ID Fan Motor Data

Synchronous Drive Motor	
Type and Frame:	Frame TS8610 Dripproof Guarded Stator Model 271R206 S/N 270777
Rated Horse power	3000 HP
Rated Top Speed	720 RPM(10 poles)
Speed Range	
Normal operation	360 to 792 RPM (50% to 110%)
Rated Stator Volts: (dual stator winding)	2400
Rated Stator Amperes:	616 Amperes
Temperature Rise	85°C by RTD - stator
Service Factor	1.0
Insulation Class:	
Stator	F
Rotor	F
Rotation	CCW, ODE
Stator RTDs	Qty 6, 10 ohms @ 25°C copper
Space Heaters	2400 watts, 120 volts, 1 phase
Bearing Temperature Detectors	RTD, 100 ohms @ 0°C (one per bearing)

ID Fan Motor Data (Cont'd)

Brushless exciter(6 pole)	Nameplate rated 17KW, 720 RPM, 460 volts, 3 phase, 60 hertz
Rated excitation amps:	38 amps AC (with 218 volts at AC terminals of brushless exciter)
Exciter Temperature Rise:	85° by RTD stator
Exciter insulation class	
Stator	F
Rotor	F
Exciter stator RTDs	Qty 6, 10 ohms @ 25°C copper
Motor Armature WK^2	12740 lb ft^2
Net Total Motor Weight	29700 lbs
Rotor Weight	12785 lbs
Exciter armature	395 lbs
Exciter Rotor WK^2	91 lbs ft^2

GENERAL ELECTRIC DO BRASIL S.A.

DATA SHEET

SYNCHRONOUS MOTORS

Proposition/Item:	
S.O.	: 270240
Quantity	: 1
Rev	:
Date	: nov/22/85

Buyer: HOMESTAKE MINING — GD^2 of load referred to motor speed: 3686 Kgm^2

Driven Equipment: Ventilating Fan — Altitude: 1615 m — Room Temp: 40 °C

	SPECS		
	Model	271R206	
	Serial Number	270777	
3.	Type	TS	
4.	Frame Size	8610	
5.	Number of Poles	10	
6.	Output *1	3000	HP
7.	Speed *1	720	rpm
8.	Voltage *1	2400	V
9.	Frequency *1	60	Hz
10.	Number of phases	3	
11.	Enclosure	Drip Proof Gurded	
12.	Stator conection	Y	
13.	Service Factor	1.0	
14.	Duty Cycle	Continue	
15.	Starting Method	LCI	
16.	Rotor Type	Salient Pole with Amort.	
17.	Stator Insulation Class	F VPI	
18.	Stator Temp. Rise: Δt = 85 °C by	RTD	
19.	Rotor Insulation Class	F	
20.	Rotor Temp. Rise: Δt = 80 °C by	Res.	
21.	Rated Current	616	A
22.	Starting Current	NA LCI	%
23.	Starting Torque	NA LCI	%
24.	Pull in Torque	NA LCI	%
25.	Pull out Torque	175	%
26.	Type of Coupling	Damping Type	
27.	Construction	B3 (IEC 34-7)	
28.	Instalation Indoor [X]	Outdoor [ ]	
29.	Hazardous Area Yes [ ]	No [X]	
	NEC Class	Div. Group Code	
30.	Type of Bearing	Sleeve	
31.	Bearing Lubrication	Oil Ring	
32.	End play	12.7	mm
33.	Number of starts	LCI	

34. Load (%)	Cos ϕ	Efficiency *2
100	0.9	0.970
75	0.9	0.969
50	0.9	0.964

35.	Reactances	xd= 1.37	xq= 0.90	
	P.U.	xd'= 0.35	xq"= 0.17	
		xd"= 0.16		
36.	Total Weight	13500	Kg (estimate)	
37.	Rotor GD^2	2300	Kgm^2 (estimate)	
38.	Dimensions to outline:	1416423M		
39.	Direction of rotation from coupling side	CW		
40.	Minimum Airgap	6.1 mm		

41.	Excitation Brushless (X)	Static ( )
	Output	17 KW
	Voltage	125 V
42.	Brushless field rated Voltage	460 V 3Ø 60 Hz
43.		
44.		

	ACCESSORIES	
1.	RTD's for stator 10 Ω at 25 °C	Quantity: 6
2.	RTD's for bearings 100 Ω at 0 °C	(2)
3.	Bearing Thermosts with two contacts (Alarm and trip)	( )
4.	Bearing Dial Thermometers with two contactos (Alarm and trip)	( )
5.	Space Heater Voltage 120 V - nº of phases 1 Output 2400 W	
6.	Bearing Vibration Detectors	( )
7.	Current Transformer	( )
8.	Capacitor + Lightning Arrestor	( )
9.	Foundation Bolts	( )
10.	Rigid Base	( )
11.		
12.		
13.		

	TESTS	
1.	Normal	
X	a) Winding Resistances	
X	b) Insulation Resistances	
X	c) High Potential	
X	d) Current and Power at no load	
X	e) Magnetization Curve	
X	f) Vibration Measurement	
X	g) Bearing Heat Run	
X	h) Short Circuit characteristics	
X	i) Efficiency	
2.	Special	
	a) Heat Run	( )
	b)	
	c)	
	d)	
	e)	

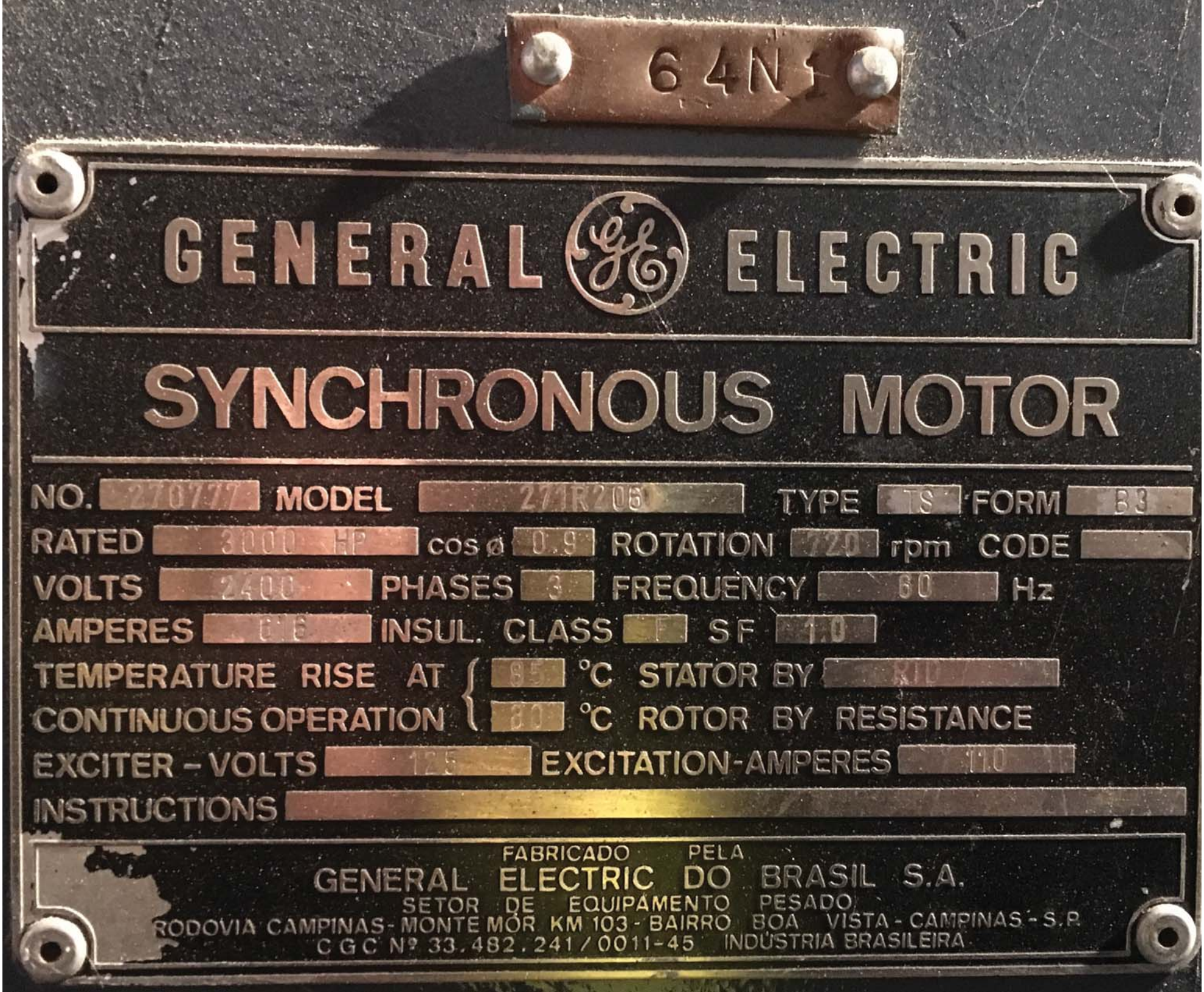
NOTES: *1 Continuous Operating Speed Range 50 to 110% of base speed. Suitable for 3000HP, 720 rpm, 60 Hz, 2400V, 1.0 S.F. 0.9 PF
3000 HP, 792 rpm, 66 Hz, 2400 V, 1.0 S.F 0.9 PF
2062 HP, 597 rpm, 49.8Hz, 2400 V, 1.0 S.F.0.95PF
*2 Sinsoidal Wave Value

Prepared by: M. Banno

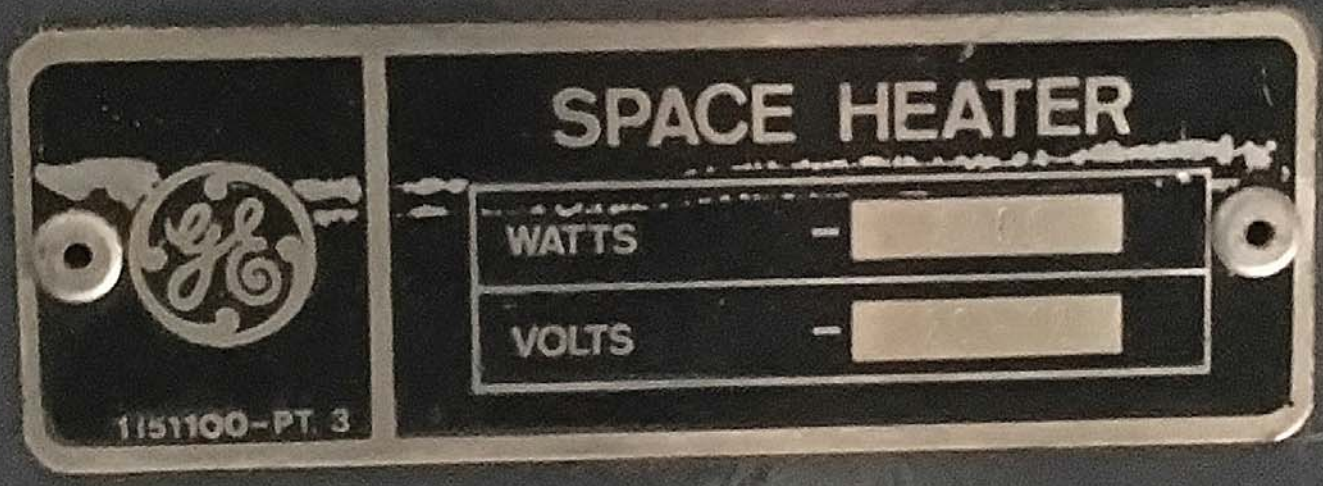
Aproved : A M Banno

Date : nov/22/85

1157971

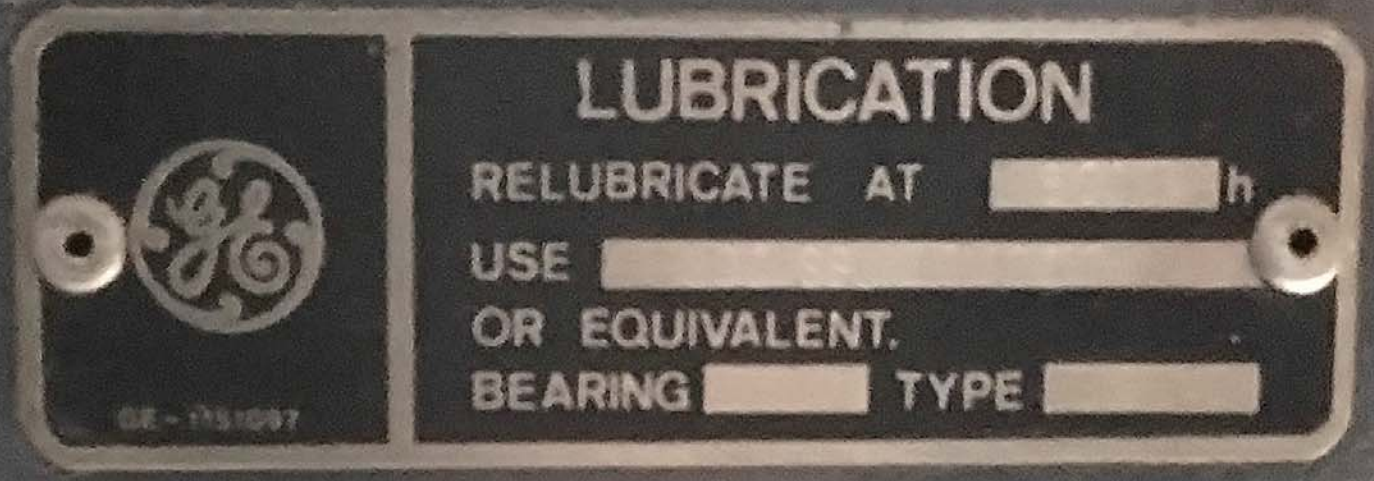

64N1
GENERAL ELECTRIC
SYNCHRONOUS MOTOR
NO. 270777 MODEL 271R206 TYPE TS FORM B3
RATED 3000 HP cos ø 0.9 ROTATION 720 rpm CODE
VOLTS 2400 PHASES 3 FREQUENCY 60 Hz
AMPERES 0.6 INSUL. CLASS F SF 1.0
TEMPERATURE RISE AT 85 °C STATOR BY RTD
CONTINUOUS OPERATION 80 °C ROTOR BY RESISTANCE
EXCITER - VOLTS 125 EXCITATION-AMPERES 110
INSTRUCTIONS
FABRICADO PELA
GENERAL ELECTRIC DO BRASIL S.A.
SETOR DE EQUIPAMENTO PESADO
RODOVIA CAMPINAS-MONTE MÓR KM 103 - BAIRRO BOA VISTA - CAMPINAS - S.P.
C G C Nº 33.482.241/0011-45 INDÚSTRIA BRASILEIRA

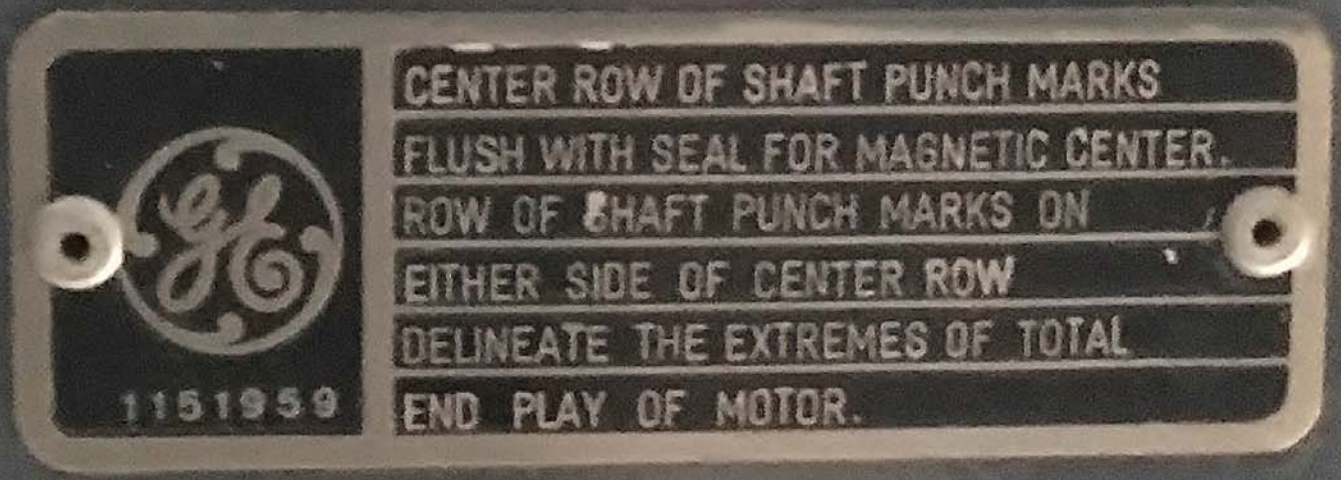

WARNING
INSTALL AND GROUND THIS MACHINE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND SOUND LOCAL PRACTICES.
CONTACT WITH ROTATING OR ELECTRICALLY ENERGIZED PARTS CAN BE HAZARDOUS.
BEFORE STARTING MAINTENANCE PROCEDURES DE-ENERGIZED ALL POWER SOURCES TO THE MACHINE AND ACCESSORY DEVICES.
BE CERTAIN THAT EQUIPMENT CONNECTED TO THE SHAFT WILL NOT CAUSE MECHANICAL ROTATION.
FAILURE TO OBSERVE NECESSARY PRECAUTIONS MAY RESULT IN SERIOUS OR FATAL INJURY.
GE - B34A770177-199

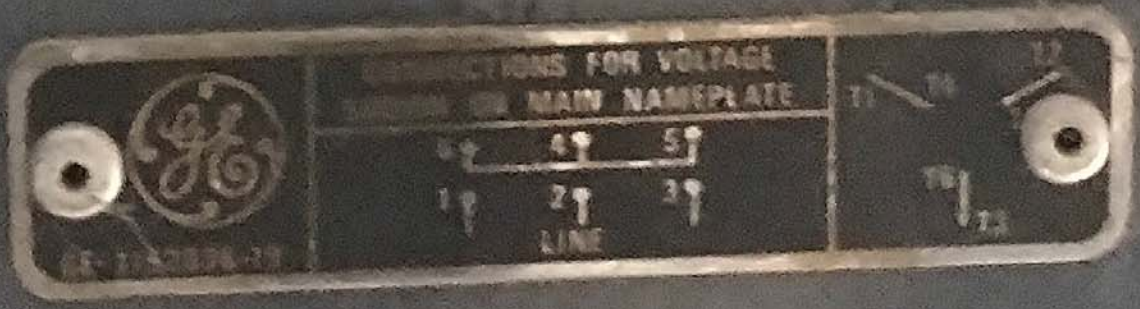

SPACE HEATER
WATTS -
VOLTS -
1151100-PT. 3


ROTATION
GE-1160096


ROTATION


LUBRICATION
RELUBRICATE AT
h
USE
OR EQUIVALENT.
BEARING
TYPE


CENTER ROW OF SHAFT PUNCH MARKS
FLUSH WITH SEAL FOR MAGNETIC CENTER.
ROW OF SHAFT PUNCH MARKS ON
EITHER SIDE OF CENTER ROW
DELINEATE THE EXTREMES OF TOTAL
END PLAY OF MOTOR.
1151959


MAIN NAMEPLATE
LINE

GENERAL ELECTRIC

BRUSHLESS EXCITER

NO. 27077 MODEL 27P77 TYPE

FORM A1 PROTECTION RATED kW (DC)

VOLTS (DC). AMPERES (DC) CIRCUIT

DISCHARGE RESISTOR Ω AT 25°C INSULATION: STATOR ROTOR

EXCITATION: RATED AMPERES RATED VOLTS

TEMPERATURE RISE { STATOR 80 °C RESISTANCE
ROTOR 80 °C RESISTANCE

INSTRUCTIONS

FABRICADO PELA

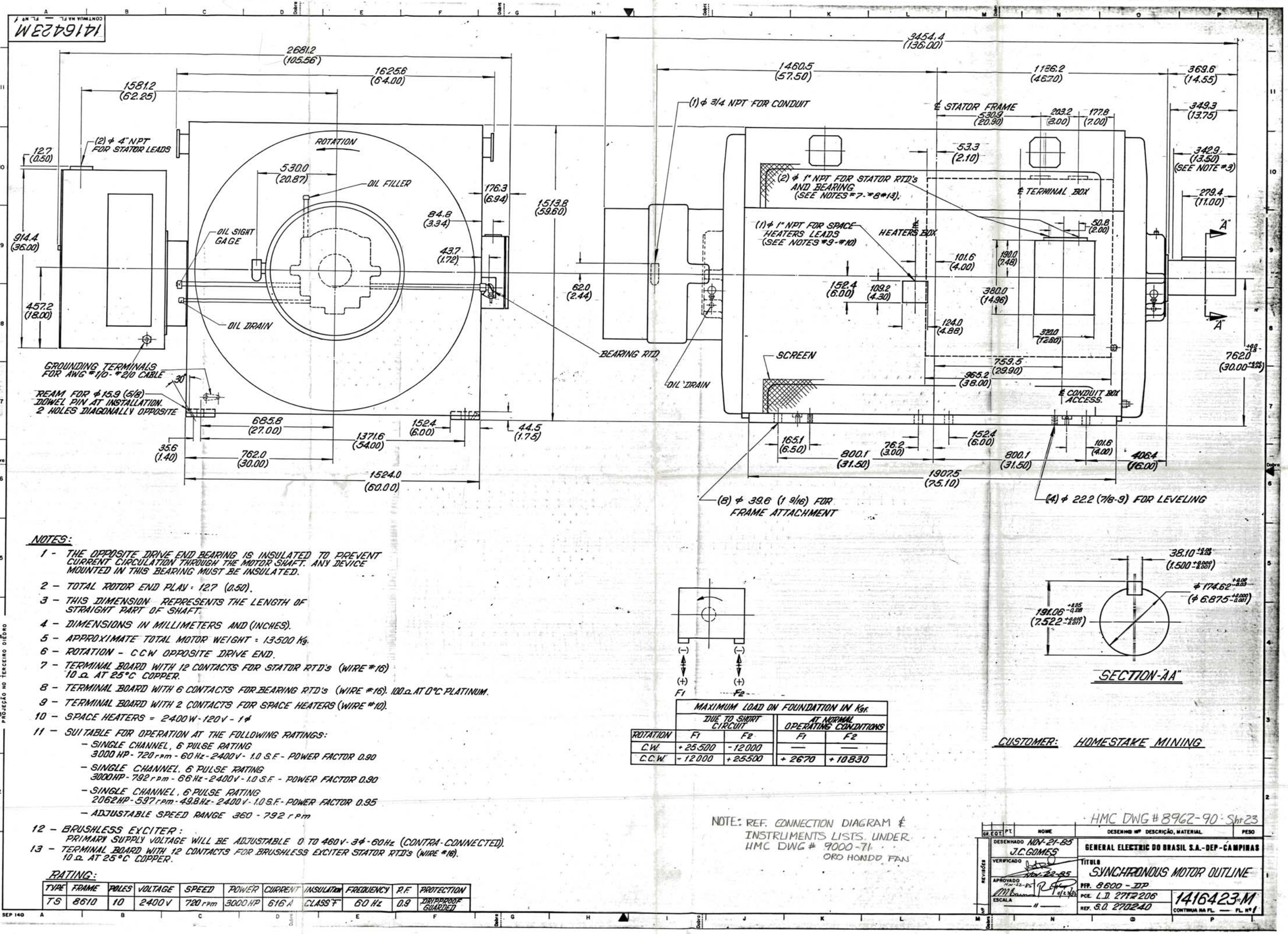
GENERAL ELECTRIC DO BRASIL S.A.

SETOR DE EQUIPAMENTO PESADO

RODOVIA CAMPINAS-MONTE MÓR KM 103-B. BOA VISTA-CAMPINAS S.P.

C.G.C. Nº 33.482.241/0011-45 INDÚSTRIA BRASILEIRA

1416423M



NOTES:

1 - THE OPPOSITE DRIVE END BEARING IS INSULATED TO PREVENT CURRENT CIRCULATION THROUGH THE MOTOR SHAFT. ANY DEVICE MOUNTED IN THIS BEARING MUST BE INSULATED.

2 - TOTAL ROTOR END PLAY = 12.7 (0.50).

3 - THIS DIMENSION REPRESENTS THE LENGTH OF STRAIGHT PART OF SHAFT.

4 - DIMENSIONS IN MILLIMETERS AND (INCHES).

5 - APPROXIMATE TOTAL MOTOR WEIGHT = 13.500 Kg.

6 - ROTATION - CCW OPPOSITE DRIVE END.

7 - TERMINAL BOARD WITH 12 CONTACTS FOR STATOR RTD'S (WIRE #16) 10 Ω AT 25°C COPPER.

8 - TERMINAL BOARD WITH 6 CONTACTS FOR BEARING RTD'S (WIRE #16). 100 Ω AT 0°C PLATINUM.

9 - TERMINAL BOARD WITH 2 CONTACTS FOR SPACE HEATERS (WIRE #10).

10 - SPACE HEATERS = 2400 W - 120 V - 1ϕ

11 - SUITABLE FOR OPERATION AT THE FOLLOWING RATINGS:
- SINGLE CHANNEL, 6 PULSE RATING 3000 HP - 720 r.p.m - 60 Hz - 2400 V - 1.0 S.F. - POWER FACTOR 0.90
- SINGLE CHANNEL, 6 PULSE RATING 3000 HP - 792 r.p.m - 66 Hz - 2400 V - 1.0 S.F. - POWER FACTOR 0.90
- SINGLE CHANNEL, 6 PULSE RATING 2062 HP - 597 r.p.m - 49.8 Hz - 2400 V - 1.0 S.F. - POWER FACTOR 0.95
- ADJUSTABLE SPEED RANGE 360 - 792 r.p.m

12 - BRUSHLESS EXCITER: PRIMARY SUPPLY VOLTAGE WILL BE ADJUSTABLE 0 TO 460 V - 3ϕ - 60 Hz (CONTRA-CONNECTED).

13 - TERMINAL BOARD WITH 12 CONTACTS FOR BRUSHLESS EXCITER STATOR RTD'S (WIRE #16). 10 Ω AT 25°C COPPER.

RATING:

TYPE	FRAME	POLES	VOLTAGE	SPEED	POWER	CURRENT	INSULATION	FREQUENCY	P.F.	PROTECTION
TS	8610	10	2400 V	720 rpm	3000 HP	616 A	CLASS "F"	60 Hz	0.9	DRIPPROOF GUARDNED

ROTATION	MAXIMUM LOAD ON FOUNDATION IN Kgf. DUE TO SHORT CIRCUIT F1	DUE TO SHORT CIRCUIT F2	AT NORMAL OPERATING CONDITIONS F1	AT NORMAL OPERATING CONDITIONS F2
C.W.	+ 25500	- 12000	—	—
C.C.W.	- 12000	+ 25500	+ 2670	+ 10830

SECTION "AA"

CUSTOMER: HOMESTAKE MINING

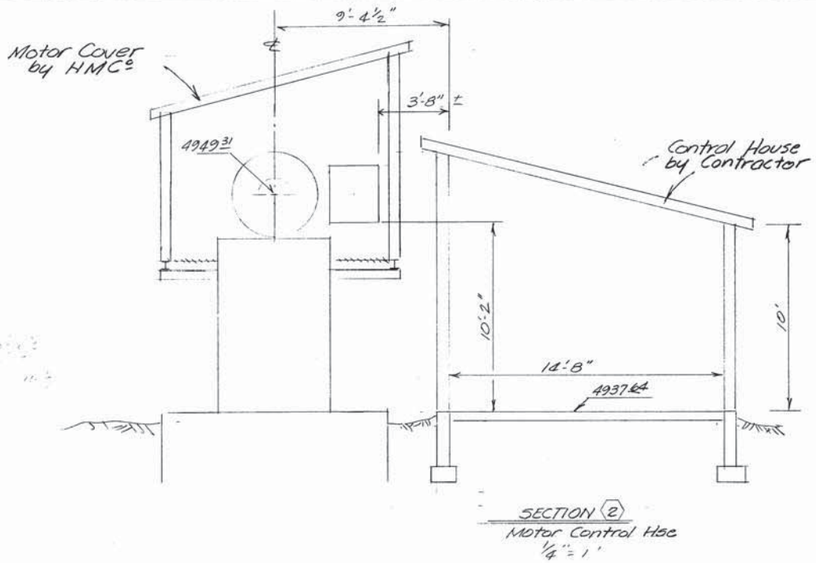
NOTE: REF. CONNECTION DIAGRAM ℄ INSTRUMENTS LISTS UNDER HMC DWG # 9000-71.
ORO HONDO FAN

HMC DWG # 8962-90 - Sht 23

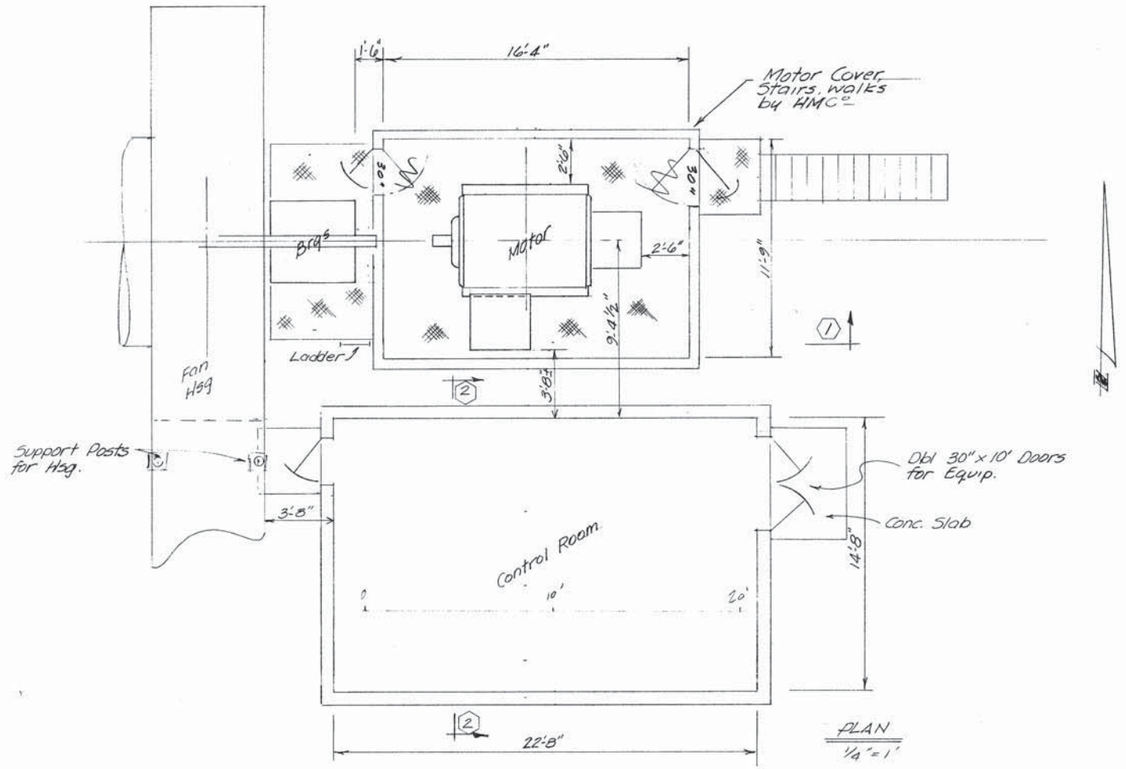
GE EOT	PT.	NOME	DESENHO Nº DESCRIÇÃO, MATERIAL	PESO
	DESENHADO	NOV-21-85 J.C.GOMES	GENERAL ELECTRIC DO BRASIL S.A.-DEP-CAMPINAS	
	VERIFICADO	Nov-22-85	TÍTULO SYNCHRONOUS MOTOR OUTLINE	
	APROVADO	Nov-22-85	PFP. 8600 - DP	
	ESCALA	—	PCE. L.D. 2712206	1416423-M
			REF. S.O. 270240	CONTINUA NA FL. — FL. Nº 1

PROJEÇÃO NO TERCEIRO DIEDRO

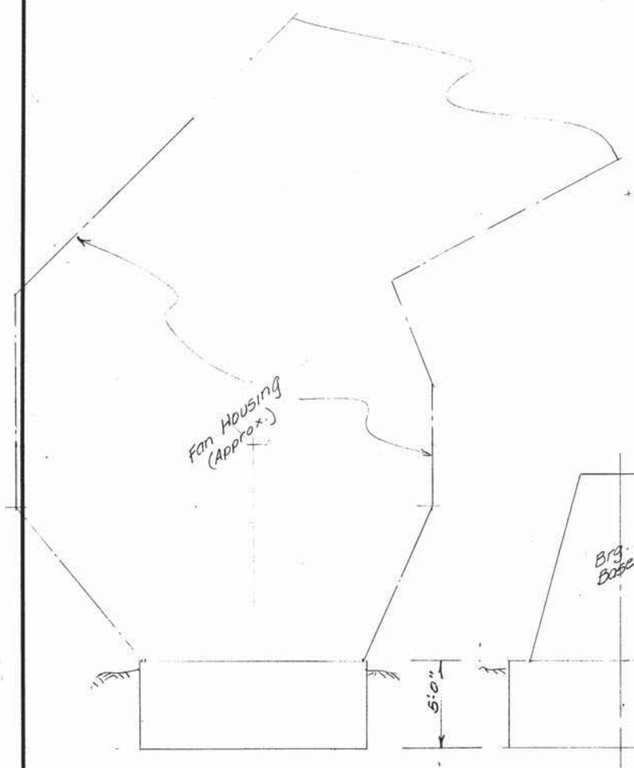
SEP 140



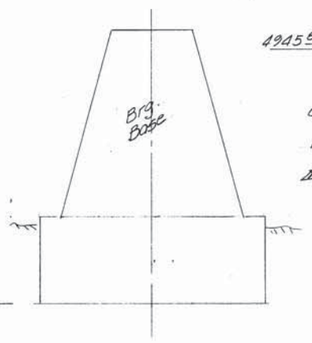
SECTION (2)
Motor Control Hse
1/4" = 1'



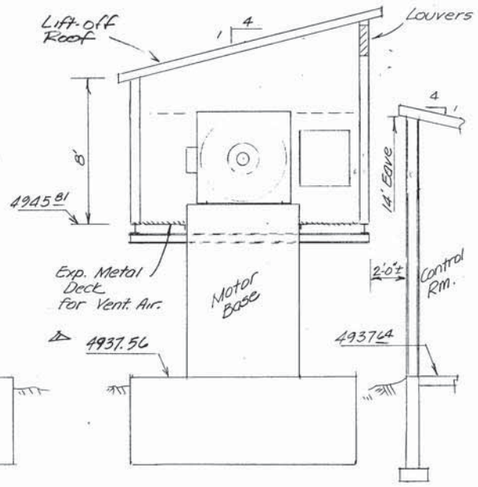
PLAN
1/4" = 1'



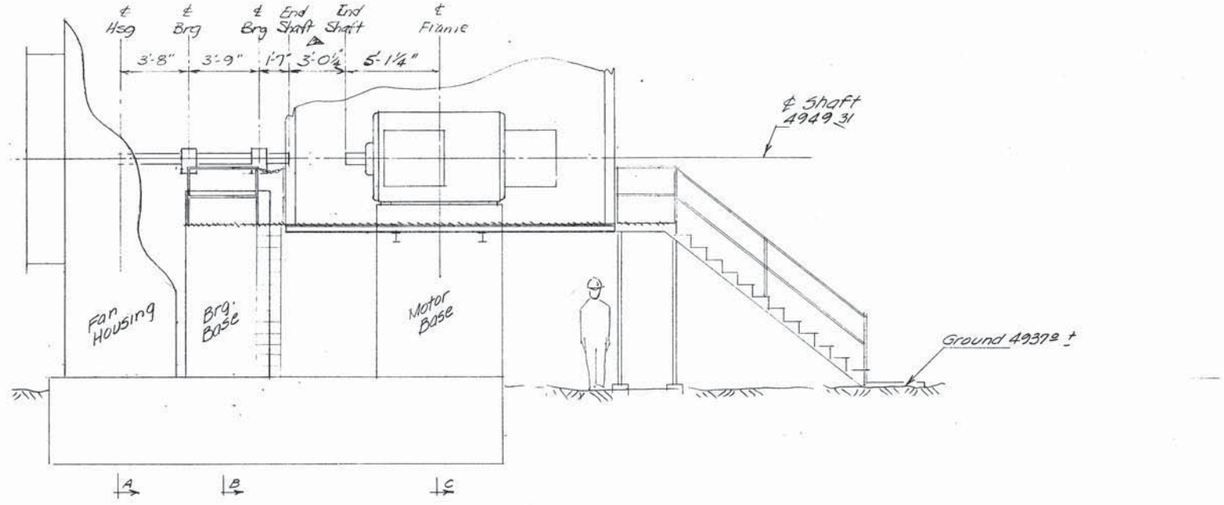
SECTION A
1/4" = 1'



SECTION B
1/4" = 1'



SECTION C
1/4" = 1'



VIEW (1)
1/4" = 1'

1/4" = 1'

DATE	BY	REVISIONS
4/18/86	VJ	△ was 4937.56 ▷ was 36
5/12/86	DM	5'0" dim btwn Shaft ends

HOMESTAKE GOLD MINE
LEAD, SOUTH DAKOTA 57754
PLT ENGR. DEPARTMENT

DRAWN BY DZZI APPROVED
TRACED SCALE 1/4
CHECKED DATE 1-12-86

ORO HONDO FAN
GENERAL LAYOUT

DWG. NO. 8962-90 Sht 2

AMERICAN DAVIDSON

PROPOSAL NO. P20930/CF85

PAGE 1 OF 3 PAGES

DATE: 10/9/85

American Blower®
Gyrol® Fluid Drives
Sirocco®
Sturtevant®

FEDERAL EXPRESS

Ronald G. Eddy

STURTEVANT DIVISION
ONE WESTINGHOUSE PLAZA
HYDE PARK, MA 02136

434 Hp
386 rpm

Homestake Mining Company
215 Main Street
Lead, SD 57754

Attention: Mr. Allen Blake Brown,
Mechanical Engineer

Subject: Main Surface Ventilation Fan

Gentlemen:

In response to your letter dated October 3, 1985, we are pleased to submit our revised bid for a fan running at 720 RPM. As requested, we have added in the pressure loss from the inlet duct bend to the fan inlet.

Item 1:

One (1) American Davidson type 1400-S1BAB92-EV single inlet backward airfoil bladed centrifugal fan arranged for direct coupled drive from a 3000 HP, 720 RPM motor of your supply. The fan would be complete with variable inlet vanes, antifriction grease lubricated bearings, vertical diffuser and flexible spacer type coupling. The fan would be designed for the following duty:

Volume (CFM)	478,000
Static Pressure (in. W.G.)	26.48
Inlet Density (lbs/cu. ft.)	0.0538
Inlet Temperature (°F)	93
Fan Speed	720
Absorbed Power (BHP)	2192.4
Motor Speed (RPM)	720
Recommended Motor Power (BHP)	3000
Diffuser OUtlet Velocity (ft./min)	2830

Technical Data

Impeller Diameter (in.)	140
Impeller Weight (lbs.)	12,675
Impeller wk2 (lbs. ft2)	279,050
Performance Curves #	P20930/3 & 4

Total net fan price F.O.B. Lead, SD $167,337.00

Approximate Shipping Weight 58,000 lbs.

w/o Variable Inlet Vanes: $155,737
less $11,600

Continued...

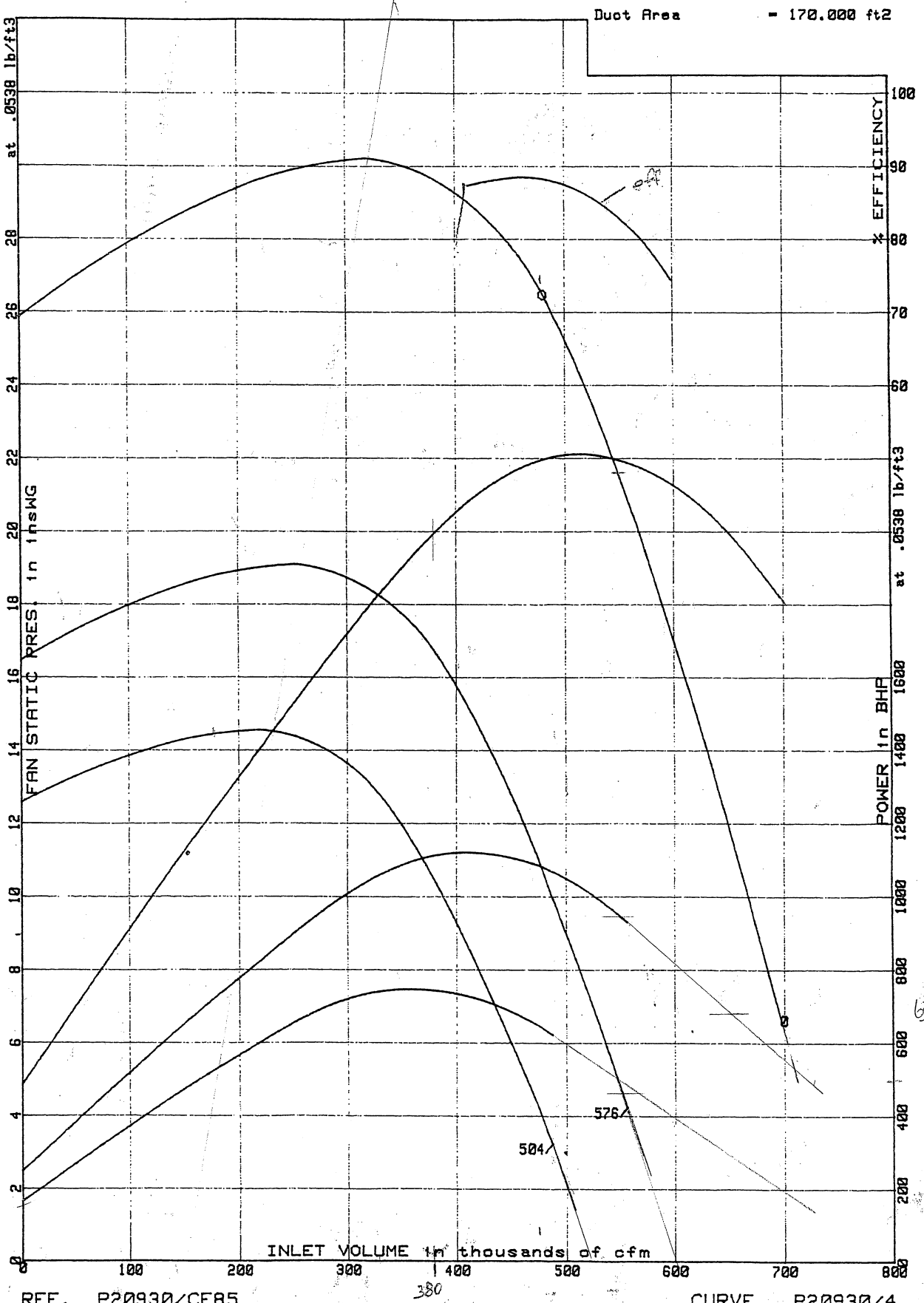
N3.232N23.37A5653N00.00.1

	Volume	Pressure	Power	Density
1 Design	478.000	26.480	2192.4	.0538

AMERICAN DAVIDSON Inc.

140.0 ins SI BAB92 at 720 RPM

with OS and VIV control gear.



REF. P20930/CF85

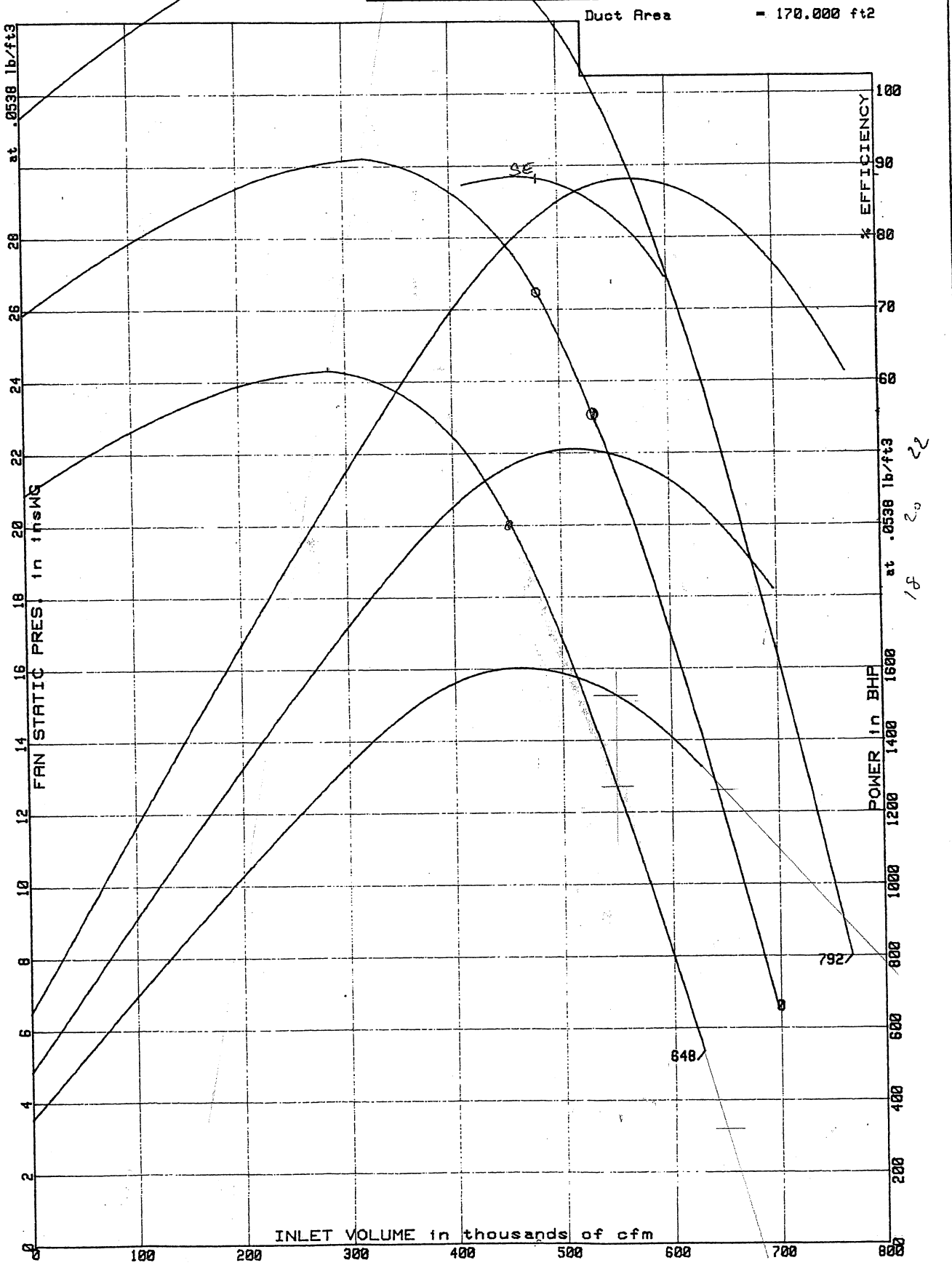
CURVE. P20930/4

	Volume	Pressure	Power	Density
1 Design	478.000	26.480	2192.4	.0538

AMERICAN DAVIDSON Inc.

140.0 ins SI BAB92 at 720 RPM

with OS and VIV control gear.



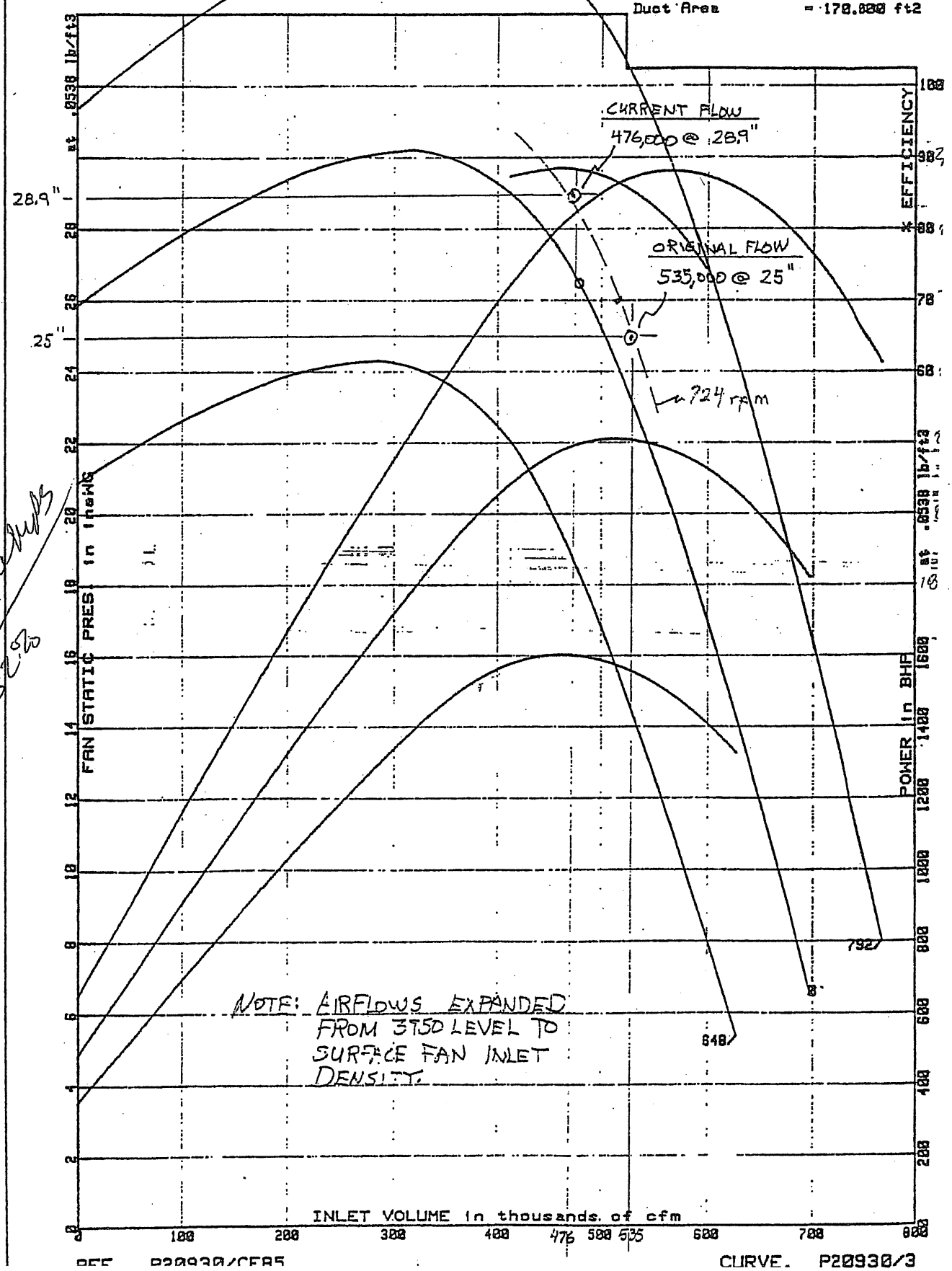
REF. P20930/CF85

CURVE. P20930/3

	Volume	Pressure	Power	Density
1 Design	478.000	26.480	2192.4	.0538

AMERICAN DAVIDSON Inc.

140.0 ins SI BAB92 at 720 RPM
with OS and VIV control gear.



720
538.1 cfm
82.5%

REF P20930/CFB5 CURVE. P20930/3

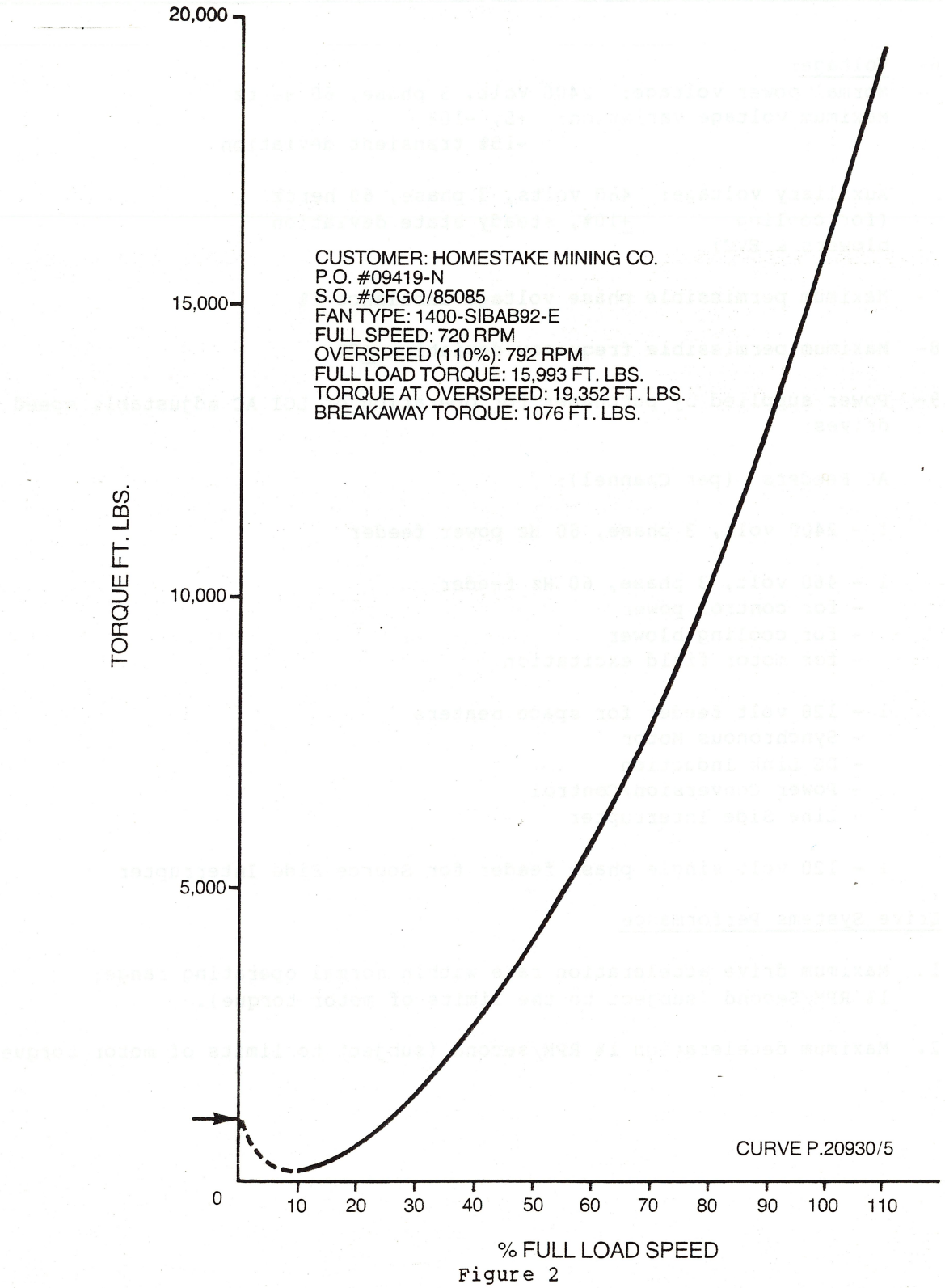


Figure 2

Ventilating Fan Speed Torque Curve