

DATE: 10/6/98  
BY: SKD

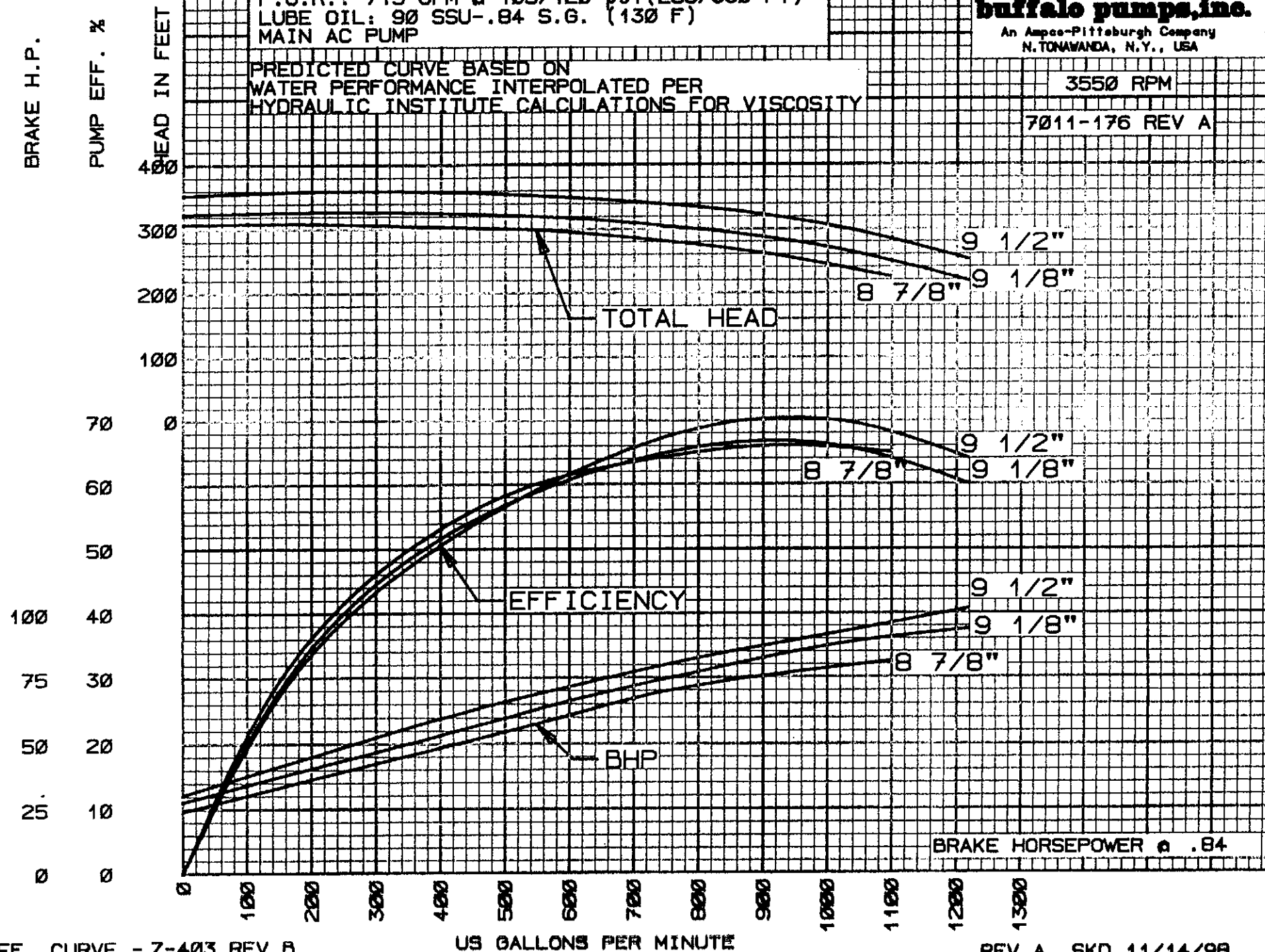
CUSTOMER: GENERAL ELECTRIC MOT-650  
P.O.R.: 400 GPM @ 105/120 psi (289/330 FT)  
P.O.R.: 715 GPM @ 105/120 psi (289/330 FT)  
LUBE OIL: 90 SSU-.84 S.G. (130 F)  
MAIN AC PUMP

CHARACTERISTIC CURVES  
7011 VCCE  
**buffalo pumps, inc.**  
An Ameco-Pittsburgh Company  
N. TONAWANDA, N.Y., USA

PREDICTED CURVE BASED ON  
WATER PERFORMANCE INTERPOLATED PER  
HYDRAULIC INSTITUTE CALCULATIONS FOR VISCOSITY

3550 RPM

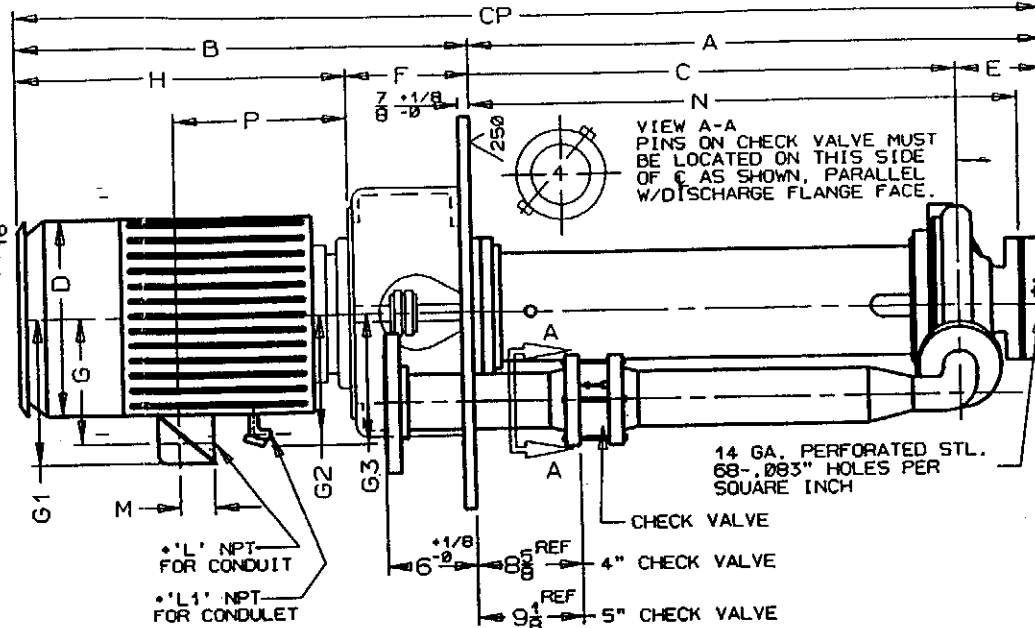
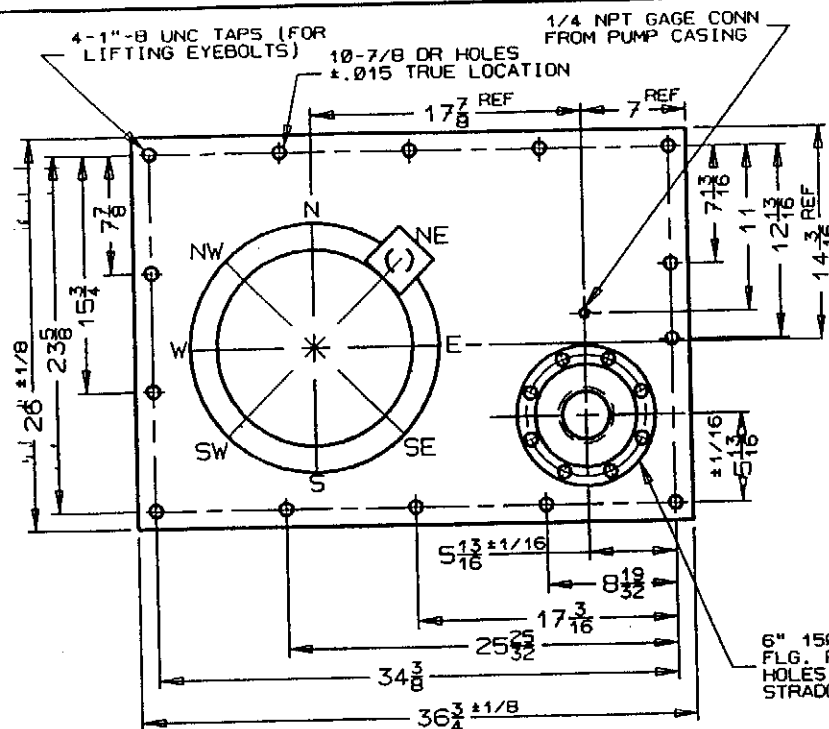
7011-176 REV A



REF. CURVE - Z-403 REV B

US GALLONS PER MINUTE

REV A SKD 11/14/98



\*BOXES SHOWN HERE FOR  
DIMENSIONAL CLARITY ONLY

CLOCKWISE ROTATION

PUMP DATA											MOTOR DATA				A	B	C	D	E	F	G	G1	G2	G3	H	L	L1	M	N	C	P	COND. BOX LOC.	REMARKS
PT	SIZE	IMP DIA	GPM	HD-FT	S.G.	HP	RPM	HZ	PH	FRAME	ENCL																						
001	7011	8 <sup>1</sup> / <sub>8</sub>	550	289	.84	75	3550	60	3	365HP16	TEFC-SD	48 <sup>1</sup> / <sub>2</sub>	43 <sup>1</sup> / <sub>2</sub>	41	23	7 <sup>1</sup> / <sub>2</sub>	10	13	16 <sup>1</sup> / <sub>2</sub>	12	-	33	3	<sup>3</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	45	91 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>	NE		4" CHECK VALVE		
003	7011	9 <sup>1</sup> / <sub>8</sub>	715	289	.84	100	3550	60	3	405HP16	TEFC-SD	48 <sup>1</sup> / <sub>2</sub>	48 <sup>1</sup> / <sub>2</sub>	41	25 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>2</sub>	10	16 <sup>1</sup> / <sub>2</sub>	20 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>2</sub>	-	38 <sup>1</sup> / <sub>2</sub>	3	<sup>3</sup> / <sub>4</sub>	7	45	96 <sup>1</sup> / <sub>2</sub>	21 <sup>1</sup> / <sub>2</sub>	NE		5" CHECK VALVE		

REVISION			
LTR	DESCRIPTION	DATE	APPROVED

CERTIFIED CORRECT FOR  
CONSTRUCTION PURPOSES  
ONLY WHEN FILLED & SIGNED  
CUSTOMER ORDER 1697

BRANCH OFFICE ORDER 992  
SHOP ORDER 99431401 (2 UNITS)  
DATE 11/15/99 PER Biel Kowalski

PER DATE  
DWN. BK 8/25/99  
CKD. SK 8/25/99

THIS DRAWING IS THE PROPERTY OF  
BUFFALO PUMPS INC. AND IS  
RETURNABLE UPON REQUEST. IT IS  
FOR THE CONFIDENTIAL USE OF THE  
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INC. THE USE OF THIS DRAWING IN  
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PARTS FROM OTHERS IS PROHIBITED  
AND VOID OUR EQUIPMENT WARRANTY.

BUFFALO PUMPS INC.  
AN AMPCO-PITTSBURGH COMPANY  
N. TONAWANDA, N.Y., USA

GE STEAM TURBINE A.C.  
L.O. PUMP W/CHECK VALVE  
G.E. PT#363A7451

SIZE CODE IDENT. DRAWING NO. REV.  
B 83130 CC16047-80X  
SCALE NTS (.125) SHEET ANVIL



# GE Industrial Control Systems

November 04, 1999

Customer Service Dept  
Fort Wayne, IN 46802  
(219) 439-2000

Customer: BUFFALO PUMPS INC  
874 OLIVER ST  
NORTH TONAWANDA NY 14120

Customer Order .....: 40347A  
Customer Part .....: 99431397,1399,1401

GEICS Reqn / Item .....: 69217417 / 1  
GEICS Job Number .....: 991101525

**MODEL NUMBER** .....: 5KS405ST130D1  
Outline Drawing .....: 225B5660AJ  
Connection Diagram .....: GEM2034E-FIG7  
Installation Manual .....: GEK-95655  
Design Code .....: 40DS0476A  
Type .....: KS  
Frame .....: L405HP16  
Phases .....: 3  
Poles .....: 2  
Horsepower .....: 100  
RPM .....: 3570  
Voltage .....: 460  
Hertz .....: 60  
Amps - FL .....: 109.0  
Service Factor .....: 1.15

**ESTIMATED WEIGHT** .....: 1480 Lbs (671.33Kg)  
Time Rating .....: CONT  
Enclosure .....: TEFC  
Encl Construction .....: SD  
Ambient .....: 40  
Insulation Class .....: F  
NEMA Design .....: B  
Nominal Efficiency .....: 93.6  
Guaranteed Efficiency .....: 93.0  
KVA Code .....: G  
Max KVAR .....: 13.1  
Power Factor .....: 91.5  
Bearing - DE .....: 6312ZZC3  
Bearing - ODE .....: 6212ZZC3

Enclosure is Totally Enclosed Fan-Cooled Severe Duty

## Additional Motor Data:

VIBRATION LIMIT = 0.0005 INCHES  
HTR LDS H 115V 100W  
GREASE: MOBIL #28  
65 DEG C AMBIENT AT 1.0 SF  
2P, VSS-NT, 115V HTR LDS TO CONDULET,  
SPL GREASE MOBIL #28 - SPL BALANCE  
REFRESH 6-21-99

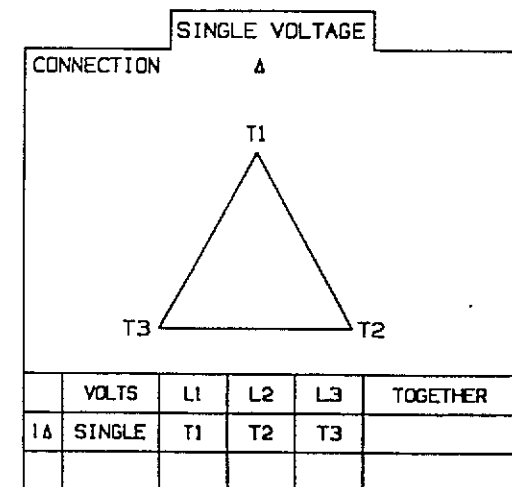
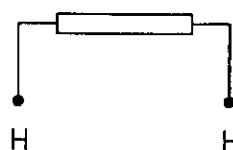


FIG. 1  
HEATER CONN.



CONTROL	L1	L2
VOLTAGE ONLY	H	H

Performance Characteristics for: 5KS405ST130D1Design: 40DS0476A

LOAD%	125.0	115.0	100.0	75.0	50.0	25.0	0.0
%EFF	93.6	93.8	93.6	94.0	93.2	89.4	0.0
%PF	91.0	91.5	91.5	91.0	88.0	75.0	12.7
AMPS	137.5	125.8	109.0	82.1	57.2	35.0	19.7

TORQ(FL)#FT .....: 147.12

TORQ(LR)%FL .....: 275

TORQ(BD)%FL .....: 263

AMPS(LR) .....: 752.3

PF@START .....: 0.413

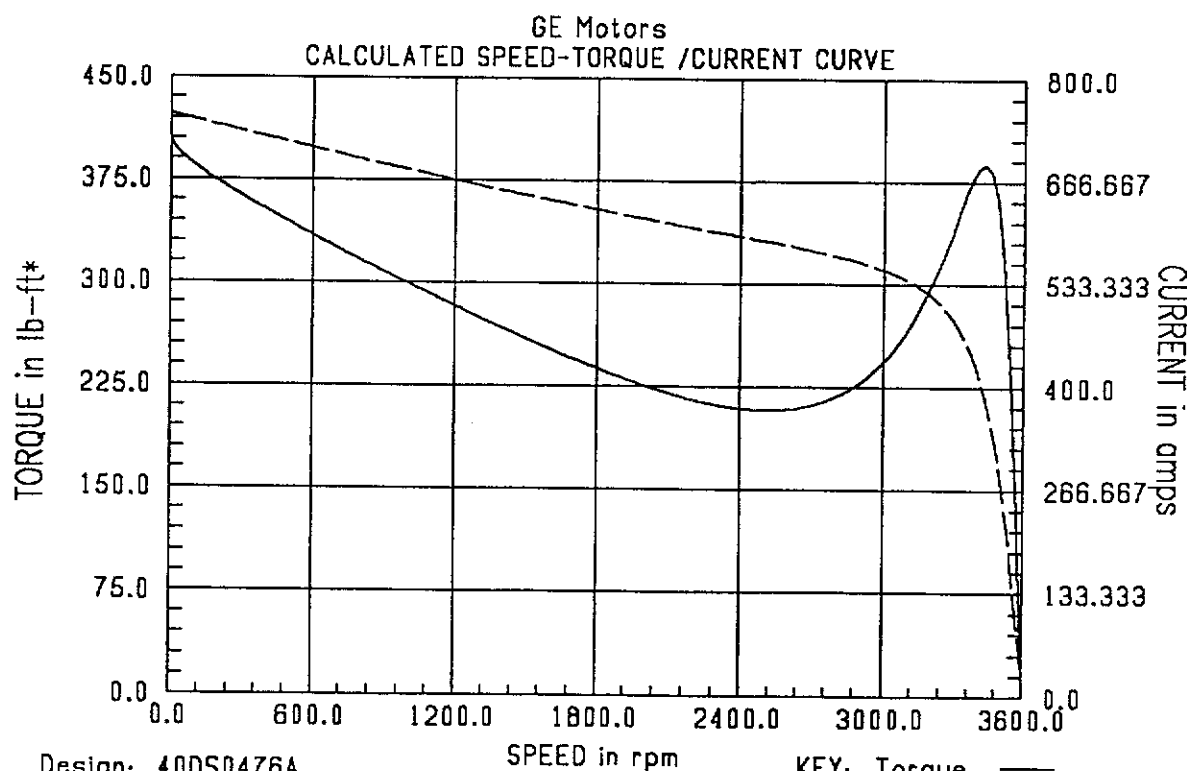
This motor is capable of two cold or one hot start with a maximum connected load inertia not to exceed 186.1 Lb-Ft Sq (7.8Kgs-Meter Sq) at 100% V. Acceleration time with maximum inertia is 10.3 sec. Safe stall time at 100% volts is 17.5 seconds cold 13.1 seconds hot. Rotor inertia is 17.22 Lb-Ft Sq (0.73Kgs-Meter Sq).

Open Circuit A-C .....: 1.767

Short Circuit D-C .....: 0.022

Short Circuit A-C .....: 0.044

X/R Ratio .....: 8.1



Design: 40DS0476A

Model/Type: 5KS405S

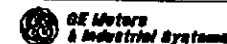
Horsepower: 100.00

Voltage: 460.

Frequency: 60.

The values are calculated data and not to be used to guarantee performance  
\*Divide Torque by .7375 to convert to N-m

BREAK



**225B5660AJ**

**OUTLINE** TEFC  
FIRST MADE FOR NEMA 400 CAST IRON FRAME CONSTR.  
VERTICAL SOLID SHAFT-NORMAL THRUST-16.50 BD

DIMENSIONS IN INCHES  
NEMA TYPE P BASE

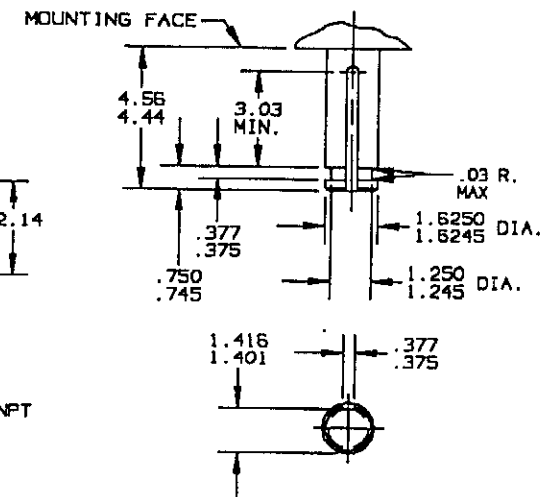
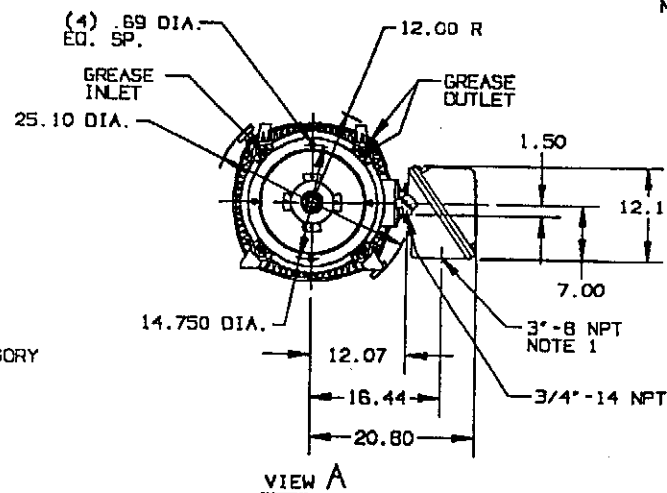
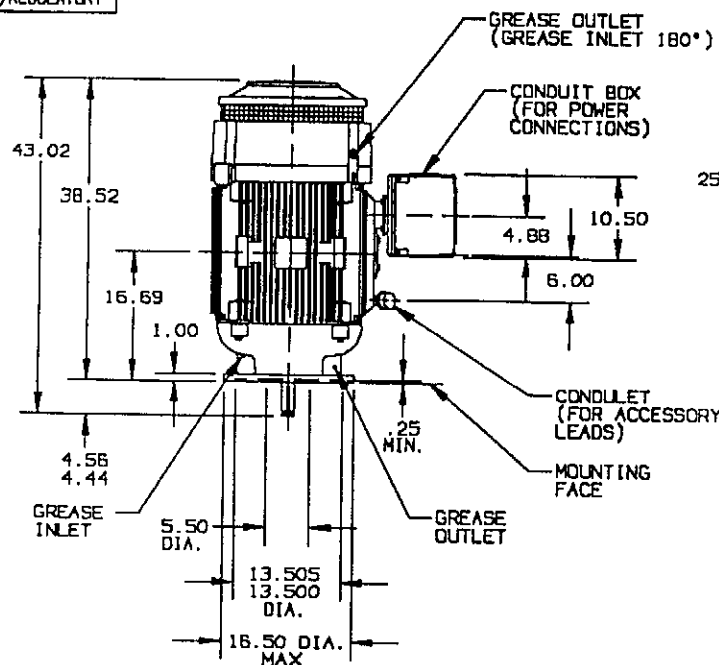
5K405ST119

225B5660AJ  
ON ENT/RYND

CONTROL SURFACES & DIMENSIONS  
(P) PROCESS  
(E) ENGINEERING  
(A) APPLICATION  
(R) REGULATORY

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:				
APPLIED PRACTICES	SURFACES	TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED		
		FRACTIONS	DECIMALS	MILLIS
	✓	+	+	+

REV. 4  
**225B5660AJ**  
CONF IN SHEET - IN NO. 1



ENLARGED VIEW OF SHAFT EXTENSION

PRINTS ARE:  
☐ FOR APPROVAL  
☐ APPROVED FOR CONSTRUCTION

CAD NO. F400:225B5660AJ PLOT SCALE .0668

CAD REVISIONS ONLY		PRINTS TO	
1	M. LILLING REDRAWN ON CAD 4-28-83		
2	M. R. B. REDRAWN ON CAD 02/24/93		
3	M. R. B. REVISED C'BOX FOR LOGO 02/14/94		
4	M. R. B. UPDATED 12/19/95		

NOTES:

1. PROVIDED MOUNTING CONDITIONS PERMIT, CONDUIT BOX MAY BE TURNED SO THAT ENTRANCE CAN BE MADE UPWARD OR FROM EITHER SIDE.

DESIGN BY J. TRAYLOR 7-6-83  
DATE 7-6-83

APPROVAL J.W.T.

GEMIS  
FORT WAYNE, IN.

**225B5660AJ**

DATE: 10/1/98  
BY: SKD

CUSTOMER: MITTEN FLUIDPOWER INC  
P.O.R.: 405 GPM @ 80 psi (220 FT)  
LUBE OIL: 76 SSU-.84 S.G.  
IMPELLER DIA.: 10 7/8"

# CHARACTERISTIC CURVES

3013 VCRE

**buffalo pumps, inc.**

An Ameco-Pittsburgh Company  
N. TONAWANDA, N.Y., USA

2500 RPM

3013-100 REV A

VIBRATION (MILS PK-PK)

	MOTOR		PUMP
	I.B.	O.B.	I.B.
H	—	—	—
V	—	—	—
A	—	—	—

ACTUAL TEST  
150 SSU-.87 S.G.

BRAKE H.P.  
PUMP EFF. %  
HEAD IN FEET

250

200

150

70 100

60 50

50 50

40 40

30 30

20 20

10 10

0 0

EFFICIENCY

TOTAL HEAD

BHP

BRAKE HORSEPOWER @ .87

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700

US GALLONS PER MINUTE

REF. CURVE - S.O.# 99430063-001

REV A SKD 3/24/99





**Friday, November 05, 1999**

**Technical Data Center**  
**PO Box 2205**  
**Fort Wayne, IN 46802-2205**

**Customer: BUFFALO PUMPS INC**  
**874 OLIVER ST**  
**NORTH TONAWANDA NY 14120**

**Contact: Technical Data Center**

**Phone: 219-439-2000**

**Model Number: 5CD193ZD802A800**

**GE Requisition: 69217422\3**  
**GE Job Number: 991102281**

**Customer Order: 40347A**  
**Customer Part: 99431402**

**Instruction Manual: GEH-3967**  
**Connection Diagram: 36A167900AB502**

**Outline Drawing: 36B467536CS004**  
**Mounting Assembly: 36A167777ED005**

**Other Drawings:**

**886A611AB001**

**Description:**

**SUPPLEMENTARY OUTLINE FOR CONDUIT BOX.**

**Distribution Information**

<b><u>Quantity</u></b>	<b><u>Recipient</u></b>
<b>1</b>	<b>CHARGE, ATTN: BEV WITKOP</b>
<b>1</b>	<b>BERNITA STEVENS, 4-6</b>





Friday, November 05, 1999

Technical Data Center  
PO Box 2205  
Fort Wayne, IN 46802-2205

Customer: BUFFALO PUMPS INC  
874 OLIVER ST  
NORTH TONAWANDA NY 14120

Customer Order: 40347A  
Customer Part: 99431402

GE Requisition: 69217422  
GE Job Number: 991102281

**MODEL NUMBER:** 5CD193ZD802A800

Outline Drawing: 36B467536CS004  
Connection Diagram: 36A167900AB502  
Horsepower: 40  
Armature Volts: 120  
Wound: SHUNT  
Series Field:  
Enclosure: TEFC  
Duty: CONT  
Rating Code: 193Z1370-00  
K(V): .444 CEMF VOLTS/RADIAN/SEC  
K(T): .306 LB. FT./AMP

Enclosure Mtg Assem: 36A167777ED005  
Instruction Book: GEH-3967  
RPM: 2500  
Armature Amps: 275  
Type: CD366APY  
Power Supply Code: A  
Insulation Class: F  
Ambient Max: 40 C  
Field Volts: 120  
WK<sup>2</sup>: 18.3 LB. FT.<sup>2</sup>

**Resistances at 25 Degrees C:**

Shunt Field: 18.5 OHMS  
Armature: .0036 OHMS  
Commutator Field: .0011 OHMS

**Inductance's:**

Armature Circuit Total: .100 mH Saturated  
Shunt Field: 13 Henries Sat

**Shunt Field Data:**

Shunt Field Current(1): 4.81 AMPS at Rated Load and 2500 RPM

**Additional Drawings:**

886A611AB001

**Description:**

SUPPLEMENTARY OUTLINE FOR CONDUIT BOX.

**Additional Notes:**

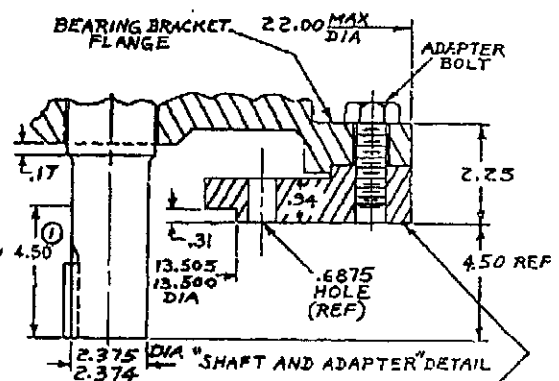
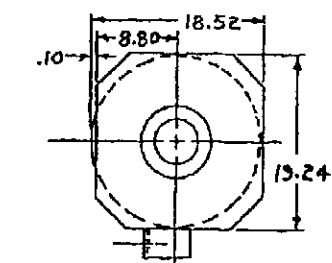
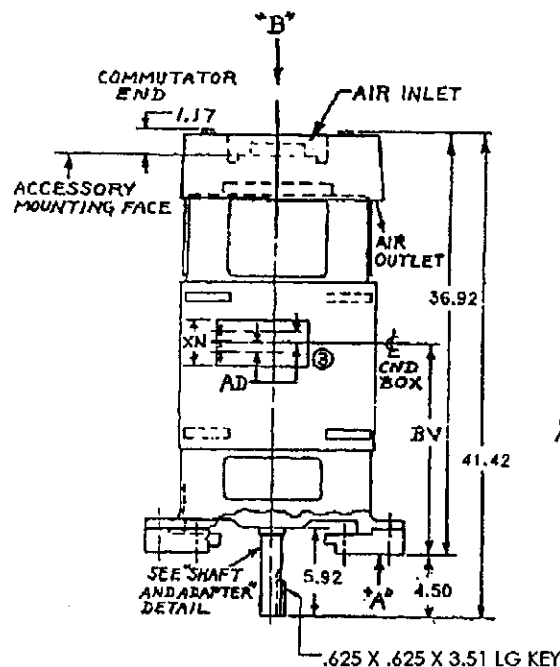
TOTALLY ENCLOSED FAN COOLED - BALL BEARINGS  
CONDUIT BOX ON RIGHT HAND SIDE FACING COMMUTATOR END  
STANDARD SHAFT DRIVE END ONLY - WITHOUT FEET  
WITH:  
SPACE HEATERS: 180 WATTS-120 VOLTS-1 PHASE

**Marks**

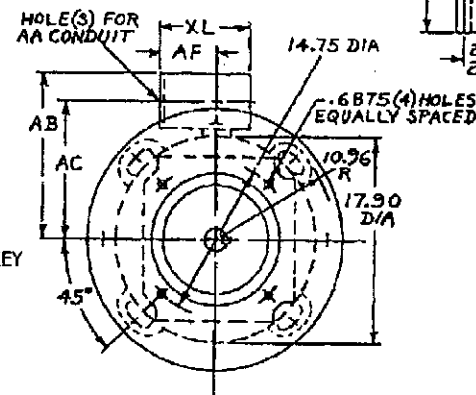
NONE

SIZE B DWG NO 36B467536CS

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



ADAPTER-REMOVE(4) ADAPTER BOLTS. ASSEMBLE ADAPTER TO CUSTOMER MOUNTING. THEN REASSEMBLE MOTOR TO ADAPTER.



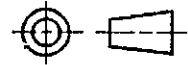
VIEW IN DIRECTION OF ARROW 'A'

- 1 REPRESENTS MINIMUM LENGTH OF SHAFT AVAILABLE FOR HUBS.
- 2 FOR ENCLOSURE TYPE AND MOUNTING POSITION, SEE ENCLOSURE AND MOUNTING ASSEMBLY.
- 3 CONDUIT BOX MAY BE TURNED SO THAT ENTRANCE CAN BE MADE UPWARD, FORWARD, OR FROM EITHER SIDE, PROVIDING MOUNTING CONDITIONS PERMIT. CONDUIT BOX WILL BE ASSEMBLED ON OPPOSITE SIDE OF FRAME IF SO SPECIFIED. [SEE ENCLOSURE AND MOUNTING ASSEMBLY].
- 4 MOUNTING FACE WILL BE SQUARE AND RABBIT DIAMETER CONCENTRIC WITH SHAFT WITHIN 0.007 INCH TOTAL INDICATOR READING. SHAFT RUNOUT NOT TO EXCEED 0.003 INCH TOTAL INDICATOR READING.
- 5 COMM END IS PREPARED FOR ACCESSORY MOUNTING. CONTACT FACTORY FOR DIMENSIONS.

APPROX NET WT=1225 LBS

PTNO	AA	AB	AC	AD	AF	BV	XL	XN
001	3.00	16.08	2.50	—	8.82	21.35	10.50	8.58
002	4.00	17.82	13.20	—	8.50	21.35	13.50	8.62
003	4.00	18.72	14.97	3.00	6.75	18.97	13.50	13.50
004	SEE SUPPLEMENTARY OUTLINE							

THIRD ANGLE PROJECTION



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS ± 3 PL DECIMALS ± FRACTIONS ±		SIGNATURES DRAWN R. HARRIS CHECKED ENG'D ISSUED R. HARRIS		DATE 11/2/98 11/2/98		GENERAL ELECTRIC COMPANY OF MOTORS FIRE, PA	
881028382002		FILE:36-18		SCALE SHEET		DE-SPL EXT 4.5" BYND P-BASE FIRST MADE FOR CU366 DWG NO 36B467536CS	

4943(3)  
DISTR TO

DA921-2

36A167900AB 502

CONT ON SHEET

SH NO.

REV 0

TITLE

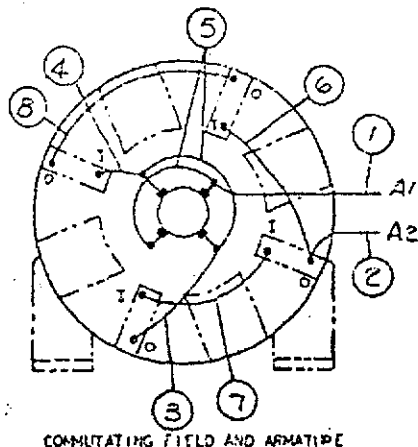
36A167900AB 502

## CONNECTION DIAGRAM

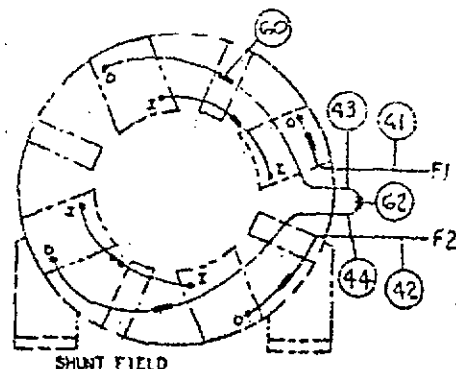
CONT ON SHEET

SH NO.

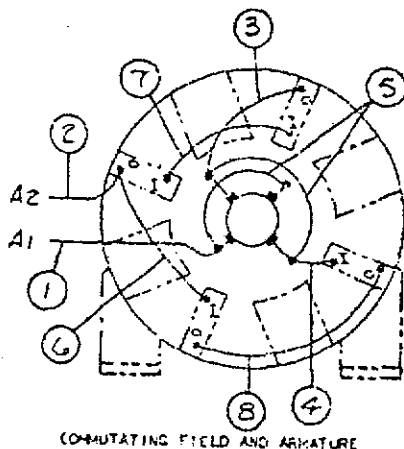
FIRST MADE FOR CD360AT (EW)

DIRECT CURRENT MOTOR & GENERATOR - SHUNT WOUND  
1 CIRCUIT SHUNT FIELD, 2 CIRCUIT COMMUTATING FIELDVIEWS FACING COMMUTATOR END  
LEADS OUT RIGHT SIDE

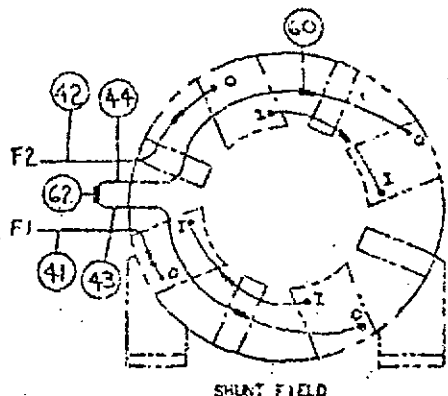
COMMUTATING FIELD AND ARMATURE



SHUNT FIELD

VIEWS FACING COMMUTATOR END  
LEADS OUT LEFT SIDE

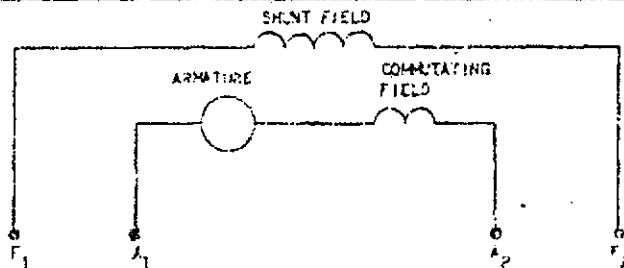
COMMUTATING FIELD AND ARMATURE



SHUNT FIELD

ALL EXTERNAL LEADS ARE MARKED. ALL CONNECTIONS AND TERMINATIONS EXTERNAL TO MAGNET FRAME MUST BE INSULATED PER NATIONAL ELECTRICAL CODE AND SOUND LOCAL PRACTICES.  
SPACE HEATERS, WHEN SPECIFIED, WILL HAVE LEADS WITH TERMINAL MARKINGS H1 AND H2.  
THERMOSTAT, WHEN SPECIFIED, WILL HAVE LEADS WITH TERMINAL MARKINGS P1 AND P2.

ENCIRCLED NUMBERS MAY BE USED FOR PART IDENTIFICATION.



## MOTOR CONNECTIONS:

FOR CW ROTATION FACING COMM END, MAKE LEADS F1 AND A1 THE SAME POLARITY.

FOR CCW ROTATION FACING COMM END, MAKE LEADS F1 AND A2 THE SAME POLARITY.

## GENERATOR CONNECTIONS:

FOR CW ROTATION FACING COMM END, F1 POSITIVE WILL MAKE A2 POSITIVE.

FOR CCW ROTATION FACING COMM END, F1 POSITIVE WILL MAKE A1 POSITIVE.

MADE BY

APPROVAL

DESIGN CURRENT

BY OR

ISSUED

FILE

DATE

DEPT

36A167900AB 502

**GENERAL ELECTRIC**

001 thru 006

# 1. COURT OF APPEALS

2004 1200

001 THRU 006

## Test the product

2000

**TITLE**

**(ASSEMBLY)**

**ENCLOSURE & MOUNTING  
"D" FLANGE & GEAR MOTOR**

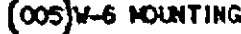
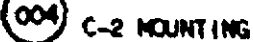
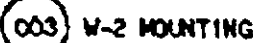
FIRST MADE FOR TOTALLY ENCLOSED NON VENTILATED

**END BOX R.H.S.**

CE DEMOTES COMM END

\*GEAR MOTOR LESS DE BRACKET

## KEYWORDS



4160  
552  
4152  
(w)  
QW  
QWQ  
411  
(new)  
4198  
(new)  
PRINTS

**MARCH 30, 1972**

**KC95-1**

**ERIE**

**Abstract**

001 TNUY QOS

**AD**

PLAN REF -36A167777EE

DATE: 10/17/94

NO S.O.

GENERAL ELECTRIC

886A611AB

REV  
NO. 3

TITLE

CONT OR SHEET

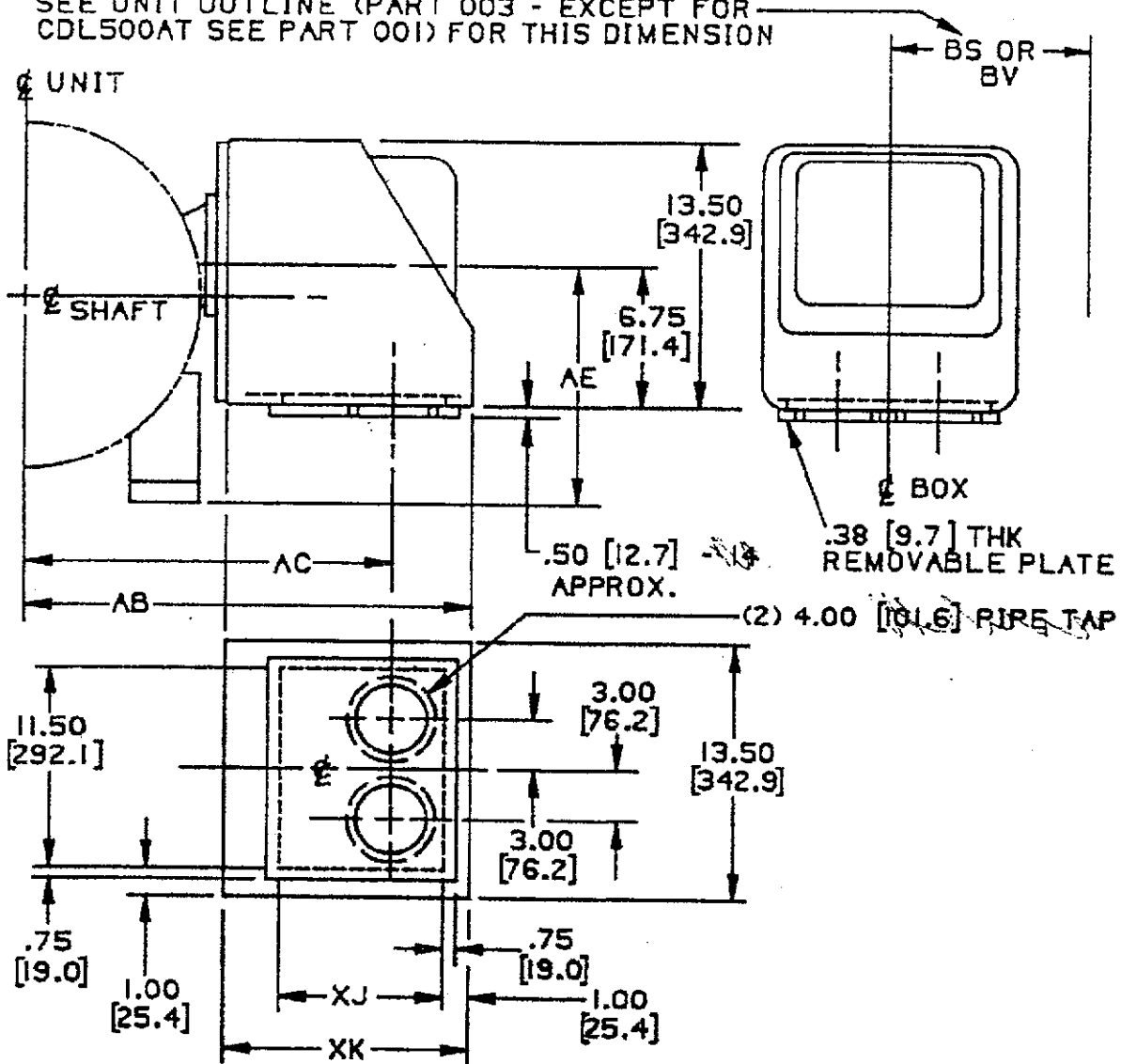
SH NO.

886A611AB

CONT OR SHEET

001 THRU 004  
SH NO.SUPPLEMENTARY OUTLINE  
CONDUIT BOX

FIRST MADE FOR WATERPROOF - STD PIPE TAPS

SEE UNIT OUTLINE (PART 003 - EXCEPT FOR  
CDL500AT SEE PART 001) FOR THIS DIMENSION

REVISIONS

NO S.O.

FEB 6, 1981  
K. WIERCINSKI  
RETR: CHG TO DUAL  
DIMENSIONING

PART NO.	FRAME	AB	AC	AE	XJ	XK
001	CD360AT	18.97 [481.8]	15.22 [386.6]	9.00 [228.6]	7.00 [177.8]	8.95 [227.3]
002	CD400AT	20.37 [517.4]	16.62 [422.1]	12.95 [328.9]	7.00 [177.8]	8.95 [227.3]
003	CD500AT	22.85 [580.4]	19.10 [485.1]	16.10 [408.9]	7.00 [177.8]	8.95 [227.3]
004	CDL500AT	27.43 [696.7]	23.68 [601.5]	15.70 [398.8]	11.50 [292.1]	13.59 [345.2]

CAD

4240 - 1V

4911 - 1V

4252 - 1V

PRINTS TO

MADE BY  
E.C. UNGER MAY 8, 1971FILE  
KSA4DIRECT CURRENT  
MOTOR & GENERATORDIV OR  
DEPT.

ERIE

LOCATION

CONT OR SHEET

SH NO.

001 THRU 004  
886A611AB

PLAN REF 897A920AG

DWG. A.886A611ABR03  
PLOT FULL SCALE

BM-ED8-31

RE-