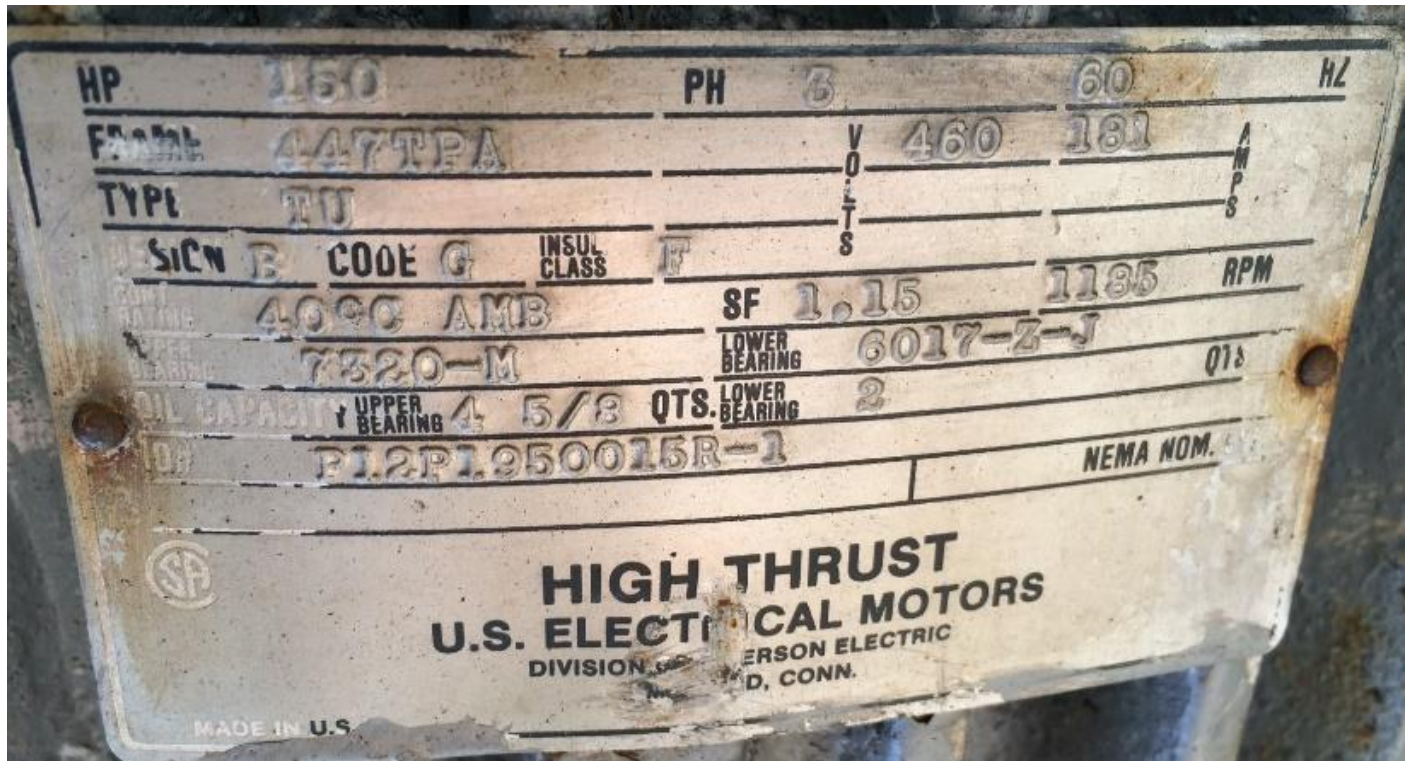




Two (2) US VERTICAL Motors

Motor: US High thrust motor, 150 hp, frame 447TPA, 1200 rpm, 460 v, 3 phase, 60 hz, SF: 1.15. Type TU, TEFC, full load amps 181.. Hollow shaft





NAMEPLATE DATA

CUSTOMER WORTHINGTON ENG. PUMP
CUSTOMER P.O. TVU60321
USEM ORDER
NUMBER P1950015

Type/Description

TU/TEFC

Frame Number

447TPA

Horsepower Output

150

Service
Factor

1.15

Continuous Rating

40° C

Insulation Class

F

RPM at Full Load

1185

Frequency (Hertz)

60

Number of Phases

3

Voltage

460

Full Load Amperes

181

NEMA Code Letter

G

NEMA Design Letter

B

Special Notes

DF #291



PRODUCT



SECTION: 505

PAGE: 11 & 17

CUSTOMER NAME WORTHINGTON ENG. PUMP

CUSTOMER ORDER NO. TVU60321

USEM NO. P1950015

MARKS: P081401 4 6001, TVU 60321 COOLING TOWER PUMP TAG NOS. 6 A/B

DESCRIPTION

QUANTITY 2 HP 150 FRAME 447TPA TYPE TU

PHASE 3 HERTZ 60 RPM 1200 VOLTS 460 ASSY.POS.

FEATURES: 1.15 SERVICE FACTOR, SRC, 115 DEGREE C RISE AT 1.15 SERVICE
FACTOR, BD=20", BX-1.69 WITH STEADY BUSHING 5-3/8 X 3/16 KEYWAY, COUNTER
CLOCKWISE LOOKING DOWN ON TOP OF MOTOR.

RECEIVED
SEP 08 1987
WORTHINGTON
TRAFFIC

RECEIVED
SEP 08 1987
Engineering

EXCEPTIONS & CLARIFICATIONS (IF ANY):

WHEN SIGNED BELOW, THE PRINT(S) AND/OR
DATA ATTACHED IS(ARE) CERTIFIED
CORRECT FOR MOTOR(S) DESCRIBED ABOVE.

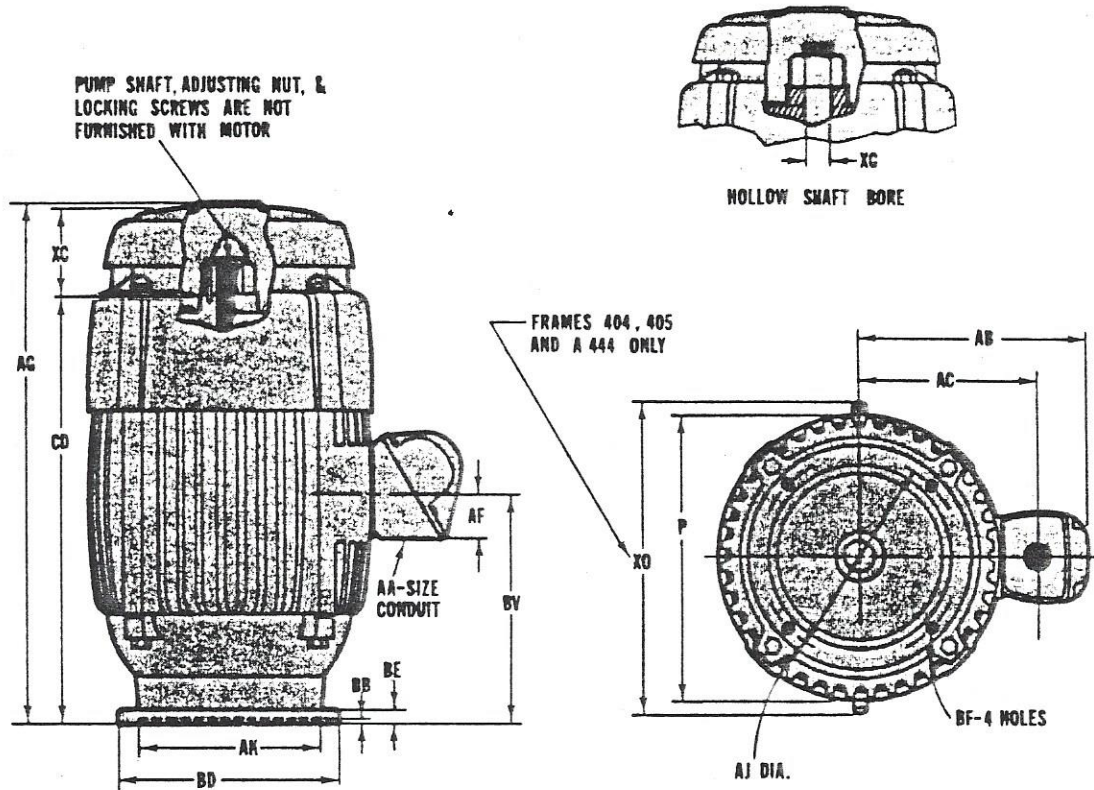
BY CRB DATE 9/1/87

VERTICAL MOTORS



DIMENSIONS

FRAMES 444TP THRU 447TPA -- TYPES LU (EXPLOSIONPROOF), TU (TOTALLY ENCLOSED)



ALL DIMENSIONS ARE IN INCHES

FRAME	P*	AA	AG	AJ	AK +.005	BB	BE	BF	BV	CD	XC	XG	XO
444, 445TP, TPA	23-1/4	3	48-1/8	14-3/4	13-1/2	5/16	1	11/16	17-1/8	43-1/16	4-5/8	2	26-3/8
447TP, TPA	23-1/4	3	51-5/8	14-3/4	13-1/2	5/16	1	11/16	18-7/8	46-9/16	4-5/8	2	26-3/8

FRAME	TYPE	AB	AC	AF	BD
444, 445, 447TP	LU	19-5/8	14-5/8	4-9/16	16-1/2
	TU	18-9/16	14-3/8	4-7/8	16-1/2

FRAME	TYPE	AB	AC	AF	BD
444, 445, 447TPA	LU	19-5/8	14-5/8	4-9/16	20
	TU	18-9/16	14-3/8	4-7/8	20

* Largest motor width.

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

Conduit box opening may be located in steps of 90 degrees. Standard as shown with conduit opening down.

TOLERANCES	
Face runout	.007 F.I.R.
Permissible eccentricity of mounting rabbet	.007 F.I.R.



U.S. ELECTRICAL MOTORS DIVISION EMERSON ELECTRIC CO.

Printed in U.S.A.

EFFECTIVE: MAY 1, 1986
SUPERSEDES: SEPTEMBER 30, 1984

SECTION : 505
PAGE : 11

DO NOT USE FOR CONSTRUCTION
PURPOSES UNLESS CERTIFIED



6001-4-814101
DE-800-5
Sheet 1 of 1
Date: 9-17-86

SQUIRREL CAGE INDUCTION MOTOR DATA

Project No.	<u>814101</u>	SELLER:	<u>Worthington</u>
Client	<u>Lowell Cogeneration Company</u>	Service: P-6A/B	No. Reqd <u>2</u>
Project	<u>Lowell Cogeneration Project</u>	<u>Cooling Tower Pumps</u>	

01	Enclosure - - - - -	<u>TEFC</u>
02	Shaft orientation - - - - -	<u>Vertical</u>
03	Rated horsepower - - - - - +	<u>150</u>
04	Service factor - - - - - +	<u>1.15</u>
05	Rated voltage, Hz/phase - - - - - +	<u>3/60/460 or 4000</u>
06	Rated speed - - - - - +	<u>1200</u>
07	Driven load, horsepower - - - - - +	<u>115</u>
08	NEMA locked rotor code - - - - - +	<u>F</u>
09	Temperature rise at service factor - +	<u>115°C *</u>
10	Insulation class - - - - - +	<u>F</u>
11	Bearings, type - - - - - +	<u>Z, Anti Friction</u>
12	Bearings, location - - - - - +	<u>Motor Brackets</u>
13	Shaft, (solid/hollow) - - - - - +	<u>Hollow</u>
14	Vertical thrust capacity, up/down, lbs - - - - - +	<u>7,100 down **</u>
15	Lubrication - - - - - +	<u>Oil</u>
16	Bearing cooling requirements - - - - +	<u>None</u>

* If 90° rise at Service Factor is required, add + \$3,085

** 30% of down thrust - momentary for up thrust.

~~***for alternate bid - 200HP may be required (due to high HP at shut-off), add + \$10,101.~~

MATERIALS LIST

WORKS NO. TVU-60321 D.O. NO. 156-70028 CUST. P.O. 814101-4-6001
QUANTITY TWO (2) SIZE & TYPE 22HH780-1 STAGE
C IFIED BY R. GROFT DATE 10/09/87
CUSTOMER : FLUOR ENGINEERS, INC. PAGE 1

SECTIONAL DRAWING NO. VX-45251

<u>REF.</u> <u>NO.</u>	<u>NO. OF</u> <u>PIECES</u>	<u>NAME OF PART</u>	<u>MATERIAL</u>
1	1	MOTOR	
2	1	LOCK SCREW	STEEL
3	1	GIB KEY	STEEL/ASTM-A-322
4	1	DISCH HEAD	CAST IRON/ASTM-A-48
6	1	TOP COLUMN PIPE	STEEL/ASTM-A-36
7	16	TOP COLUMN BOLTS	STEEL
8	1	STUFFING BOX BEARING	BRONZE/ASTM-B-584
9	1	STFG. BOX GASKET	ANKORITE 425
10	8	STFG. BOX BOLTS	STEEL
11	1	GLAND	BRONZE/ASTM-B-584
12	2	GLAND STUDS/NUTS	STEEL/BRONZE
13	1	WATER SLINGER	RUBBER
14	1	HEAD SHAFT	416 ST STL/ASTM-A-582
15	1	GREASE CUP	STEEL
16	1	PACKING	GRAPHITE ASBESTOS
17	1	STUFFING BOX	CAST IRON/ASTM-A-48
18	4	BOLTS/NUTS MOTOR TO HEAD	STEEL
22	1	DISCHARGE CASE	CAST IRON/ASTM-A-48
23	1	TOP BOWL	CAST IRON/ASTM-A-48
25	32	BOWL BOLTS	STEEL
28	1	ADJUSTING NUT	CARBON STL/ASTM-A-108
30	1	SHAFT COUPLING	CARBON STL/ASTM-A-108
31	1	DISCH. CASE CAP	CAST IRON/ASTM-A-48
32	1	TOP BOWL BEARING	BRONZE/ASTM-B-584
33	1	SEAL CAGE	BRONZE/ASTM-B-584
35	1	IMPELLER	BRONZE/ASTM-B-584
37	1	IMPELLER SHAFT	416 ST STL/ASTM-A-582
38	2	SET SCREW	ST STL
39	1	SAND COLLAR	CAST IRON/ASTM-A-48
40	1	GREASE SEAL	RUBBER
41	1	SUCTION CASE/BELL BRG.	BRONZE/ASTM-B-584
42	1	SUCTION BELL PLUG	CAST IRON/ASTM-A-48
45	1	SUCTION BELL	CAST IRON/ASTM-A-48
**	1	BELL/BOWL WEARING RING	BRONZE/ASTM-B-584
**	1	IMPELLER WEARING RING	BRONZE/ASTM-B-584
**	2	IMPELLER SNAP RING	ST STL
**	1	IMPELLER KEY	STEEL/ASTM-A-434
**	1	TOP PIPE GASKET	ANKORITE 425
**	1	COLUMN/DISCH CASE GSKT	ARAMID FIBER
**	16	DISCH CASE BOLTS	STEEL

** NOT SHOWN