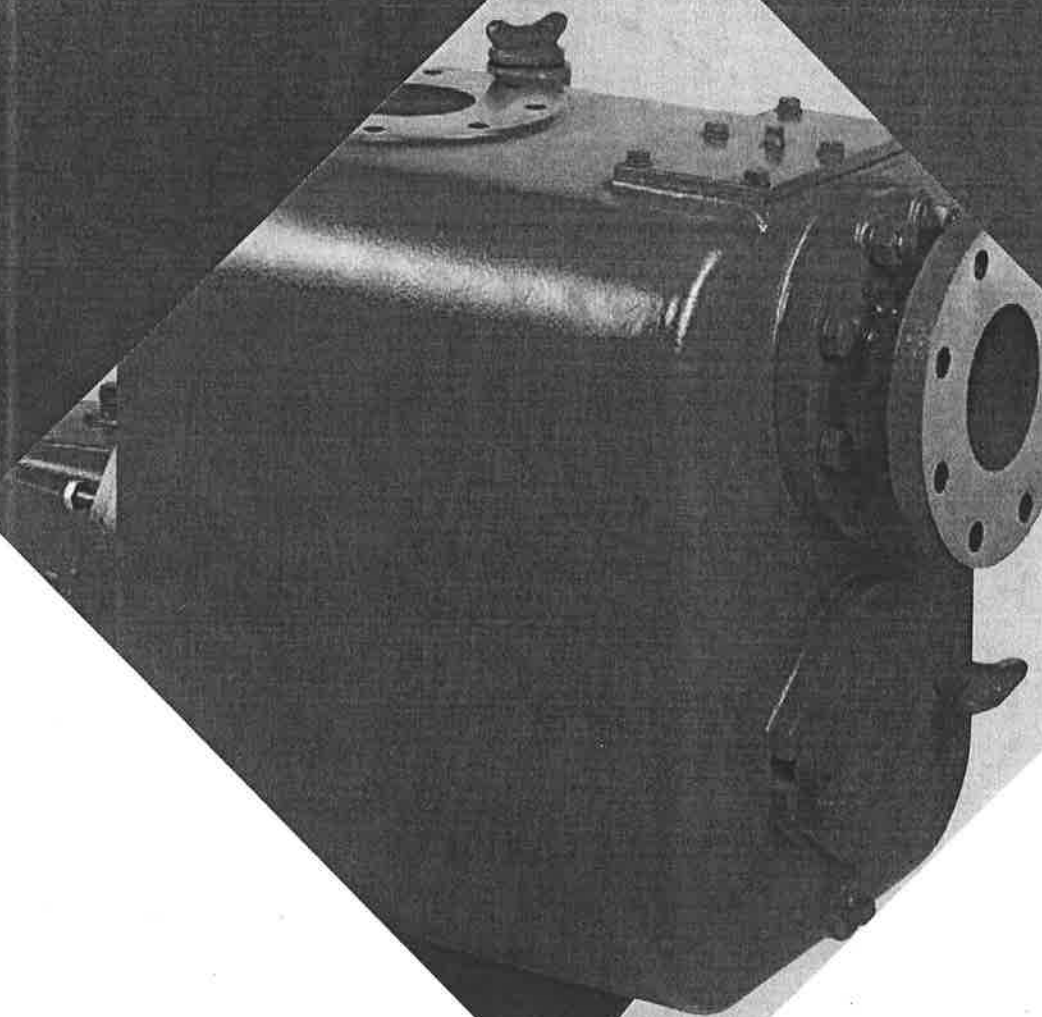
Where:

- PT_T : Total system priming time
- PT_{Les} : Priming time as determined from the curve
- SPL : Total suction pipe length above the free surface of the liquid
- L_{es} : Effective static lift
- L_s : Maximum static lift from free surface of the liquid to the centerline of the pump suction, or the highest point in the suction piping, whichever is greater
- $S.G.$: Specific gravity of the liquid
- D_p : Nominal pipe diameter
- D_s : Nominal pump suction diameter

 **GOULDS PUMPS**

Goulds Trash Hog[®]

Self-Priming Solids Handling Pump



ITT

ENGINEERED FOR LIFE

Goulds Trash Hog®

Self-Priming Pumps Designed for Toughest Solids Handling Services

- Capacities to 6,000 GPM (1,363 m³/h)
- Heads to 140 feet (43 m)
- Temperatures to 225°F (107°C)
- Pressures to 85 PSIG (586 kPa)
- Suction Lifts to 25 feet (7.6 m)
- Spherical Solids to 3 inches (76 mm)

Applications

Pulp and Paper Industry

- Black Liquor Sump
- Paper Machine Floor Sump
- Knotters Discharge Pump
- White Water Service

General Industry

- Wash Down Sump
- Food Wastes
- Fish Farming
- Rendering Wastes
- Machine Coolant Sump

Mining and Metal Fabrication

- Mine Dewatering
- Mill Scale Runoff
- Cutting Oil Transfer
- Construction Site Dewatering

Performance Features for Self-Priming, Solids Handling Services

Large Capacity Priming Chamber

For reliable priming and repriming

Heavy Duty Power End

For extended life in toughest services

Non-Clog Impeller

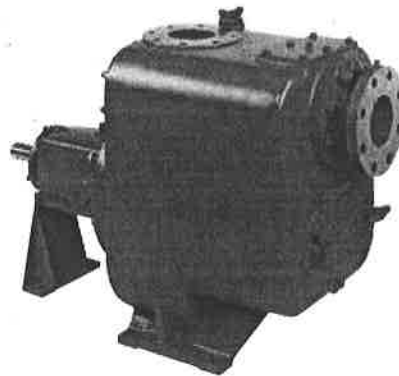
Capable of passing spherical solids to 3 inches (76 mm)

External Impeller Adjustment

Easily renews optimum hydraulic performance

Trimable Impeller

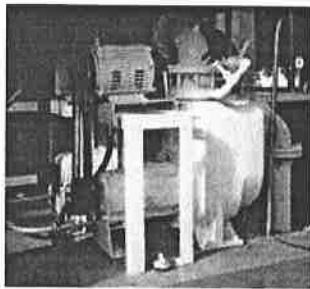
Permits most efficient use of motor horsepower



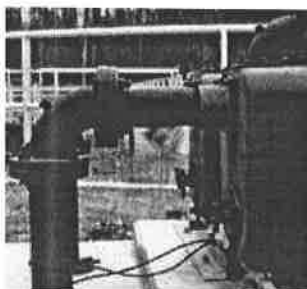
Goulds Trash Hog is designed for superior solids handling capability, optimum pump performance and extreme ease of maintenance for a wide range of industrial, pulp and paper, mining and municipal wastewater services. Whether handling raw sewage, sludge, debris or plant wastes, there's no other pump that compares to the Trash Hog.

Proven Performance

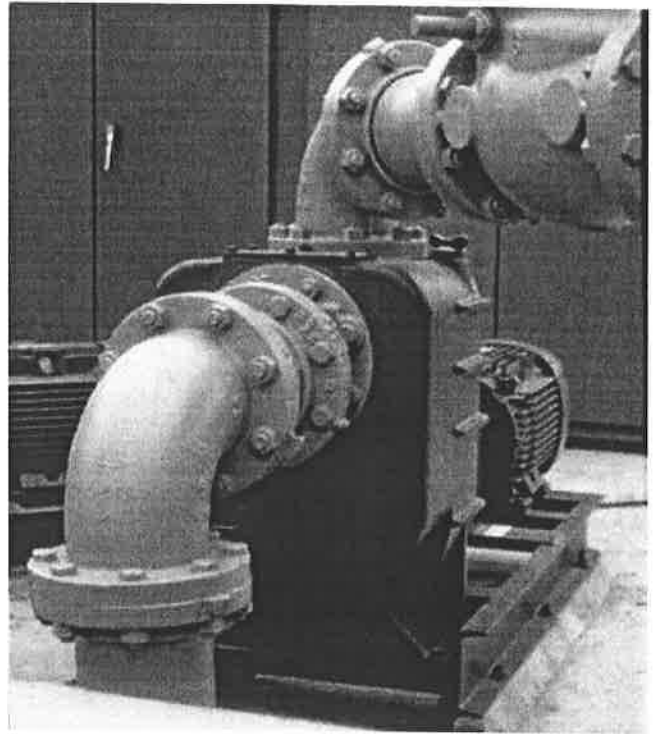
Goulds Trash Hog has been designed to meet the waste handling needs of our industrial customers. Whether it be a remote lift station, an on-site treatment facility or transfer of your process wastes, Goulds has the experience to provide the engineered solution you need.



Trash Hogs are utilized in remote sewage lift stations to pump municipal waste from outlying residential areas to the local treatment plant. Here, Trash Hogs are being driven by overhead belt drives to conserve lift station space. Service will be performed by removing the rotating element to the rear as typical suction piping restricts access to the front of the pumps.



In this installation, two 3" Trash Hogs are being used to control the level of the liquid in these settling ponds. Liquid level controls in the sump determine whether either or both pumps are needed to maintain proper pond level. Trash Hogs were chosen due to their reliable priming capabilities.



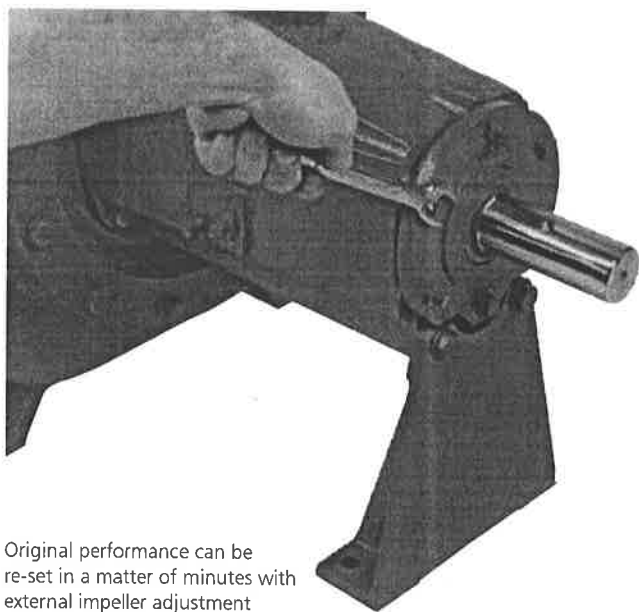
Here, one of several 6" self-priming Trash Hogs is being used to pump process waste at an industrial treatment plant. Trash Hog was specified and installed due to its ability to pass a 3" diameter solid and prime and reprime a 15 feet static suction lift.

Goulds Trash Hog®

Designed for Ease of Maintenance

Easily Renewed Performance

It's common knowledge that as a pump wears, the performance decreases. The Trash Hog's open impeller can be adjusted, simply and quickly, to compensate for wear and renew performance.

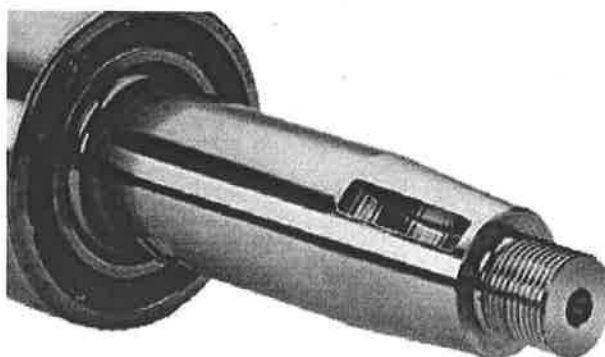


Original performance can be re-set in a matter of minutes with external impeller adjustment

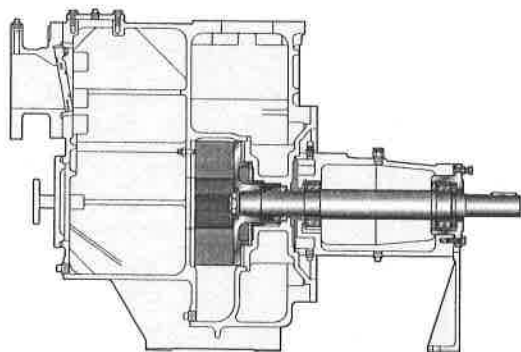
Back Pull-Out

The power end is entirely outside the pump casing. Jacking bolt holes are provided to ease the separation of the power end from the casing.

- No special tools or "T" handles are required to remove the power end.
- No shims are used on the casing bolt circle for clearance adjustments.
- No risk of injury from "wrestling" with an awkward back pull-out design.



The tapered shaft and woodruff key design allow easy removal of the impeller from the rotating assembly.



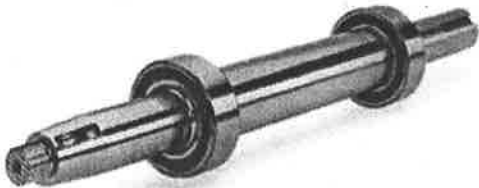
Adjustable cartridge style bearing housing allows adjustment of impeller to wearplate clearance. No shims are required. No need to disassemble or drain pump.

Goulds Trash Hog®

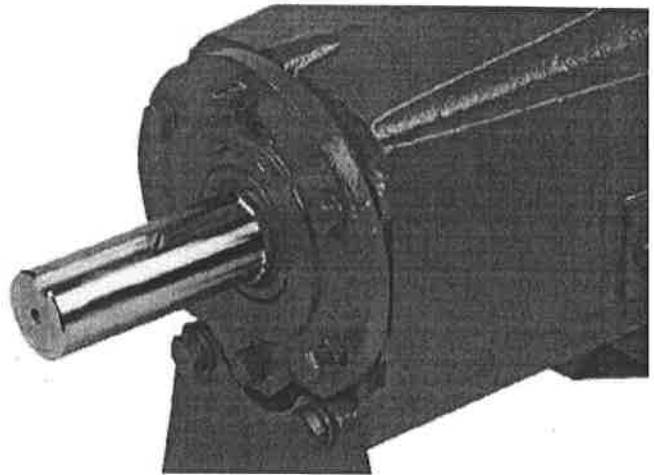
Designed for Extended Pump Life

Goulds Trash Hog is a true heavy duty solids handling pump. No other self-priming solids handling pump is designed with the "beef" of a Trash Hog. All parts are engineered for maximum performance and service life.

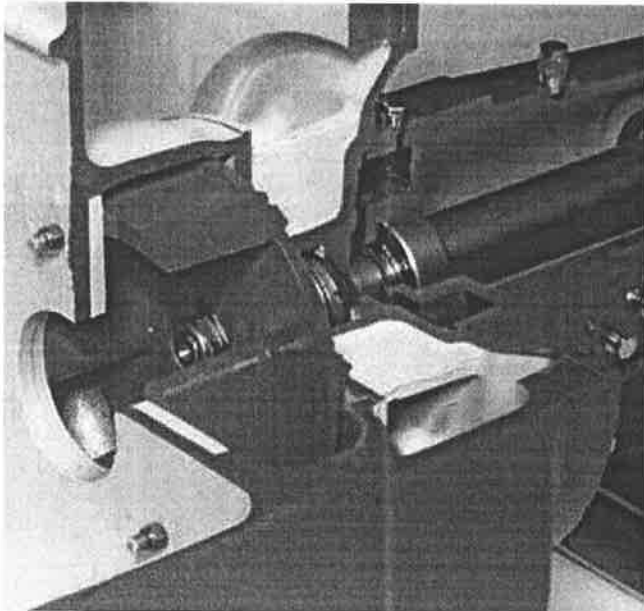
The Trash Hog features the heaviest shaft and bearing assembly in the industry. Long bearing span minimizes bearing loads for extended bearing life. Large shaft diameter for minimal deflection, maximum mechanical seal life.



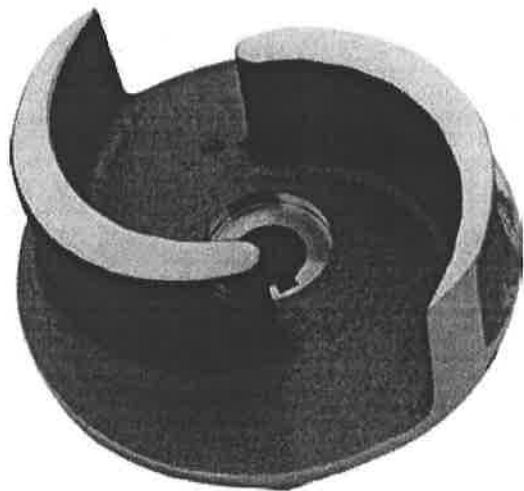
The power end is supported by a rigid cast iron frame foot that provides excellent support for the shaft and thrust bearing. Bearing life is extended.



Removable wearplate provides added protection to pump casing from abrasive wear. Easily replaced.



The Trash Hog uses two-vane or three-vane impellers for non-clog solids handling. Trash Hog is engineered for optimum efficiency and priming performance.



Goulds Trash Hog[®]

Self-Priming, Solids Handling Pumps

Heavy Duty Design Features for Wide Range Solids Handling Services

EXTERNAL IMPELLER ADJUSTMENT

Continuous high performance maintained by simple adjustment. Absolutely no shims required.

INDUSTRIAL-DUTY POWER END

Provides rigid shaft support. Ample oil volume results in cooler running bearings for extended life.

BACK PULL-OUT DESIGN

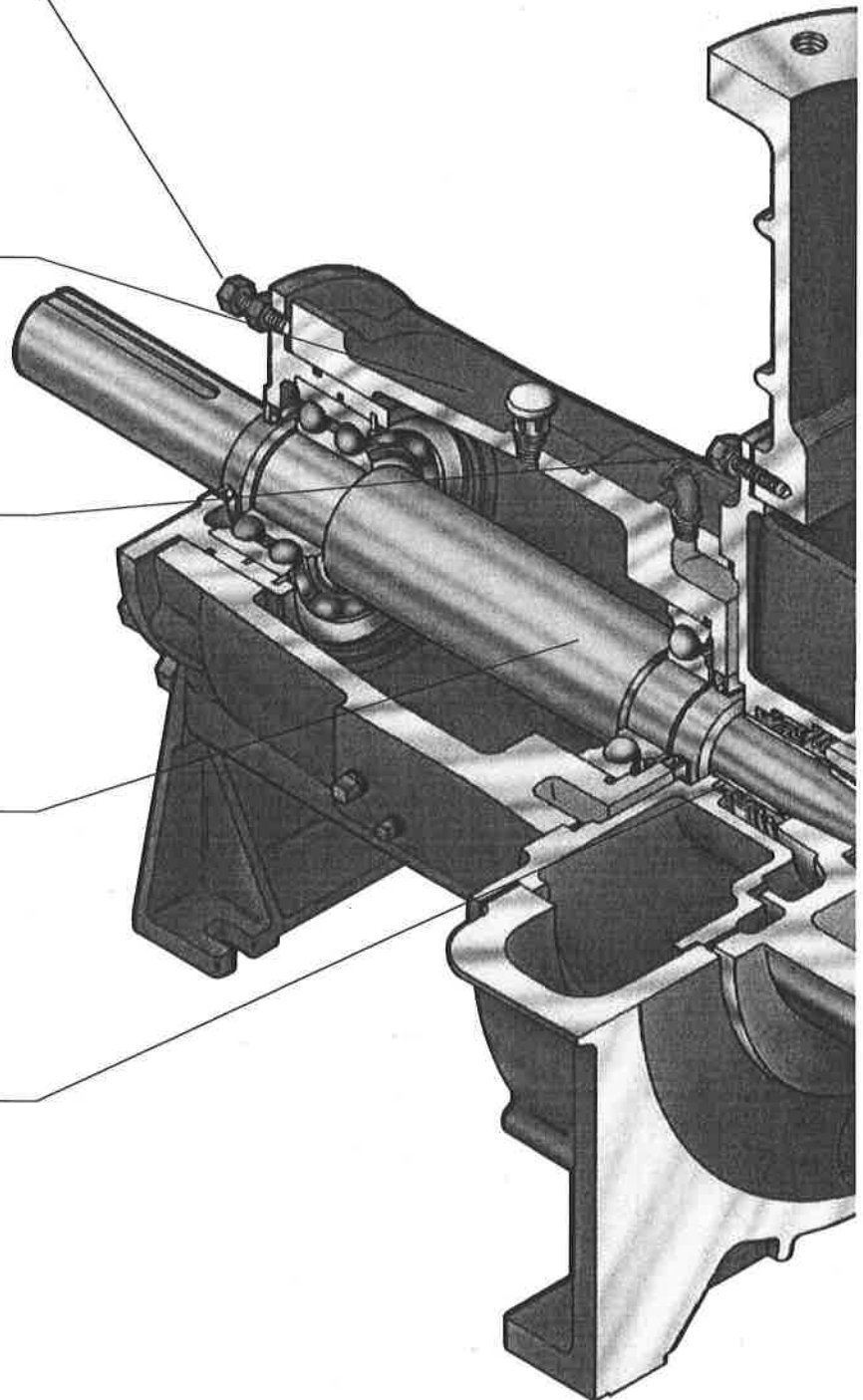
Complete power end with seal chamber can be easily removed from casing without disturbing suction and discharge piping. No need for special tools.

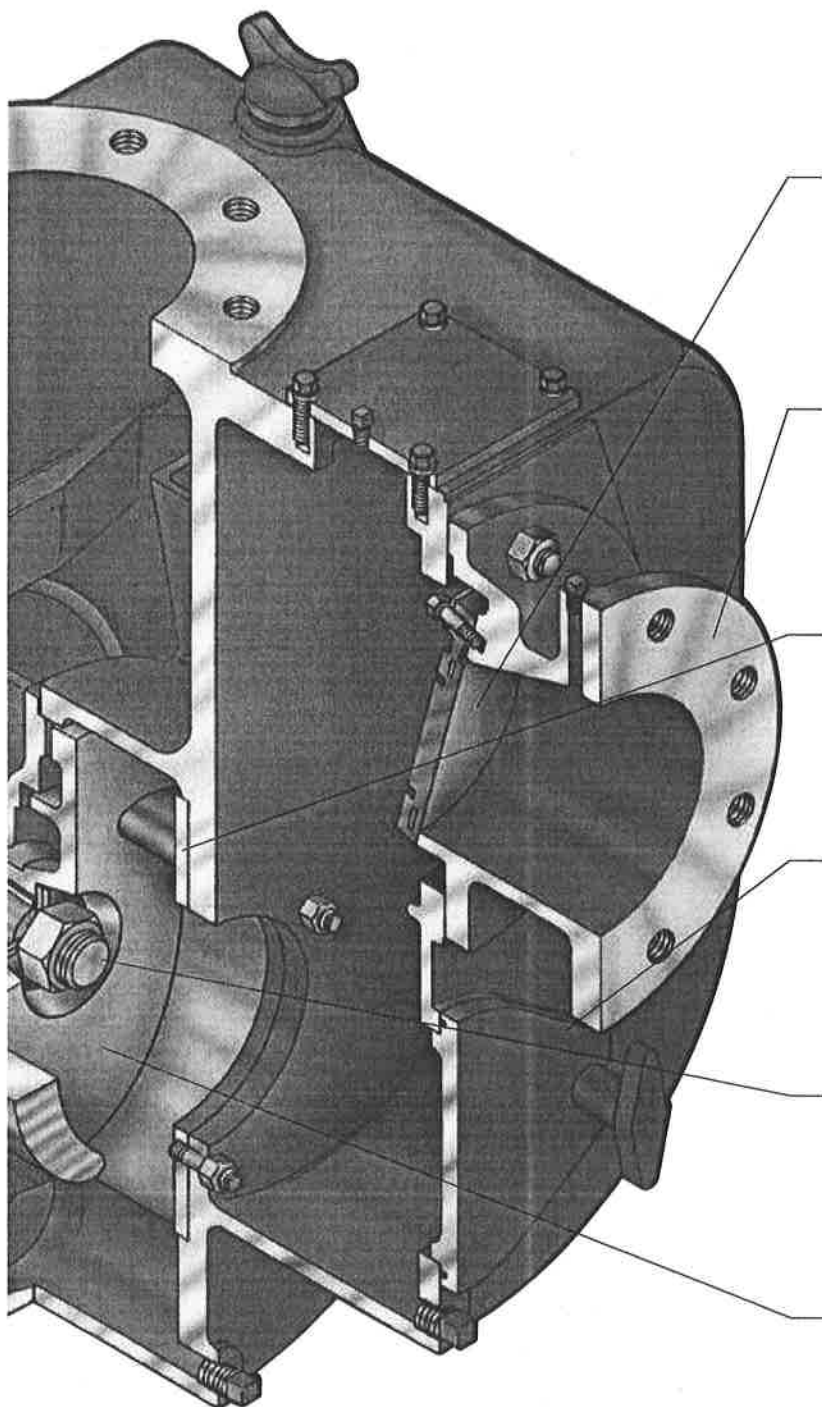
HIGH STRENGTH STAINLESS STEEL TAPERED SHAFT

Maximum strength and corrosion resistance. Tapered impeller fit facilitates easy impeller removal.

SILICON CARBIDE MECHANICAL SEAL

Hard faces provide substantially higher resistance to wear. Carbon/ceramic seal is optional.





REPLACEABLE ELASTOMERIC CHECK VALVE
With integral blow-out disc — provides for instant repriming while preventing over-pressurization of casing.

CLASS 125 FLANGES
Standard on suction and discharge for positive sealing in all industrial services.

RENEWABLE WEARPLATE
Reduces maintenance costs; allows running clearances to be maintained for maximum pumping efficiency and priming capability.

LIGHTWEIGHT CLEAN-OUT COVER
Maintenance-friendly cover allows access to remove any debris.

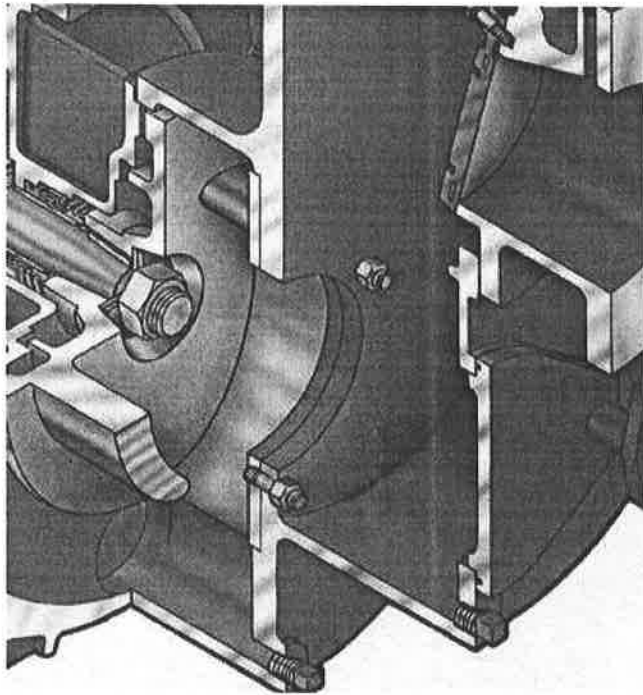
BACK PUMP-OUT VANES AND REAR IMPELLER RING
Reduces seal chamber pressure and axial thrust for extended bearing and seal life. Prevents solids from entering seal chamber. Close radial clearance eliminates need to shim behind impeller.

HEAVY VANED OPEN IMPELLER
Designed for superior performance in toughest solids handling services.

Reliable Self-Priming Operation

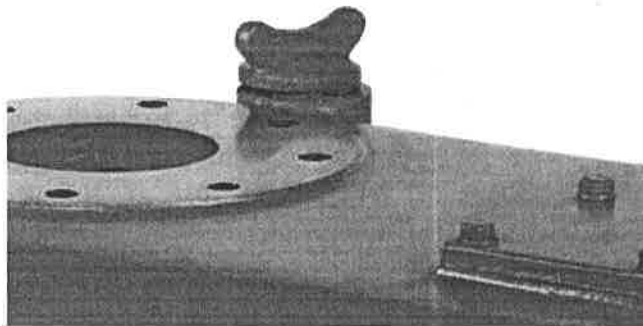
Consistent Priming and Repriming

Self-priming pumps require liquid in the priming chamber in order to prime properly. Too small a volume of liquid can adversely affect priming performance or possibly create a dangerous situation by raising the liquid temperature.



The large capacity priming chamber retains plenty of liquid for consistent priming and repriming.

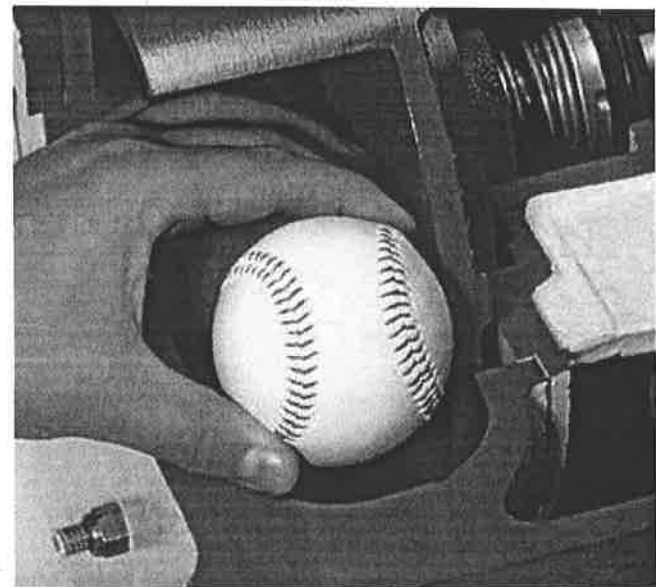
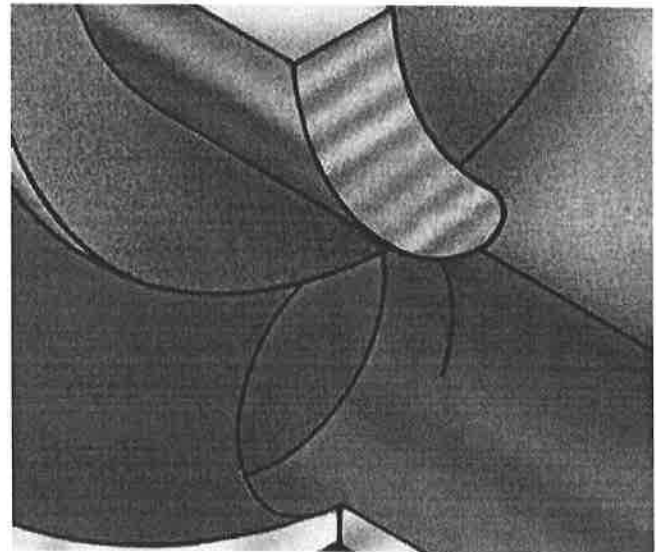
The Trash Hog is designed with an elevated suction inlet to keep liquid in the priming chamber even if the check valve fails. All Trash Hog sizes will prime up to 25 feet in under 5 minutes.



The casing fill plug provides convenient access for filling the priming chamber and provides a connection for an air release system.

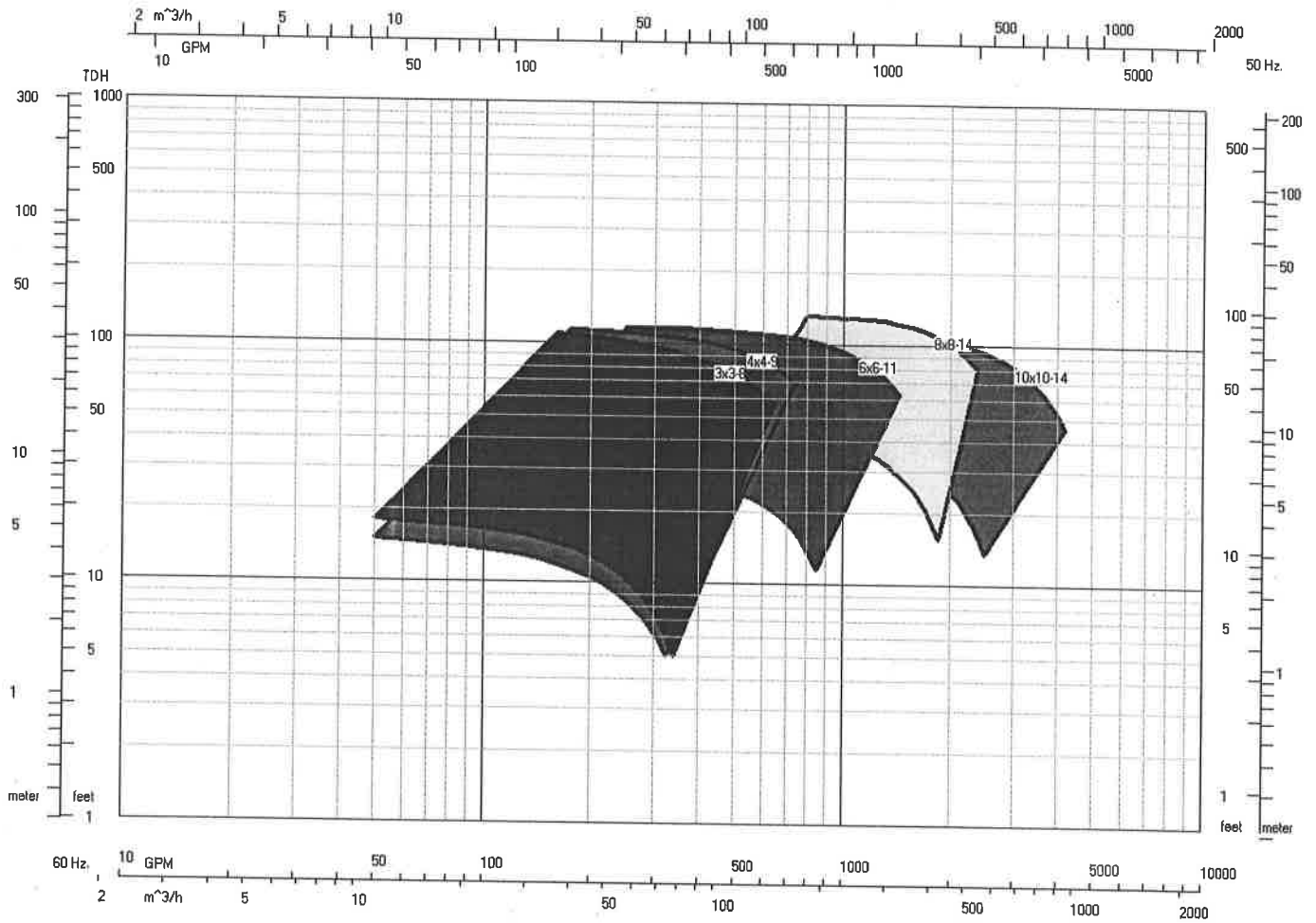
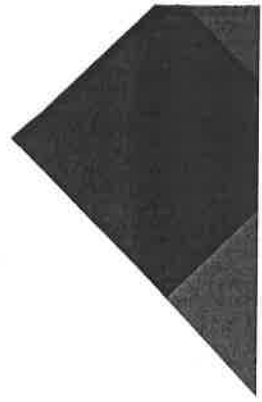
Industrial Duty Solids Handling

Goulds Trash Hog is designed to handle up to 3-inch spherical solids in some of the toughest solids handling services. Other manufacturers' light duty pumps cannot match the solids handling or self-priming capability of the Trash Hog.

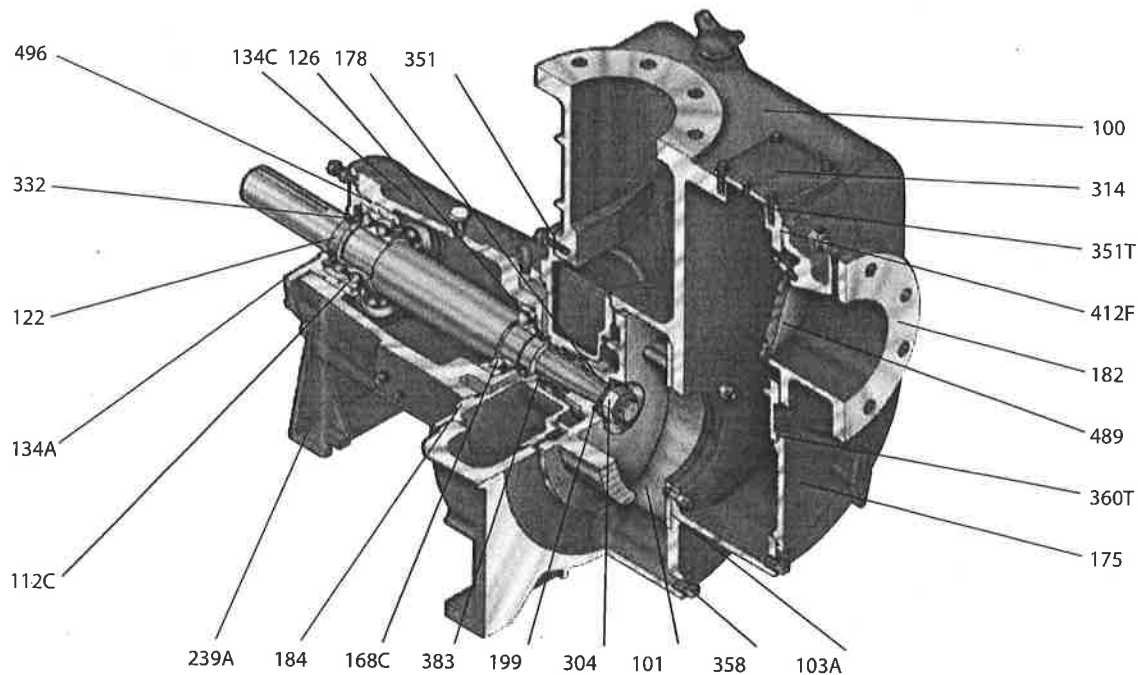


The Trash Hog uses two-vane or three-vane impellers for non-clog solids handling. Trash Hog is engineered for optimum efficiency and priming performance.

Hydraulic Coverage



Sectional View



Parts List and Materials of Construction

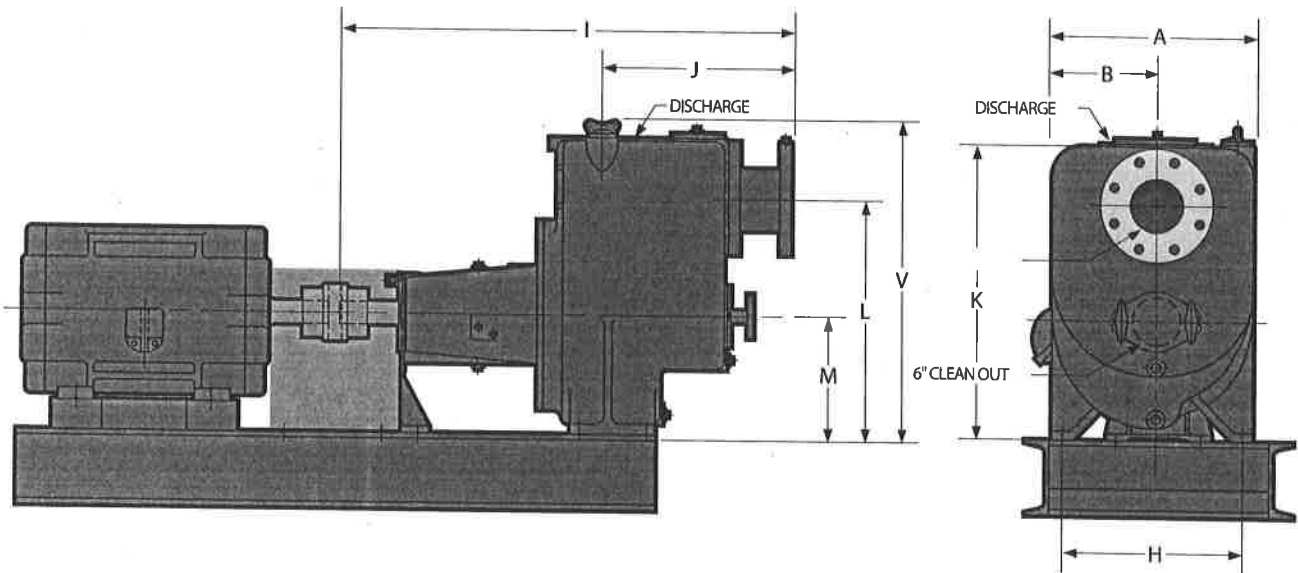
Item Number	Part Name	Material						
		All Cast Iron	CI/316	CI/316 w/316 SB Cover	CI/HC600	CI/CD4	All 316SS	All CD4MCu
100	Casing	Cast Iron					316SS	CD4MCu
101	Impeller	Ductile Iron	316SS		HC600	CD4	316SS	CD4MCu
103A	Wear Plate	Ductile Iron	316SS		HC600	CD4	316SS	CD4MCu
112C	Thrust Bearing	Double Row Angular Contact ⁽¹⁾						
122	Shaft	17-4PH ⁽²⁾						
126	Shaft Sleeve (Optional)	416 SS						
134A	Bearing Carrier	Cast Iron						
134C	Bearing Frame	Cast Iron						
168C	Radial Bearing	Double Row Angular Contact ⁽¹⁾						
175	Clean Out Cover	Cast Iron					316SS	CD4MCu
178	Impeller Key	Steel	316 SS					
182	Suction Piece	Cast Iron					316SS	CD4MCu
184	Stuffing Box Cover	Cast Iron		316SS		Cast Iron	316SS	CD4MCu
199	Impeller Washer	Carbon Steel					316SS	Alloy 20
239A	Frame Foot	Cast Iron						
304	Impeller Nut	Carbon Steel					316SS	Alloy 20
314	Inspection Cover	Cast Iron					316SS	CD4MCu
332	Oil Seal	Lip Seal (Buna/Steel)						
351	Casing Gasket	Lexide						
351T	Gasket, Inspection Cover	Lexide						
358	Casing Drain Plug	Carbon Steel					316SS	Alloy 20
360T	O-ring	Buna N					Viton	
383	Mechanical Seal	Single (Silicon Carbide vs. Silicon Carbide/Viton)						
412F	Gasket, Suction Piece	Lexide						
489	Check Valve	Buna N					Viton	
496	O-ring	Buna N						

(1) Single row bearings standard on 3x3-8, 6x6-11 and 8x8-14 pumps.

(2) Carbon steel shaft standard on 3x3-8 and 4x4-10 pumps for all Iron construction.

(3) Single row bearings standard on 3x3-8 pump.

Dimensions



DIMENSIONS													
Pump Size	Discharge	Suction	A	B	H	I	J	K	L	M	V	Weight Bare Pump	
												Lbs.	Kgs.
3x3-8	3	3	14.25 (368)	7.56 (192)	13.38 (340)	38.75 (984)	17.19 (437)	25.31 (643)	21.5 (546)	11.5 (292)	26.63 (676)	480	(218)
4x4-9	4	4	16.44 (418)	8.63 (219)	15.63 (397)	40.13 (1019)	18.56 (472)	25.75 (654)	21 (533)	11.5 (292)	27.06 (687)	600	(273)
6x6-11	6	6	19.81 (503)	10.25 (260)	18.56 (472)	42.69 (1084)	16.5 (419)	27 (686)	21 (533)	10 (254)	28.56 (726)	705	(320)
8x8-14	8	8	23.25 (591)	10.56 (268)	20.25 (514)	45.56 (1157)	19.75 (502)	34 (864)	26.63 (676)	12 (305)	35.56 (903)	1150	(523)
10x10-14	10	10	28.94 (735)	13 (330)	24.5 (622)	54.13 (1375)	25.63 (651)	44 (1118)	33.5 (851)	14.75 (375)	45.31 (1151)	1800	(818)

Visit our website at
www.gouldspumps.com

Wherever you are, we're there too.

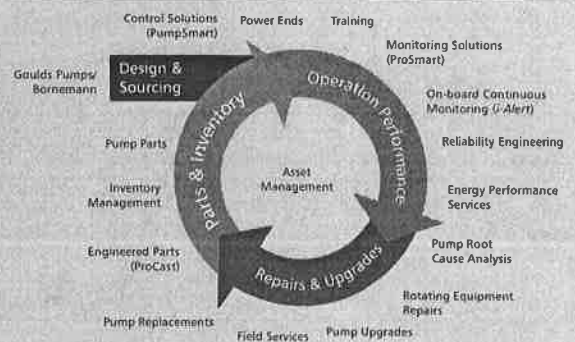


PRO services

Reliability has no quitting time.

Building on over 160 years of Goulds Pumps experience, PRO Services provides an array of services focused on reducing equipment total cost of ownership (TCO) and increasing plant output, including predictive monitoring, maintenance contracts, field service, engineered upgrades, inventory management, and overhauls for pumps and other rotating equipment.

Your Total Solution For Equipment Life Cycle Optimization



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Seneca Falls, NY 13148
www.itt.com

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B.TrashHog.en-US.2015-10



March 8, 2023

SUBJECT: Summary of Westlake Sulphur Pond Pumps

Westlake brine field operations has (2) pond pumps located on the Southern perimeter of the central lake on the Sulphur dome. The central lake does not have a connection to the main outfall from the Sulphur dome, bayou d'Inde, so pumps are used to control the water levels. The pond pumps are operated based on observed water level increases post rain events and/or prior to a large rainfall event. Both pumps discharge from the central lake water to the adjacent area to the south of central lake (see below image, depicted in yellow). The Sulphur Brine Field is permitted under the LPDES Storm Water Multi-Sector General Permit (MSGP No. LAG480546, AI No. 8990) for discharges of storm water associated with industrial activity, specifically those industrial activities related to chemical mineral mining (brine mining) as governed under the MSGP Sector J (Non-metallic Mining and Dressing).



Thanks,

Josh Bradley
Brine Field Superintendent

Basic Pump

Self Priming Centrifugal Pump

Super
T SERIES

Model T10A60S-B

Size 10" x 10"



PUMP SPECIFICATIONS

Size: 10" x 10" (254 mm x 254 mm) Flanged.

Casing: Gray Iron 30.

Maximum Operating Pressure 99 psi (683 kPa).*

Semi-Open Type, Two Vane Impeller: Ductile Iron 65-45-12.

Handles 3" (76,2 mm) Diameter Spherical Solids.

Impeller Shaft: Stainless Steel 17-4 PH.

Shaft Sleeve: Alloy Steel 4130.

Replaceable Front Wear Plate: Ductile Iron 80-55-06.

Replaceable Rear Wear Plate: Carbon Steel 1026.

Removable Clean-out Cover Plate: Gray Iron 30; 9 lbs. (4 kg).

Flap Valve: Neoprene w/Steel Reinforcing.

Seal Plate: Gray Iron 30.

Bearing Housing: Gray Iron 30.

Radial and Thrust Bearings: Open Double Row Ball.

Bearing and Seal Cavity Lubrication: SAE 30 Non-Detergent Oil.

Suction Flange: Gray Iron 30.

Suction Head: Gray Iron 30.

Gaskets: Buna-N, PTFE, Cork, and Rubber.

O-Rings: Buna-N.

Hardware: Standard Plated Steel.

Brass Pressure Relief Valve.

Bearing and Seal Cavity Oil Level Sight Gauges.

Optional Equipment: Metal Bellows Seal. Automatic Air Release Valve. High Pump Temperature Shutdown Kit. 120V/240V Casing Heater. Continuous Vane Ductile Iron Impeller.

Gray Iron 30 Spool Flanges:

10" ASA Discharge.

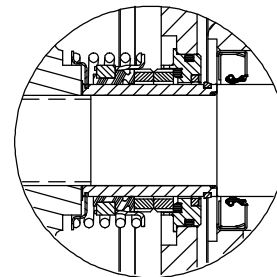
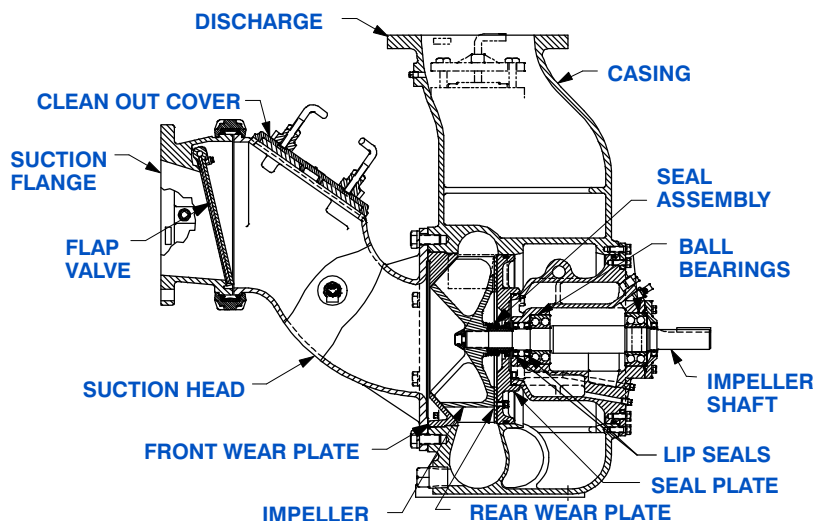
250 mm DIN 2527 (PN 16) Suction and Discharge

(Specify Model T10A60S-B /FM).

**Consult Factory for Applications Exceeding Maximum Pressure and/or Temperature Indicated.*



Shown with Optional Discharge Spool Flange (Suction/Discharge Spool Flanges Available in ASA or DIN Standard Sizes).



SEAL DETAIL

Cartridge Type, Mechanical, Oil-Lubricated, Double Floating, Self-Aligning. Silicon Carbide Rotating and Stationary Faces. Stainless Steel 316 Stationary Seat. Fluorocarbon Elastomers (DuPont Viton® or Equivalent). Stainless Steel 18-8 Cage and Spring. Maximum Temperature of Liquid Pumped, 160°F (71°C).*



GORMAN-RUPP PUMPS

www.grpumps.com

Specifications Subject to Change Without Notice

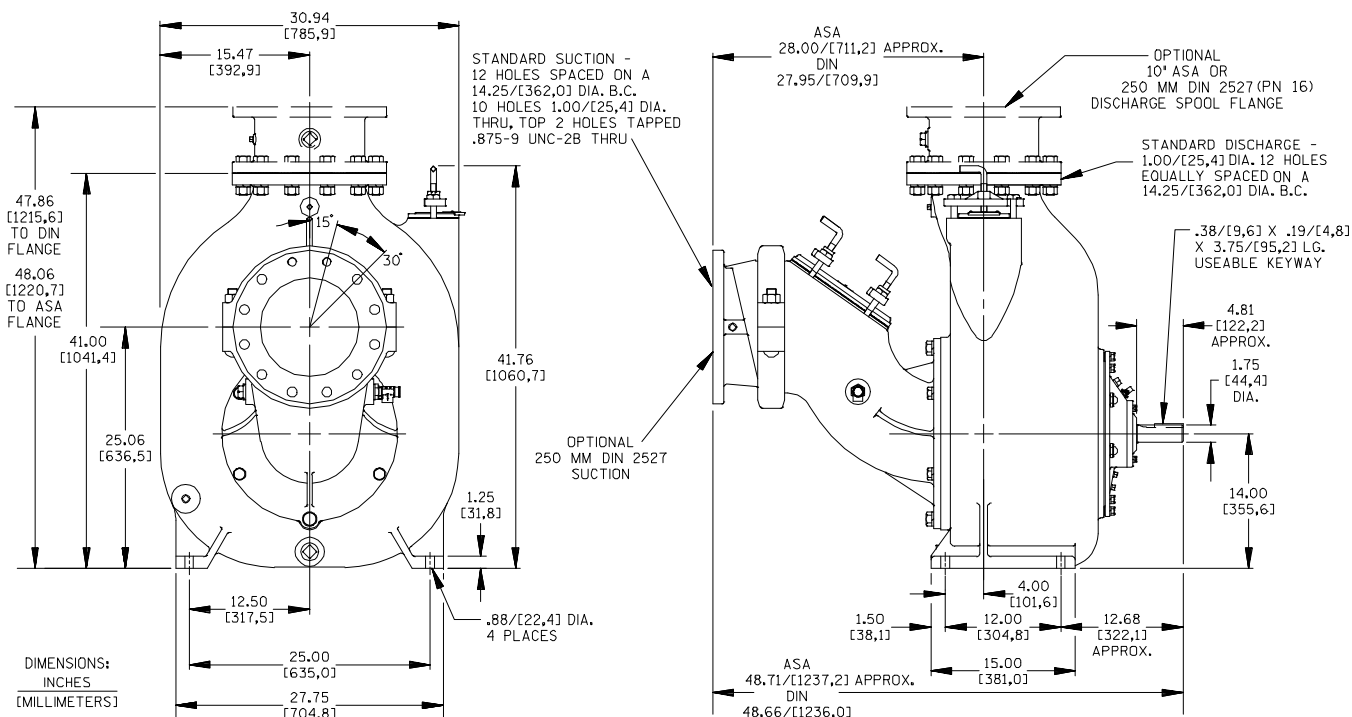
Printed in U.S.A.

Specification Data

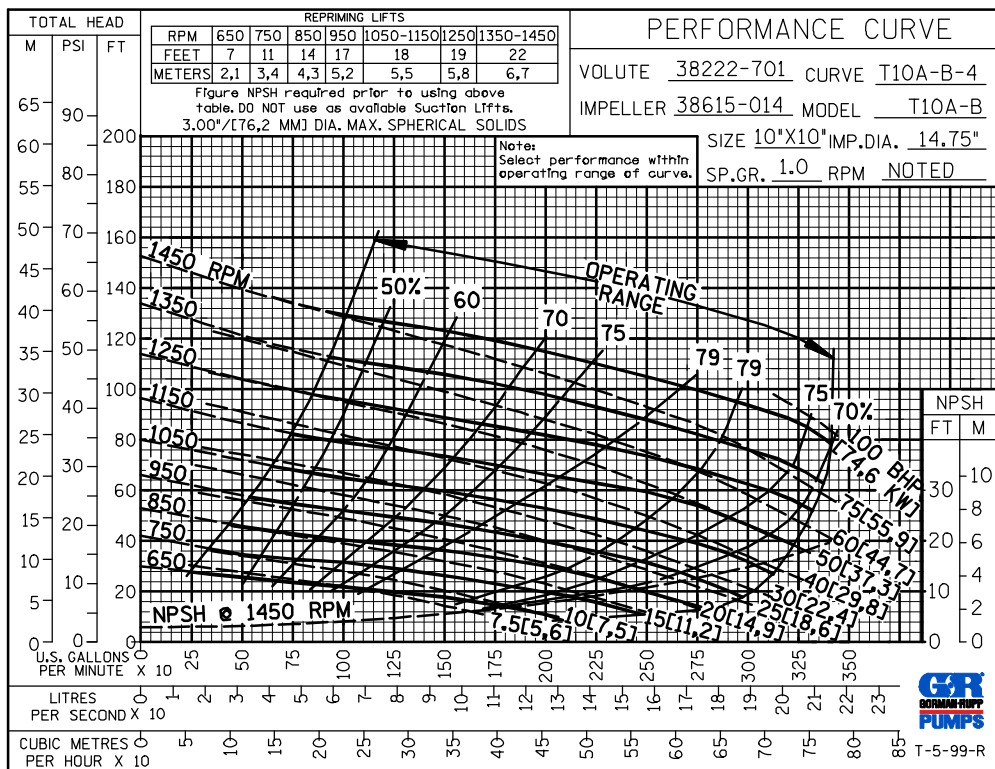
SECTION 55, PAGE 2410

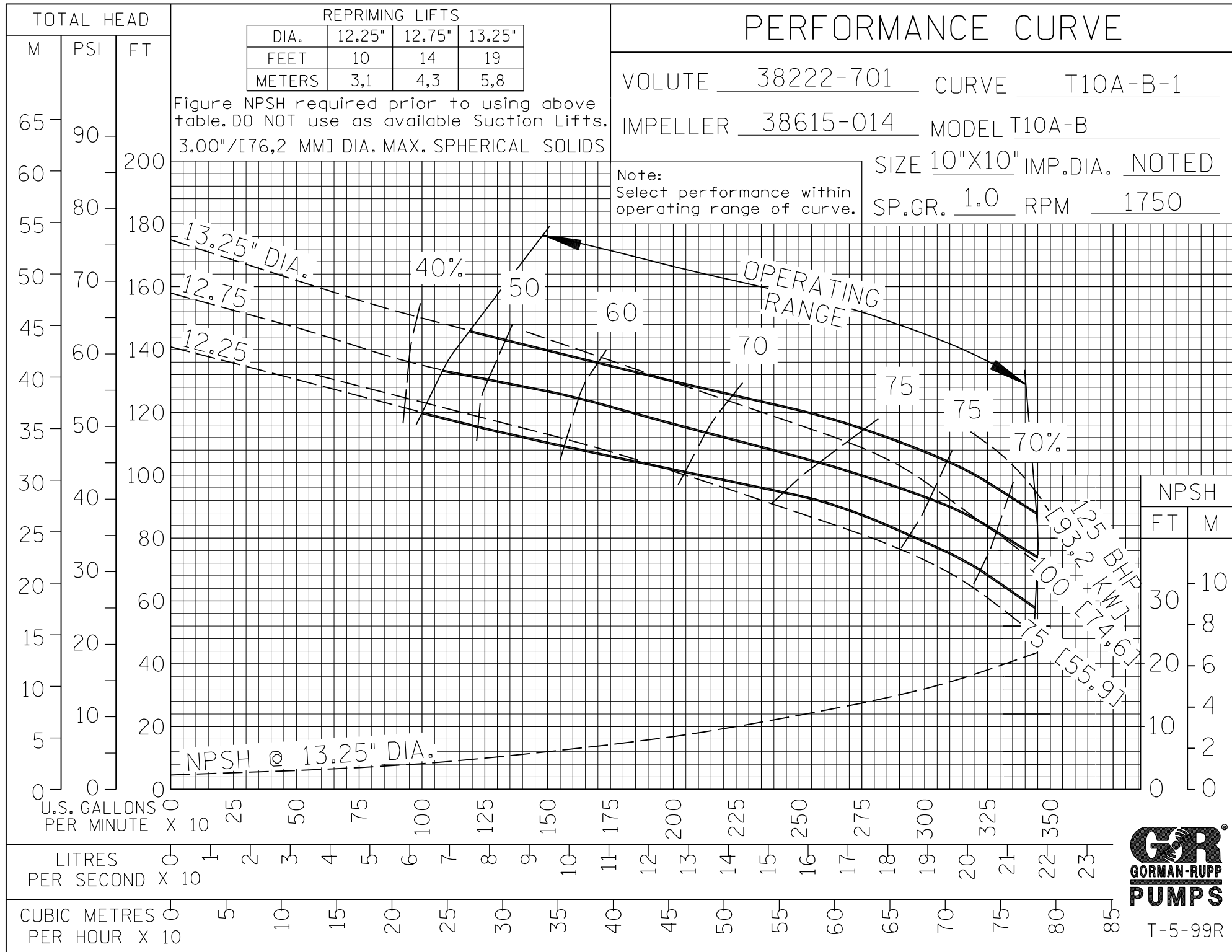
APPROXIMATE DIMENSIONS and WEIGHTS

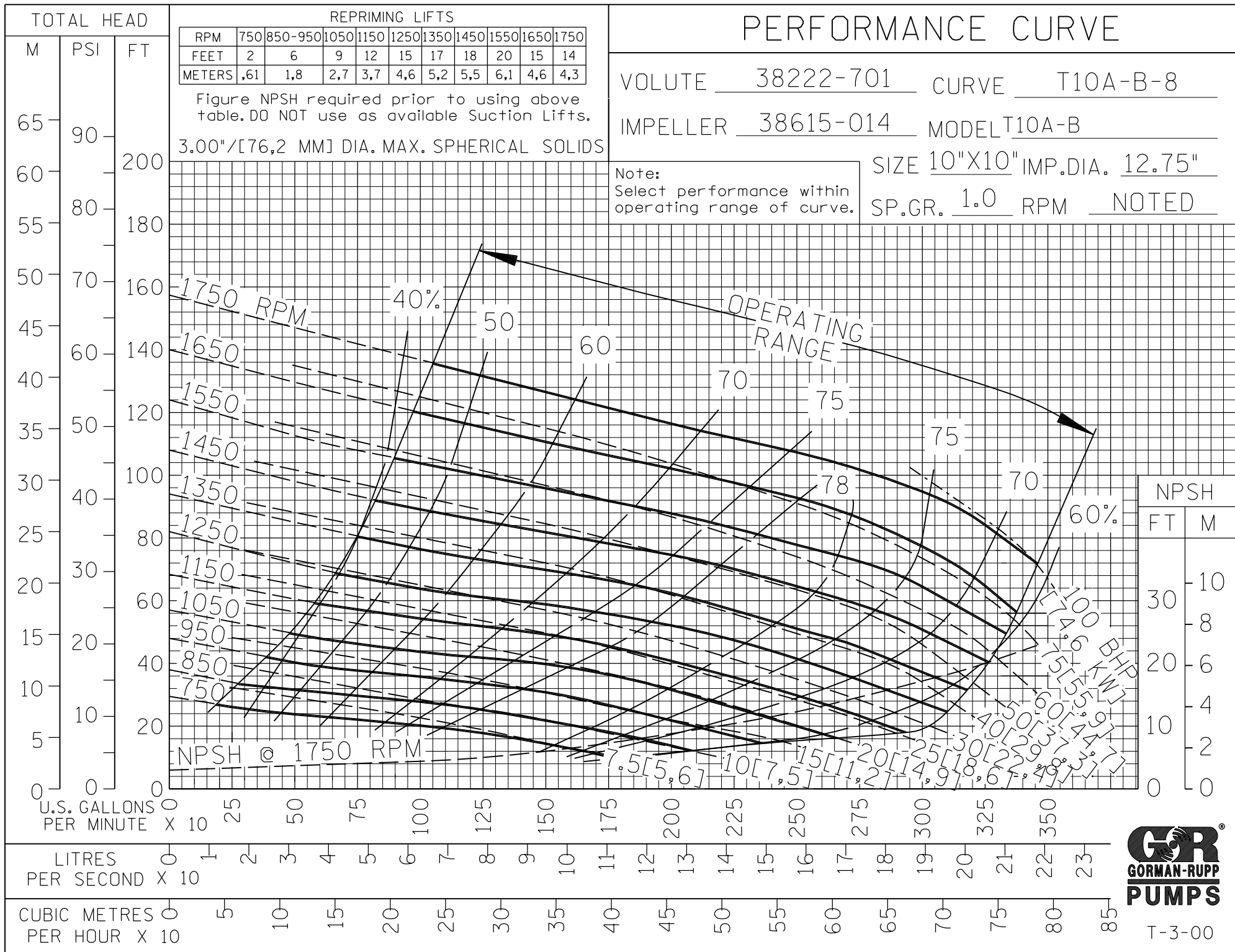
NET WEIGHT: 1440 LBS. (653 KG.)*
SHIPPING WEIGHT: 1590 LBS. (721 KG.)*
EXPORT CRATE: 70.3 CU. FT. (2 CU. M.)
***ADD 71 LBS. (32,2 KG.) W/DISCH SPOOL FLANGE**



OPTIONAL ASA OR DIN STANDARD SPOOL FLANGES AVAILABLE



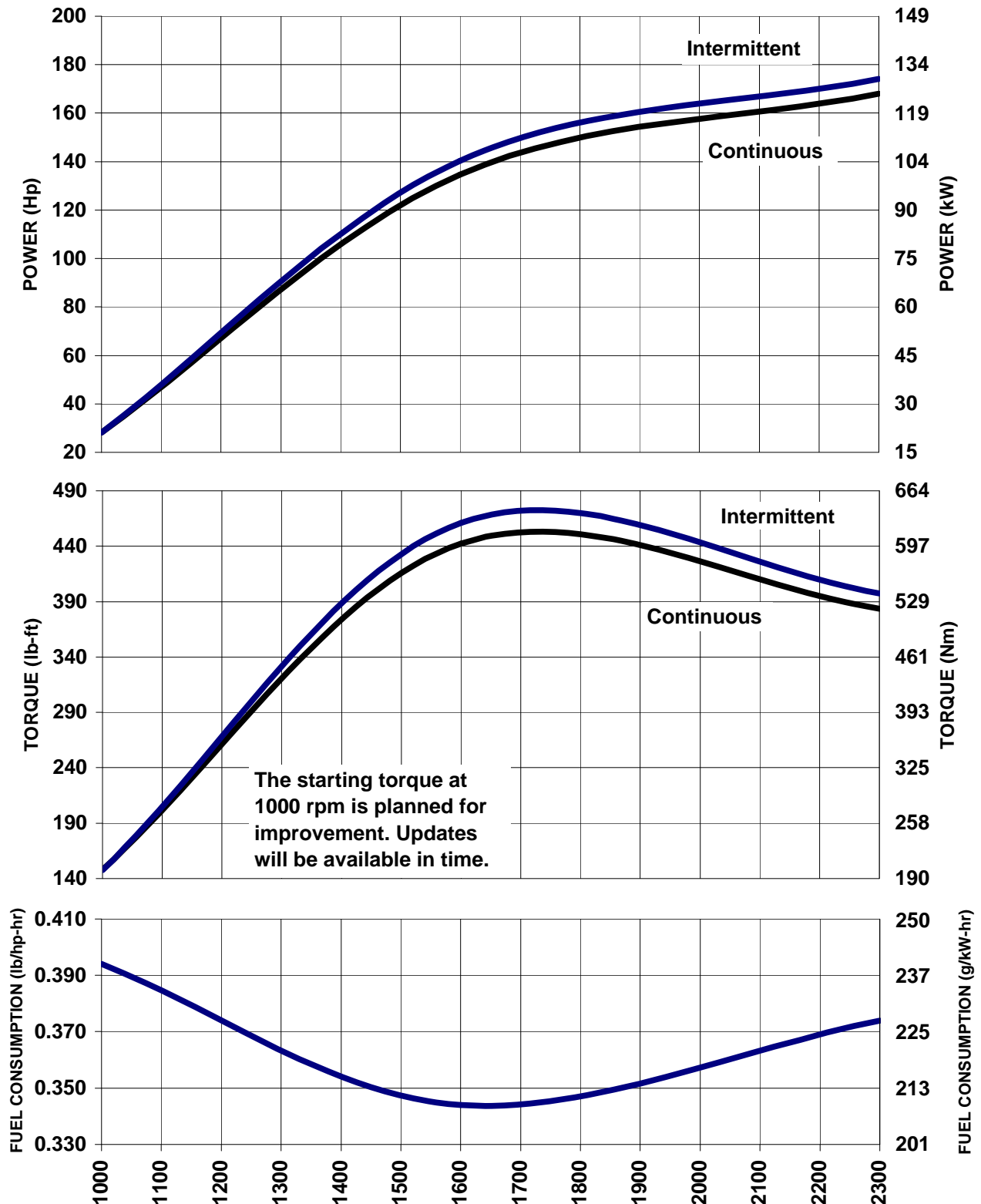




General			Physical data		minimum dimensions			
Cylinders	6		Length	1386 mm	54.6 in.			
Cylinder arrangement	Vertical in-line		Width	714 mm	28.1 in.			
Bore	102 mm	4.0 in.	Height	1004 mm	39.5 in.			
Stroke	132 mm	5.2 in.	Weight, dry	530 kg	1166 lb.			
Cylinder Displacement	1.08 liter	65.8 in. ³	Max bending @ housing:	800 Nm	589.6 lb-ft			
Total displacement	6.47 liter	394.9 in. ³	Max force @ flywheel:					
Compression ratio	19.0:1		Axial:	3000 N	675.7 lb.			
Combustion system	Direct injection		Radial:	4000 N	900.9 lb.			
Aspiration	Turbocharged, aftercooled							
Emissions equipment	Internal EGR							
Fuel system			Performance data					
Lift pump suction head, max	1.0 m	39.4 in.	Peak torque	625 Nm	461 lb-ft			
Lift pump flow @max rpm	117.0 l/h	30.9 GPH	@ rpm	1600				
Max restriction in fuel supply line	200 mbar	80 in. H ₂ O	low idle speed	750 rpm				
Max restriction in fuel return line	200 mbar	80 in. H ₂ O	Engine power		Not for Genset			
Max restriction in fuel pre-filter	200 mbar	80 in. H ₂ O	Engine RPM	1800	2000	2150	2300	
Fuel filter type	Replaceable cartridge		kW, Gross intermittent	109.0	119.0	124.5	129.9	
Fuel consumption @ max rating	35.0 l/h	9.2 GPH	Hp, Gross intermittent	146.1	159.5	166.8	174.1	
Fuel consumption @ peak torque	25.7 l/h	6.8 GPH	kW, Net intermittent	105.3	114.0	118.3	122.3	
			Hp, Net intermittent	141.1	152.8	158.5	163.9	
Combustion air system			kW, Gross continuous	104.0	113.0	120.0	125.5	
Combustion air flow @ max rating	680 m ³ /h	400.2 CFM	Hp, Gross continuous	139.4	151.4	160.8	168.2	
Max allowable clean restriction	30 mbar	12 in. H ₂ O	kW, Net continuous	100.3	108.0	113.8	117.9	
Max allowable dirty restriction	65 mbar	26 in. H ₂ O	Hp, Net continuous	134.4	144.7	152.5	158.0	
Exhaust system			Fuel consumption					
Exhaust gas flow @ max rating	1800 m ³ /h	1059.3 CFM	g/kWhr	212	216	222	228	
Exhaust temp @ max rating	480 °C	896 °F	lb/hphr	0.348	0.354	0.364	0.374	
Max allowable back pressure	75 mbar	30 in. H ₂ O						
Cooling system			Combustion air					
Type	Integrated air cooled		m ³ /h	550	600	650	680	
Cooling air flow rate @ max rpm	6865 m ³ /h	4040.1 CFM	CFM	324	353	383	400	
Max inlet air temp rise over ambient	10 °C	18 °F	Exhaust gas @ 500 ^o C					
Discharge air temp rise over inlet	70 °C	126 °F	m ³ /h	1450	1600	1650	1800	
Cowling pressure:			CFM	853	942	971	1059	
Max loss due to inlet duct	10 %		Cooling air					
Max loss due to discharge duct	10 %		m ³ /h	5370	5970	6415	6865	
			CFM	3160	3513	3775	4040	
Lubrication system			Noise, dB(A)					
Lubrication type	Forced-feed lubrication		Avg. @ 1 meter					
Oil flow at max rpm (std.)	72 l/min	19.0 GPM	Certifications					
Oil pump relief valve setting	5.5 bar	79.75 psi	U. S. EPA Non-road Tier 3					
Max oil temperature in oil sump	135 °C	275 °F	European COM 3a					
Filter volume	1.5 liter	1.6 qt.						
Oil change interval	250-500 hr. depending on app.							
Electrical								
Starter motor	12V, 3.1kW	24V, 4.0kW						
Max battery CCA	1250A	750A						
Voltage drop, battery (+), max	1.0V							

ENGINE PERFORMANCE CURVES

ENGINE MODEL TCD 914 L06
RATING STANDARD ISO 14396
RATED INTERMITTENT POWER (gross) 174.9 Hp at 2300 rpm
MAX. TORQUE 461 lb-ft at 1600 rpm
EMISSION CERTIFICATION EPA Tier 3/COM 3a



Tolerance: +/- 5% per ISO 14396

Document: TCD914L06_T3

Reference conditions: 25 °C (77 °F) 99 kPa (29.31 in. Hg)

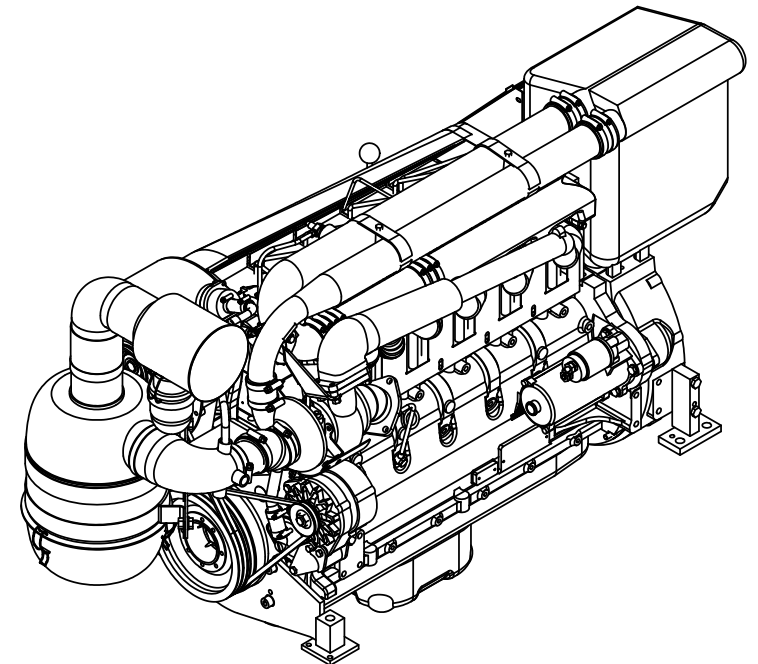
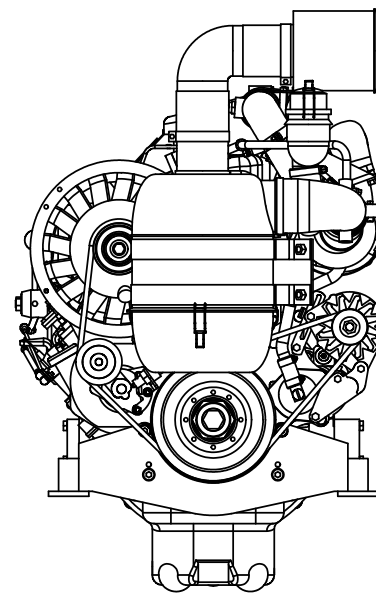
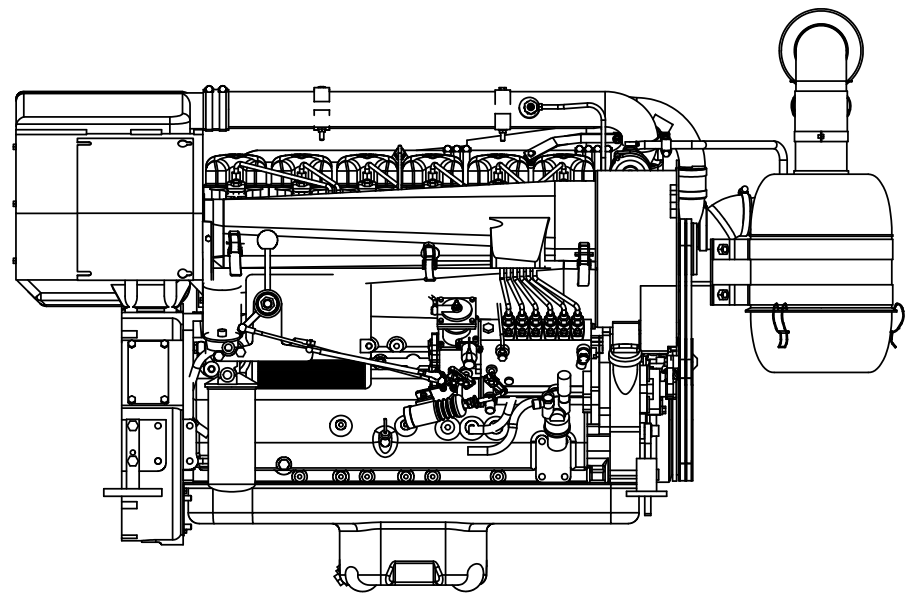
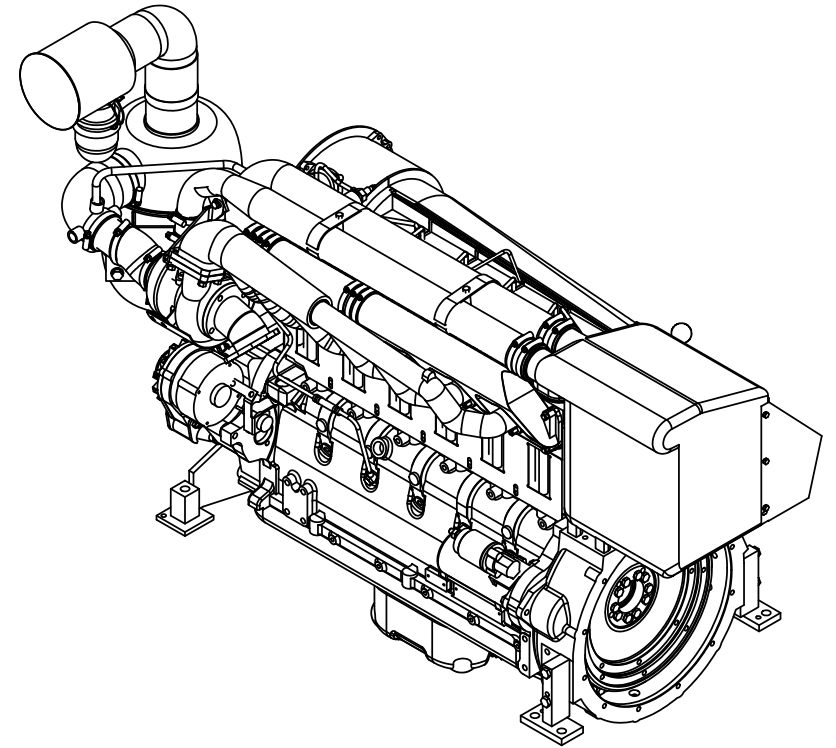
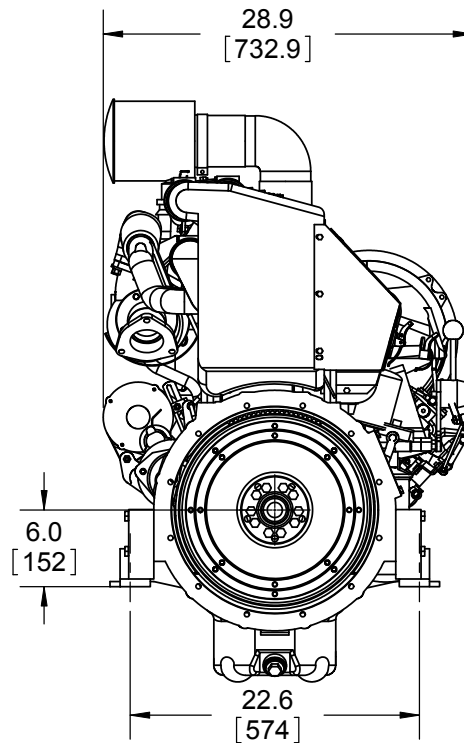
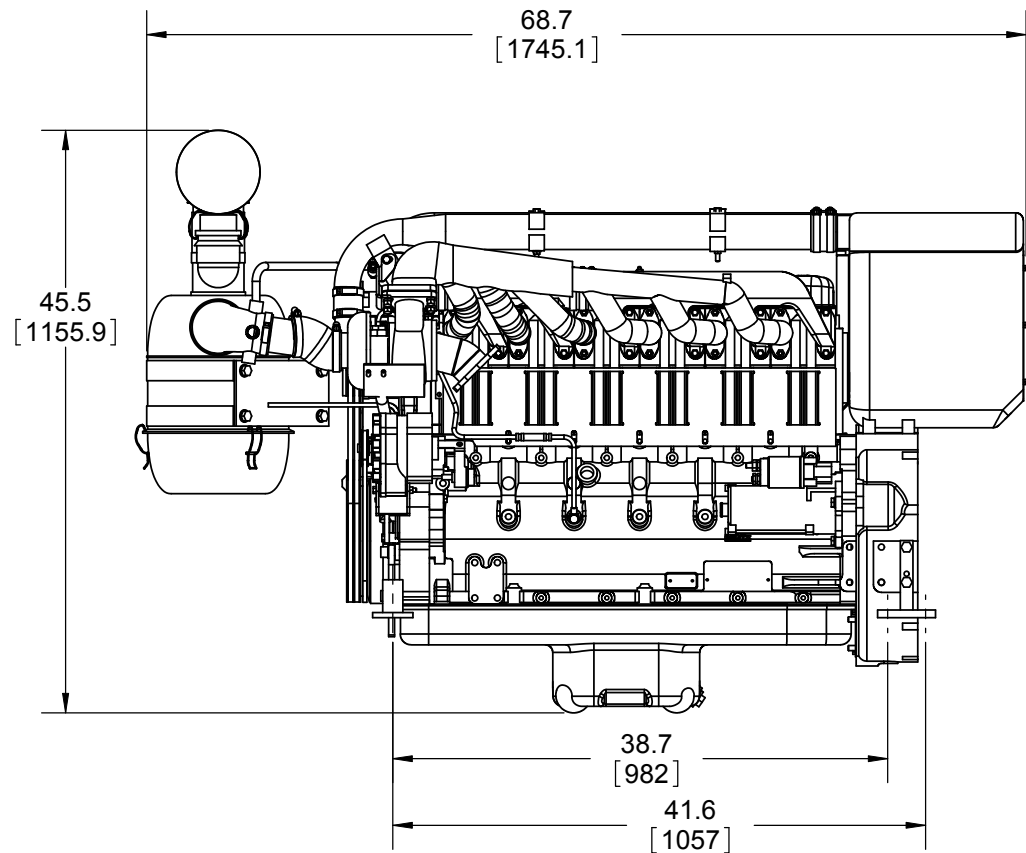
Date: 12 Dec, 2007




Fuel: 40 °C (104 °F) 0.850 kg/l (7.07 lb/gal)

Name: B. Wilson

Curves are based on current data and are subject to change without notice.

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<div></div> <div>DEUTZ CORPORATION NORCROSS, GA USA</div>				UNLESS OTHERWISE NOTED			
DR BY: EJM DATE: 2/7/08		ECN ORIGIN: XX		GEOMETRIC TOLERANCES PER ISO 1101 AND DIN 7167		GENERAL TOLERANCES: 0.X +/-0.2 MM +/-0.1 IN 0.XX +/-0.06 MM +/-0.01 IN 0.XXX +/-0.013 MM +/-0.003 IN	
		MATERIAL: VENDOR		SURFACE TEXTURE PER ISO 1302		PROJECTION:  	
		DESCRIPTION TCD 914 L06		CORNERS PER DIN 6784			
CK BY: .. DATE: ..		DRAWING NUMBER TCD0914L06				PROJECT	
APPROVED: DATE						SCALE: 1:15	

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SIZE B 11x17 PART FORMAT