FAYETTE County
Create Your Story!

**Purchasing Department**
140 Stonewall Avenue West, Ste 204
Fayetteville, GA 30214
Phone: 770-305-5420
www.fayettecountyga.gov

March 13, 2025

**Subject: Request for Quotes 2557-A: Crosstown WTP Raw #1 Pump/Motor Repairs**

Gentlemen/Ladies:

Fayette County, Georgia invites you to submit a quote for the above listed solicitation in accordance with the information and specifications contained herein.

A mandatory pre-quote conference will be held at 10:00 a.m., Thursday, March 20, 2025, at 3500 TDK Blvd, Peachtree City, GA, 30269 to provide an opportunity for you to become familiar with the site and work conditions, and to ask questions. Companies that attend will be invited to submit quotes for this project.

Address any questions you may have about this request for quotes to Colette Cobb via email to ccobb@fayettecountyga.gov. Questions will be accepted until 3:00 p.m., Tuesday, March 25, 2025.

Quotes will be accepted until 3:00p.m., Friday, March 28, 2025. Please provide your quote and other information via email to Colette Cobb, Contract Administrator at ccobb@fayettecountyga.gov or fax to (770) 719-5544.

Purchasing Department office hours are Monday through Friday 8:00 a.m. to 5:00 p.m. The office is in the county complex at 140 Stonewall Avenue West Suite 204, Fayetteville, Georgia, telephone number is (770) 305-5420.

Sincerely,

Ted L. Burgess
Chief Procurement Officer

## GENERAL TERMS AND CONDITIONS

### RFQ 2557-A: Crosstown WTP Raw #1 Pump/Motor Repairs

1. **Definitions**:
    a. **Responder**: A company or individual who submits a quote in response to this RFQ.
    b. **Successful Responder**: The Responder that is awarded a contract.
    c. **Contractor**: The Successful Responder, upon execution of the contract.
    d. **County**: Fayette County, Georgia.

2. **Quote is Offer to Contract**: Each quote constitutes an offer to become legally bound to a contract with the County, incorporating the Request for Quotes and the Responder's quote. The binding offer includes compliance with all terms, conditions, special conditions, specifications, and requirements stated in the Request for Quotes, except to the extent that a Responder takes written exception to such provisions, and the County agrees to the exceptions. All such terms, conditions, special conditions, specifications, and requirements will form the basis of the contract. The Responder should take care to answer all questions and provide all requested information, and to note any exceptions in the quote submission. Failure to observe any of the instructions or conditions in this Request for Quotes may result in rejection of the quote.

3. **Binding Offer**: To allow sufficient time for a contract to be awarded, each quote shall constitute a firm offer that is binding for ninety (90) days from the received by date to the date of award.

4. **References**: Include with your quote a list of three (3) jobs that your company has done that are of the same or similar nature to the work described in this Request for Quotes, on the form provided. Include all information as requested on the form.

5. **Preparation Costs**: The Responder shall bear all costs associated with preparing the quote.

6. **More Than One Quote**: Do not submit alternate quotes or options, unless requested or authorized by the County in the Request for Quotes. If a Responder submits more than one quote without being requested or authorized to do so, the County may disqualify the quotes from that Responder, at the County's option.

7. **Defects or Irregularities:** The County reserves the right to waive any defect or irregularity in any quote received. In case of a discrepancy between unit prices and extended prices, the unit price will govern unless the facts or other considerations indicate another basis for correction of the discrepancy.

8. **Brand Name:** If items in this Request for Quotes have been identified, described or referenced by a brand name or trade name description, such identification is intended to be descriptive, but not restrictive and is to indicate the quality and characteristics of products that may be offered. Alternative products may be considered for award if clearly identified in the quote. Items offered must meet required specifications and must be of a quality

which will adequately serve the use and purpose for which intended.

9. **Prices Held Firm**: Prices quoted shall be firm for the period of the contract, unless otherwise specified in the quote. All prices for commodities, supplies, equipment, or other products shall be quoted FOB Destination, Fayette County or job site.

10. **Responder Substitutions:** Responders offering substitutions or deviations from specifications stated in the Request for Quotes, shall list such substitutions or deviations on the "Exceptions to Specifications" sheet provided, or on a separate sheet to be submitted with the quote. The absence of such list shall indicate that the Responder has taken no exception to the specifications. The evaluation of quotes and the determination as to equality and acceptability of products or services offered shall be the responsibility of the County.

11. **Non-Collusion**: By responding to this Request for Quotes, the Responder represents that the quote is not made in connection with any competing Responder, supplier, or service provider submitting a separate response to this Request for Quotes, and is in all respects fair and without collusion or fraud.

12. **Ethics – Disclosure of Relationships**: Before a proposed contract in excess of $10,000.00 is recommended for award to the Board of Commissioners or the County Administrator, or before the County renews, extends, or otherwise modifies a contract after it has been awarded, the Contractor must disclose certain relationships with any County Commissioner or County Official, or their spouse, mother, father, grandparent, brother, sister, son or daughter related by blood, adoption, or marriage (including in-laws). A relationship that must be reported exists if any of these individuals is a director, officer, partner, or employee, or has a substantial financial interest the business, as described in Fayette County Ordinance Chapter 2, Article IV, Division 3 (Code of Ethics).

    If such relationship exists between your company and any individual mentioned above, relevant information must be presented in the form of a written letter to the Director of Purchasing. You must include the letter with any bid, proposal, or price quote you submit to the Purchasing Department.

    In the event that a Contractor fails to comply with this requirement, the County will take action as appropriate to the situation, which may include actions up to and including rejection of the bid or offer, cancellation of the contract in question, or debarment or suspension from award of a County contract for a period of up to three years.

13. **Evaluation:** Award will be made to the lowest responsive, responsible Responder, taking into consideration payment terms, vendor qualifications and experience, quality, references, any exceptions listed, and/or other factors deemed relevant in making the award. The County may make such investigation as it deems necessary to determine the ability of the Responder to perform, and the Contractor shall furnish to the County all information and data for this purpose as the County may request. The County reserves the right to reject any item, any quote, or all quotes, and to re-solicit for pricing.

14. **Payment Terms and Discounts**: The County's standard payment terms are Net 30. Any deviation from standard payment terms must be specified in the resulting contract, and both parties must agree on such deviation. Cash discounts offered will be a consideration in awarding the quote, but only if they give the County at least 15 days from receipt of invoice to pay. For taking discounts, time will be computed from the date of invoice acceptance by the County, or the date a correct invoice is received, whichever is the later date. Payment is deemed made, for the purpose of earning the discount, on the date of the check.

15. **Contract Execution & Notice to Proceed**: After an award is made, and all required documents are received by the County, and the contract is fully executed with signature of both parties, the County will issue a written Notice to Proceed. The County shall not be liable for payment of any work done or any costs incurred by any Responder prior to the County issuing the Notice to Proceed.

16. **Unavailability of Funds**: This contract will terminate immediately and absolutely at such time as appropriated and otherwise unobligated funds are no longer available to satisfy the obligations of the County under the contract.

17. **Insurance**: The Successful Responder shall procure and maintain the following insurance, to be in effect throughout the term of the contract, in at least the amounts and limits as follows:

    a. **General Liability Insurance**: $1,000,000 combined single limit per occurrence, including bodily and personal injury, destruction of property, and contractual liability.

    b. **Automobile Liability Insurance**: $1,000,000 combined single limit each occurrence, including bodily injury and property damage liability.

    c. **Worker's Compensation & Employer's Liability Insurance**: Workers Compensation as required by Georgia statute.

    Before a contract is executed, the Certificates of Insurance for all required coverage shall be submitted to the County. The certificate shall list an additional insured as follows:

    Fayette County, Georgia
    140 Stonewall Avenue West
    Fayetteville, GA 30214

18. **Unauthorized Performance:** The County will not compensate the Contractor for work performed unless the work is authorized under the contract, as initially executed or as amended.

19. **Assignment of Contract:** Assignment of any contract resulting from this Request for Quotes will not be authorized, except with express written authorization from the County.

20. **Indemnification**: The Contractor shall indemnify and save the County and all its officers, agents and employees harmless from all suits, actions, or other claims of any character, name and description brought for or on account of any damages, losses, or expenses to the extent caused by or resulting from the negligence, recklessness, or intentionally wrongful conduct of the Contractor or other persons employed or utilized by the Contractor in the performance of the contract. The Contractor shall pay any judgment with cost which may be obtained against the County growing out of such damages, losses, or expenses.

21. **Severability**: The invalidity of one or more of the phrases, sentences, clauses or sections contained in the contract shall not affect the validity of the remaining portion of the contract. If any provision of the contract is held to be unenforceable, then both parties shall be relieved of all obligations arising under such provision to the extent that the provision is unenforceable. In such case, the contract shall be deemed amended to the extent necessary to make it enforceable while preserving its intent.

22. **Delivery Failures:** If the Contractor fails to deliver contracted goods or services within the time specified in the contract, or fails to replace rejected items in a timely manner, the County shall have authority to make open-market purchases of comparable goods or services. The County shall have the right to invoice the Contractor for any excess expenses incurred, or deduct such amount from monies owed the Contractor. Such purchases shall be deducted from contracted quantities.

23. **Substitution of Contracted Items:** The Contractor shall be obligated to deliver products awarded in this contract in accordance with terms and conditions specified herein. If a Contractor is unable to deliver the products under the contract, it shall be the Contractor's responsibility to obtain prior approval of the ordering agency to deliver an acceptable substitute at the same price quoted in the Contractor's original bid. In the event any Contractor consistently needs to substitute or refuses to substitute products, the County reserves the right to terminate the contract or invoke the "Delivery Failures" clause stated herein.

24. **Termination for Cause**: The County may terminate the contract for cause by sending written notice to the Contractor of the Contractor's default in the performance of any term of this agreement. Termination shall be without prejudice to any of the County's rights or remedies by law.

25. **Termination for Convenience**: The County may terminate the contract for its convenience at any time with 10 days' written notice to the Contractor. In the event of termination for convenience, the County will pay the Contractor for services performed. The County will compensate partially completed performance based upon a signed statement of completion.

26. **Force Majeure**: Neither party shall be deemed to be in breach of the contract to the extent that performance of its obligations is delayed, restricted, or prevented by reason of any act of God, natural disaster, act of government, or any other act or condition beyond the reasonable control of the party in question.

27. **Governing Law**: This agreement shall be governed in accordance with the laws of the State of Georgia. The parties agree to submit to the jurisdiction in Georgia, and further agree that any cause of action arising under this agreement shall be required to be brought in proper venue in Fayette County, Georgia.

**Checklist of Required Documents**

***(Be Sure to Return This Checklist and***
***the Required Documents in the order listed below)***

**RFQ #2557: Crosstown WTP Raw #1 Pump/Motor Repairs**

Company information – on form provided _____

Contractor Affidavit under O.C.G.A. § 13-10-91(b)(1) – on form provided _____

Pricing sheet – on form provided _____

List of exceptions, if any – on form provided _____

References – on form provided _____

Addenda, if any are issued _____

**COMPANY NAME:** _____

**COMPANY INFORMATION**
**RFQ #2557: Crosstown WTP Raw #1 Pump/Motor Repairs**

## A. COMPANY

Company Name: _____

Physical Address: _____

_____

Mailing Address (if different): _____

_____

Website (if applicable): _____

## B. AUTHORIZED REPRESENTATIVE

Signature: _____

Printed or Typed Name: _____

Title: _____

E-mail Address: _____

Phone Number: _____

## C. PROJECT CONTACT PERSON

Name: _____

Title: _____

E-mail Address: _____

Phone Number: _____

**REFERENCES**
**RFQ #2557: Crosstown WTP Raw #1 Pump/Motor Repairs**

Please list three (3) references for current or recent customers who can verify the quality of service your company provides. Projects of similar size and scope are preferable.

1. Government/Company Name _____

City & State _____

Work or Service Provided_____

Approximate Completion Date _____

Contact Person and Title _____

Phone _____ Email _____

2. Government/Company Name _____

City & State _____

Work or Service Provided_____

Approximate Completion Date _____

Contact Person and Title _____

Phone _____ Email _____

3. Government/Company Name _____

City & State _____

Work or Service Provided_____

Approximate Completion Date _____

Contact Person and Title _____

Phone _____ Email _____

COMPANY NAME: _____

**SCOPE AND SPECIFICATION**

**RFQ #2557: Crosstown WTP Raw #1 Pump/Motor Repairs**

## INTRODUCTION

Fayette County Water System is seeking quotes from qualified vendors for the expedited repair of one raw water vertical turbine pump and motor at the Crosstown Water Treatment Plant. The raw water pump is in the Raw Pump House at Crosstown WTP Lake at 3500 TDK Blvd, Peachtree City, GA, 30269. The quote will be for prompt removal, repair, and installation of pump and motor prior to high demand anticipated in early May.

## BACKGROUND

Raw Water Pump #1 – Pump is a 200 HP vertical turbine pump (VTP) and inverter duty motor with VFD (see Attachment A). Pump and motor specifications:

Pump #1 – Goulds Pump Serial # 1-Stage, 7500GPM @ 84TDH

Motor #1 - U.S. Motors ID # D0599059225 -001R-, Frame 449TP, 200 HP, 3-Phase, 460 Volts, 232.0 Amps, 1200RPM.

## SCOPE OF WORK

### *General*

1) The Contractor is responsible for properly securing equipment and materials.
2) Work hours shall be 8:00 a.m. to 5:00 p.m., Monday – Friday. Work outside FCWS business hours may be approved by FCWS with minimum one-week notice.
3) Contractor will be liable for any damage caused during the duration of the project.
4) Contractor is responsible for personnel, vehicles, tools, and equipment.
5) There is a **No Tobacco** policy on all Fayette County property and buildings.

### 1) Repairs to Crosstown Raw #1 Pump

Goulds Pump Serial # 1-Stage VTP

1) Travel to Crosstown Water treatment facility.
2) Pull Raw #1 using crane service.
3) Deliver to service center.
4) Disassemble pump complete.
5) Blast and clean parts to be reused.
6) Inspect and record critical dimensions.
7) Provide, Manufacture, or install the following parts:

a. Bearings
b. Strainer (see spec below)
c. Sleeves
d. Miscellaneous fasteners, gaskets, wear rings, packing, etc.

8) Dynamically balance rotating assembly to ISO G1.0 Specification.
9) Prime and paint; Tnemec on columns and bowls.
10) Assemble pump complete.
11) Deliver pump to site.
12) Install pump and motor using crane service.
13) Perform start up.
14) Verify operation.

**Strainer Basket Spec:**

Replace with new stainless steel strainer basket having a net inlet area equal to at least 10 times the pump suction area. The maximum opening shall be not more than 75% of the minimum opening of the water passage through the bowls and impellers.

1. Wire mesh shall be 304 SS with a wire diameter of 0.148" and one (1) inch square openings.
2. Frame shall be 304 SS with a top ring, bottom ring, 6 supports up the sides and 3 supports (diameter length) across the bottom to support the wire mesh. The bottom and side supports shall be 1/4" thick X 1" wide and installed with the narrow edge facing the wire mesh. Note: A stock basket from a third party that meets the wire mesh requirements may be customized with side and bottom supports.
3. Basket shall be held to the pump with stainless steel clips bolted to the top frame ring.

Note: Any work outside the above scope of work will not be performed without approval of changes by Fayette County.

**2) Repairs to Crosstown Raw #1 Motor:**

200 HP US motor 449TP

1) Disassemble motor complete.
2) Blast and clean parts to be reused.
3) Dip/bake windings
4) Inspect and record critical dimensions.
5) Provide, manufacture, or install the following:
    a. 1 ea. Thrust bearing
    b. 1 ea. Radial Bearing
    c. Bearing locknut/washer

d. Miscellaneous lip seals, sight glasses, and oil

6) Dynamically balance rotating assembly to ISO G1.0 Specification.
7) Assemble motor complete.
8) Paint and prep motor for delivery.
9) Install motor using crane service.
10) Connections for motor leads shall be Polaris type.
11) Perform start up on pump and motor.

## Coatings

**Painting Materials:**

A. Products manufactured by Carboline, Tnemec, or Sherwin Williams are acceptable for use on this project.
B. Provide products for all specified coatings from single manufacturer. Pump repair vendor shall be responsible for compatibility of prime coats with finish coats.
C. Equivalent products by other manufacturers may be used if approved by the Water System.

**Application:**

A. Apply precoats, primers, binder coats, sealer coats or other coats not specifically mentioned, as recommended by the coating manufacturer for the specific application.
B. Apply coatings from shop to final field coating in accordance with time restrictions on recoatings as recommended by the coating manufacturer.

**Schedule:**

A. Submerged ferrous metal - discharge head interior, wetted surface of the packing box, column pipe ID and OD, and bowl assembly exterior shall be cleaned and blasted per SSPC-SP-10. Carboline Carboguard 891 or equal shall be applied in three (3) coats of 4 - 5 mils dry film thickness (DFT) not to exceed 17 mils DFT total thickness. Color shall be Safety White.
B. Non-submerged ferrous metal (paint removed to bare metal) - discharge head exterior shall be cleaned and blasted per SSPC-SP-6. Carboline Carboguard 890 or equal shall be applied in two (2) coats of 4 - 5 mils DFT. Color shall be Dark Olive Green (Tnemec Balsam).
C. Non-submerged ferrous metal (previously painted surfaces) - pump base plate. Rusted areas shall be cleaned to SSPC-SP-2 (Hand Tool Cleaning) or SSPC-SP-3 (Power Tool Cleaning) to remove loose corrosion to solid surface. Painted areas shall be cleaned and lightly sanded or abraded to roughen surface and degloss the surface. Apply one of the following - Carboline Carboguard 890 or equal applied in one coat of 4 - 5 mils DFT or Carboline Carbocrylic 3359 DTM or equal applied in one coat of 3 - 5 mils DFT. Color shall be Dark Olive Green (Tnemec Balsam).

**Additional Work**

Vendor will report to owner any additional work needed not covered above. Vendor will allow owner to visit Vendor's shop to see worn or damaged parts if additional work is needed.

Vendor agrees that the Contingency Allowance is for the sole use of Owner to cover unanticipated costs. The Contingency Allowance shall only be used with prior written authorization by the County Administrator.

Vendor agrees to provide minimum 1-year warranty to all work provided.

**PRICING SHEET**

**RFQ #2557: Crosstown WTP Raw Pump/Motor #1 Repairs**

Responder agrees to perform all the work described in the Contract documents for the following prices:

Quote Raw Pump #1 Pump/Motor Repairs and new Strainer Basket: $_____

Contingency Allowance* $ 1,500.00

**Total Quote, Including Contingency** $_____

*To be used only with prior written authorization by the County.

NOTES:

1. All applicable charges shall be included in your total quoted amount, including but not limited to materials, equipment, installation, labor, and any other amounts. No additional charges will be allowed after the quote received by date.

2. All warranties shall be included in your total quoted amount.

State time needed to commence work after notice to proceed is issued _____Days.

State length of time needed to complete project _____ Days.

State, List or Attach the terms of your warranty, if applicable: _____

_____

_____

**COMPANY'S NAME**_____

**EXCEPTIONS TO SPECIFICATIONS**

**RFQ #2557: Crosstown WTP Raw Pump #1 Pump/Motor Repairs**

Please list below any exceptions or clarifications to the specifications of this bid. Explain any exceptions in full.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

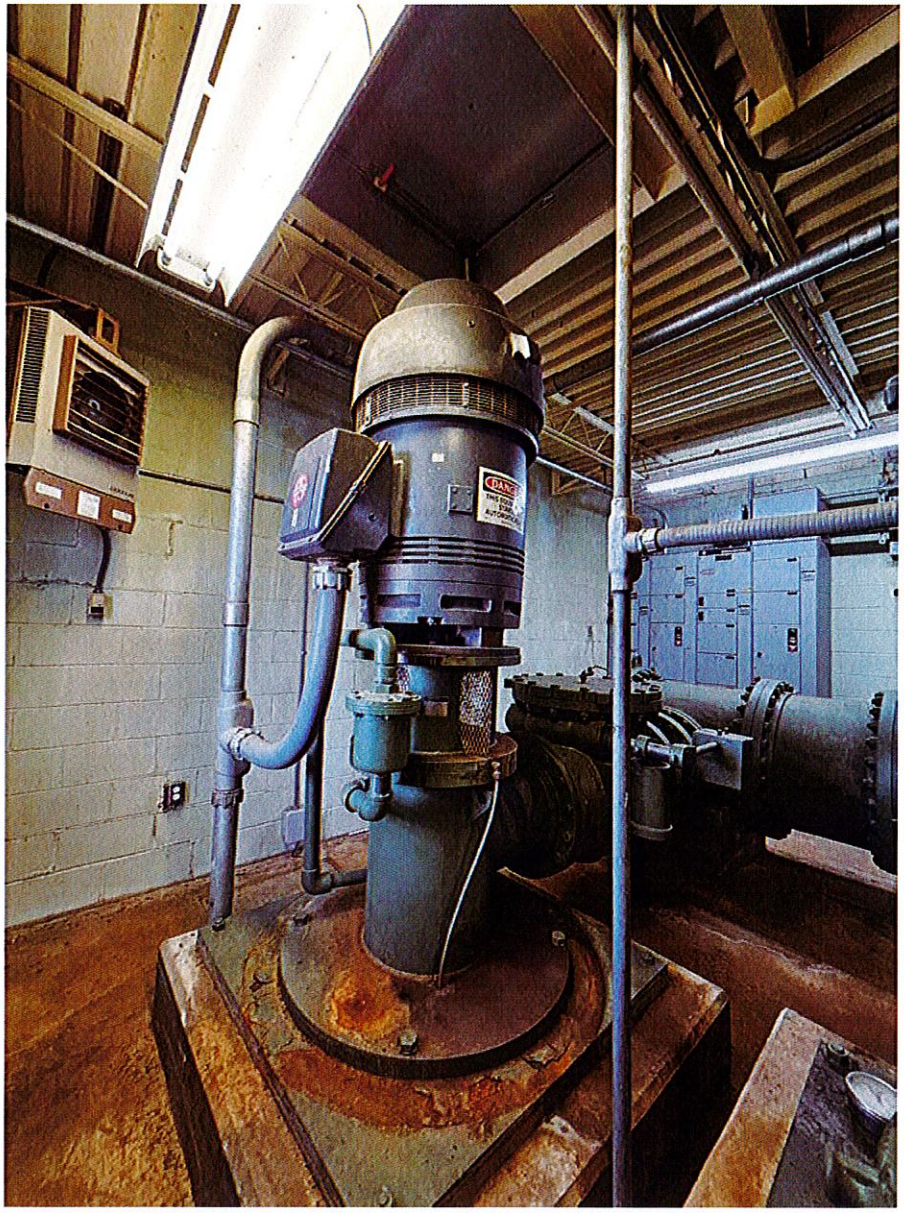
_____

_____

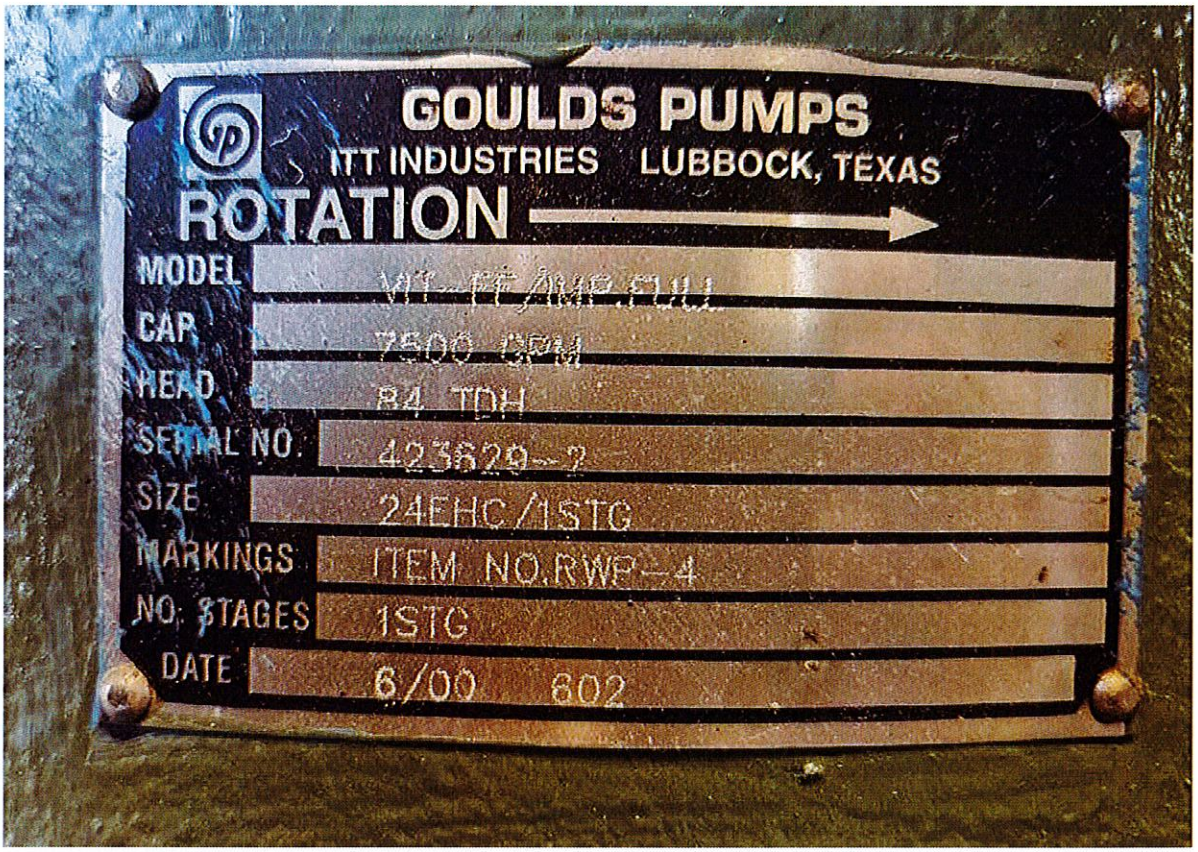
_____

**COMPANY NAME**: _____

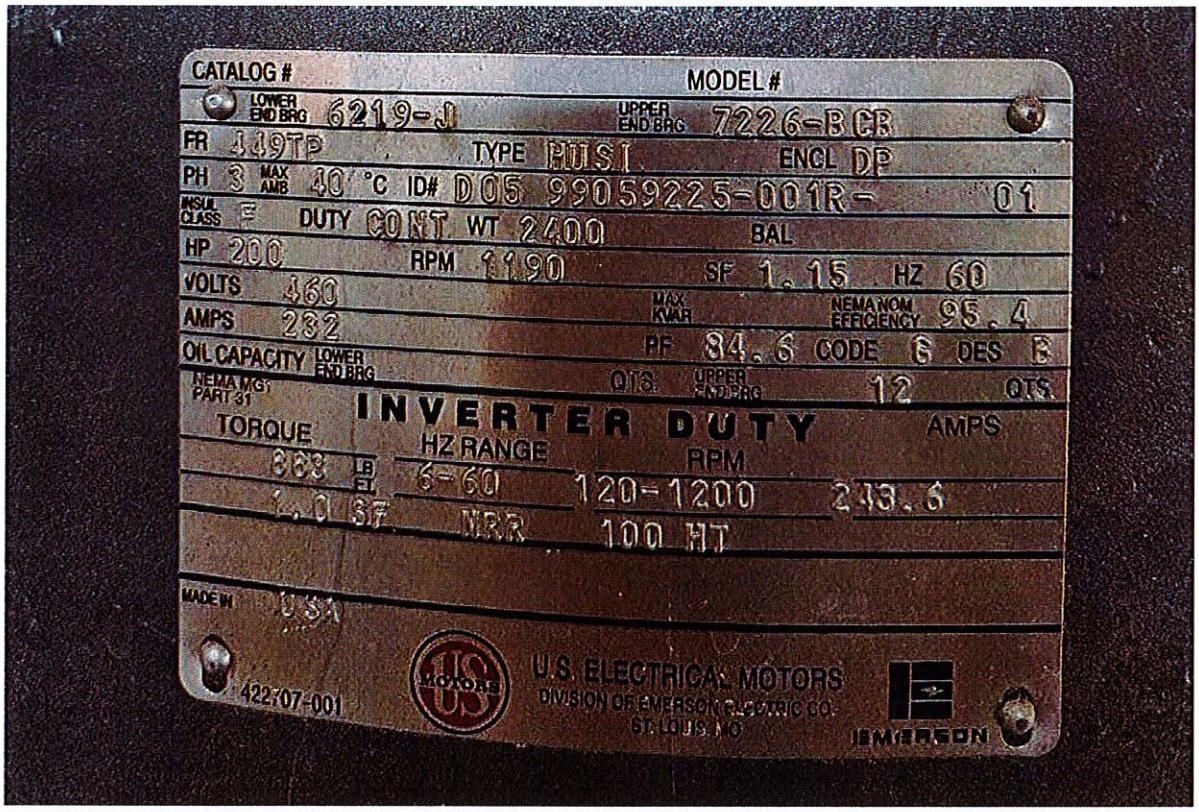
Crosstown WTP Raw Pump Building



Crosstown Raw Pump #1



Crosstown Raw Water Pump #1 Goulds Pumps Nameplate



Crosstown Raw Water Pump #1 US Motor Nameplate

# Section 2: Vertical Turbine Pumps & Motors

Crosstown Raw Water Pumps 1 and 4

# Engineering Document Package

## O & M MANUAL

| | |
|---|---|
| **OWNER:** | **FAYETTE COUNTY WATER SYSTEM** |
| **ENGINEER:** | **MALLETT & ASSOCIATES, INC.** |
| **PURCHASER:** | **CMK, INC.** |
| **PROJECT:** | **CROSSTOWN W.T.P<br>RAW WATER FLOW MODIFICATIONS<br>PEACHTREE CITY, GEORGIA** |
| **MANUFACTURER:** | **GOULDS PUMPS, INC.** |
| **SUPLLIER:** | **GPM ENVIRONMENTAL, INC.** |
| **SECTION:** | **11920 - VERTICAL TURBINE PUMPS** |

GPM Environmental, Inc.
8231 Dunwoody Place, Bldg. 16
Atlanta, Georgia 30350

# O & M MANUAL

| | |
|---|---|
| **OWNER:** | **FAYETTE COUNTY WATER SYSTEM** |
| **ENGINEER:** | **MALLETT & ASSOCIATES, INC.** |
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| **PROJECT:** | **CROSSTOWN W.T.P**<br>**RAW WATER FLOW MODIFICATIONS**<br>**PEACHTREE CITY, GEORGIA** |
| **MANUFACTURER:** | **GOULDS PUMPS, INC.** |
| **SUPLLIER:** | **GPM ENVIRONMENTAL, INC.** |
| **SECTION:** | **11920 - VERTICAL TURBINE PUMPS** |

**FAYETTE COUNTY WATER SYSTEM**
**CROSSTOWN W.T. P.**
**(RAW WATER FLOW MODIFICATIONS)**
**PEACHTREE CITY, GA**
**Contractor: CMK, Inc.**

**Section: 11920** - **Vertical Turbine Pumps**

**Manufacturer:**
**ITT Industries Goulds Pumps**
**241 Falls Street**
**Seneca Falls, NY 13148**
**Ph: 315-568-2811 / 315-568-5162**

**Supplier:**
**GPM Environmental, Inc.**
**8281 Dunwoody Place Bldg. 16**
**Atlanta, GA 30350**
**PH. 770-643-4859, Fax. 770-552-0319**

**Parts/Service Local Contact:**
**GPM Environmental Inc.**
**Ph: 770-643-4859 / Fax: 770-552-0319**

## Table of Contents

# Section 11920 Vertical Turbine Pumps

Crosstown Raw Water Pumps 1 and 4

# Scope of Supply

**SCOPE OF SUPPLY SHEET**

# GOULDS PUMPS

**VERTICAL TURBINE PUMP**

TO: CMK, Inc.
150 Wyngate Circle
Fayetteville, GA 30215

REPLY TO: GPM Environmental, Inc.
8281 Dunwoody Place, Bldg. 16
Atlanta, GA 30350
Phone: 770-643-4859
Facsimile: 770-552-0319

Date: 01-17-00 Page: 1/1

Item No.: Section 11920

Project: Fayette County Water System
Crosstown Treatment Plant
Raw Water Flow Modifications

Equipment No.: RWP-1, RWP-4

Service: Raw Water Pump

## CONDITIONS OF SERVICE -

| | | | | | |
|---|---|---|---|---|---|
| Liquid | Raw Water | | Suct Press | - | |
| G.P.M. | 7,500 | Sp. Gr. @ 60°F 1.0 | Abrasives | - | Disch Press. - |
| T.D.H. | 84 (FT.) | Sp. Gr. @ P.T. 1.0 | NPSHA | - (FT.) | Solids % - |
| P.T. | Ambient | Visc. @ P.T. - | NPSHR | | Solids Size - (IN) |
| | | | @ C/L Imp. | 25 (FT.) | Subm. Reqd. 42 (IN) |

## PUMP DESCRIPTION -

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Quantity | 2 | Bowl | Cast Iron | Col./Mat'l | Flanged/Steel | Efficiency | 86 | % |
| Model | VIT | Impeller | Bronze | Col. Dia./Lgth | 16/16.78 (IN./FT.) | B.H.P. Rating | 185 | |
| Stgs. | 24EHC/1 | Bowl Brg. | Bronze | Col. Brg. Mat'l | Rubber | B.H.P. Max. | 189 | |
| Lube | Product | Bowl Shaft | 416 SS | Col. Shaft Mat'l | 416 St. St. | Pump Thr. Rtg. | 4,295 | |
| Pump Lgth. | 21'-11" | Bowl Wrg. Ring | - | Col. Shaft Size | 1-11/16 (IN.) | Pump Thr. Max. | 6,908 | |
| Curve No. | E6624EBPC1 | Imp. Wrg. Ring | - | Disch. Hd. Mat'l | Fabricated Steel | Imp. Dia. Rtg. | 15.42" | |
| Bulletin | 3A.1 | Strainer | Galvanized | Disch. Hd. Size | 16 (IN.) | Imp. Dia. Min./Max. | 13.60"/15.42" | |
| | | Soleplate | Fabr. Steel | Shaft Sleeves | 304 Stainless Stl. | | | |

## DRIVER -

HP 200 RPM 1200 PH/HZ 3/60 Volts 460 Encl./Insul. WP-1/Cl.F Eff. Prem SF 1.15
VHS yes VSS no Thrust 11,250 BD 24.5 SRC no NRR yes Mfg. USEM Furn. by Goulds

## UNIT PRICES -

## UNIT WEIGHTS -

Pump Weight: 5,025#
Motor Weight: 2,700#

Total Unit Weight: 7,725#

## ADDITIONAL COMMENTS -

Pump includes factory performance test-for approval; bowl and discharge head hydrostatic test; 2" air vacuum valve; interior of bowl assembly is coated with Scotchcote 134; and Engard 480 epoxy coating is included on the OD of the bowl assembly, ID of discharge head, and ID & OD of column pipe.
Motor includes steady bushing, and is inverter duty rated.

This Scope -- Prepared by Jim Naus

# Pump/Motor Dimensional Print

# Dimension Drawings

## VIT-FF Two-Piece Head

**21.1**
**September 1, 1990**
(Sup. 10/1/86)

## VIT-FF DIMENSION PRINT

(All dimensions are in inches)

**Pump Data**

Size 16 x 24 EHC/1 STAGE

**Condition Data**

GPM 7,500 TDH 84'

Liquid RAW WATER

**Motor Data**

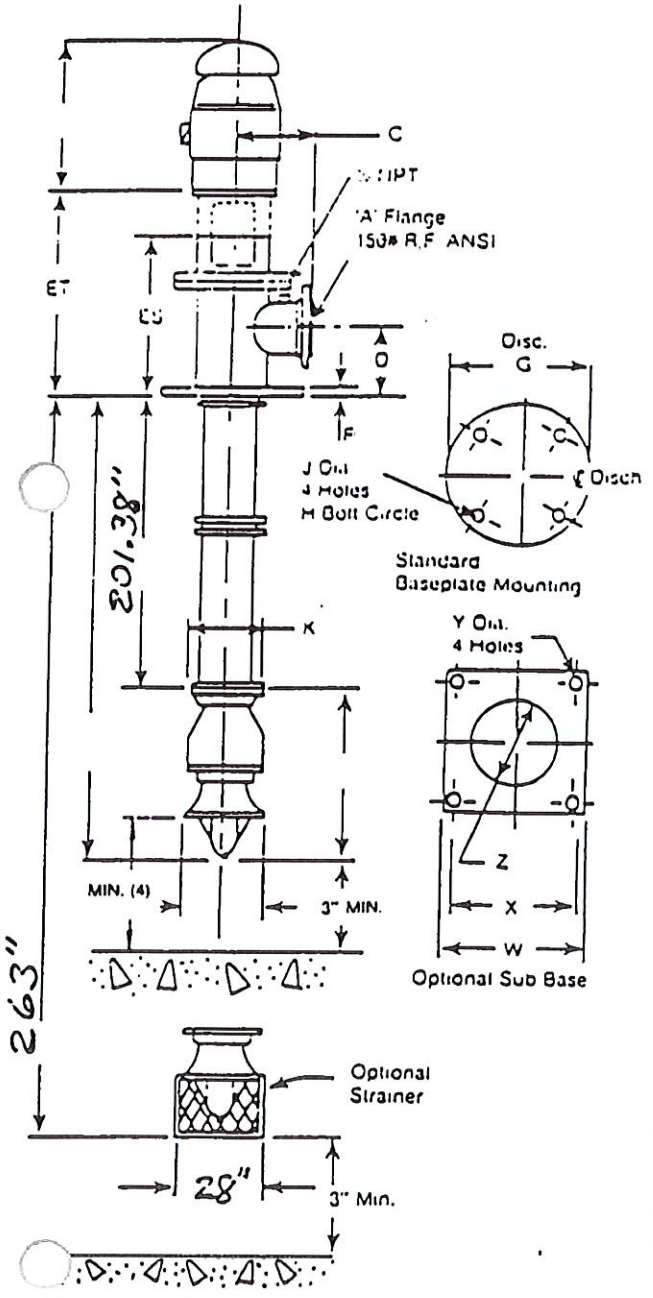
Motor Mfgr. USEM

H.P. 200 RPM 1200

Phase 3 Cycle 60 Volts 460

VHS YES VSS NO Thrust 11,250

Frame 5006P Encl. WP-1 BD 24.5




| Column & Discharge Size | | | | | Baseplate (3) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| A | C | O | (1) ES | (2) ET | F | G | H | J | Motor BD |
| 16 | 21 | 16 | 42 | – | 18.5 | 40 | 37.5 | 1.38 | 24.5 |

| Column & Discharge Size | Optional Sub Base | | | | |
|---|---|---|---|---|---|
| A | W | X | Y | Z | Thick |
| 16 | 48 | 44 | 1.38 | 32 | 1.25 |

(1) Open line shaft, standard stuffing box, adjustable coupling.
(2) Mechanical seal and spacer coupling or enclosed line shaft and adjustable coupling.
(3) Baseplates available to match ANSI F.F. 150 lb. bolting.
(4) Min. Dim. = 1/2 suction bell dia.

Proposal No. _____

Customer CMK, INC. / FAYETTE COUNTY WATER SYS.

Project CROSSTOWN TREATMENT PLANT - RAW WATER MOD.

Inquiry No. _____

Item No. RW Pump - 1, 4

Service RAW WATER PUMPS

Submitted by _____

Date 5/17/00

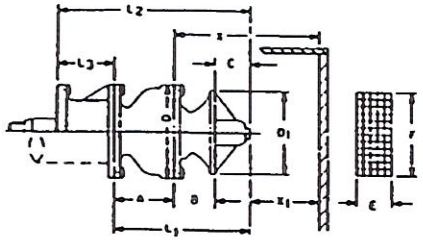
Do not use for construction unless certified by VPD Engineering Department



PRINTED IN U.S.A.

GOULDS PUMPS, INC.
VERTICAL PRODUCTS DIVISION

## BOWL ASSEMBLY DIMENSIONS 18" THRU 60"




| | Bowl Size | First Stage Bowl Length DLS | First Stage Bowl Length BLS | Each Add'l Stage | Bell Length to Bell Lip | Proj. of Hub Below Bell | Bowl Dia. | Bell Dia. | Disch. Bowl Length | Imp. Eye to Bottom of Can or Pit | Bell Bottom to Bottom of Can or Pit | WR2 Wet Per Stg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | L1 | L2 | A | B | C | D | D1 | L3 | X | X1 | |
| B | 18B | 25.25 | 36.50 | 13 | 8.6 | 3.5 | 17.50 | 17.50 | 11.25 | 23.81 | 11.56 | 13.9 |
| | 20B | 33.31 | RF | 18.31 | 12.25 | 4.75 | 19.75 | 19.75 | RF | 22.82 | 7.32 | 19.3 |
| | 28B | 37.75 | 49.75 | 22 | 13 | 2.75 | 26.8 | 28.5 | 12 | 30.94 | 14.19 | 90.3 |
| | 30B | 44.81 | 56.81 | 24 | 15 | 5.81 | 29.5 | 33 | 12 | 33.69 | 12.69 | 133 |
| | 36B | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| C | 18C | 32.5 | RF | 16.37 | 10.75 | 5.37 | 17.5 | 17 | RF | 19.25 | 3.13 | 9.09 |
| | 20C | 37.87 | 47.75 | 19.12 | 12.63 | 6.12 | 20.5 | 20 | 9.87 | 22.63 | 3.88 | 22.52 |
| | 24C | 45 | 60 | 23.25 | 15.44 | 6.38 | 25 | 24.5 | 15 | 27.75 | 6.00 | 68.5 |
| D | 18D | 33.05 | 42.92 | 16.75 | 12 | 4.3 | 17.75 | 17.75 | 9.87 | 22.5 | 6.25 | 13.3 |
| | 18DX | 33 | – | 16.75 | 12 | 4.25 | 17.75 | 17.75 | – | 26.56 | 10.31 | 14.2 |
| | 24D | 44.75 | 58.25 | 22.75 | 16.37 | 5.63 | 24.25 | 25 | 13.5 | 29.13 | 7.13 | 69.9 |
| | 32D | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| | 36D | 54.87 | 70.37 | 31.75 | 18.25 | 4.87 | 38.25 | 39.5 | 15.5 | 40.69 | 16.94 | 598.5 |
| E | 18E | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| | ~~20E~~ | ~~50.69~~ | ~~48.25~~ | ~~18~~ | ~~12.5~~ | ~~0.87~~ | ~~18.88~~ | ~~RF~~ | ~~9.88~~ | ~~RF~~ | ~~0.19~~ | ~~12.6~~ |
| | 24E | 39.25 | RF | 21 | 14.62 | 3.63 | 22.25 | 25.75 | RF | 27.5 | 9 | 52.1 |
| | ~~28E~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ |
| | 32E | 58.12 | 78.12 | 28.87 | 20 | 7.25 | 30.0 | 38 | 20 | 38 | 10.75 | 149.2 |
| | 34E | 57.5 | 73 | 31.5 | 21.75 | 4.25 | 32.62 | 37.0 | 15.5 | 42.88 | 16.88 | 321.4 |
| | 36E | 59.87 | RF | 32.25 | 19.75 | 7.87 | 35.62 | 39.5 | RF | 43.87 | 16.25 | 524 |
| | 38E | 65 | RF | 35.5 | 24.62 | 4.88 | 37 | 44.37 | RF | 46.13 | 16.63 | 552 |
| | 44E | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| | 52E | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| | 60E | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| F | 24F | 48.5 | 70.5 | 24.10 | 14.75 | 7.75 | 24.12 | 24.5 | 24.0 | 27.37 | 4.87 | 52.1 |
| G | 20G | 37.37 | 52.37 | 21.50 | 12.5 | 3.37 | 20.75 | 22 | 15 | 25.37 | 9.5 | 15.8 |
| | 24G | 42.5 | 56.0 | 24.75 | 14.5 | 3.25 | 24.25 | 25 | 13.5 | 30 | 12.19 | 40.5 |
| | 28G | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| | 32G | 56.68 | 78.68 | 33.12 | 18.75 | 4.81 | 31.25 | 34 | 20 | 43.38 | 19.13 | 262.1 |
| | 34G | 59.87 | – | 35.25 | 20.63 | 4.00 | 35.13 | 36 | – | 38.63 | 14 | 243.90 |
| | 36G | 67.37 | RF | 39.75 | 23.25 | 4.37 | 38.38 | 40 | RF | 44 | 18.07 | 545 |
| | 44G | 77.66 | RF | 46 | 26.87 | 4.78 | 45.75 | 47 | RF | 51.75 | 19.63 | 1028.5 |
| | 52G | 91 | RF | 53.50 | 31.5 | 6.00 | 55.50 | 55 | RF | 59 | 21.5 | 1855 |
| | 60G | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| H | 18H | 34.31 | 44.18 | 17.62 | 8.88 | 7.81 | 18 | 18 | 9.87 | 22.13 | 5.44 | 21.7 |
| | 18HX | 33.81 | N/A | 17.62 | 12 | 4.19 | 18 | 17.75 | N/A | 26.5 | 10.31 | 14.15 |
| | 20H | 29 | 42.12 | 14.5 | 12.62 | 1.88 | 19.75 | 22.87 | 13.12 | 24 | 9.5 | 21.7 |
| | 20HX | 29 | 42.12 | 14.5 | 12.62 | 1.88 | 19.75 | 22.87 | 13.12 | 24 | 9.5 | 21.7 |
| L | 18L | 33.75 | 43.62 | 18.63 | 12.75 | 2.37 | 18 | 23.5 | 9.87 | 24.5 | 9.38 | 81 |
| | 42L | 72.37 | RF | 40.37 | 27.75 | 4.25 | 37.5 | 47 | RF | 51.31 | 19.18 | 552 |
| | 48L | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| T | 28T | 49.12 | 67.62 | 25 | 13.5 | 10.62 | 26.12 | 22.56 | 18.5 | 34.5 | 10.38 | 22.5 |
| | 36T | 62.62 | 62.62 | 32 | 17.25 | 13.37 | 33.43 | 30 | 20 | 43.25 | 12.63 | 147.8 |

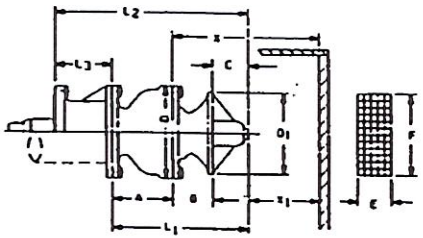


GOULDS PUMPS, INC.

PRINTED IN U.S.A.








| | Bowl Size | Std. Shell Dia. | Opt. Column Size | Typical Column Size | E Strainer Length | F Strainer Diameter | Bowl Wall Thk. | Max. Solid Size | Impeller Weight | Bowl Wts. Lbs. First Stage DLS | Bowl Wts. Lbs. First Stage BLS | Each Add'l Stage | Strainer Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | 18B | 2 43 | – | 12,14,16 | 17 | 19 5 | 5 | 1 12 | 88 | 552 | 975 | 374 | 40 |
| | 20B | 2 43 | 3 5 | 10,12 | 26 25 | 21 5 | 62 | 1 0 | 95 | 730 | RF | 395 | 40 |
| | 28B | 2 69 | 3 19-3 69 | 16,18,20 | 27 75 | 30 5 | 69 | 1 5 | 148 8 | 1505 | 2027 | 1045 | RF |
| | 30B | 2 94 | 4 25 | 18,20,24,30 | 32 12 | 34 66 | 75 | 1 87 | 220 | 1815 | 2385 | 1325 | 100 |
| | 36B | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| C | 18C | 2 43 | – | 10,12,14,16 | 17 | 18 63 | 38 | 1 0 | 46 | 447 | – | 309 | RF |
| | 20C | 2 43 | 2 94 | 12,14,16,18 | 20 | 21 63 | 44 | 1 25 | 83 | 718 | 992 | 496 | RF |
| | 24C | 2 43 | 3 43 | 14,16,18,20 | 24 | 26 16 | 53 | 1 62 | 138 | 1302 | 1800 | 899 | 70 |
| D | 18D | 2 69 | – | 12,14,16 | 17 | 19 5 | 43 | 75 | 60 7 | 647 | 905 | 482 | 40 |
| | 18DX | 2 69 | – | 12,14,16 | 17 | 19 5 | 43 | 1 25 | 60 7 | 661 | N/A | | – |
| | 24D | 2 43 | – | 16,18,20 | 27 12 | 26 66 | 62 | 1 0 | 158 | 1599 | 2144 | 1063 | 1 |
| | 32D | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| | 36D | 3 43 | 3 69-4 25 | 24,30 | 36 37 | 41 25 | 65 | 2 0 | 530 | 3360 | 5580 | 2246 | 100 |
| E | 18E | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| | ~~20E~~ | ~~3 43~~ | ~~3 69~~ | ~~18,20,24,30~~ | ~~24~~ | ~~RF~~ | ~~RF~~ | ~~1 75~~ | ~~60~~ | ~~699~~ | ~~995~~ | ~~399~~ | ~~40~~ |
| | 24E | 2 43 | 4 00 | 16,18,20 | 26 | 27 66 | 56 | 2 0 | 62 5 | 1312 | RF | 678 | RF |
| | ~~28E~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ | ~~RF~~ |
| | 32E | 3 69 | 4 0 | 18,20,24,30 | 35 12 | 37 66 | 5 | 3 0 | 250 | 2425 | 3415 | 1590 | 100 |
| | 34E | 3 43 | – | 24,30 | 40 75 | 38 66 | 56 | 1 33 | 390 | 2934 | 4740 | 2180 | RF |
| | 36E | 3 43 | 4 0-4 5 | 24,30 | 29 5 | 41 75 | 62 | 2 5 | 580 | 3398 | RF | 2369 | RF |
| | 38E | 3 43 | 4 0-4 25 | 24,30 | 42 37 | 45 25 | 62 | 2 0 | 520 | 4230 | RF | 2290 | RF |
| | 44E | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| | 52E | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| | 60E | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| F | 24F | 2 94 | – | 16,18,20 | 24 | 26 16 | 5 | 2 75 | 116 | 1120 | RF | 780 | RF |
| G | 20G | 2 43 | 2 93 | 18 | 21 | 23 62 | 37 | 1 56 | 77 | 714 | 1150 | 519 | 100 |
| | 24G | 2 94 | – | 16,18,20 | 24 75 | 26 66 | 5 | 1 75 | 150 | 1108 | 1800 | 769 | 100 |
| | 28G | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| | 32G | 4 0 | 3 19-4 5 | 20,24,30 | 33 06 | 35 66 | 56 | 2 19 | 361 5 | 4156 | 5249 | 2369 | RF |
| | 34G | 4 0 | – | 18,20,24 | 36 | 37 63 | 63 | 2 88 | 378 | 2962 | – | 1604 | RF |
| | 36G | 3 43 | – | 20,24,30 | 39 87 | 41 75 | 62 | 5 25 | 540 | 4230 | RF | 2290 | RF |
| | 44G | 3 19 | 4 0-5 0 | 30,36,42 | 46 5 | 48 75 | 87 | 5 87 | 1004 | 7790 | RF | 5060 | RF |
| | 52G | 5 00 | – | 36,42,48 | 55 | 58 63 | 1 02 | 5 19 | 1242 | 12,417 | – | 8,099 | RF |
| | 60G | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| H | 18H | 2 69 | – | 12,14,16 | 17 | 19 5 | 4 | 1 75 | 65 | 648 | 866 | 371 | RF |
| | 18HX | 2 69 | – | 12,14,16 | 17 | 21 | 37 | 1 25 | 60 7 | 700 | N/A | N/A | RF |
| | 20H | 2 69 | – | 14,16 | 19 | 24 37 | 5 | 1 5 | 74 | 665 | 965 | 492 | RF |
| | 20HX | 2 69 | – | 14,16 | 19 | 24 37 | 5 | 1 5 | 74 | 665 | 965 | 492 | RF |
| L | 18L | 2 43 | – | 16,18 | 26 5 | 25 0 | 43 | 1 25 | 87 5 | 918 | 1020 | 456 | 92 |
| | 42L | 3 0 | – | 30,36 | 47 | 48 75 | 62 | 5 75 | 995 | 6290 | RF | 4690 | RF |
| | 48L | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF | RF |
| T | 28T | 3 19 | – | 14,16,18,20 | 22 12 | 24 25 | 5 | 1 87 | 104 | 1254 | 1657 | 868 | 100 |
| | 36T | 4 0 | – | 20,24 | 29 37 | 31 75 | 62 | 1 5 | 200 | 2537 | 4210 | 1881 | RF |

# Pump Performance / Hydrostatic Test Report

ITT Industries
Engineered for life

GOULDS PUMPS
VERTICAL PRODUCT OPERATIONS

# PERFORMANCE TEST DATA

## TEST NO.: T-00-147

**CUSTOMER : GOULDS PUMPS TEXAS**
P.O. No. : 809677
ITEM No. :
**SERIAL NO. : 756637 -1**

MODEL: 24 EHC
IMP(S) 1
DIA. 15.42
UNDERFILE .13 x 3.0
IMP.MTRL. ALBRZ
BOWL MATRL. CI
COATING SCH134

**TEST EQUIPMENT**

TEST MOTOR - HP: 200 HP - 1190 RPM
TEST LINE DIA. DISCH : 14
VENTURI: 12
WATT SCALE MULTIPLIER 640
AXIAL CLEARANCE : 0.375

**GUARANTEED PERFORMANCE**

RPM : **1180**
FLOW-GPM: 7500
HEAD-FEET: 84
HP.: 200.0 — S.F. : 1.00
SP.GR : 1.000

FLOW -CuM/Hr.: 1703
HEAD-M: 25.6
KW.: 149.2
VISC.-SSU: 32

| READING | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| RPM | 1191 | 1191 | 1189 | 1188 | 1187 | 1187 | 1188 | | | |
| DISCH PRESS. - PSI | 57.6 | 50.3 | 44.0 | 39.0 | 33.0 | 25.0 | 15.0 | | | |
| DISCH. HEAD-Ft. | 133.1 | 116.2 | 101.6 | 90.1 | 76.3 | 57.8 | 34.7 | | | |
| ELEV.CORRECTION-Ft. | 6.43 | 6.43 | 6.43 | 6.43 | 6.43 | 6.43 | 6.43 | | | |
| VELOCITY HEAD-Ft. | 0.00 | 0.36 | 1.42 | 3.32 | 4.99 | 6.45 | 7.93 | | | |
| TOTAL HEAD-Ft. | 139.5 | 123.0 | 109.4 | 99.9 | 87.7 | 70.7 | 49.0 | | | |
| FLOW READING -" BLUE | | | | | | | | | | |
| FLOW READING - " Hg | 0.00 | 1.30 | 5.10 | 11.90 | 17.85 | 23.10 | 28.40 | | | |
| FLOW-GPM | 0.0 | 2037.3 | 4035.2 | 6163.8 | 7549 | 8588 | 9522.2 | | | |
| WATT READING | 0.163 | 0.171 | 0.193 | 0.227 | 0.242 | 0.233 | 0.215 | | | |
| INPUT TO MOTOR-Kw | 104.3 | 109.4 | 123.5 | 145.3 | 154.9 | 149.1 | 137.6 | | | |
| BRAKE HORSEPOWER | 130.8 | 137.2 | 154.9 | 181.7 | 193.5 | 186.4 | 172.3 | | | |
| EFFICIENCY-% | 0.00 | 46.13 | 72.00 | 85.55 | 86.40 | 82.19 | 68.43 | | | |
| PERFORMANCE CONVERTED TO : | | | | | 1180 RPM | | | SP.GR. : 1.00 | | |
| TOTAL HEAD-Ft. | 137.0 | 120.8 | 107.8 | 98.5 | 86.6 | 69.8 | 48.4 | | | |
| FLOW-GPM | 0.0 | 2018.5 | 4004.6 | 6122.3 | 7504.6 | 8537.2 | 9458.1 | | | |
| BRAKE HORSEPOWER | 127.2 | 133.5 | 151.4 | 178.1 | 190.1 | 183.2 | 168.8 | | | |
| EFFICIENCY-% | 0.00 | 46.13 | 72.00 | 85.55 | 86.40 | 82.19 | 68.43 | | | |

ITT/GP WTG-Turbine Division
P.O. #: 809677
S.O. #: 756637
TAG: SO 423629

TESTED BY : P.LARSON
TEST DATE : 5/16/00

**CERTIFIED BY:**

GOULDS PUMPS
VERTICAL PRODUCTS OPERATIONS

ITT Industries
Engineered for life

GOULDS PUMPS
VERTICAL PRODUCT OPERATIONS

# PERFORMANCE TEST CURVE

CUSTOMER : GOULDS PUMPS TEXAS
P.O. No. : 809677
ITEM No. :

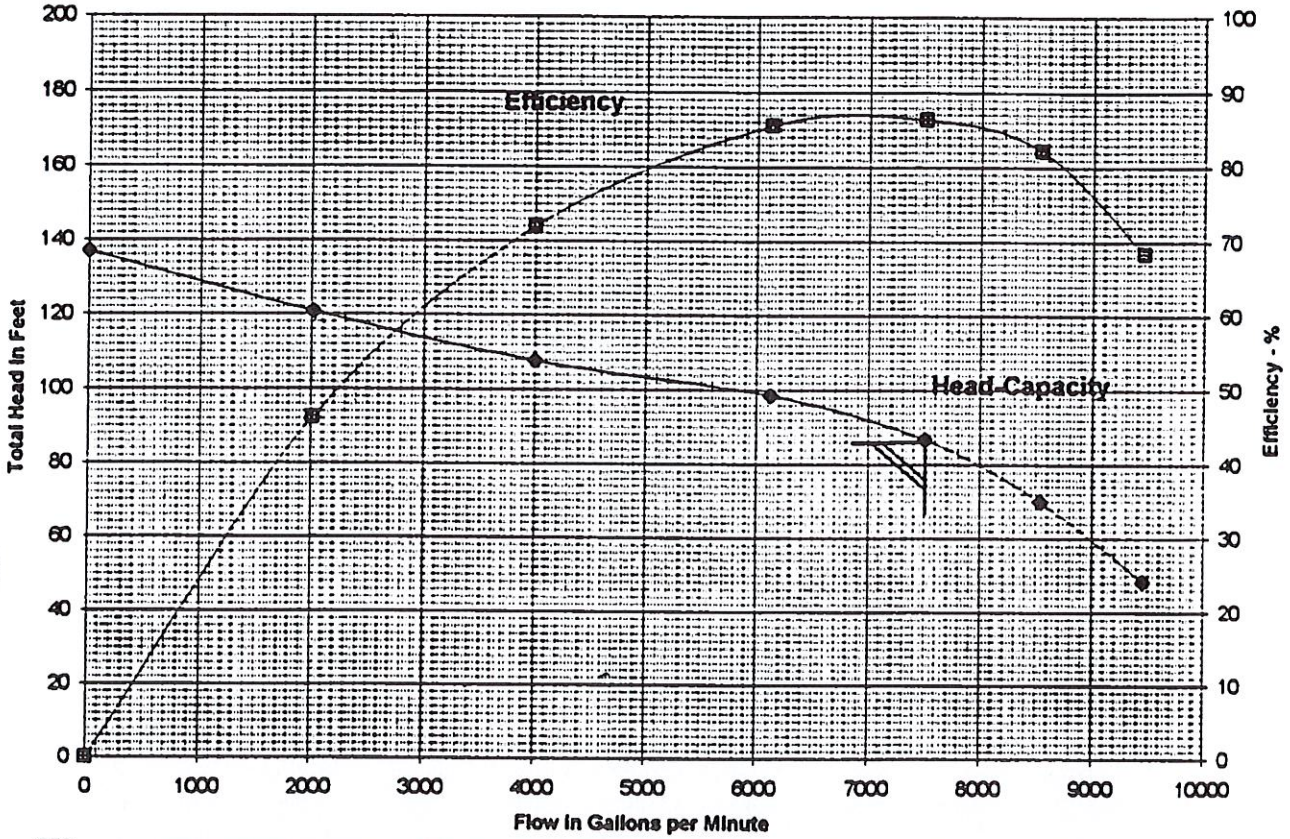
TEST NO.: T-00-147

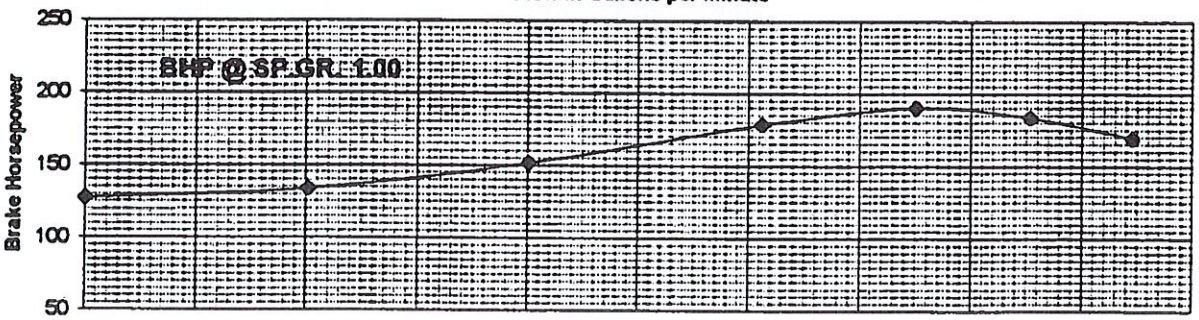
GOULDS S.O. No. : 756637 – 1

NOTE: NO FRICTION LOSSES ARE INCLUDED

TEST DATE: 5/16/00

TESTED BY: P.LARSON




**MODEL** 24 EHC
STAGES: 1
DIAMETER : 15.42
UNDERFILE : .13 x 3.0
**RPM** 1180

CERTIFIED BY:

GOULDS PUMPS INC.
VERTICAL PRODUCTS OPERATIONS

CURVES SHOW APPROXIMATELY THE CHARACTERISTICS WHEN PUMPING CLEAR NON-AERATED WATER. NO GUARANTEE IS MADE EXCEPT FOR THE RATED POINT.

ITT/GP WTG-Turbine Division
P.O. #: 80967
S.O. #: 75663
TAG: SO 423629

ITT Industries
Engineered for life

GOULDS PUMPS
VERTICAL PRODUCT OPERATIONS

# PERFORMANCE TEST DATA

## TEST NO.: T-00-148

**CUSTOMER : GOULDS PUMPS TEXAS**
P.O. No. : 809677
ITEM No. :
**SERIAL NO. : 756637 -2**

MODEL: 24 EHC
IMP(S) 1
DIA. 15.42
UNDERFILE .13 x 3.0
IMP.MTRL. ALBRZ
BOWL MATRL. CI
COATING SCH134

**TEST EQUIPMENT**

TEST MOTOR - HP: 200 HP - 1190 RPM
TEST LINE DIA. DISCH : 14
VENTURI: 12
WATT SCALE MULTIPLIER 640
AXIAL CLEARANCE : 0.375

**GUARANTEED PERFORMANCE**

RPM : 1180
FLOW-GPM: 7500
HEAD-FEET: 84
HP.: 200.0 —— S.F. : 1.00
SP.GR : 1.000

FLOW -CuM/Hr.: 1703
HEAD-M: 25.6
KW.: 149.2
VISC.-SSU: 32

| READING | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| RPM | 1191 | 1190 | 1189 | 1188 | 1187 | 1187 | 1188 | | | |
| DISCH PRESS. - PSI | 57.4 | 50.0 | 44.1 | 39.3 | 33.2 | 24.9 | 14.8 | | | |
| DISCH. HEAD-Ft. | 132.7 | 115.6 | 101.9 | 90.8 | 76.7 | 57.5 | 34.2 | | | |
| ELEV.CORRECTION-Ft. | 6.43 | 6.43 | 6.43 | 6.43 | 6.43 | 6.43 | 6.43 | | | |
| VELOCITY HEAD-Ft. | 0.00 | 0.34 | 1.42 | 3.34 | 4.97 | 6.48 | 7.93 | | | |
| TOTAL HEAD-Ft. | 139.1 | 122.3 | 109.8 | 100.6 | 88.1 | 70.5 | 48.6 | | | |
| FLOW READING -" BLUE | | | | | | | | | | |
| FLOW READING - " Hg | 0.00 | 1.20 | 5.10 | 11.95 | 17.80 | 23.20 | 28.40 | | | |
| FLOW-GPM | 0.0 | 1957.4 | 4035.2 | 6176.8 | 7539 | 8606 | 9522.2 | | | |
| WATT READING | 0.162 | 0.170 | 0.194 | 0.228 | 0.243 | 0.233 | 0.211 | | | |
| INPUT TO MOTOR-Kw | 103.7 | 108.8 | 124.2 | 145.9 | 155.5 | 149.1 | 135.0 | | | |
| BRAKE HORSEPOWER | 130.0 | 136.4 | 155.7 | 182.5 | 194.2 | 186.4 | 169.1 | | | |
| EFFICIENCY-% | 0.00 | 44.32 | 71.86 | 85.96 | 86.37 | 82.13 | 69.05 | | | |
| PERFORMANCE CONVERTED TO : | | | | | 1180 | RPM | SP.GR. : 1.00 | | | |
| TOTAL HEAD-Ft. | 136.5 | 120.3 | 108.1 | 99.2 | 87.1 | 69.6 | 47.9 | | | |
| FLOW-GPM | 0.0 | 1940.9 | 4004.6 | 6135.2 | 7494.1 | 8555.7 | 9458.1 | | | |
| BRAKE HORSEPOWER | 126.4 | 133.0 | 152.1 | 178.9 | 190.8 | 183.2 | 165.7 | | | |
| EFFICIENCY-% | 0.00 | 44.32 | 71.86 | 85.96 | 86.37 | 82.13 | 69.05 | | | |

ITT/GP WTG-Turbine Division
P.O. #: 809677
S.O. #: 756637
TAG: SO 423629

TESTED BY : P.LARSON
TEST DATE : 5/17/00

**CERTIFIED BY:**
GOULDS PUMPS
VERTICAL PRODUCTS OPERATIONS

ITT Industries
Engineered for life

GOULDS PUMPS
VERTICAL PRODUCT OPERATIONS

# PERFORMANCE TEST CURVE

**CUSTOMER : GOULDS PUMPS TEXAS**
P.O. No. : 809677
ITEM No. :

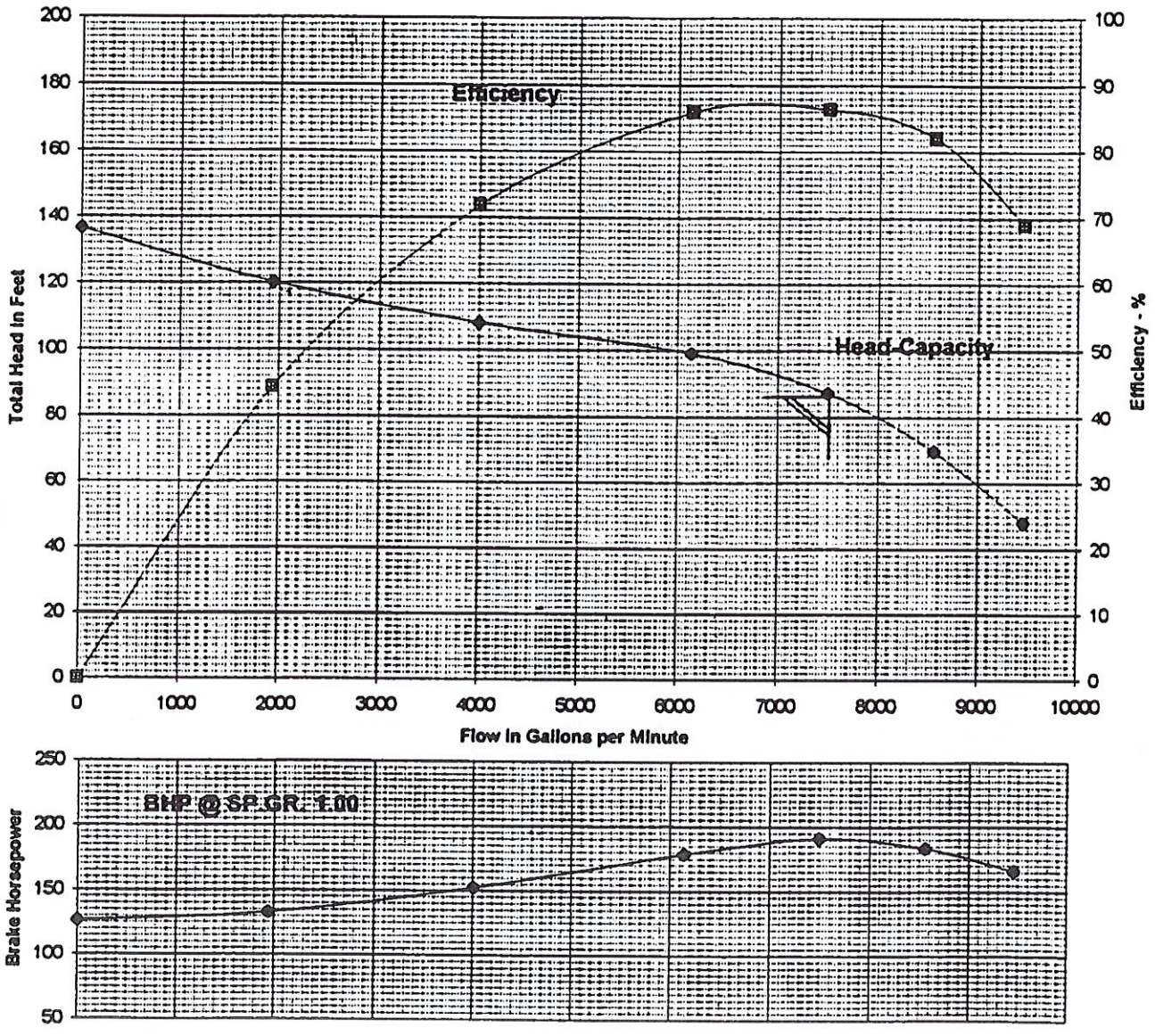
**TEST NO.: T-00-148**

**GOULDS S.O. No. : 756637 – 2**

NOTE: NO FRICTION LOSSES ARE INCLUDED

TEST DATE: 5/17/00

TESTED BY: P.LARSON




**MODEL** 24 EHC
STAGES: 1
DIAMETER : 15.42
UNDERFILE : .13 x 3.0
**RPM 1180**

**CERTIFIED BY:**

GOULDS PUMPS INC.
VERTICAL PRODUCTS OPERATIONS

:TERISTICS WHEN PUMPING CLEAR
.DE EXCEPT FOR THE RATED POINT.

ITT/GP WTG-Turbine Division
P.O. #: 809677
S.O. #: 756637
TAG: SO 423629

QUALITY ASSURANCE DEPARTMENT

ITT Industries

*Vertical Products Operations*

3951 Capitol Avenue
City of Industry, CA 90601
Phone: 562-949-2113
Fax: 562-695-8523

GOULDS PUMPS

# CERTIFICATION OF HYDROSTATIC TEST

CUSTOMER: GOULDS PUMPS / WTG TURBINE DIVISION DATE: 5-17-2000

GOULDS SHOP ORDER#: 756637 SPECIFICATION#: MA029 REV: 1

The parts and/or assemblies noted below have been hydrostatically tested to the pressures and lengths of time indicated; in accordance with the provisions of the specification referenced above.

| | QTY | PART NO. | PSI | TIME |
|---|---|---|---|---|
| **HEAD - DISCHARGE** | | | | |
| **HEAD - SUCTION** | | | | |
| **STUFFING BOX** | | | | |
| **BLEED LINES** | | | | |
| **COLUMNS, TOP** | | | | |
| **INTERMEDIATE** | | | | |
| **BOTTOM** | | | | |
| **BOWLS, TOP** | 2 | B12240F101 | 100 | 5 MIN. |
| **INTERMEDIATE** | | | | |
| **SPIDERS** | | | | |
| **CAN** | | | | |
| **OTHER:** | | | | |

SERIAL NUMBER: 201078 CALIB: 3-16-2000 DUE: 9-16-2000

RANGE: 0 TO 200

SERIAL NUMBER: _____ CALIB: _____ DUE: _____

RANGE: _____

TEST WITNESSED AND ACCEPTED BY: "W.L." DATE: 5-17-2000

CUSTOMER WITNESS: _____ DATE: _____

COMMENTS: _____

CERTIFIED BY: _____
QUALITY ASSURANCE DEPARTMENT

ITT - WTG-Turbine Division
P.O. #: 809677
S.O. #: 756637
TAG: SO 423629

FORM NO. QA216
REV. 0 8/06/97

# Pump Critical Speed Calculation

# CRITICAL SPEED CALCULATION

SO: 423629 Date: 30-Apr-00

## JOB INFORMATION

| | | | |
|---|---|---|---|
| Customer: | GPM Environmental | Pump Type: | VIT-FF |
| PO: | 00001826 | Bowl Model: | 24EHC |
| Contact: | Barbara Barth | No Stages: | 1 |

## INPUT INFORMATION

| | | | |
|---|---|---|---|
| Lineshaft Diameter: | 1.69 in | Rated Flow: | 7500.0 gpm |
| Lineshaft Material: | 416SS | Rated Head: | 84.0 ft |
| Bearing Spacing: | 60 in | Rated Speed: | 1180 rpm |

## OUTPUT INFORMATION

| | |
|---|---|
| Impeller Weight: | 82.50 lbs |
| K-Factor: | 42.00 lbs/ft |
| Moment of Inertia: | 0.3981 $in^2$ x $in^2$ |
| Modulus of Elasticity: | 29000000.00 $lbs/in^2$ |
| Material Unit Weight: | 0.63 lbs/in |

## CRITICAL SPEED CALCULATIONS

| | |
|---|---|
| First Critical: | 2331 rpm |
| Second Critical: | 8958 rpm |

Jimmy Scroggins
Engineer

# CRITICAL SPEED CALCULATION

SO: 423629 Date: 30-Apr-00

## JOB INFORMATION

| | | | |
|---|---|---|---|
| Customer: | GPM Environmental | Pump Type: | VIT-FF |
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## INPUT INFORMATION

| | | | |
|---|---|---|---|
| Lineshaft Diameter: | 1.69 in | Rated Flow: | 7500.0 gpm |
| Lineshaft Material: | 416SS | Rated Head: | 84.0 ft |
| Bearing Spacing: | 60 in | Rated Speed: | 1180 rpm |

## OUTPUT INFORMATION

| | |
|---|---|
| Impeller Weight: | 82.50 lbs |
| K-Factor: | 42.00 lbs/ft |
| Moment of Inertia: | 0.3981 $in^2 \times in^2$ |
| Modulus of Elasticity: | 29000000.00 $lbs/in^2$ |
| Material Unit Weight: | 0.63 lbs/in |

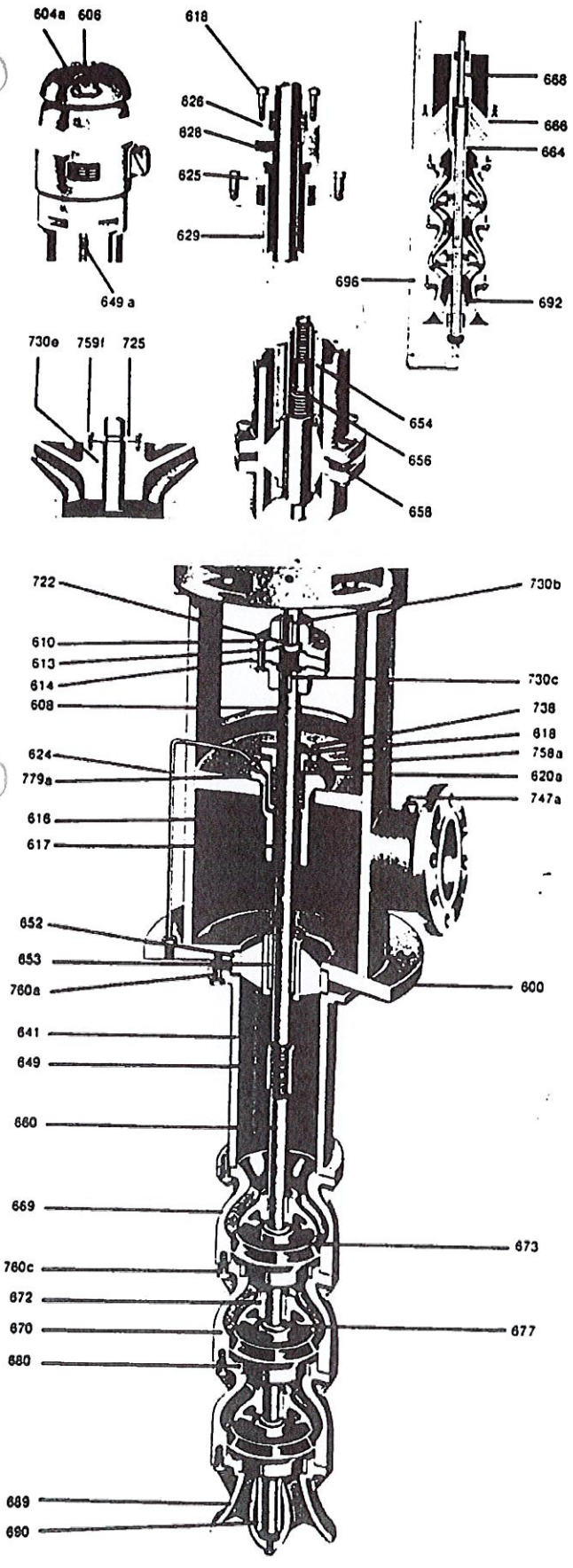
## CRITICAL SPEED CALCULATIONS

| | |
|---|---|
| First Critical: | 2331 rpm |
| Second Critical: | 8958 rpm |

Jimmy Scroggins
Engineer

# Spare Parts/Repair Parts/List

# Sectional View




| ITEM NO. | NO. REQ'D. Per PUMP | PART NAME | MATERIAL CONSTRUCTION | |
|---|---|---|---|---|
| | | | BRONZE FITTED | ALL IRON |
| 600 | 1 | Discharge Head | FAB. STL. | |
| 604a | 1 (n) | Adjusting nut | AISI C-1018 | |
| 606 | 1 (n) | Drive shaft | AISI C-1045 | |
| 608* | 1 | Headshaft | 416 SS | |
| 610 | 1 (k) | Upper half coupling | AISI C-1213 | |
| 613 | 1 (k) | Adjusting plate | AISI C-1213 | |
| 614 | 1 (k) | Lower half coupling | AISI C-1213 | |
| 616 | 1 | Stuffing box | 1003 | |
| 617* | 1 | Throttle bushing | 1104 | 1003 |
| 618 | 1 (s) | Split stuffing box gland | 1104 | 1003 |
| 620a* | 1 set | Packing | Graphitized Yarn | |
| 624 | 1 | Bypass pipe | SAE-1020 | |
| 625 | 1 (m) | Tube tension plate | 1003 | |
| 626 | 1 (m) | Adjusting nut | 1003 | |
| 628 | 1 (m) | Bushing nut | 1104 | |
| 629 | 1 (m) | Tube tension nipple | ASTM STL. 120 | |
| 641 | (g) | Column pipe | FAB. STL. | |
| 649* | 1 | Pump shaft coupling | 416 SS | |
| 649a | 1 (n) | Headshaft coupling | 416 SS | |
| 652 | (g) | Bearing retainer | AISI C-1213 | |
| 653* | (g) | Lineshaft bearing | 1104 | 1003 |
| 654 | (g) (m) | Shaft enclosing tube | ASTM STL. 120 | |
| 656* | (g) (m) | Tube shaft bearing | 1104 | 1104 |
| 658 | (g) (m) | Tube stabilizer | 1212 | |
| 660* | 1 | Pump Shaft | 416 SS | |
| 664* | 1 (m) | Dischg. bowl throttle bushing | 1104 | 1003 |
| 666 | 1 (m) | Discharge bowl w/ports | 1003 | |
| 668* | 1 (m) | Tube adapter bushing | 1104 | 1104 |
| 669 | 1 (p) | Top bowl | 1003 | |
| 670 | 1 (a) (p) | Intermediate bowl | 1003 | |
| 672* | 1 (b) | Bowl bearing | 1104 | 1003 |
| 673 | 1 (b) (l) | Impeller | 1102 | 1003 |
| 677* | 1 (b) (e) | Impeller taper lock | AISI C-1018 | |
| 680* | 1 (b) | Bowl wear ring | 1117 | 1003 |
| 689 | 1 | Suction bell | 1003 | |
| 690* | 1 | Suction bell bearing | 1104 | 1003 |
| 692* | 1 | Sand collar | 1104 | 1003 |
| 696 | 1 (m) | Flush line | Galv Steel Pipe | |
| 722 | 1 (k) (s) | Split ring-upper half cplg. | AISI C-1213 | |
| 725* | 1 (b) (f) (s) | Split ring-impeller | 416 SS | |
| 730b | 1 (k) | Key motor shaft | AISI C-1213 | |
| 730c | 1 (k) | Key, headshaft | AISI C-1213 | |
| 730e | 1 (b) (f) | Impeller key | 416 SS | |
| 738 | 2 | Gland bolt | AISI C-1018 | |
| 747a | 1 | Pipe plug | ASTM A338 | |
| 758a | (q) | Capscrew-stuffing box | AISI C-1018 | |
| 759f | 4 (b) (f) | Capscrew, split ring collar | 416-SS | |
| 760a | (g) | Column flange bolt | AISI C-1018 | |
| 760c | (q) | Capscrew | AISI C-1018 | |
| 779a* | 1 | Stuffing box gasket | Vellumoid | |

*Minimum recommended spare parts that should be stocked.

## Material Specification

| Code | Specification |
|---|---|
| 1003 | ASTM A48 CL30B |
| 1102 | ASTM B145-836 (SAE40) |
| 1104 | ASTM B144-932 (SAE660) |
| 1117 | ASTM B148-952 (SAE68E) |
| 1212 | ASTM A216 Gr. WCB |
| 6521 | ASTM 120 Gr. B |

(a) 1 each additional stage
(b) per stage
(c) optional
(e) standard through 16" Bowl size
(f) standard on 18 size and above
(g) dependent on pump length
(k) standard on VSS drive only
(m) enclosed lineshaft only
(n) standard on VHS drive only
(p) C.I. bowls through 18 are glass lined
(q) dependent upon pump size
(s) 1 set in 2 halves
(t) C.I. impellers standard on 18 and larger sizes

**Figure 3-1. STANDARD VIT PUMP**

# Motor Data Package

# U. S. ELECTRICAL MOTORS

**DIVISION OF EMERSON ELECTRIC CO.**

ORDER DOCUMENTATION SERVICES * 8100 WEST FLORISSANT AVE.
EMERSON MOTOR TECHNOLOGY CENTER
P.O. BOX 36912 * ST. LOUIS, MO. 63136
PHONE (314) 595-8419 * FAX (314) 595-8507




Date - 03/29/00
Customer - 120205
Brn/Plt - M020
Work Order - 2446410
Order Nbr - 99059225 SO
Invoice -
Customer PO 809703

Goulds Pumps Inc
PO Box 5487
Accounts Payable Department
Lubbock TX 79417

Ship To: CROSSTOWN WTP
% CMK, INC
3500 TDK BLVD
SO 423629

**ATTN:**

| Project/ Line #/ Schedule Date | Description | Item Number | Quantity |
|---|---|---|---|
| 1.000 | | | |
| | NA-WPI-VFD-MOD AC~ | HURU 8VM | 2 |
| | SO 423629 | | |

Horsepower ..... 00200.00~00000.00 ~ KW: 149.2
Enclosure ..... WPI
Poles ..... 06~00 ~ RPM: 1200~0
Frame Size ..... 449~TP
Phase/Frequency/Voltage.. 3~060~460 ~ Random Wound
Service Factor ..... 1.15
Insulation Class ..... Class "F" ~ VPI-2000
Altitude In Feet (Max) .. 3300 Ft.(1000 M)
Ambient In Degree C (Max) +40 C
Efficiency Class ..... Premium Efficiency
Application ..... Centrifugal Pump
Customer Part Number ....
Base Diameter (Inches) ..... 24.5
Coupling Size ..... 1-11/16" Bore, 3/8" Key
NRR/SRC/Bolted Coupling ..... Non-Reverse Ratchet
Steady Bushing ..... Steady Bushing
Pricebook Thrust Value (lbs).. 11250
Down Thrust At Design (lbs) .. 11250
Down Thrust At Shutoff (lbs)..
Up Thrust (lbs) .....
Inverter Duty Rating:
  Load Type (Base Hz & Below) .. Variable Torque
  Speed Range (Base Hz & Below). 10:1
Temperature Rise (Sine Wave): "F" Rise @ S.F. (Resist)
NEMA Design ..... Refer To PerfData
KVA Code Letter ..... Refer To PerfData
Starting Method ..... Standard Value For Rating
Duty Cycle ..... Continuous Duty
Efficiency Value ..... Refer To PerfData ~ Typical
Power Factor (Uncorrected): Refer To PerfData
Sound Level Value (dBa).. Refer To PerfData
Inrush Limit ..... Refer To PerfData
Load Inertia (lb-ft2): NEMA ~ NEMA Inertia: 2238.00 ~ 1.00
BDT: Refer To PerfData ~ LRT: Refer To PerfData
Number Of Starts Per Hour: NEMA
  Motor Type Code ..... HUSI
Counter CW Rotation FODE

THE INFORMATION ON THIS PAGE AND ALL ATTACHMENTS IS CERTIFIED AS CORRECT FOR ORDER NOTED ABOVE

ENCLOSURES

CERTIFIED: AB 3/31/00

SBMTTL

# U. S. ELECTRICAL MOTORS

**DIVISION OF EMERSON ELECTRIC CO.**

ORDER DOCUMENTATION SERVICES * 8100 WEST FLORISSANT AVE.
EMERSON MOTOR TECHNOLOGY CENTER
P.O. BOX 36912 * ST. LOUIS, MO. 63136
PHONE (314) 595-8419 * FAX (314) 595-8507




Date - 03/29/00
Customer - 120205
Brn/Plt - M020
Work Order - 2446410
Order Nbr - 99059225 SO
Invoice -
Customer PO 809703

Goulds Pumps Inc
PO Box 5487
Accounts Payable Department
Lubbock TX 79417

Ship To: CROSSTOWN WTP
% CMK, INC
3500 TDK BLVD
SO 423629

**ATTN: JOHN ROSSG**

| Project/ Line #/ Schedule Date | Description | Item Number | Quantity |
|---|---|---|---|

Insul. Bearing - Upper Bracket
Thermostats - Normally Closed
VFD Duty
Submittal Requirements:
Number Of Copies Requested: 1 ~ Number Of I/M's: 1
Title Block Required (Y/N): No
Mail Submittals To: Ship-To Address
Mail Submittals Attention: JOHN ROSSG
Due Date (Format MMDDYY): 040300
Certified Dimension Print
Performance Data
Nameplate Data
Wiring (Connection) Diagram
Instruction Manual
Parts List

THE INFORMATION ON THIS PAGE AND ALL ATTACHMENTS IS CERTIFIED AS CORRECT FOR ORDER NOTED ABOVE.

ENCLOSURES

CERTIFIED:_____

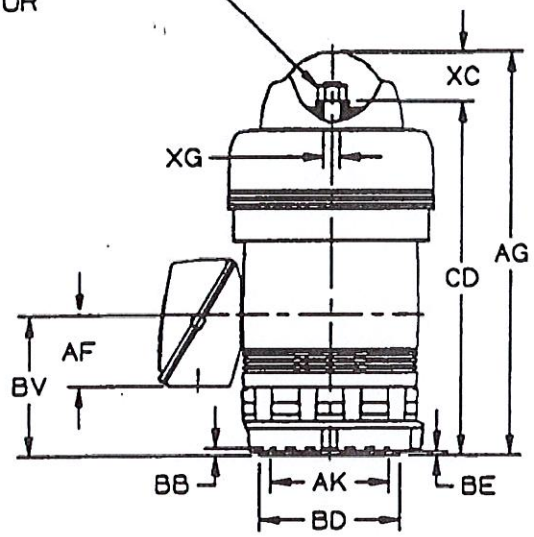
SBMTTL

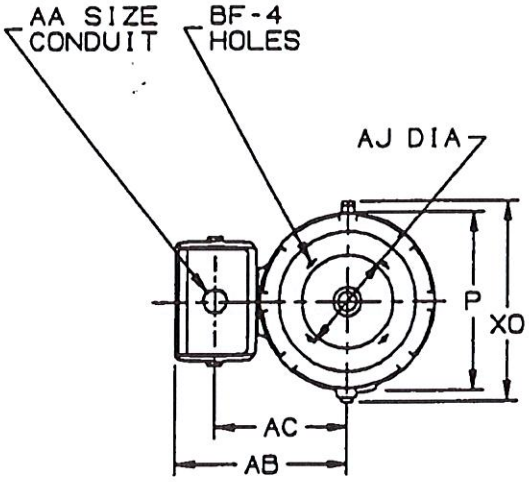
# VERTICAL MOTORS

HOLLOWSHAFT STYLE "P" BASE
FRAME: 449TP, TPH
TYPE: HUS

PRINT NO: 09/1775
EFFECTIVE: 11-08-95
SUPERSEDES: NEW

PUMP SHAFT, ADJUSTING NUT, LOCKING SCREWS ARE NOT FURNISHED WITH MOTOR




ALL DIMENSIONS ARE IN INCHES

| | FRAME | AJ | AK | BD | BF |
|---|---|---|---|---|---|
| ■ | 449TP | 14-3/4 | 13-1/2 | 24-1/2 | 11/16 |
| | 449TPH | 14-3/4 | 13-1/2 | 20 | 11/16 |

| | MAIN CONDUIT BOX | AA | AB | AC | AF |
|---|---|---|---|---|---|
| ■ | SIZE ø2 - STD | 3-1/2 | 23-1/4 | 17-3/4 | 8-1/16 |
| | SIZE ø2.5 | 3-1/2 | 24-1/2 | 18-3/4 | 10 |
| | SIZE ø3 | 3-1/2 | 28 | 20-7/8 | 10-15/16 |

| | $P^2$ | AG | BB | BE | BV | CD | XC | XG | XO |
|---|---|---|---|---|---|---|---|---|---|
| | 29 | 56-5/16 | 1/4 | 7/8 | 19-3/8 | 49-25/32 | 6-1/4 | 2-1/2 | 34 |

| TOLERANCES | |
|---|---|
| "AK" DIMENSION | -.000;+.005 |
| FACE RUNOUT | .007 F.I.R. |
| PERMISSIBLE ECCENTRICITY OF MOUNTING RABBET | .007 F.I.R. |

1: ALL ROUGH CASTING DIMENSIONS MAY VARY BY 1/4" DUE TO CASTING VARIATIONS.
2: LARGEST MOTOR WIDTH.
3: CONDUIT OPENING MAY BE LOCATED IN STEPS OF 90 DEGREES REGARDLESS OF LOCATION. STANDARD AS SHOWN WITH CONDUIT OPENING DOWN.

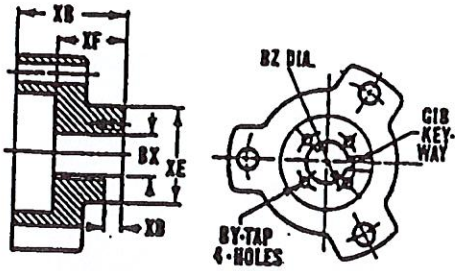
CERTIFIED BY AB DATE: 11/8/95

9905922 S

# VERTICAL MOTORS

## DRIVE COUPLINGS FOR HOLLOSHAFT MOTORS FRAMES 444 THRU 6810

SECTION: 505
PAGE: 17
EFFECTIVE: 07-01-90
SUPERCEDES: 10-15-88




ALL DIMENSIONS ARE IN INCHES

| TYPE | FRAME | PART NUMBER | BX BORE NOMINAL | BX BORE ACTUAL | BY | BZ | XB | XD | XE | XF | SQ. KEY |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LU TU | 444, 445 447TP, TPA | 172314 | 1-7/16 | 1.437 | 1/4-20 | 2-1/8 | 3-3/16 | 17/32 | 3-5/8 | 2-3/4 | 3/8 |
| | | 118296 | 1-1/2 | 1.501 | 1/4-20 | 2-1/8 | 3-13/16 | 17/32 | 3-5/8 | 2-3/4 | 3/8 |
| | | 118297 | 1-11/16 | 1.688 | 1/4-20 | 2-1/8 | 3-13/16 | 17/32 | 3-5/8 | 2-3/4 | 3/8 |
| | | 118298 | 1-3/4 | 1.751 | 1/4-20 | 2-1/8 | 3-13/16 | 17/32 | 3-5/8 | 2-3/4 | 3/8 |
| | | 118299 | 1-15/16 | 1.938 | 1/4-20 | 2-1/8 | 3-13/16 | 17/32 | 3-5/8 | 2-3/4 | 3/8 |
| RU | 444, 445TP, TPA | 132576 | 1-7/16 | 1.437 | 1/4-20 | 2-1/8 | 4 | 11/16 | 3-11/16 | 2-7/8 | 1/2 |
| | | 132577 | 1-1/2 | 1.501 | 1/4-20 | 2-1/8 | 4 | 17/32 | 3-11/16 | 2-7/8 | 3/8 |
| | | 132578 | 1-11/16 | 1.687 | 1/4-20 | 2-1/2 | 4 | 17/32 | 3-11/16 | 2-7/8 | 3/8 |
| | | 132579 | 1-15/16 | 1.937 | 1/4-20 | 2-1/2 | 4 | 11/16 | 3-11/16 | 2-7/8 | 1/2 |
| | | 136874 | 2-3/16 | 2.188 | 3/8-16 | 3-1/4 | 4 | 11/16 | 4 | 2-7/8 | 1/2 |
| | | 136875 | 2-1/4 | 2.250 | 3/8-16 | 3-1/4 | 4 | 11/16 | 4 | 2-7/8 | 1/2 |
| | | 131805 | BLANK | .751 | - | - | 4 | - | 3-11/16 | 2-7/8 | - |
| | | 136876 | BLANK | .751 | - | - | 4 | - | 4 | 2-7/8 | - |
| EU HU JU | 449TP, TPH 5006, 5008 5009, 5108 5109, P, PH | 129679 | 1-11/16 | 1.688 | 1/4-20 | 2-1/2 | 4-3/8 | 17/32 | 4-3/4 | 3-1/16 | 3/8 |
| | | 113288 | 1-15/16 | 1.938 | 1/4-20 | 2-1/2 | 4-3/8 | 11/16 | 4-3/4 | 3-1/16 | 1/2 |
| | | 113287 | 2-1/8 | 2.126 | 3/8-16 | 3-1/4 | 4-3/8 | 11/16 | 4-3/4 | 3-1/16 | 1/2 |
| | | 113289 | 2-3/16 | 2.188 | 3/8-16 | 3-1/4 | 4-3/8 | 11/16 | 4-3/4 | 3-1/16 | 1/2 |
| | | 113313 | 2-3/8 | 2.376 | 3/8-16 | 3-1/4 | 4-3/8 | 25/32 | 4-3/4 | 3-1/16 | 5/8 |
| | | 113290 | 2-7/16 | 2.438 | 3/8-16 | 3-1/4 | 4-3/8 | 25/32 | 4-3/4 | 3-1/16 | 5/8 |
| | | 113314 | 2-1/2 | 2.501 | 3/8-16 | 3-1/4 | 4-3/8 | 25/32 | 4-3/4 | 3-1/16 | 5/8 |
| | | 113285 | BLANK | .000 | - | - | 4-3/8 | - | 4-3/4 | 3-1/16 | - |
| HU | 5808, 5809, 5810 P, PH | 143112 | 2-3/16 | 2.188 | 3/8-16 | 3-1/4 | 5-1/8 | 1/2 | 5 | 3-5/8 | 1/2 |
| | | 143113 | 2-7/16 | 2.438 | 3/8-16 | 3-1/4 | 5-1/8 | 1/2 | 5 | 3-5/8 | 5/8 |
| EU JU | 5805 PH | 128009 | 2-3/16 | 2.188 | 3/8-16 | 3-1/4 | 4-3/8 | 11/16 | 4-3/4 | 3-1/16 | 1/2 |
| | | 127376 | 2-7/16 | 2.438 | 3/8-16 | 3-1/4 | 4-3/8 | 25/32 | 4-3/4 | 3-1/16 | 5/8 |
| EU JU | 5807, 5809 5811 P, PH | 143112 | 2-3/16 | 2.188 | 3/8-16 | 3-1/4 | 5-1/8 | 1/2 | 5 | 3-5/8 | 1/2 |
| | | 143113 | 2-7/16 | 2.438 | 3/8-16 | 3-1/4 | 5-1/8 | 1/2 | 5 | 3-5/8 | 5/8 |
| HU | 6808 P, PH, 6810 P, PA | 293643 | 2-11/16 | 2.687 | 3/8-16 | 3-3/4 | 7-7/8 | 11/16 | 7-5/8 | 6 | 5/8 |
| | | 830210 | 2-15/16 | 2.937 | 3/8-16 | 3-3/4 | 7-7/8 | 1 | 7-5/8 | 6 | 3/4 |
| | | 255753 | 3-3/16 | 3.187 | 3/8-16 | 5 | 7-7/8 | 1 | 7-5/8 | 6 | 7/8 |
| | | 255609 | 3-7/16 | 3.437 | 3/8-16 | 5 | 7-7/8 | 1 | 7-5/8 | 6 | 7/8 |
| | | 178611 | BLANK | .000 | - | - | 7-7/8 | - | 7-5/8 | 6 | - |

SPECIAL COUPLING DIMENSIONS

| PART NUMBER | BX BORE NOMINAL | BX BORE ACTUAL | BY | BZ | SQ. KEY SIZE | XB | XD | XE | XF |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

All tapped holes are unified national course, right-hand thread.

All rough casting dimensions may vary by 1/4" due to casting variations.

Coupling bore dimension "BX" is machined with a tolerance of -.000", + .001" up to 1-1/2" bore inclusive. Larger bores: -.000", + .002".

US ELECTRICAL MOTORS
ST. LOUIS, MO 63136

# MOTOR PERFORMANCE (SINEWAVE POWER)

| HP | POLES | PHASE | HZ | | TYPE | FRAME |
|---|---|---|---|---|---|---|
| 200.00 | 6 | 3 | 60 | | HUSI | 449 |

| MODEL NO. | | ORDER NO. | 99059225 | LINE NO. | 1 | MP ID NO. | 52295 |
|---|---|---|---|---|---|---|---|

| | |
|---|---|
| VOLTS: | 460 |
| SERVICE FACTOR: | 1.15 |
| EFFICIENCY: | |
| S.F. | 95.3 |
| FULL | 95.4 |
| 3/4 | 96.1 |
| 1/2 | 95.8 |
| 1/4 | 93.6 |
| POWER FACTOR: | |
| S.F. | 84.8 |
| FULL | 84.6 |
| 3/4 | 82.4 |
| 1/2 | 75.7 |
| 1/4 | 55.8 |
| NO LOAD | 3.6 |
| LOCKED ROTOR | 25.0 |
| AMPS: | |
| S.F. | 266.0 |
| FULL | 232.0 |
| 3/4 | 177.0 |
| 1/2 | 129.0 |
| 1/4 | 90.0 |
| NO LOAD | 71.5 |
| LOCKED ROTOR | 1498.5 |
| NEMA CODE LETTER | G |
| NEMA DESIGN LETTER | B |
| FULL LOAD RPM | 1190 |
| NEMA NOMINAL EFFICIENCY | 95.4 |
| GUARANTEED EFFICIENCY | 94.5 |
| MAX KVAR | 48.4 |
| SAFE STALL TIME-HOT (SEC.) | 30 |
| SOUND PRESSURE (DBA @ 1M) | 82.0 |
| TORQUES: | |
| BREAKDOWN (%) F.L.) | 241 |
| LOCKED ROTOR (% F. L.) | 120 |
| FULL LOAD (LB-FT) | 883.1 |

DATE: 3/30/00

*THE ABOVE DATA IS TYPICAL UNLESS NOTED OTHERWISE*

571201

Nameplate Data Listing


Date: 3/29/00

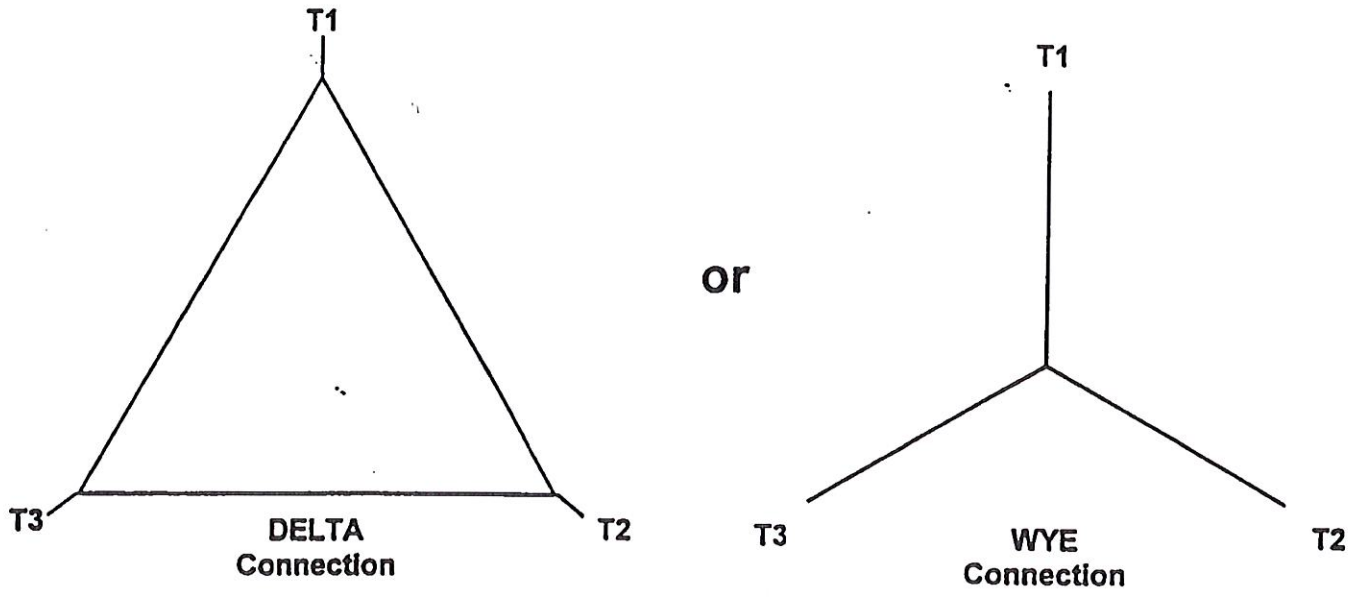
Item Number. . . . HURU 8VM NAMEPLATE,BLANK
Order Number . . . 99059225 SO Line 1.000 W.O. Number. 2446410 WO
Effective Date . 03292000
Nameplate Blank. . 422707-001 Nameplate Blank P/N

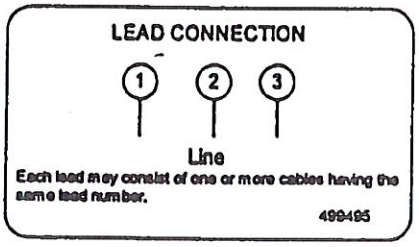
| | |
|---|---|
| Motor Frame Size. . . . . | 449 |
| Frame Alpha Suffix. . . . . | TP |
| Motor Type Code . . . . . | HUSI |
| Enclosure . . . . . | DP |
| SHAFT/LWR Bearing . . . . . | 6219-J |
| LWR Bearing Quantity. . . . | 1 |
| OPP/UPR Bearing . . . . . | 7226 BCB |
| UPR Bearing Quantity. . . . | 1 |
| Phase . . . . . | 3 |
| Maximum Ambient . . . . . | 40 C |
| Insulation Class. . . . . | F |
| Duty Cycle. . . . . | CONT |
| Horsepower . . . . . | 200 |
| RPM. . . . . | 1190 |
| Voltage 1. . . . . | 460 |
| Full Load Amps 1 . . . . . | 232.0 |
| Service Factor . . . . . | 1.15 |
| Design . . . . . | B |
| Code . . . . . | G |
| NNE . . . . . | 95.4 |
| Power Factor . . . . . | 84.6 |
| Hertz. . . . . | 60 |
| OPP/Upper Oil Capacity. . . | 12 QT/11.4 L |
| SHAFT/Lower Oil Capacity. . | GREASE |
| Vertical Thrust Percentage. . | 100% HT |
| VFD Voltage 1 . . . . . | 460 |
| VFD Full Load Amps 1. . . . | 243.6 |
| VFD Torque 1. . . . . | 883.1 |
| VFD Load Type 1 . . . . . | VT/PWM |
| VFD Hertz Range 1 . . . . . | 6-60 |
| VFD Speed Range 1 . . . . . | 120-1200 |
| VFD Service Factor. . . . . | 1.00 |
| + Motor Weight (LBS). . . . | 2400 |
| + Thermal Protect - Windings. | OVER TEMP PROT 2 |
| + Non Reverse Ratchet . . . . | NRR |
| + Notes (Conn Decal / Plate). | WD=499495 |
| AUX Decal/Plate 1 & 2 . . . | 422689 |

*** Typical Data Under SineWave Power ***

# 499495

## Motor Wiring Diagram




To reverse direction of rotation interchange connections L1 and L2.

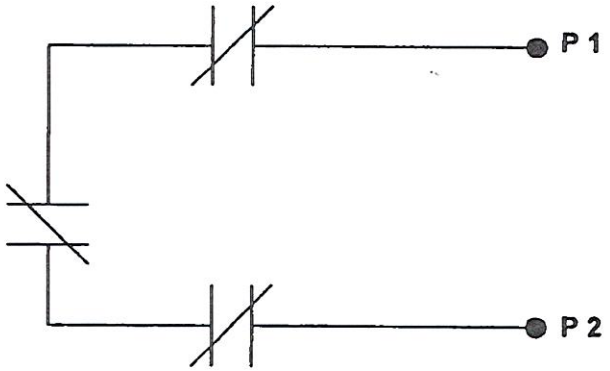
Each lead may be comprised of one or more cables.
Each cable will be marked with the appropriate lead number.

EFFECTIVE: 2/27/96
SUPERCEDES: X736818, 98441, 176879, 264136
Connection Plate: 499495
Connection Decal: 912113

834066

**NORMALLY CLOSED (N.C.) THERMOSTATS:**

1. MOTOR IS EQUIPPED WITH QTY-3 (1 PER PHASE) NORMALLY CLOSED THERMOSTATS IN THE MOTOR WINDING. THERMOSTATS ARE SET TO OPEN AT HIGH TEMPERATURE.
2. THERMOSTATS MUST NOT BE USED TO SWITCH ABOVE 18 AMPS @ 24 VDC OR 12 AMPS @ 230 VAC.

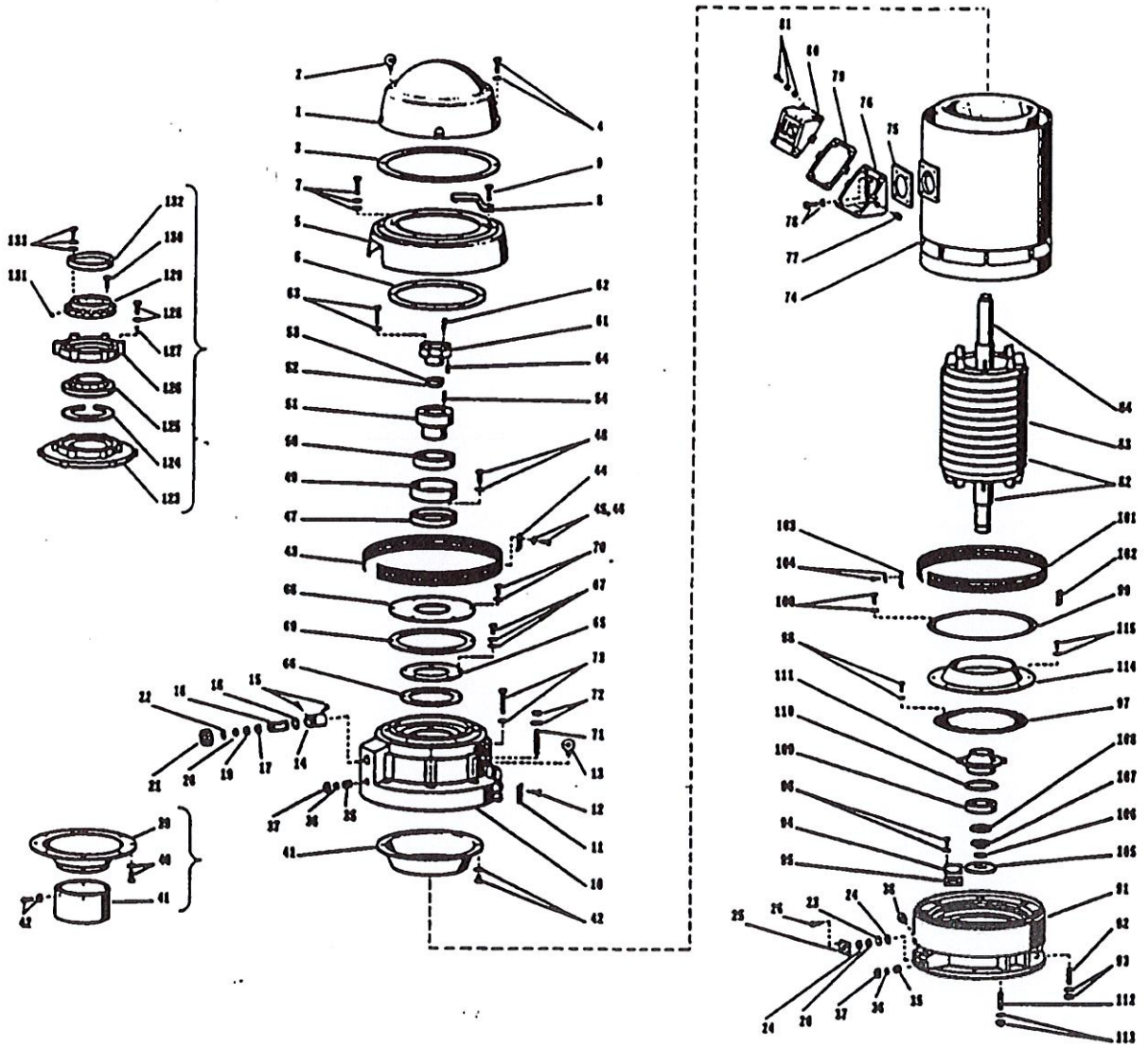



**NORMALLY CLOSED THERMOSTATS**

| ACCESSORY LISTING |
| --- |
| QTY-3 N.C. THERMOSTATS |
| CUSTOMER CONNECTION DRAWING |

REV. 1/24/96-ODS

# FRAME SERIES 449 THRU 8000 - -TYPE HU, HUE, HV4, HVE4, HVS4, RV4, RVE4, RVS4)



| ITEM NO | QTY | NAME OF PART |
|---|---|---|
| 1 | 1 | Canopy cap |
| 2 | 2 | Eyebolt (Not used on frame 5006P, PH & 5008 P, PH) |
| 3 | 1 | Gasket |
| 4 | 4 | Hex head cap screw & lockwasher |
| 5 | 1 | Bracket cover (Used on frame 6808P, PH) |
| 6 | 1 | Gasket (Used on frame 6808P, PH) |
| 7 | 6 | Hex head cap screw, plain & lockwasher (Used on frame 6808P, PH ) |
| 8 | 1 | Locking arm |

| ITEM NO | QTY | NAME OF PART |
|---|---|---|
| 9 | 1 | Hex head cap screw |
| 10 | 1 | Upper bracket assembly |
| 11 | 2 | Safety plate (Used on frame 6808P, PH ) |
| 12 | 2 | Flat head cap screw (Used on frame 6808P, PH) |
| 13 | 2 | Eyebolt (Used on frame 6808P, PH) |
| 14 | 2 | Oil fill drawer housing ((6808PH & Qty. 1 on 6808P) |
| 15 | 4 | Flat head machine screw (6808PH & Qty. 2 on 6808P) |

PR[illegible]:
Pa[illegible]ng distributors: refer to your USEM renewal parts numerical index.
All o[illegible] refer to your nearest USEM parts stocking distributor.

# RENEWAL PARTS

## FRAME SERIES 449 THRU 8000 - -TYPE HU, HUE, HV4, HVE4, HVS4, RV4, RVE4, RVS4)

| ITEM NO | QTY | NAME OF PART |
|---|---|---|
| 16 | 2 | Oil fill drawer (6808PH & Qty. 1 on 6808P) |
| 17 | 2 | Lock ring (6808PH & Qty. 1 on 6808P) |
| 18 | 2 | "O" ring (6808PH & Qty. 1 on 6808P) |
| 19 | 2 | Oil drawer filter assembly (6808PH & Qty. 1 on 6808P) |
| 20 | 2 | Sight gauge window |
| 21 | 2 | Ferrule (6808PH & Qty. 1 on 6808P) |
| 22 | 2 | "O" ring (6809PH & Qty. 1 on 6808P) |
| 23 | 2 | Reflector disc (Qty. 1 on 6808P, not used on 6808PH) |
| 24 | 4 | Gasket (Qty. 2 on 6808P, not used on 6808PH) |
| 25 | 2 | Special housing (Qty. 1 on 6808P, not used on 6808PH) |
| 26 | 8 | Oval head screw (Qty. 4 on 6808P, not used on 6808PH) |
| 27–34 | – | NOT USED ON THIS ASSEMBLY |
| 35 | 2 | Pipe nipple |
| 36 | 2 | Gasket |
| 37 | 2 | Drain cap |
| 38 | 2 | Special plug (Fill)(Qty. 1 on 6808P, PH) |
| 39 | 1 | Cast air deflector(Used on frame 6808P,PH) |
| 40 | 8 | Hex head cap screw & lockwasher (Used on frame 6808P, PH) |
| 41 | 1 | Air deflector |
| 42 | 6 | Screw & lockwasher (Qty. 8 on 6808P, PH) |
| 43 | 1 | Grill |
| 44 | 1 | Grill cleat (Qty. 5 on 6809P, PH) |
| 45 | 2 | Hex head cap screw & lockwasher(Qty. 10 on 6808P,PH. Not used on frames 5808P, PH & 5809P, PH) |
| 46 | 16 | Pan head machine screw (Qty. 8 on 6006P, PH & 6008P, PH. Not used on frame 6808P, PH) |
| 47 | 1 | Metering plate |
| [illegible] | 1 | Hex head cap screw & lockwasher (Not used on frame 6808P, PH) |
| 49 | 1 | Bearing spacer |
| 50 | 2 | Ball bearing (Refer to section 775) |
| 51 | 1 | Bearing mounting |
| 52 | 1 | Lockwasher (Sold with item no. 53) |
| 53 | 1 | Lock nut (Sold with item no. 52) |
| 54 | 1 | Square key |
| 55–60 | – | NOT USED ON THIS ASSEMBLY |
| 61 | 1 | Coupling HU only |
| 62 | 1 | Gib key |
| 63 | 2 | Hex head cap screw & lockwasher (Qty. 3 on 6006P, PH & 6008P, PH) |
| 64 | 4 | Slotted headless screw (Qty. 3 on 6006P, PH & 6008P, PH) |
| 65 | 1 | Oil baffle (Used on frame 6808P, PH) |
| 66 | 1 | Gasket (Used on frame 6808P, PH) |
| 67 | 5 | Hex head cap screw, plain & lockwasher (Used on frame 6808P, PH) |
| 68 | 1 | Dust ring |
| 69 | 1 | Gasket |
| 70 | 6 | Hex head cap screw & plain washer (Qty. 8 on 6006P, PH & 6008P, PH) |
| 71 | 4 | Stud (Qty. 8 on 6808P, PH. Not used on frames 5808P, PH & 5809P, PH) |
| 72 | 4 | Hex nut & lockwasher (Qty. 8 on 6808P, PH. Not used on frames 5808P, PH & 5809P, PH) |
| 73 | 4 | Hex head cap screw & lockwasher (Not used on frames 5808P, PH & 5809P, PH) |
| 74 | 1 | Wound stator assembly |
| 75 | 1 | Gasket |

| ITEM NO | QTY | NAME OF PART |
|---|---|---|
| 76 | 1 | Outlet box base |
| 77 | 1 | Countersunk hex pipe plug |
| 78 | 4 | Hex head cap screw & lockwasher |
| 79 | 1 | Gasket |
| 80 | 1 | Outlet box cover |
| 81 | 6 | Hex head cap screw, plain & lockwasher |
| 82 | 1 | Rotor assembly (Includes items 83 & 84) |
| 83 | 1 | Rotor core |
| 84 | 1 | Rotor shaft |
| 85–90 | – | NOT USED ON THIS ASSEMBLY |
| 91 | 1 | Bracket assembly |
| 92 | 4 | Stud (Qty. 8 on 6808P, PH) |
| 93 | 4 | Hex nut & lockwasher (Qty. 8 on 6808P, PH) |
| 94 | 1 | Cover plate(Not used on frame 6808P, PH) |
| 95 | 1 | Gasket (Not used on frame 6808P, PH) |
| 96 | 4 | Hex head cap screw & lockwasher(Not used on frame 6808P, PH) |
| 97 | 1 | Screen |
| 98 | 5 | Screw & plain washer (Qty. 8 on 6808P, PH & 5809P, PH. Qty. 7 on 6808P, PH) |
| 99 | 1 | Grill or screen (Not used on frames 5808P, PH & 5809P, PH) |
| 100 | 8 | Hex head cap screw & plain washer (Qty. 16 washers on 6808P, PH. Not used on frames 5808P, PH & 5809P, PH) |
| 101 | 1 | Grill(Used on frame 6808P, PH) |
| 102 | 8 | Grill cleat (Used on frame 6808P, PH) |
| 103 | 1 | Joint grill cleat (Used on frame 6808P, PH) |
| 104 | 18 | Round head screw & lockwasher(Used on frame 6808P, PH) |
| 105 | 1 | Oil baffle plate |
| 106 | 1 | Dust sealing ring |
| 107 | 1 | Snap ring |
| 108 | 1 | Bearing space (Used on frames 5808P, PH & 5809P, PH) |
| 109 | 1 | Ball bearing (Refer to section 775) |
| 110 | 1 | "O" ring |
| 111 | 1 | Bearing cap |
| 112 | 4 | Stud |
| 113 | 4 | Cap or hex nut & lockwasher |
| 114 | 1 | Air deflector |
| 115 | 8 | Screw & lockwasher |
| 116–122 | – | NOT USED ON THIS ASSEMBLY |
| | | FOR NON–REVERSE RATCHET(OPTIONAL), OMIT ITEMS 68,69(6808P, PH only) 8, 9 (5006P, PH & 5008P, PH) & ADD: |
| 123 | 1 | Ratchet adaptor assembly (Not used on frame 6808P, PH) |
| 124 | 1 | "C" spring |
| 125 | 1 | Stationary ratchet assembly |
| 126 | 1 | Pressure plate assembly |
| 127 | 6 | Compression spring (Qty. 4 on 6006P, PH & 6008P, PH) |
| 128 | 6 | Hex head cap screw & plain washer (Qty. 4 on 6006P, PH & 6008PH) |
| 129 | 1 | Rotating ratchet |
| 130 | 4 | Hex head cap screw (Qty. 3 on 6006P, PH & 6008P, PH) |
| 131 | 12 | Steel ball (Qty. 14 on 5808P, PH & 5809P, PH. Qty. 16 on 6808P, PH) |
| 132 | 1 | Ball retaining ring |
| 133 | 6 | Hex head cap screw, plain & lockwasher (Qty. 7 on 6808P, PH & 5809P, PH, Qty. 8 on 6808P, PH) |

PRICES:
P[illegible]ocking distributors refer to your USEM renewal parts numerical index
[illegible]: refer to your nearest USEM parts stocking distributor

# Installation, Operation & Maintenance Instructions
# Pump and Motor