CITY OF GRAND ISLAND

Working Together for a Better Tomorrow. Today.

SPECIFICATION PACKAGE

for

BOILER FAN MOTOR REFURBISHMENT

Bid Opening Date/Time
Tuesday, October 12, 2010 @ 2:00 p.m.
City of Grand Island, City Hall
100 East 1st Street, P.O. Box 1968
Grand Island, NE 68802-1968

Contact
City of Grand Island – Utilities Department
Platte Generating Station
308/385-5496

Date issued: September 16, 2010

ADVERTISEMENT TO BIDDERS
FOR
BOILER FAN MOTOR REFURBISHMENT
FOR
CITY OF GRAND ISLAND, NEBRASKA

Sealed bids will be received at the office of the City Clerk, 100 E. First Street, P.O. Box 1968, Grand Island, Nebraska 68802, until Tuesday, October 12, 2010 at 2:00 p.m. local time for Boiler Fan Motor Refurbishment, FOB the City of Grand Island, freight prepaid. Bids will be publicly opened at this time in the Grand Island City Hall Council Conference Room #1 located on 1st floor of City Hall. Submit an original and three copies. Bid proposal package is also available on-line at www.grand-island.com under Business-Bid Calendar. Bids received after the specified time will be returned unopened to sender.

The successful bidder will be required to comply with fair labor standards as required by Nebraska R.R.S.73-102 and comply with Nebraska R.R.S. 48-657 pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. Successful bidder shall maintain a drug free workplace policy. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

Each bidder shall submit with the bid a certified check, a cashiers check, or bid bond payable to the City Treasurer in an amount no less than five percent (5%) of the bid price which shall guarantee good faith on the part of the bidder and the entering into a contract within fourteen (14) days at the bid price if accepted by the City. **Your certified check, cashier's check or bid bond must be submitted in a separate envelope attached to the outside of the envelope containing the bid. Each envelope must be clearly marked indicating its contents. Failure to submit the necessary qualifying information in clearly marked and separate envelopes will result in your bid not being opened or considered.** Surety companies authorized to do business in the State of Nebraska must issue bid bonds.

Bids will be evaluated by the Purchaser based on price, schedule, quality, adherence to schedule, plan and specifications, economy and efficiency of operation, experience and reputation of the bidder, ability, capacity, and skill of the bidder to perform contract required and adaptability of the particular items to the specific use intended.

The Purchaser reserves the right to reject any or all bids, to waive irregularities therein, and to accept whichever bid that may be in the best interest of the City, at its sole discretion.

No bidder may withdraw his bid for a period of thirty (30) days after date of bid opening.

RaNae Edwards, City Clerk

CHECKLIST FOR BID SUBMISSION

FOR

BOILER FAN MOTOR REFURBISHMENT

Bids must be received by the City Clerk before *2:00 p.m. on Tuesday, October 12, 2010*.

The following items must be completed for your bid to be considered.

- ❑ A signed original and three copies of the bidding documents.
- ❑ A reference list of at least three motor repairs of similar scope and complexity.
- ❑ Firm lump sum pricing; firm unit pricing in case adjustments are necessary, and breakout of sales tax pricing.
- ❑ A proposed repair and delivery schedule.
- ❑ A detailed description of the proposed repair.
- ❑ Selection of Nebraska Sales Tax Option.
- ❑ Acknowledgment of Addenda Number(s) _____.
- ❑ Bidders must complete and sign the Bid Data Form provided in these Documents. All blank spaces must be filled in. Bidders shall acknowledge receipt of any Addenda information on the Bid Data Form.
- ❑ A certified check, cashiers check or bid bond in a separate envelope attached to the **outside of the envelope containing the bid**. Each envelope must be clearly marked indicating its contents. Failure to submit the necessary qualifying information in clearly marked and separate envelopes will result in your bid not being opened.

  Please check off each item as completed.

_____ _____

Company Signature

Telephone No. _____ Fax No. _____

INSTRUCTIONS TO BIDDERS

1. GENERAL INFORMATION.

   The following instructions outline the procedure for preparing and submitting Bids. Bidders must fulfill all requirements as specified in these Documents.

2. TYPE OF BID.

   Bidders shall be required to submit prices for all items listed in the Bid Data Form.

3. PREPARATION OF BIDS.

   Bidders shall use only the Bid Data Form provided in these Documents. All blank spaces in the Bid Data Form, must be filled in, preferably in BLACK ink, in both words and figures where required. No changes to the wording or content of the forms is permitted. Written amounts shall govern in case of discrepancy between the amounts stated in writing and the amounts stated in figures.

   Prices stated shall be f.o.b. with freight and full insurance paid by Bidder, to the job site located in Grand Island.

   The Bidder shall acknowledge receipt of all addenda in the Bid Data Form. Bids received without acknowledgement or without the Addendum enclosed will be considered informal.

4. SUBMISSION OF BIDS.

   All Bids must be submitted intact not later than the time prescribed, at the place, and in the manner set forth in the ADVERTISEMENT FOR BIDS. Bids must be made on the Bid Data Form provided here in. Each Bid must be submitted intact in a sealed envelope, so marked as to indicate its contents without being opened, and delivered in person or addressed and mailed in conformance with the instructions in the ADVERTISEMENT FOR BIDS.

5. BID SECURITY.

   Bids must be accompanied by cash, a certified check, or cashier's check drawn on a bank which is insured by the Federal Deposit Insurance Corporation, or a bid bond issued by a Surety authorized to issue such bonds in the state where the Work is located, in the amount of 5 percent of the bid amount payable to OWNER. This bid security shall be given as a guarantee that the Bidder will not withdraw his Bid for a period of 30 days after bid opening, and that if awarded the Contract, the successful Bidder will execute the attached Contract and furnish a properly executed Performance Bond and Payment Bond each in the full amount of the Contract price within the time specified.

   The Attorney-in-Fact that executes this bond in behalf of the Surety must attach a notarized copy of his power of attorney as evidence of his authority to bind the Surety on the date of execution of the bond. Where State Statue requires, certification by a resident agent shall also be provided.

6. RETURN OF BID SECURITY.

   Within 15 days after the award of the Contract, the OWNER will return the bid securities to all Bidders whose Bids are not to be further considered in awarding the contract. All other retained bid securities will be held until the Contract has been finally executed, after which all bid securities, other than Bidders' bonds and guarantees which have been fortified, will be returned to the respective Bidders whose Bids they accompanied.

7. BASIS OF AWARD.

   The award will be made by the OWNER on the basis of the Bid from the lowest responsive, responsible Bidder which, in the OWNER's sole and absolute judgment will best serve the interest of the OWNER. All Bids will be considered on the following basis:

Conformance with the terms of the Bid Documents.	Bid price. Cost of installation.

Suitability to project requirements. Responsibility and qualification of Bidder.
Delivery time.

The OWNER reserves the right to reject all Bids, or any Bid not in conformance with the intent of the Bid Documents, and to waive any informalities and irregularities in said Bids.

8. EXECUTION OF CONTRACT.

The successful Bidder shall, within 15 days after receiving notice of award, sign and deliver to the OWNER the Contract hereto attached together with the acceptable bonds as required in these Bid Documents. Within 15 days after receiving the signed Contract with acceptable bond(s) from the successful Bidder, the OWNER's authorized agent will sign the Contract. Signature by both parties constitutes execution of the Contract.

9. PERFORMANCE AND PAYMENT BONDS.

The successful Bidder shall file with the OWNER Performance and Payment Bonds in the full amount (100 percent) of the Contract price, as security for the faithful performance of the Contract and the payment of all persons supplying labor and materials for the Work under this Contract, and to cover all guarantees against defective workmanship or materials, or both, for a period of 1 year after the date of final acceptance of the Work by the OWNER. The Surety furnishing these bonds shall have a record of service satisfactory to the OWNER, be authorized to do business in the State where the OWNER's project is located and shall be named on the current list of approved Surety Companies, acceptable on Federal bonds as published by the Audit Staff, Bureau of Accounts, U.S. Treasury Department.

The Attorney-in-Fact (Resident Agent) who executes these bonds on behalf of the Surety must attach a notarized copy of his power-of-attorney as evidence of his authority to bind the Surety on the date of execution of the bond.

10. TIME OF COMPLETION.

The time of completion of the Work to be performed under this Contract is the essence of the Contract. The time allowed for the completion of the Work is stated in the Bid Data Form.

11. GRATUITIES AND KICKBACKS.

City Code states that it is unethical for any person to offer, give, or agree to give any City employee or former City employee, or for any City employee or former City employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or proposal therefor. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

12. FISCAL YEAR.

The City of Grand Island, Nebraska operates on a fiscal year beginning October 1st and ending on the following September 30th. It is understood and agreed that any portion of this agreement which will be performed in a future fiscal year is contingent upon the City Council adopting budget statements and appropriations sufficient to fund such performance.

CONTRACT AGREEMENT

THIS AGREEMENT made and entered into by and between **[SUCCESSFUL BIDDER]**, hereinafter called the Contractor, and the **CITY OF GRAND ISLAND, NEBRASKA**, hereinafter called the City.

WITNESSETH:

THAT, WHEREAS, in accordance with law, the City has caused contract documents to be prepared and an advertisement calling for bids to be published for *BOILER FAN MOTOR REFURBISHMENT;* and

WHEREAS, the City, in the manner prescribed by law, has publicly opened, examined, and canvassed the bids submitted, and has determined the aforesaid Contractor to be the lowest responsive and responsible bidder, and has duly awarded to the said Contractor a contract therefore, for the sum or sums named in the Contractor's bid, a copy thereof being attached to and made a part of this contract;

NOW, THEREFORE, in consideration of the compensation to be paid to the Contractor and of the mutual agreements herein contained, the parties have agreed and hereby agree, the City for itself and its successors, and the Contractor for itself, himself, or themselves, and its, his, or their successors, as follows:

ARTICLE I. That the following documents shall comprise the Contract, and shall together be referred to as the "Agreement" or the "Contract Documents";

1. This Contract Agreement.
2. City of Grand Island's Specification for this project.
3. [NAME OF SUCCESSFUL BIDDER] bid signed and dated [DATE OF BID].

In the event of any conflict between the terms of the Contract Documents, the provisions of the document first listed shall prevail.

ARTICLE II. That the contractor shall (a) furnish all tools, equipment, superintendence, transportation, and other construction materials, services and facilities; (b) furnish, as agent for the City, all materials, supplies and equipment specified and required to be incorporated in and form a permanent part of the completed work; (c) provide and perform all necessary labor; and (d) in a good substantial and workmanlike manner and in accordance with the requirements, stipulations, provisions, and conditions of the contract documents as listed in the attached General Specifications, said documents forming the contract and being as fully a part thereof as if repeated verbatim herein, perform, execute, construct and complete all work included in and covered by the City's official award of this contract to the said Contractor, such award being based on the acceptance by the City of the Contractor's bid;

ARTICLE III. That the City shall pay to the Contractor for the performance of the work embraced in this contract and the Contractor will accept as full compensation therefore the sum (subject to adjustment as provided by the contract) of **[DOLLAR AMOUNT] ($00.00)** for all services, materials, and work covered by and included in the contract award and designated in the foregoing Article II; payments thereof to be made in cash or its equivalent in the manner provided in the General Specifications.

The total cost of the Contract includes:

Base Bid:	$	.00
Sales Tax on Materials/Equipment:	$	.00
Sales Tax on Labor:	$	.00
Total	$	.00

The City of Grand Island, Nebraska operates on a fiscal year beginning October 1st and ending on the following September 30th. It is understood and agreed that any portion of this agreement which will be performed in a future fiscal year is contingent upon the City Council adopting budget statements and appropriations sufficient to fund such performance.

ARTICLE IV. The Contractor hereby agrees to act as agent for the City in purchasing materials and supplies for the City for this project. The City shall be obligated to the vendor of the materials and supplies for the purchase price, but the Contractor shall handle all payments hereunder on behalf of the City. The vendor shall make demand or claim for payment of the purchase price from the City by submitting an invoice to the Contractor. Title to all materials and supplies purchased hereunder shall vest in the City directly from the vendor. Regardless of the method of payment, title shall vest immediately in the City. The Contractor shall not acquire title to any materials and supplies incorporated into the project. All invoices shall bear the Contractor's name as agent for the City. This paragraph will apply only to these materials and supplies actually incorporated into and becoming a part of the finished product of the BOILER FAN MOTOR REFURBISHMENT.

ARTICLE V. That the Contractor shall start work as soon as possible after the contract is signed and the required bonds and insurance are approved, and that the Contractor shall deliver the equipment, tools, supplies, and materials F.O.B. Platte Generating Station, and complete the work on or before ***JANUARY 31, 2011***.

ARTICLE VI. The Contractor agrees to comply with all applicable State fair labor standards in the execution of this contract as required by Section 73-102, R.R.S. 1943. The Contractor further agrees to comply with the provisions of Section 48-657, R.R.S. 1943, pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. During the performance of this contract, the Contractor and all subcontractors agree not to discriminate in hiring or any other employment practice on the basis, of race, color, religion, sex, national origin, age or disability. The Contractor agrees to comply with all applicable Local, State and Federal rules and regulations. The Contractor agrees to maintain a drug-free workplace policy and will provide a copy of the policy to the City upon request. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

GRATUITIES AND KICKBACKS

City Code states that it is unethical for any person to offer, give, or agree to give any City employee or former City employee, or for any City employee or former City employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or

subcontract, or to any solicitation or proposal therefor. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

[SUCCESSFUL BIDDER]

By_____ Date _____

Title_____

CITY OF GRAND ISLAND, NEBRASKA

By_____ Date _____
Mayor

Attest:_____
City Clerk

The contract is in due form according to law and hereby approved.

_____ Date _____
Attorney for the City

(All bids must be submitted on this form)

BOILER FAN MOTOR REFURBISHMENT

BID DATA FORM

CITY OF GRAND ISLAND
GRAND ISLAND, NE

The undersigned bidder, having examined all specifications and other bidding documents, and all addenda thereto, and being acquainted with and fully understanding all conditions relative to the specified materials and equipment, hereby proposes to repair two (2) motors and deliver them FOB the City of Grand Island, freight prepaid, at the following price:

ITEM DESCRIPTION		EXTENDED COST
Base Bid (3000 HP Motor):		
Disassembly, inspection, assembly and testing	$_____	
Sales tax*	$_____	
Total Base Bid:		$_____
Base Bid (1250 HP Motor):		
Disassembly, inspection, assembly and testing	$_____	
Sales tax*	$_____	
Total Base Bid:		$_____

TOTAL BASE BID (BOTH MOTORS)…….. $_____

Options (3000 HP Motor):		
Rewind motor	$_____	
Sales tax*	$_____	
Total Bid:		$_____
Replace laminations	$_____	
Sales tax*	$_____	
Total Bid:		$_____
Machine to true up rotor	$_____	
Sales tax*	$_____	
Total Bid:		$_____
Line bore frame	$_____	
Sales tax*	$_____	
Total Bid:		$_____

Options (1250 HP Motor):		
Rewind motor	$_____	
Sales tax*	$_____	
Total Bid:		$_____
Replace laminations	$_____	
Sales tax*	$_____	
Total Bid:		$_____
Machine to true up rotor	$_____	
Sales tax*	$_____	
Total Bid:		$_____
Line bore frame	$_____	
Sales tax*	$_____	
Total Bid:		$_____

*** If bidder fails to include sales tax in their bid price or takes exception to including sales tax in their bid price, the City will add a 7.0% figure to the bid price for evaluation purposes; however, the City will only pay actual sales tax due.**

According to Nebraska Sales and Use Tax Requirements, Section 1-017, Contractors, check which option you have selected to file with the Nebraska Department of Revenue:

Nebraska law provides a sales and use tax exemption on contractor labor charges for the construction, repair, or annexation of any structure used for the generation, transmission, or distribution of electricity. Separately stated contractor labor would be exempt, all materials are taxable according to the contractor's option.

Option 1 (Section 1-017.05)_____ Option 2 (Section 1-017.06)_____ Option 3 (Section 1-017.07)_____

0 If the Nebraska sales and use tax election is not filed or noted above, the contractor will be treated as a retailer under Option 1 for sales and use tax purposes.

☐ By checking this box, Bidder acknowledges that Addenda Number(s) _____ were received and considered in Bid preparation.

☐ By checking this box, Bidder acknowledges the specified completion date of the project is **January 31, 2011.**

_____

Bidder Company Name Date

_____

Company Address City State Zip

_____

Print Name of Person Completing Bid Signature

Telephone No._____ Fax No._____

☐ By checking this box, Bidder acknowledges there are Exceptions noted to the bid.
NOTE: Any exceptions to specifications must be fully explained on a separate sheet attached to bid.

CITY OF GRAND ISLAND

Working Together for a Better Tomorrow, Today.

REQUEST FOR BIDS - GENERAL SPECIFICATIONS

The Bid shall be in accordance with the following and with all attached BID DATA and DETAILED SPECIFICATIONS.

All prices are to be furnished and installed FOB, Grand Island, Nebraska. **All prices shall be firm, and shall include all sales and use taxes as lawfully assessed under laws and regulations of the State of Nebraska.** * If bidder fails to include sales tax in their bid price or takes exception to including sales tax in their bid price, the City will add a 7.0% figure to the bid price for evaluation purposes; however, the City will only pay actual sales tax due.

Bids shall include the following on the **outside** of the mailing envelope: **"Boiler Fan Motor Refurbishment".** All sealed bids are due no later than **Tuesday, October 12, 2010 at 2:00 p.m. local time**. Submit **an original and three copies** of the bid to:

Mailing Address: City Clerk
City Hall
P. O. Box 1968
Grand Island, NE 68802

Street Address: City Clerk
City Hall
100 E. First Street
Grand Island, NE 68801

Bids will be opened at this time in the City Hall Council Conference Room #1 located on 1st floor of City Hall. Any bid received after the specified date will not be considered. No verbal bid will be considered.

Bids will be evaluated by the Purchaser based on price, schedule, quality, adherence to schedule, plan and specifications, economy and efficiency of operation, experience and reputation of the bidder, ability, capacity, and skill of the bidder to perform contract required and adaptability of the particular items to the specific use intended.

The successful bidder will be required to comply with fair labor standards as required by Nebraska R.R.S.73-102 and comply with Nebraska R.R.S. 48-657 pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. Contractor shall maintain a drug free workplace policy. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

The equipment and materials must be new, the latest make or model, unless otherwise specified. Prior to approving the invoice for payment, the City reserves the right to thoroughly inspect and test the equipment to confirm compliance with specifications. Any equipment or material which does not meet the City's requirements will be returned at vendor's expense for correction. The invoice will be paid after approval at the next regularly scheduled Council meeting and occurring after departmental approval of invoice; the City Council typically meets the second and fourth Tuesday of each month. Invoices must be received well in advance of Council date to allow evaluation and processing time.

Each bidder shall submit with the bid a certified check, a cashiers check, or bid bond payable to the City Treasurer in an amount no less than five percent (5%) of the bid price which shall guarantee good faith on the part of the bidder and the entering into a contract within fourteen (14) days at the bid price if accepted by the City. **Your certified check, cashier's check or bid bond must be submitted in a separate envelope attached to the outside of the envelope containing the bid. Each envelope must be clearly marked indicating its contents. Failure to submit the necessary qualifying information in clearly marked and separate envelopes will result in your bid not being opened or considered.** Surety companies authorized to do business in the State of Nebraska must issue bid bonds.

Successful bidder shall comply with the City's insurance requirements; performance and payment bonds are required for this project as outlined in the Detailed Specifications and Instructions to Bidders.

All bids shall be valid for at least thirty (30) working days after the bid deadline for evaluation purposes.

All bids must be on the bid form and must be signed and dated to be accepted. Please contact Rodger Zawodniak at 308-385-5497, for questions concerning this specification.

BOILER FAN MOTOR REFURBISHMENT
DETAILED SPECIFICATIONS

SCOPE: The Contractor shall supply all material, labor, tools, equipment, supervision, technical expertise and shipping to refurbish the following two (2) motors at the Platte Generating Station:

- (1) 3000 HP General Electric motor
- (1) 1250 HP General Electric motor

DESCRIPTION: The Platte Generating Station is located at 1035 W. Wildwood Drive, two miles south of Grand Island, Nebraska. The boiler induced draft fan is driven by a 3000 HP General Electric motor. The boiler forced draft fan is driven by a 1250 HP General Electric motor. Both motors have endured 30 years of continuous service and are being replaced with new motors. The intent is to refurbish these motors and hold them as spares. As these motors are currently in-service, no major damage is expected. See the attached motor data sheets.

CODES AND STANDARDS: The material and workmanship shall conform to the applicable standards of ANSI, IEEE, NEMA, EASA, and AFBMA. In case of conflict between any of the industry standards relative to the requirements covered in this specification, the requirements of NEMA shall govern.

REQUIREMENTS: The Contractor shall inspect and repair the motors as follows:

1 VISUAL INSPECTION

a) Motors shall be visibly inspected upon receipt. Record all nameplate data, owners ID tag, shaft position, their location and position. Also make note of any auxiliary electrical devices and how they are wired.

b) Any obvious physical damage or missing parts shall also be recorded.

2 INITIAL INSPECTION AND TESTS

a) Photos shall be taken to serve as records of damage, missing items or attached or installed gearboxes, pulleys, and couplings, other than items compromising the motor itself.

b) A megger and surge comparison test shall be conducted prior to disassembly.

3 DISSASSEMBLY AND TESTS

a) The physical and electrical condition of the motor shall be evaluated, based upon the initial inspections and test results. The condition of the motor shall be evaluated and documented. Individual parts shall be checked to see that they are in good mechanical condition and that normal wear has not exceeded good engineering standards. All parts shall be tagged, marked, or put into a parts pan to keep them segregated and readily identifiable.

b) The “as found” condition and/or dimensions of bearing fits, housings, seal surfaces, key ways, pulley surfaces, bearing journals, etc. shall be recorded.

c) The positions, locations, and direction of any seals, spacers, washers, lock nuts, fans, sight glasses, fill tubes, RTD’s, heaters, sensors, junction boxes, terminal strips, etc. shall be noted.

d) Both the stator and rotor shall be examined for cracks, burns, signs of rubbing, plugged vent ducts, loose or damaged iron, burned or damaged wedges, broken ties, brittle insulation. The rotor shall also be examined for any loose or broken bars, and cracked end rings, security of any fans and rotor care itself to the shaft. The condition of the leads and lugs shall also be checked and all findings recorded.

e) At this point the motor repair shall be evaluated. The City shall be notified of the extent and cost of repair. Upon written approval from the City, repairs shall proceed.

f) If the motor is not being rewound, all parts and windings will be cleaned free of dirt, grit, grease and oil with appropriate cleaning agents. Stators will be cleaned using either air pressure, solvent, steam, pressurized water or any combination thereof deemed necessary to clean according to normal shop practices. Any stator cleaned with the use of water shall be baked dry. A drying process shall be used which eliminates all moisture. After being dried, a megger, hi-pot, and surge comparison test shall be conducted and recorded.

g) If the motor is to be rewound, a core loss test shall be conducted prior to the burn out process and winding removal.

h) All winding dimensions shall be measured and recorded. The connection end of the winding shall be cut off, labeled and put aside for future reference in the winding process.

i) The windings will be prepared for removal from the core by being placed in a controlled heat oven. The stator core temperature shall not exceed 750 degrees F.

j) The old windings will be removed in such a manner as not to harm core or laminations. The slots shall be cleaned and bars removed. The core shall also be checked for loose or damaged laminations.

k) A second core loss test shall be conducted and the results recorded and compared to the initial readings. Any significant deterioration in values shall be corrected with appropriate repair methods. At this point the current output of the core loss tester shall be raised to sufficient level to check for hot spots.

4 REWIND

a) Stators that are rewound shall have the same cross sectional area of wire, number of turns per coil, number of coils, and coil connections as original winding. This data and the flux density shall be verified as correct by using a computerized winding data check program. The City shall be notified and advised if a winding is not within the parameters. No winding data shall be changed without City approval. The winding data test information shall be included in the repair history file. A copy of the computer printout shall be supplied to the City.

b) The insulation system used in rewound motors shall be a Class H system.

c) Flexible motor leads shall be replaced during a stator rewind. Replacement leads shall be stranded copper wire with a 150 degree C or greater rated insulation, appropriately sized for the motor rated voltage and horsepower, lead length shall be 8” to 10” unless otherwise specified.

d) The lead wires shall be protected from mechanical damage and sharp edges inside the motor and connection box. Lead connections and coil jumpers shall be bundled, tightly laced and secured to prevent movement and abrasion that could result in premature winding failure. On explosion proof motors, the lead wires shall be potted between the frame and connection box. Lead wires shall terminate with a crimped-on lug unless otherwise specified.

e) All RTD’s heaters, thermals, or other sensing/heating devices shall be reinstalled or replaced with like or equivalent devices unless otherwise specified. If RTD’s are installed in a stator that did not previously have RTD’s, they will be installed between top and bottom coil sides unless instructed otherwise.

f) Replacement RTD’s or any temperature sensing device shall be checked before they are installed in the winding, after rewind and before varnish treatment.

5 FORM COILS

a) All insulation materials except surface insulation on the magnet wire shall be mica based and must be compatible with the VPI treatment. All taping shall be half lap.

b) The minimum coil insulation system shall consist of 3 half lapped tape layers and 3 wrapper layers for the slot section and 3 half lapped tape layers on the end turns.

c) Motors with form wound coils shall have 0.015" thick 24 KV dielectric rated slot liners. They shall also have insulating separators between the top and bottom coils and between the top coil and wedges in all stator slots.

d) Coil end turns shall be supported by using one felt spacer block between each adjacent coil when the knuckle is 6 inches or less from the stator core; by using two evenly spaced felt blocks when the knuckle is 6 to 12 inches from the stator and by using three felt spacer blocks when the knuckle is over 12 inches. Each coil knuckle shall be tied to an end support ring (surge ring) when the knuckle is 12 inches or less from the stator core. When the knuckle is more that 12 inches from the stator core, each coil shall be tied to a second support ring that is approximately 9 inches from the stator core. The end support rings shall be made of steel or epoxy filled fiberglass rope that will become rigid when heat processed. If the stator was originally equipped with steel support rings, the original rings will be reinsulated and reused.

e) All green windings (new windings installed in the stator core that has not yet been varnish processed) shall be tested at scheduled levels using the programmed Advanced Winding Analyzer (Baker surge tester or equivalent). Winding treatment shall be an Epoxy VPI system and the treated winding shall be hi-pot (high potential) tested at full value (2 X rated voltage +1000).

f) Terminal lugs shall be attached to lead cables by crimping or pressure-indenting the lug barrel using a lug sized to suit the lead cable stranding in accordance with recommendation of the lug manufacturer. The crimping tool shall have pressure control such that it is not released from the lug until the minimum recommended crimping force has been applied. Not more than one lead cable may be crimped in any one lug.

g) Windings shall be varnished according to the VPI process using an epoxy varnish. The VPI process shall include monitoring the capacitance of the stator to insure that the winding is completely impregnated. The amount of vacuum, the time under vacuum, the level of pressure and the time under pressure shall be recorded.

6 ROTOR REPAIR

a) If tests or visual inspection indicate a defect in the rotor, it will be so noted in the scope of repair form. The defective rotor will be repaired at the service shop unless the extent of failure is such that it must be repaired at an approved rotor rebuild facility. Repair of the motor shall be put on hold until written authorization is given to proceed with the repair.

b) Any visual damage deemed extraordinary or particularly revealing as to the cause of failure shall be photographed. Copies of the pictures shall be supplied to the customer.

c) After removal of the defective components and cleaning, and prior to bar replacement, the laminated core shall be inspected for damage and a core test shall be performed to determine core insulation condition.

d) Replacement bars and end rings shall duplicate the motor manufacturer's specifications concerning material composition, configuration, dimensions fit, mass, conductivity, tensile strength etc., as applicable.

e) Bar/end ring joining materials shall be compatible with the bar and ring and provide a strong, void free, low resistant joint. Metal Inert Gas (MIG) or Tungsten Inert Gas (TIG) welding shall be used to join aluminum alloy bars and end rings. Brazing shall be used to join copper alloy bars and end rings.

f) After confirming the integrity of the repair(s), cleaning, and dry out, the entire rotor core assembly shall be sealed via dip and bake.

g) The rotor shall be balanced as described in the section on balancing.

h) The rotor assembly shall be painted and finished to prevent rusting of exposed metal. All rotor repairs and test results shall be recorded.

7 BALANCING

a) Balancing shall be performed on reconditioned, repaired, or replaced rotating assemblies. The assembly to be balanced shall be fully configured. Balancing shall be accomplished in two phases for both statue and dynamic correction and will be carried out to the practical limits of the balance machine. Acceptable balance shall be based on final test run of the assembled motor.

b) Balance weights shall be permanently mechanically attached or welded in such a manner that they will not become detached during operation. Corrosion resistant bolts and nuts shall be used, as necessary.

8 ANTI-FRICTION BEARINGS

a) All anti-friction bearings shall be replaced with new bearings of identical design and specifications as the original bearings. SKF bearings shall be used whenever possible.

b) Due diligence shall be exercised when installing bearings to avoid damage. Bearings shall be thoroughly inspected prior to installation to ensure that dust and/or dirt has not attached. In no case shall force be applied to the bearings outer race as a means of installation.

c) The usual method for installing a bearing incorporates an induction heater to expand the bearings inner race. An upper temperature of 250 degrees F shall not be exceeded. When installing the heated bearing on the shaft, care shall be taken to ensure the bearing does not shrink away from the shaft shoulder.

9 SLEEVE BEARINGS

a) Journal to bearing clearance shall be checked and recorded on all sleeve-bearing motors. In the absence of OEM data, or customer specifications, tolerances will be determined by using accepted EASA (Electrical Apparatus Service Association) standards.

b) Bearing shall be fit to the shaft by bluing (or equivalent) and scraping until a 75% contact is evident in the bottom 1/3 of the bearing.

10 BEARING HOUSINGS AND ENDBELLS

a) Normal procedure for repairing bearing housings shall be to use Thermal Arc Spray process. Bushings (sleeving) also may be used to repair housings. In either case, the materials used shall be the same as the end bells or a thermally compatible material with equal or improved characteristics. (e.g., a mild steel bushing in a cast iron endbell.)

b) For the repair of insulated bearing endbells, the bearing housing insert shall be removed and reinsulated with material of equivalent dielectric strength and thickness. Inserts may be repaired as specified above for endbells. If new inserts are required, they will be made with material equivalent to the original.

c) After inserting the insert, the insert to end bell insulation resistance shall be checked and documented.

d) End bell runout TIR measurements shall not exceed the following:
   0.002 inches for internal and shield rabbit to bearing housing.
   0.002 inches for face and rabbit runouts for pilot diameters below 12 inches
   for type C & D flange motors.
   0.004 inches for face and rabbit runouts for pilot diameters 12 inches and larger
   for type C and D flange motors.

11 AUXILIARIES

a) Embedded RTD's or Thermocouples (TC's) shall be replaced with the same type, installed in the same manner, and wired to the same location as the originals.

b) Space heaters, if replaced, shall be the same type and installed in the same locations as the original.

12 ASSEMBLY

a) Upon assembly, bearing configuration shall be the same as when the motor arrived unless otherwise requested. Anti-friction bearings shall be greased with approved, compatible grease or the customers specified grease. Grease reservoir shall be filled approximately 1/3 unless instructed otherwise

b) The oil reservoir shall be filled to standstill level on the sight gage. Operating the motor with the oil level to high prevents the bearing from clearing itself of excess oil. The resulting churning can cause oil loss, high temperature and oil oxidation.

c) All sleeve bearings and any other bearing running in oil shall have the oil drained after a test run and be shipped to the customer without oil. A tag stating that the oil has been drained must be attached to each bearing fill port and to the connection box.

13 FINAL INSPECTIONS AND TESTS

a) All motors shall be subjected to an insulation resistance test, dielectric absorption (polarization index) test, high potential test, and surge test using a programmed Advanced Winding Analyzer (or equivalent). Test data shall be documented.

b) RTD's or any temperature sensing devices shall be tested. A final check will be made to ensure that the correct device has been installed. Type of RTD or device should be marked on the nameplate.

c) Motors shall be run at full voltage. No load current on each phase shall be noted along with actual phase-to-phase voltage. All test data shall be documented and made available to the customer.

d) Motors shall be run for one hour or until bearing temperature stabilizes - whichever takes longer. The final temperature shall be documented and the motors checked for end play and end float.

e) Final run vibration checks shall be conducted and documented. If any reading exceeds 0.1 in/sec, correction is required.

f) Before shipping all motors shall be painted with Sherwin-Williams MC42 enamel, or approved equivalent. All shaft extensions without pulleys shall be protected with a rust inhibiting coating. Motors requiring oil before start up shall be tagged accordingly.

g) After repairs have been completed, all required information and data shall be documented. Provide the City a complete written report of the motor repair to include all electrical tests and balance results. The report shall be delivered within 10 days of the motor delivery.

WARRANTY: The Contractor shall warranty the motor to be free from defects for a period of one (1) year from the date the motor is placed in service at the Platte Generating Station. Motor rewinds shall be warranted for a period 3 years from the date the motor is put into service, but not to exceed 3-1/2 years from the date of shipment. If during the warranty period a motor defect or failure is determined or incurred, the Contractor shall repair the motor at its expense, including shipping.

MATERIALS, EQUIPMENT, AND SERVICES PROVIDED BY THE OWNER: The City shall place the motors on pallets, cover them for shipment, and load them on the Contractor's truck.

MATERIALS, EQUIPMENT, AND SERVICES PROVIDED BY THE CONTRACTOR: The Contractor shall provide all engineering, design, equipment, tools, material, labor, supervision, shipping and all other equipment and materials necessary to completely perform the work.

SCHEDULE: The motors will be available for pick-up in November 2010 and available for cursory inspection prior to this date, although they will not be disassembled. Motor repairs shall not exceed a 60-

day period and shall be delivered back to the plant no later than January 31, 2011. The Contractor shall include a repair and delivery schedule with the bid. All work shall be completed as soon as possible.

QUALIFICATIONS: The Contractor shall be a firm specializing in the repair of large motors similar to the size being bid. The Contractor shall submit with the bid references of motor repairs to similar size motors.

SERVICE RATES: The Contractor shall include in the Bid firm lump sum pricing.

The Platte Generating Station is NOT tax exempt and is subject to 7.0% sales tax. See the Nebraska Department of Revenue web site at www.revenue.state.ne.us for contractor's tax information.

CONTACT: Questions regarding this specification may be directed to Rodger Zawodniak at the Platte Generating Station, telephone (308) 385-5497.

REFERENCE MATERIAL:

- Motor Data Sheets

INSURANCE: The Contractor shall comply with the attached Insurance Requirements.

MINIMUM INSURANCE REQUIREMENTS
CITY OF GRAND ISLAND, NEBRASKA

The successful bidder shall obtain insurance from companies authorized to do business in Nebraska of such types and in such amounts as may be necessary to protect the bidder and the interests of the City against hazards or risks of loss as hereinafter specified. This insurance shall cover all aspects of the Bidder's operations and completed operations. Failure to maintain adequate coverage shall not relieve bidder of any contractual responsibility or obligation. Minimum insurance coverage shall be the amounts stated herein or the amounts required by applicable law, whichever are greater.

1. WORKERS COMPENSATION AND EMPLOYER'S LIABILITY

This insurance shall protect the Bidder against all claims under applicable State workers compensation laws. This insurance shall provide coverage in every state in which work for this project might be conducted. The liability limits shall not be less than the following:

Workers Compensation	Statutory Limits
Employers Liability	$100,000 each accident
	$100,000 each employee
	$500,000 policy limit

2. BUSINESS AUTOMOBILE LIABILITY

This insurance shall be written in comprehensive form and shall protect the Bidder, Bidder's employees, or subcontractors from claims due to the ownership, maintenance, or use of a motor vehicle. The liability limits shall be not less than the following:

Bodily Injury & Property Damage	$ 500,000 Combined Single Limit

3. COMPREHENSIVE GENERAL LIABILITY

The comprehensive general liability coverage shall contain no exclusion relative to explosion, collapse, or underground property. The liability limits shall be not less than the following:

Bodily Injury & Property Damage	$ 500,000 each occurrence
	$1,000,000 aggregate

4. UMBRELLA LIABILITY INSURANCE

This insurance shall protect the Bidder against claims in excess of the limits provided under employer's liability, comprehensive automobile liability, and commercial general liability policies. The umbrella policy shall follow the form of the primary insurance, including the application of the primary limits. The liability limits shall not be less than the following:

Bodily Injury & Property Damage	$1,000,000 each occurrence
	$1,000,000 general aggregate

5. ADDITIONAL REQUIREMENTS

The City may require insurance covering a Bidder or subcontractor more or less than the standard requirements set forth herein depending upon the character and extent of the work to be performed by such Bidder or subcontractor.

Insurance as herein required shall be maintained in force until the City releases the Bidder of all obligations under the Contract.

The Bidder shall provide and carry any additional insurance as may be required by special provisions of these specifications.

6. CERTIFICATE OF INSURANCE

Satisfactory certificates of insurance shall be filed with the City prior to starting any work on this Contract**. The certificates shall show the City as an additional insured on all coverage except Workers Compensation. The certificate shall state that thirty (30) days written notice shall be given to the City before any policy is cancelled (strike the "endeavor to" wording often shown on certificate forms). If the bidder cannot have the "endeavor to" language stricken, the bidder may elect to provide a new certificate of insurance every 30 days during the contract. Bidder shall immediately notify the City if there is any reduction of coverage because of revised limits or claims paid which affect the aggregate of any policy.**

MOTOR DATA

Model No.	5K851178C2
Serial No.	8409980
Application	I.D. Fan
Enclosure	WP II
Code	G
Bearings	SLEEVE *
Lubrication	OIL *
Type	K
Frame	8511Z
Poles	8
Horsepower	3000
Synchronous Speed	900
Phases	3
Cycles	60
Volts	4000
Shaft Extension	DS2 Special
Insulation Class	B Custom Polyseal
Secondary Volts	-
Secondary Amps	-
Secondary Ohms	-
Temperature Rise	85°C By RTD # 3000 HP
Rotation (Opposite Pulley End)	Dual
Full-load Speed	890
Full-load Amps	391
Air Gap	.085
End Play	1/2" Min
Net Weight	18,900 Lbs. Approx.
Motor Terminal	G.E. Std.
Heater Watts	1600
Heater Volts	115/230

* BRGS. ARRANGED FOR FORCED FEED LUBRICATION. PUMP, TANK & PIPING TO BE SUPPLIED BY OTHERS THAN G.E.

OIL REQUIREMENTS:

- RATE OF FLOW - ONE GPM/BRG
- OIL PRESSURE - 10 - 15 PSI
- OIL VISCOSITY - 300 SSU AT 100°F

6 (2/PHASE) 10 OHM RTD'S IN STATOR WINDING
CHROMEL ALUMEL THERMOCOUPLE IN EACH BRG.
1/8 INCH LAMINATED SHIM PACKS, UNDER EACH MOUNTING BOLT FURNISHED
VERTICAL JACKING SCREWS FURNISHED

GENERAL ELECTRIC

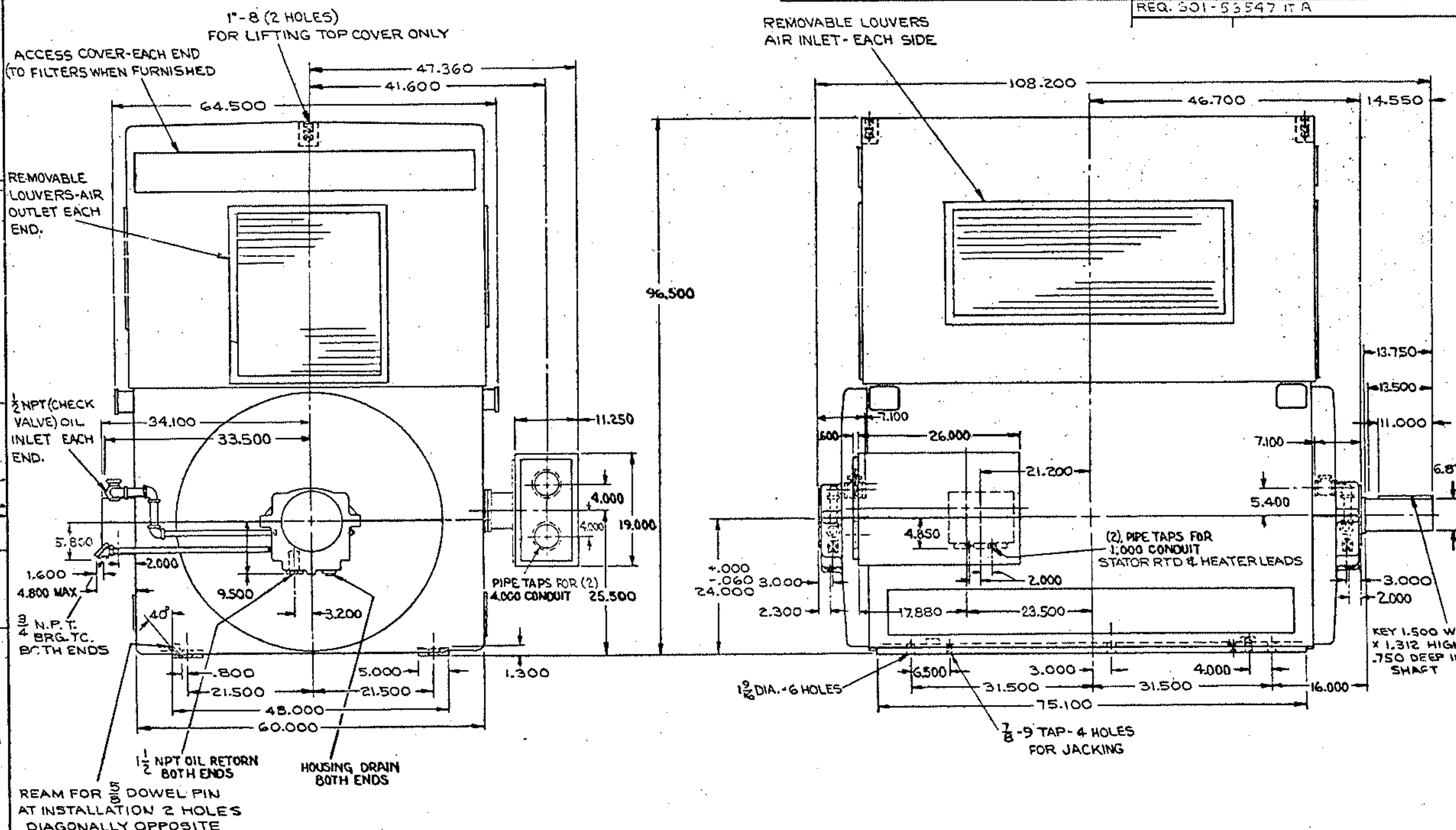
34C110687

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING— APPLIED PRACTICES | SURFACES ✓ | TOLERANCES ON MACHINED DIMENSIONS: FRACTIONS ± DECIMALS ± ANGLES ±

TITLE OUTLINE INDUCTION MOTOR WPII FORCED LUBE

FIRST MADE FOR BS1152

REQ. 301-53547 IT A



(001)

FOR APPROXIMATE MOTOR WEIGHT SEE CERTIFICATION SHEET.

THIS MACHINE IS ARRANGED FOR A FORCED LUBRICATION SYSTEM. FOR ADDITIONAL INFORMATION & DIMENSIONS, CONTACT THE GENERAL ELECTRIC CO.

CONDUIT BOX MAY BE ARRANGED SO THAT ENTRANCE CAN BE MADE UPWARD, DOWNWARD OR FROM EITHER SIDE.

MOTORS ARE SUPPLIED WITH 0.500 INCH END PLAY, UNLESS OTHERWISE SPECIFIED, FOR USE WITH A LIMITED END FLOAT COUPLING.

F. E. BEARING IS INSULATED AGAINST SHAFT CURRENTS. ANY INSTRUMENTS INSERTED INTO THE BEARING MUST BE INSULATED.

13477-C-12L3 21-3

REVISIONS: 1 KEY WAS 1.000 X 1.500 X .750 DP.

LM&G SCHENECTADY 34C110687

GENERAL ELECTRIC

34B741087
CONT ON SHEET | SH NO.

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:

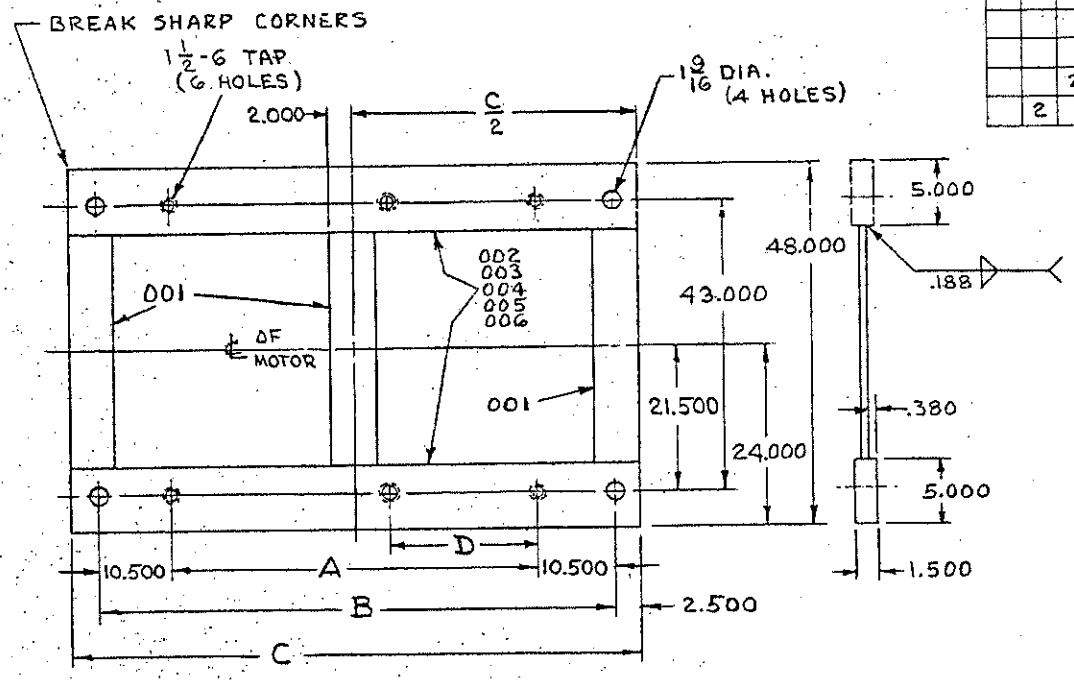
APPLIED PRACTICES	SURFACES	TOLERANCES ON MACHINED DIMENSIONS: FRACTIONS	DECIMALS	ANGLES
S.I.-34A190500-004	✓	±	±.020	±

REV NO. 01
CONT ON SHEET | SH NO

TITLE
SOLE PLATE

FIRST MADE FOR IND MOTOR 8500

GROUP NO AND QUANTITY GC5	GC4	GC3	GC2	GC1	PART NO.	NAME	DRAWING NO., DESCRIPTION, MATERIAL, WEIGHT
3	3	3	3	3	001	PLATE	.750 X 4.000 X 38.000 B4A2C
				2	002	PLATE	
			2		003	PLATE	
		2			004	PLATE	
	2				005	PLATE	
2					006	PLATE	B4A2C



G.NO	FRAME	A	B	C	D
01	8507	40.000	61.000	66.000	17.000
02	8509	50.000	71.000	76.000	22.000
03	8510	56.000	77.000	82.000	25.000
04	8511	63.000	84.000	89.000	28.500
05	8512	71.000	92.000	97.000	32.500

DESCRIPTION OF GROUPS

REVISIONS

1	5-17-78 R Huber	QTY'S OF PT-001 WAS 2	

PRINTS TO: KM

110-1A2

MADE BY R E Huber May 12, '78
ISSUED May 12, 1978

APPROVALS

L M E G — DIV OR DEPT
SCHENECTADY — LOCATION

34B741087
CONT ON SHEET | SH NO

PF-888-PL (6-68) PRINTED IN U.S.A.

MOTOR DATA SHEET

G.E. REQN. 301-53547

Motor Application Induced Draft Fan

Motor Model 5K6511786C2 Motor Serial 8409980

HP 3000 Service Factor 1.0

Full Load Speed, rpm 890. Full Load Current, amps

Locked Rotor Current, amps 2542. Volts 4000

Phases 3 Frequency, Hz 60

Insulation Class B Temperature Rise, C 80

Motor and Load Combined Acceleration Time, sec:

At full voltage 15.

At minimum starting voltage 24.

Bearing Type Split sleeve Enclosure Type WPII

Motor Weight 18350. LBS.

Additional information required for motors larger than 150 hp:

Efficiency: Load 50% .950 75% .953 100% .953

Power Factor: Load 50% .740 75% .830 100% .866

Minimum Starting Voltage 85% Safe Stall Time 17. sec. @ 100% Volts

Current Transformer Ratio NONE Rotation DUAL

Thermocouples: Bearings Number 2 Type CHROMEL-ALUMEL

Motor Winding RTD's: Stator Number 3/PH Resistance 100 ohms @ 25°C

Space Heaters: Single Voltage 115/230 Wattage 1600

Critical Speed for motors rated 3500 HP or larger, rpm ——

Load Inertia at Motor Shaft 106700 Lb ft^2 Motor Cold 2 Consecutive Starts

Motor at Operating Temp 1 Consecutive Starts

Subsequent Starts With Motor Running: Minutes Apart Between Starts 30.

Subsequent Starts With Motor Standing: Minutes Apart Between Starts 90

DEPARTMENT OF UTILITIES — LOUIS, DAILY & TOWER, Consulting Engineers — CONTRACT NO. — Sheet of

Grand Island, Nebraska

MOTOR DATA BY: R. H. HAILE 4-27-78

77-8-2

13477-C-4G1 D-74

Form E-874-1

MOTOR DESIGN DATA. (SHEET 1 OF 2)

G.E. REQN. 301-53547 DATE 2-23-78

C.E. INC. CONTRACT NO. 13477

C.E. INC. CUSTOMER CITY OF GRAND ISLAND

SERVICE OF MOTOR I.D. FAN DRIVE

1. HORSEPOWER 3000.
2. VOLTAGE 4000.
3. POWER SUPPLY PHASES 3.
4. POWER SUPPLY CYCLES 60.
5. NEMA DESIGN LETTER (FOR SPEED VS TORQUE CHARACTERISTIC) B N.A.
6. SYNCHRONOUS SPEED 900.
7. TYPE OF BEARINGS SPLIT SLEEVE.
8. TYPE OF ENCLOSURE WEATHER PROTECTED TYPE II
9. NEMA CLASS OF INSULATION B.
10. ROTATIONAL INERTIA OF DRIVEN EQUIPMENT 106,700 LB FT²
11. DIRECTION OF ROTATION (FACING MOTOR END OPPOSITE SHAFT EXTENSION) CCW.
12. SHAFT EXTENSION TYPE SINGLE STD.
13. BEARING TEMPERATURE DETECTORS ARE [X] REQUIRED.
14. WINDING TEMPERATURE DETECTORS ARE [X] REQUIRED.
15. SPACE HEATER VOLTAGE [X]/230.
16. SPACE HEATER WATTS 1600.
17. SOLEPLATES AND SHIMMING MATERIAL ARE [ ] REQUIRED.

A. EACH MOTOR IS TO BE PROVIDED WITH A ONE PIECE SOLEPLATE DESIGNED TO PERMIT KEYING THE MOTOR TO THE SOLEPLATE FOR ALIGNMENT AND GROUTING THE SOLEPLATE IN POSITION ON THE MOTOR FOUNDATION. SUFFICIENT SHIM MATERIAL SHALL BE FURNISHED TO PROVIDE A TOTAL OF 1/8" ADJUSTMENT FOR EACH MOTOR FOOT. THE SHIM MATERIAL SHALL PROVIDE THIS ADJUSTMENT IN INCREMENTS OF 0.003 TO 0.005 INCHES.

SHEET 1 OF 2

13477-C-4A1

Form E-874A

MOTOR DESIGN DATA (SHEET 2 OF 2)

G.E. REQN: 301-53547 DATE 2-23-78

C.E. INC. CONTRACT NO. 13477

C.E. INC. CUSTOMER CITY OF GRAND ISLAND

SERVICE OF MOTOR I.D FAN DRIVE

MOTOR VENDOR SHALL COMPLETE THE FOLLOWING DATA AND RETURN TO C.E., INC. WITH DRAWINGS:

1. FULL LOAD SPEED 890 RPM.
2. TEMPERATURE RISE ABOVE 85°C. OVER 40°C. AMBIENT TEMPERATURE.
3. EFFICIENCY AT 50% LOAD .950.
   75% LOAD .953.
   100% LOAD .953.
4. POWER FACTOR AT 50% LOAD .740.
   75% LOAD .830.
   100% LOAD .866
5. STARTING CURRENT 2542. AMPS.
6. FULL LOAD CURRENT 391. AMPS.
7. STARTING TORQUE 21236. FT. LB.
8. BREAKDOWN TORQUE 42472. FT. LB.
9. FRAME SIZE 8511SE.
10. ROTATIONAL INERTIA OF MOTOR 4032. LB. FT.^{2}
11. TOTAL WEIGHT OF MOTOR 18350. LB., APPROX.
12. WEIGHT OF ROTOR ONLY 4800. LB., APPROX.
13. SERVICE FACTOR 1.0.
14. RECOMMENDED COUPLING BORE 6.871 MIN. TO 6.872 MAX.

CERTIFY DRAWINGS AND DATA. IDENTIFY DRAWINGS AND CORRESPONDENCE AS FOLLOWS:

C.E. INC. PURCHASE ORDER NO. -
C.E. INC. CONTRACT NO. - - 13477
C.E. INC. CUSTOMER NAME - - CITY OF GRAND ISLAND
SERVICE OF MOTOR - - I.D FAN DRIVE

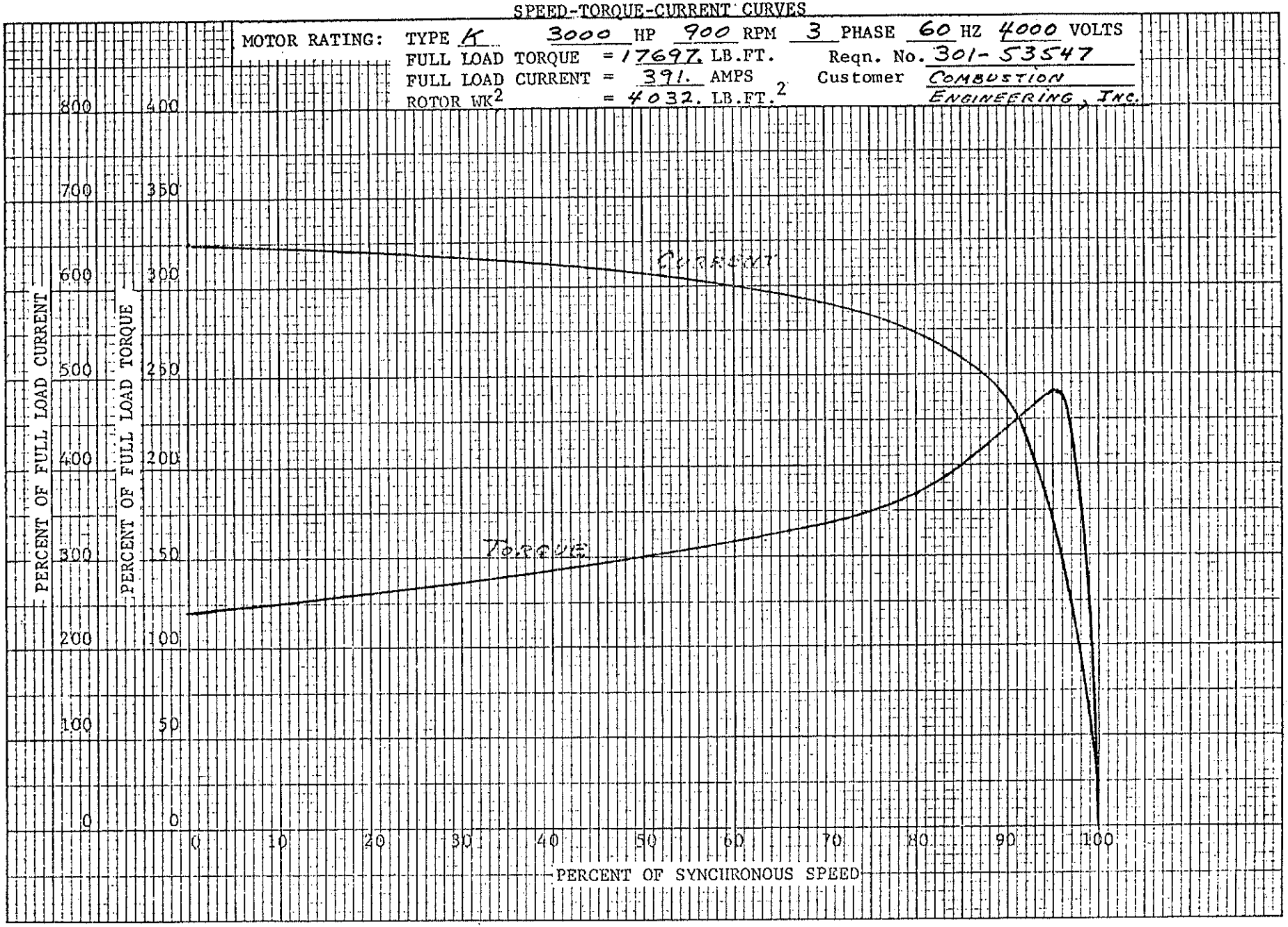
MOTOR DATA BY: R.H. HAILE 4-27-78

SHEET 2 OF 2

13477-C-4C1

SPEED-TORQUE-CURRENT CURVES

MOTOR RATING: TYPE K 3000 HP 900 RPM 3 PHASE 60 HZ 4000 VOLTS
FULL LOAD TORQUE = 17697. LB.FT. Reqn. No. 301-53547
FULL LOAD CURRENT = 391. AMPS Customer COMBUSTION ENGINEERING, INC.
ROTOR WK^2 = 4032. LB.FT.^{2}

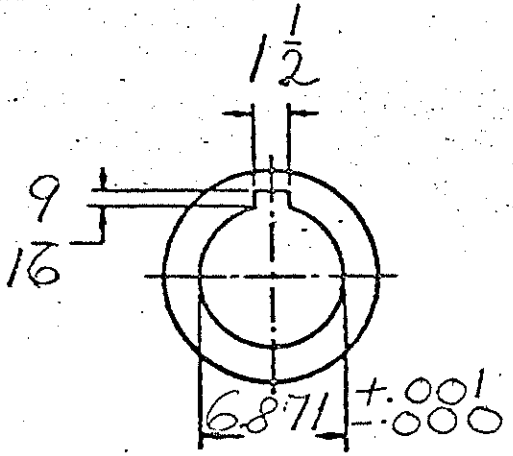


R. HAILE 4-28-78

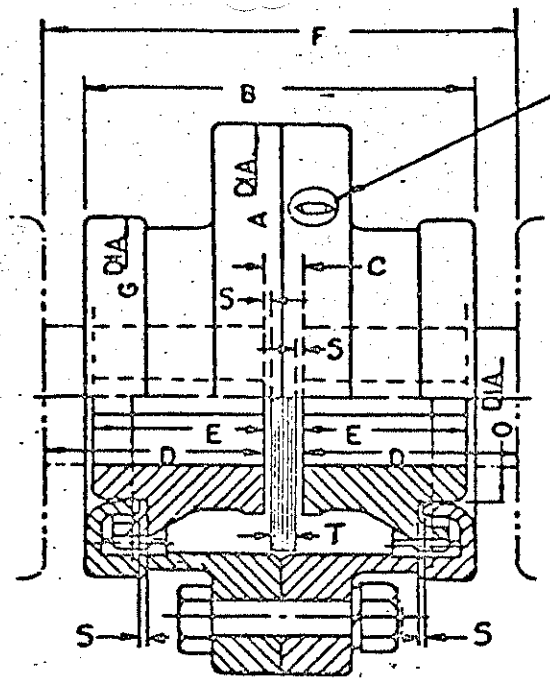
HTC- 8185

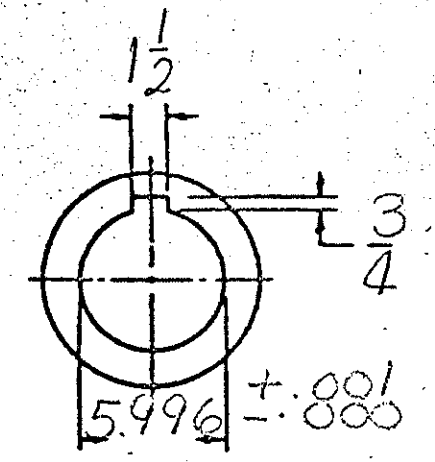
CEI CON. 13477
CEI P.O.#1870326
CEI CUSTOMER: CITY OF GRAND ISLAND
FOR USE WITH I.D. FAN

-A.L. D H.P.E
RPM
4-10-79 E.C.



BORE AND KEYWAY
DRIVING UNIT
MOTOR





BORE AND KEYWAY
DRIVEN UNIT
FLUID DRIVE

FAST'S SELF-ALIGNING COUPLING

FOR 3/16 LIMITED END FLOAT

SIZE	CAPACITY H.P./100 R.P.M.	A	B	C	D	E	F	G	O	S	T
1 1/2	9.5	6	4 3/16		2 15/32	1 15/16		3 15/16	2 3/16		
2	22.5	7	5 3/16		3 5/32	2 7/16		4 15/16	2 7/8		
2 1/2	43.8	8 3/8	6 7/16		3 7/8	3 1/32		5 7/8	3 5/8		
3	75.5	9 7/16	7 11/16		4 5/8	3 19/32		6 7/8	4 1/4		
3 1/2	120	11	8 7/8		5 3/8	4 3/16		7 29/32	5		
4	180	12 1/2	10 1/8		6 1/8	4 3/4		9 1/4	5 3/4		
4 1/2	250	13 5/8	11 3/8		6 29/32	5 5/16		10 3/8	6 1/2		
5	350	15 5/16	12 5/8		7 21/32	6 1/32		11 9/16	7 5/16		
5 1/2	465	16 3/4	13 7/8		8 13/32	6 29/32		12 7/8	8		
6	605	18	14 7/8	17/32	9 3/32	7 13/32		13 7/8	8 13/16	3/64	7/16
7	960	20 3/4	17 3/8		10 5/8	8 11/16		16 1/4	10 5/16		

MOTOR ROTOR SHOULD BE POSITIONED ON THE GEOMETRIC CENTER WHEN COUPLING IS POSITIONED AS SHOWN.

2,581 H.P. at 858 R.P.M.

CUSTOMER: THE GREEN FAN CO.
CUSTOMER'S ORDER NO. 11462
OUR ORDER NO. CP-73508S-05, 06 & 07
NO. REQ'D 1
DATE 1-10-78 CERTIFIED BY EVANS

KOPPERS

Power Transmission Dept., Koppers Company, Inc., Baltimore, Md. 21203

FORM 215

Cov. Ltr. F-15680

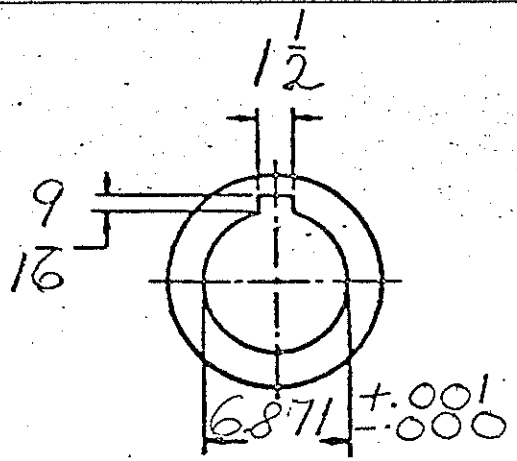
Page 27 of 39

GREEN FAN DWG. NO. 8-29787-A

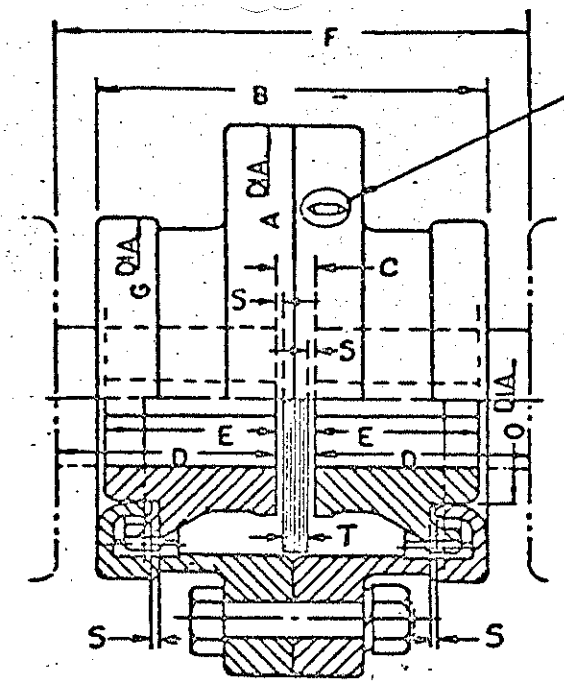
13477 B 4611

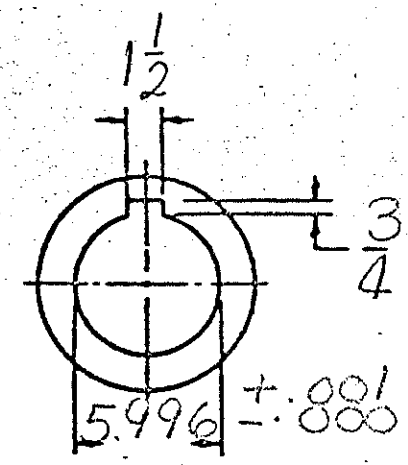
CEI CON. 13477
CEI P.O.#1870326
CEI CUSTOMER: CITY OF GRAND ISLAND
FOR USE WITH I.D. FAN

-A; AL D H.P.&
RPM
4-10-79 E.C.



BORE AND KEYWAY
DRIVING UNIT
MOTOR





BORE AND KEYWAY
DRIVEN UNIT
FLUID DRIVE

FAST'S SELF-ALIGNING COUPLING

FOR 3/16 LIMITED END FLOAT

SIZE	CAPACITY H.P./100 R.P.M.	A	B	C	D	E	F	G	O	S	T
1 1/2	9.5	6	4 3/16		2 15/32	1 15/16		3 15/16	2 3/16		
2	22.5	7	5 3/16		3 5/32	2 7/16		4 15/16	2 7/8		
2 1/2	43.8	8 3/8	6 7/16		3 7/8	3 1/32		5 7/8	3 5/8		
3	75.5	9 7/16	7 11/16		4 5/8	3 19/32		6 7/8	4 1/4		
3 1/2	120	11	8 7/8		5 3/8	4 3/16		7 29/32	5		
4	180	12 1/2	10 1/8		6 1/8	4 3/4		9 1/4	5 3/4		
4 1/2	250	13 5/8	11 3/8		6 29/32	5 5/16		10 3/8	6 1/2		
5	350	15 5/16	12 5/8		7 21/32	6 1/32		11 9/16	7 5/16		
5 1/2	465	16 3/4	13 7/8		8 13/32	6 29/32		12 7/8	8		
6	605	18	14 7/8	17/32	9 3/32	7 13/32		13 7/8	8 13/16	3/64	7/16
7	960	20 3/4	17 3/8		10 5/8	8 11/16		16 1/4	10 5/16		

MOTOR ROTOR SHOULD BE POSITIONED ON THE GEOMETRIC CENTER WHEN COUPLING IS POSITIONED AS SHOWN.

2,581 H.P. at 858 R.P.M.

CUSTOMER: THE GREEN FAN CO.
CUSTOMER'S ORDER NO. 11462
OUR ORDER NO. CP-735085-05, 06 & 07
NO. REQ'D 1
DATE 1-10-78 CERTIFIED BY EVANS

KOPPERS

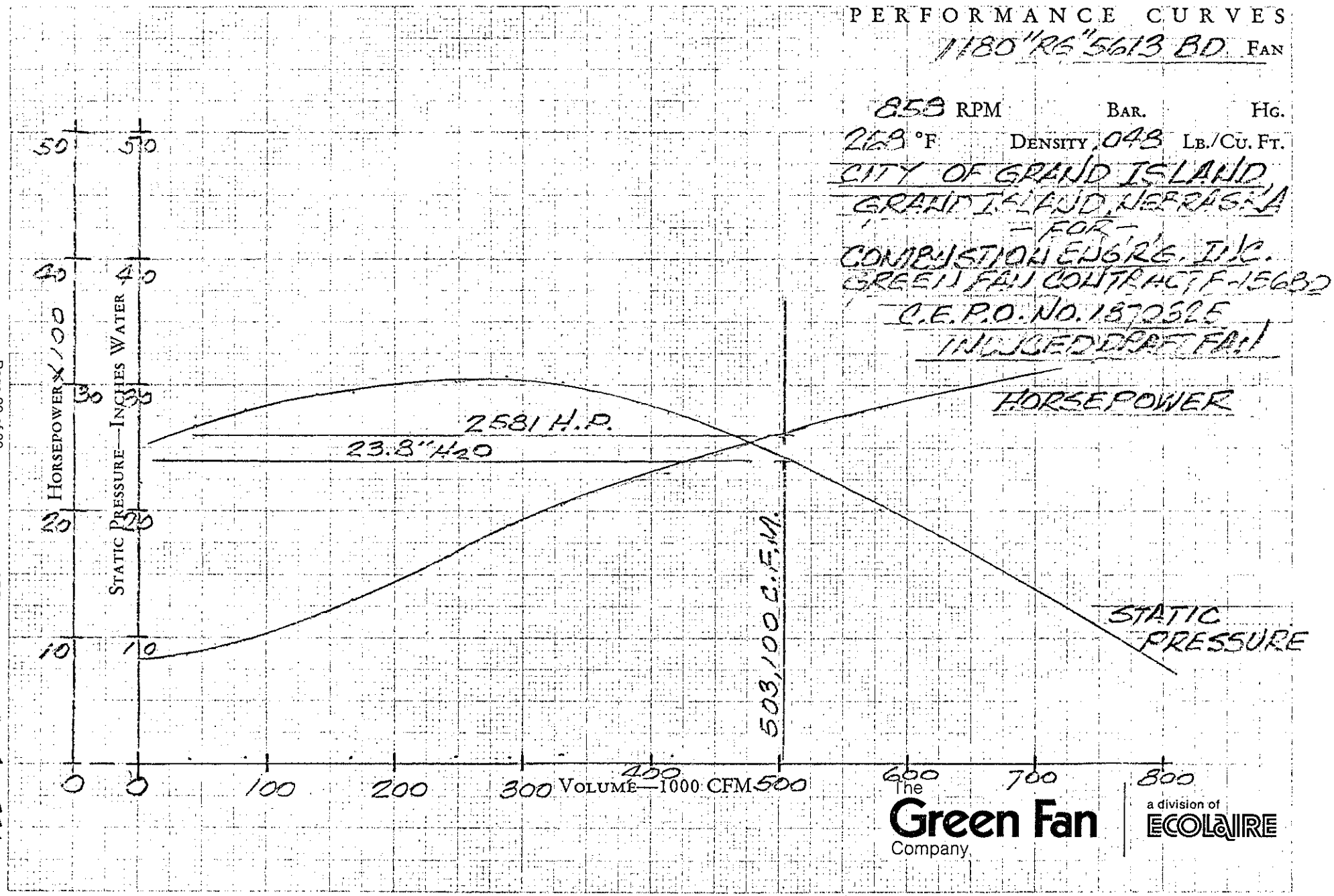
Power Transmission Dept., Koppers Company, Inc., Baltimore, Md. 21203

FORM 215

Con. No. F-15680

Page 28 of 39

GREEN FAN DWG. NO. 8-29787-A.



Page 29 of 39

CURVE DWG. #8-C-18869

MOTOR DATA

Model No.	5K840967C12
Serial No.	8410023
Application	Forced Draft Fan
Enclosure	WP II
Code	G
Bearings	Sleeve *
Lubrication	Oil
Type	K
Frame	8409S
Poles	10
Horsepower	1250
Synchronous Speed	720
Phases	3
Cycles	60
Volts	4000
Shaft Extension	DS2
Insulation Class	B- Custom Polyseal
Secondary Volts	-
Secondary Amps	-
Secondary Ohms	-
Temperature Rise	90°C By RTD @ 1250 HP
Rotation (Opposite Pulley End)	Dual
Full-load Speed	710
Full-load Amps	174
Air Gap	.055
End Play	1/2" Min.
Net Weight	9980 Lbs. Approx.
Motor Terminal	G.E. Std.
Heater Watts	1200
Heater Volts	115

* BRGS. ARRANGED FOR FORCED FEED LUBRICATION. PUMP, TANK & PIPING TO BE SUPPLIED BY OTHERS THAN G.E.

OIL REQUIREMENTS -
- RATE OF FLOW - 1/2 GPM/BRG
- OIL PRESSURE - 10 - 15 PSI
- OIL VISCOSITY - 300 SSU @ 100°F

6 (2/PHASE) 10 OHM RTD IN STATOR WINDING
CHROMEL ALUMEL THERMOCOUPLE IN EACH BRG.
1/8 INCH LAMINATED SHIM PACKS - UNDER EACH MOUNTING BOLT FURNISHED
VERTICAL JACKING SCREWS FURNISHED

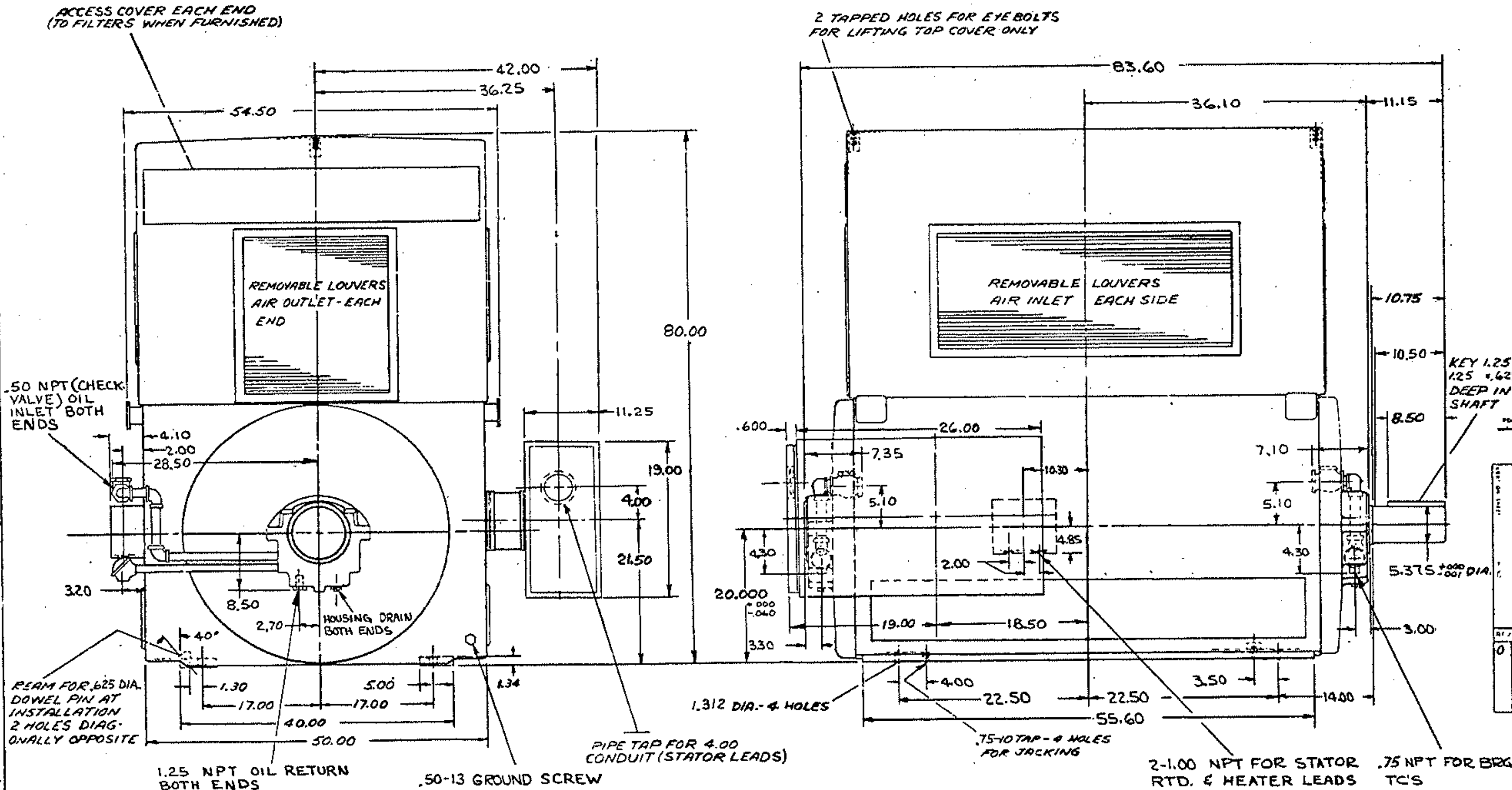
GENERAL ELECTRIC

(OUTLINE)
INDUCTION MOTOR
FIRST MADE FOR SK840967C12
REQ 301-53546-1TA

34C110695

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING

APPLIED PRACTICES	SURFACES			
	✓	±	±	±



(001) CONDUIT BOX MAY BE ROTATED TO ANY OF FOUR POSITIONS
MOTOR IS ARRANGED FOR FORCE LUBE SYSTEM
MOTOR IS SUPPLIED WITH 0.50 INCH MIN. END PLAY FOR USE WITH LIMITED END FLOAT COUPLING.
FRONT END BEARING IS INSULATED AGAINST SHAFT CURRENTS. ANY INSTRUMENT INSERTED INTO BEARING MUST BE INSULATED.

20-1

REVISIONS

KM

Des Bernard May 18 1978

LM & G
SCHENECTADY

34C110695

GENERAL ELECTRIC

34B740515 CONT ON SHEET SH NO.

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:—

APPLIED PRACTICES	SURFACES	TOLERANCES ON MACHINED DIMENSIONS: FRACTIONS	DECIMALS	ANGLES
	✓	±	±.020	±

S.I. - NONE

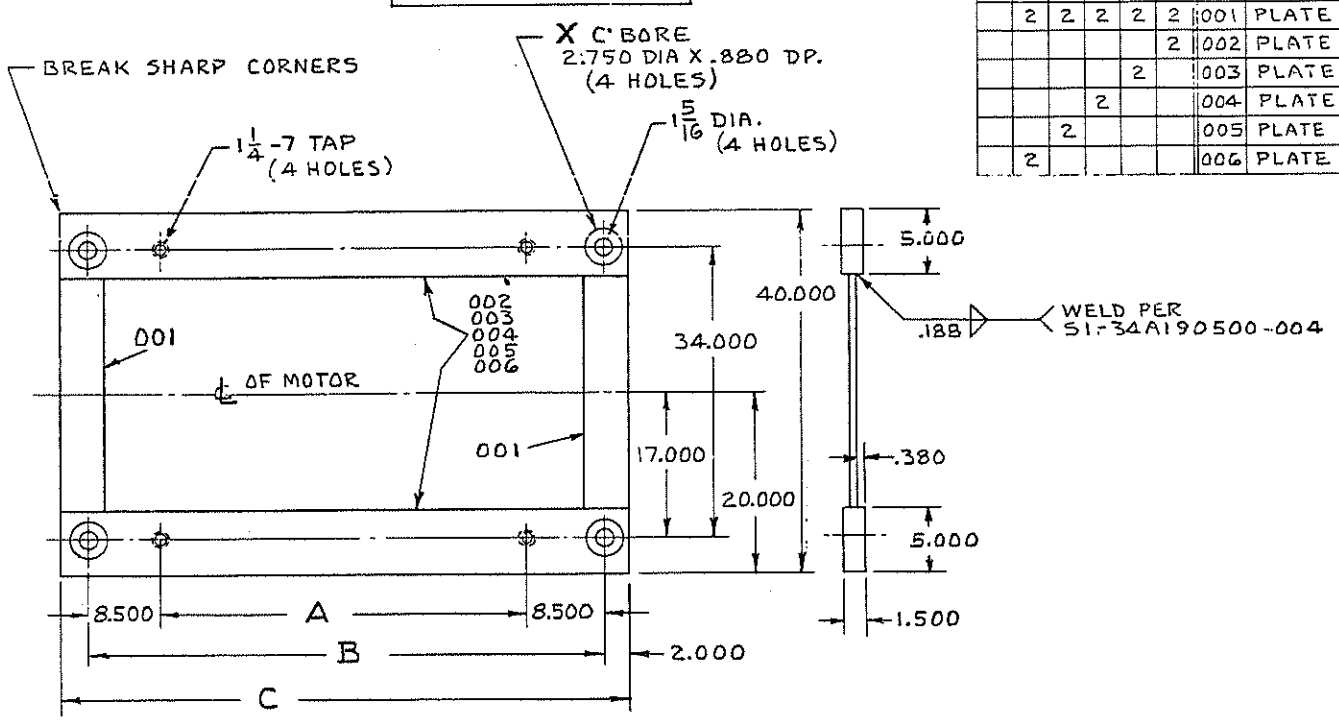
REV NO 2

CONT ON SHEET SH NO.

TITLE SOLE PLATE

FIRST MADE FOR IND. MOTOR 8400

GROUP NO AND QUANTITY 05	04	03	02	01	PART NO.	NAME	DRAWING NO., DESCRIPTION, MATERIAL, WEIGHT
2	2	2	2	2	001	PLATE	.750 X 4.00 X 30.000 B4A2C
				2	002	PLATE	
			2		003	PLATE	
		2			004	PLATE	
	2				005	PLATE	
2					006	PLATE	B4A2C



G.NO.	FRAME	A	B	C	X C'BORE	SOLE PLATE & ACCESS. (REF)
01	8407	36.000	53.000	57.000	OMIT	34A740517-G01
02	8409	45.000	62.000	66.000	OMIT	34A740517-G02
03	8411	56.000	73.000	77.000	OMIT	34A740517-G03
04	8409 TUBE COOL	45.000	62.000	66.000	WITH	34A740517-G04
05	8411 TUBE COOL	56.000	73.000	77.000	WITH	34A740517-G05

DESCRIPTION OF GROUPS	REVISIONS	PRINTS TO
		K'
		4012
		4031
		4018

MADE BY W Dyboss 26 Aug 68

ISSUED May 27, 1968

APPROVALS

L G & M DIV OR DEPT

SCHENECTADY LOCATION

34B740516 CONT ON SHEET SH NO.

M | AC

FF-605-PL (6-66) PRINTED IN U.S.A.

Form E-874-1

MOTOR DESIGN DATA. (SHEET 1 OF 2)

G.E. REQN. 301-53546 DATE 2-23-78

C.E. INC. CONTRACT NO. 13477

C.E. INC. CUSTOMER CITY OF GRAND ISLAND

SERVICE OF MOTOR F.D. FAN DRIVE

1. HORSEPOWER 1250.
2. VOLTAGE 4000.
3. POWER SUPPLY PHASES 3.
4. POWER SUPPLY CYCLES 60.
5. NEMA DESIGN LETTER (FOR SPEED VS TORQUE CHARACTERISTIC) N.A.
6. SYNCHRONOUS SPEED ~~900~~ 720. per Kirkman 4/4/78
7. TYPE OF BEARINGS SPLIT SLEEVE.
8. TYPE OF ENCLOSURE WEATHER PROTECTED TYPE II
9. NEMA CLASS OF INSULATION B.
10. ROTATIONAL INERTIA OF DRIVEN EQUIPMENT 71,000 LB-FT.²
11. DIRECTION OF ROTATION (FACING MOTOR END OPPOSITE SHAFT EXTENSION) CW.
12. SHAFT EXTENSION TYPE SINGLE STD.
13. BEARING TEMPERATURE DETECTORS ARE [redacted] REQUIRED.
14. WINDING TEMPERATURE DETECTORS ARE [redacted] REQUIRED.
15. SPACE HEATER VOLTAGE [redacted]/230.
16. SPACE HEATER WATTS 1200.
17. SOLEPLATES AND SHIMMING MATERIAL ARE [redacted] REQUIRED.

A. EACH MOTOR IS TO BE PROVIDED WITH A ONE PIECE SOLEPLATE DESIGNED TO PERMIT KEYING THE MOTOR TO THE SOLEPLATE FOR ALIGNMENT AND GROUTING THE SOLEPLATE IN POSITION ON THE MOTOR FOUNDATION. SUFFICIENT SHIM MATERIAL SHALL BE FURNISHED TO PROVIDE A TOTAL OF 1/8" ADJUSTMENT FOR EACH MOTOR FOOT. THE SHIM MATERIAL SHALL PROVIDE THIS ADJUSTMENT IN INCREMENTS OF 0.003 TO 0.005 INCHES.

SHEET 1 OF 2

13477-C-341

Form E-874A

G.E. REQN. 301-53546

MOTOR DESIGN DATA (SHEET 2 OF 2)

DATE 2-23-78

C.E. INC. CONTRACT NO. 13477

C.E. INC. CUSTOMER CITY OF GRAND ISLAND

SERVICE OF MOTOR F.D. FAN DRIVE

MOTOR VENDOR SHALL COMPLETE THE FOLLOWING DATA AND RETURN TO C.E., INC. WITH DRAWINGS:

1. FULL LOAD SPEED 710 RPM.
2. TEMPERATURE RISE 90 ° C. BY RTD OVER 40 ° C. AMBIENT TEMPERATURE.
3. EFFICIENCY AT 50% LOAD .938.
   75% LOAD .940.
   100% LOAD .941.
4. POWER FACTOR AT 50% LOAD .680.
   75% LOAD .780.
   100% LOAD .820
5. STARTING CURRENT 1044 AMPS.
6. FULL LOAD CURRENT 174 AMPS.
7. STARTING TORQUE 11092 FT. LB.
8. BREAKDOWN TORQUE 19872 FT. LB.
9. FRAME SIZE 8409S.
10. ROTATIONAL INERTIA OF MOTOR 1754 LB. FT.^{2}
11. TOTAL WEIGHT OF MOTOR 10200 LB., APPROX.
12. WEIGHT OF ROTOR ONLY 2800 LB., APPROX.
13. SERVICE FACTOR 1.0.
14. RECOMMENDED COUPLING BORS 5.371 MIN. TO 5.372 MAX.

CERTIFY DRAWINGS AND DATA. IDENTIFY DRAWINGS AND CORRESPONDENCE AS FOLLOWS:

C.E. INC. PURCHASE ORDER NO. -
C.E. INC. CONTRACT NO. - - 13477
C.E. INC. CUSTOMER NAME - - CITY OF GRAND ISLAND
SERVICE OF MOTOR - - F.D. FAN DRIVE

MOTOR DATA BY: R.H. HAILE 5-3-78

13477-C-3N1

SHEET 2 OF 2

MOTOR DATA SHEET

G.E. REQN. 301-533546

Motor Application Forced Draft Fan

Motor Model 5K8409607C12 Motor Serial 8410023

HP 1250 Service Factor 1.0

Full Load Speed, rpm 710 Full Load Current, amps 174

Locked Rotor Current, amps 1044 Volts 4000

Phases 3 Frequency, Hz 60

Insulation Class B ~~THERMOSETTING~~ EPOXY Temperature Rise, C @ 90°C By RTD

Motor and Load Combined Acceleration Time, sec:
At full voltage 16.0
At minimum starting voltage 27.0

Bearing Type Split Sleeve Enclosure Type WPII

Motor Weight 10,200

Additional information required for motors larger than 150 hp:

Efficiency: Load 50% .938 75% .940 100% .941

Power Factor: Load 50% .680 75% .780 100% .820

Minimum Starting Voltage 85% Safe Stall Time 20 sec @ 100% Volts

Current Transformer Ratio NONE Rotation To be Specified

Thermocouples: Bearings Number 2 Type CHROMEL-ALUMEL

Motor Winding RTD's: Stator Number 2/PH Resistance 10.0 ohms @ 25°C.

Space Heaters: Single Voltage 115/230 Wattage 1200

Critical Speed for motors rated 3500 HP or larger, rpm

Load Inertia at Motor Shaft 71000 Lb ft^2 Motor Cold 2 Consecutive Starts

Motor at Operating Temp 1 Consecutive Starts

Subsequent Starts With Motor Running: Minutes Apart Between Starts 15

Subsequent Starts With Motor Standing: Minutes Apart Between Starts 45

DEPARTMENT OF UTILITIES | LUTZ, DAILY & BRAIN | CONTRACT NO.
Grand Island, Nebraska | Consulting Engineers | Sheet of

MOTOR DATA BY : R.H. HAILE 5-3-78

77-8-2

13477-C-351 D-68

SPEED-TORQUE-CURRENT CURVES

MOTOR RATING: TYPE K 1250 HP 720 RPM 3 PHASE 60 HZ 4000 VOLTS

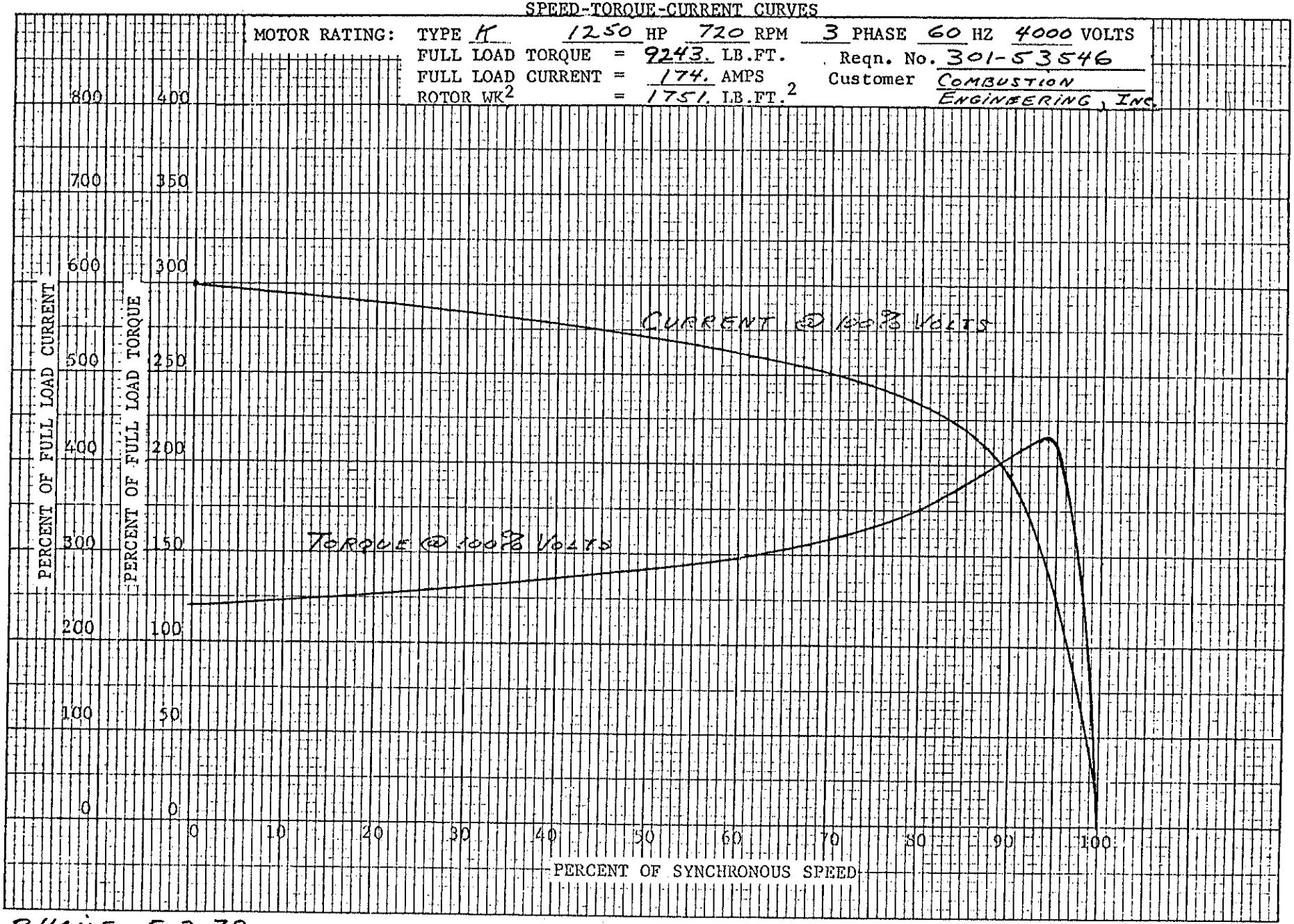
FULL LOAD TORQUE = 9243. LB.FT.

FULL LOAD CURRENT = 174. AMPS

ROTOR WK^2 = 1751. LB.FT.^{2}

Reqn. No. 301-53546

Customer COMBUSTION ENGINEERING, INC.



R.HAILE 5-3-78

HIG- 8190

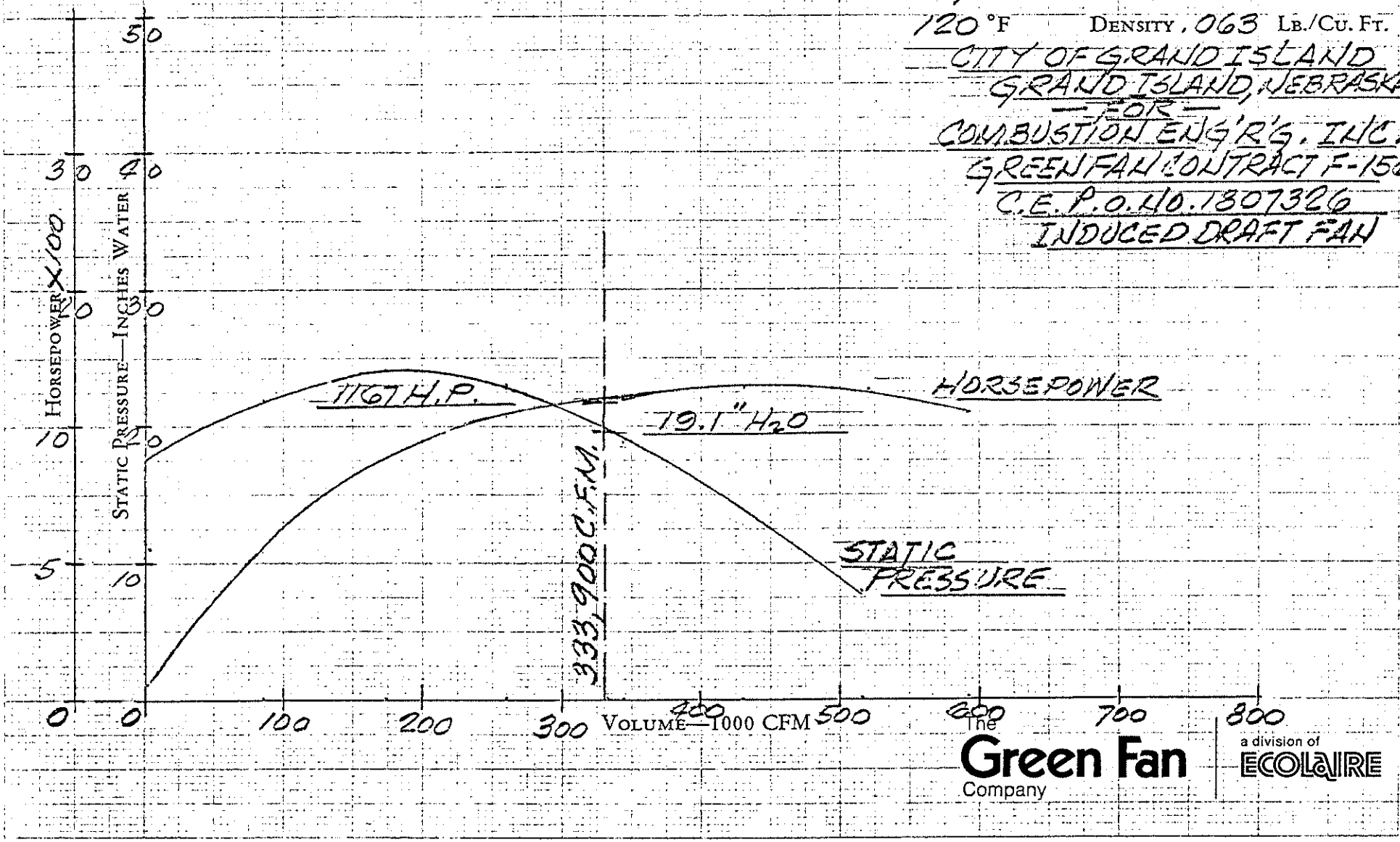
PERFORMANCE CURVES

110 "A" 6138 BVT FAN

708 RPM BAR. HG.

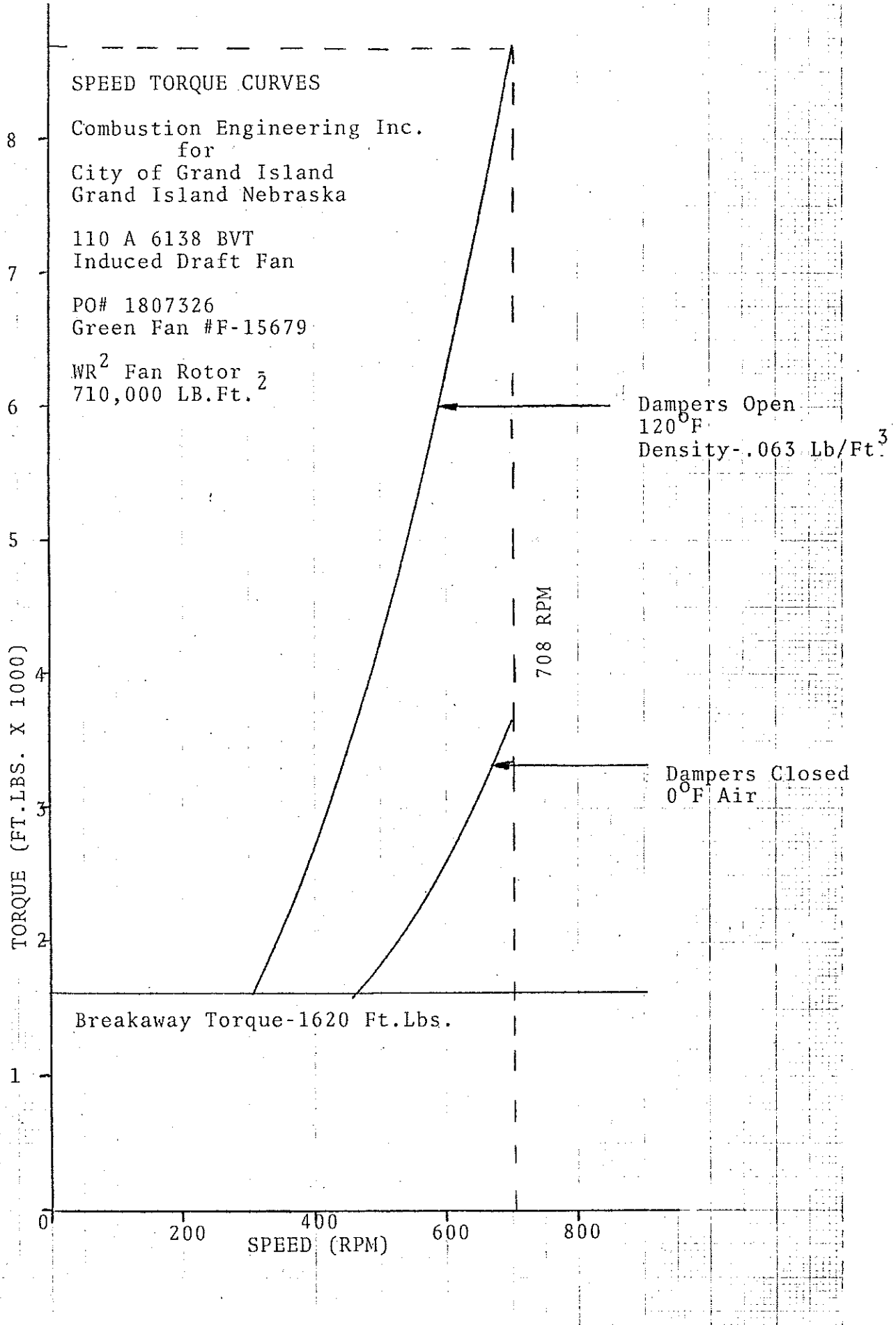
120 °F DENSITY .063 LB./CU. FT.

CITY OF GRAND ISLAND
GRAND ISLAND, NEBRASKA
FOR
COMBUSTION ENG'R'S. INC.
GREENFAN CONTRACT F-15679
C.E.P.O. NO. 1807326
INDUCED DRAFT FAN



The Green Fan Company
a division of ECOLAIRE

CURVE DWG. #8-C-18867

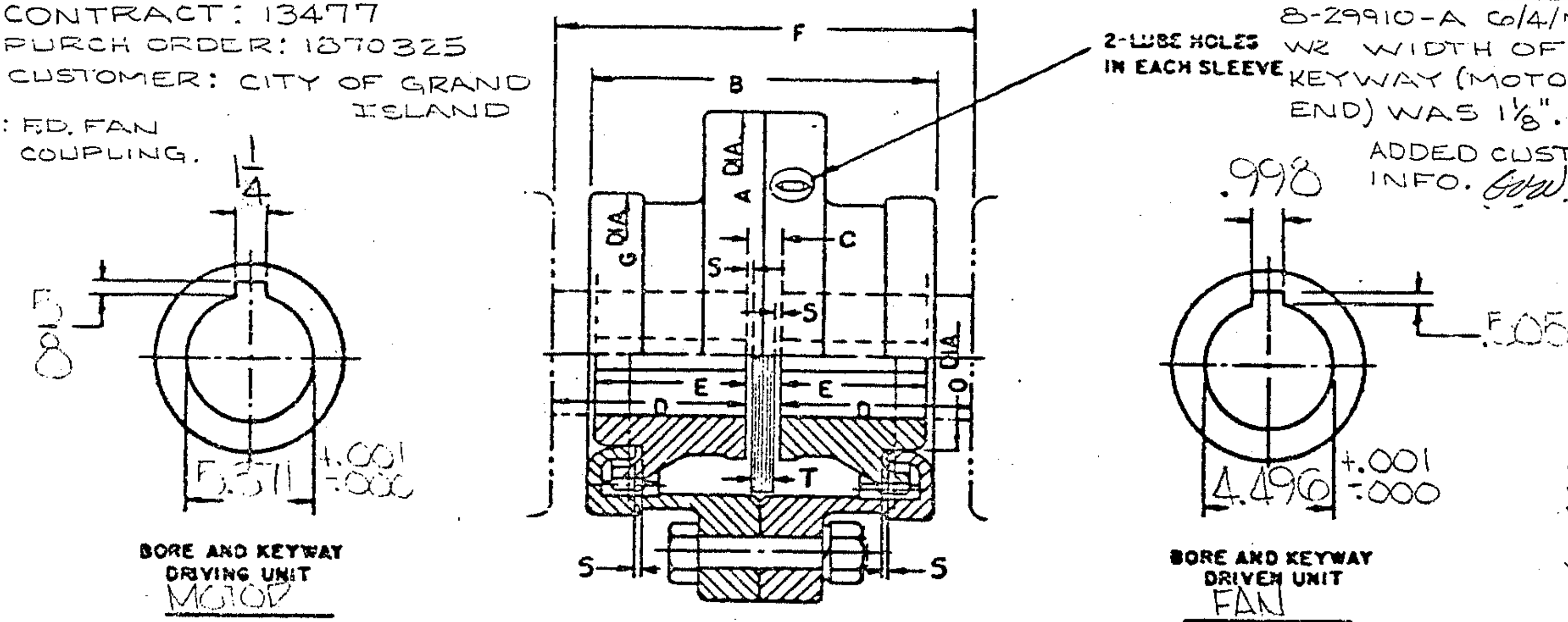


THE GREEN FAN COMPANY
BEACON, NY 8/24/78

DWG # 8-C-18868

CEI CONTRACT: 13477
CEI PURCH ORDER: 1370325
CEI CUSTOMER: CITY OF GRAND ISLAND
USE: FD. FAN COUPLING.

8-29910-A 6/4/79 WZ WIDTH OF KEYWAY (MOTOR END) WAS 1⅛".
ADDED CUST. INFO.



FAST'S SELF-ALIGNING COUPLING

SIZE	CAPACITY H.P./100 RPM	A	B	C	D	E	F	G	O	S	T
1 1/2	9.5	6	4 3/16		2 15/32	1 15/16		3 15/16	2 3/16		
2	22.5	7	5 3/16		3 5/32	2 7/16		4 15/16	2 7/8		
2 1/2	43.8	8 3/8	6 7/16		3 7/8	3 1/32		5 7/8	3 5/8		
3	75.5	9 7/16	7 11/16		4 5/8	3 19/32		6 7/8	4 1/4		
3 1/2	120	11	8 7/8		5 3/8	4 3/16		7 29/32	5		
4	180	12 1/2	10 1/8		6 1/8	4 3/4		9 1/4	5 3/4		
4 1/2	250	13 5/8	11 3/8		6 29/32	5 5/16		10 3/8	6 1/2		
[illegible]	[illegible]	[illegible] 5/8	[illegible] 5/8		[illegible]	8 1/32		[illegible] 9/16	[illegible] 5/8		
5 1/2	465	16 3/4	13 7/8	17/32	8 19/32	6 29/32		12 7/8	8	3/64	7/16
6	305	18	[illegible] 7/8		[illegible]	7 13/32		15 7/8	8 3/16		
7	960	20 3/4	17 3/8		10 5/8	8 11/16		16 1/4	10 5/16		

FOR 3/16 LIMITED END FLOAT

MOTOR ROTOR SHOULD BE POSITIONED ON THE GEOMETRIC CENTER WHEN COUPLING IS POSITIONED AS SHOWN.

1200 H.P. at 708 R.P.M.
ACCOUNT No: F 15679

CUSTOMER: THE GREEN FAN CO.
CUSTOMER'S ORDER NO. 11921
OUR ORDER NO. CP 737285-01 & -02
NO. REQ'D 1
DATE 12-21-78 CERTIFIED BY CPITTS

KOPPERS 13477-C-5464

Power Transmission Dept., Koppers Company, Inc., Baltimore, Md. 21203

G.F.C. Dwg. No. 8-29910-A2-16-1979

FORM 215