

ORDINANCE NO. 11-05

AN ORDINANCE ACCEPTING A PROPOSAL FOR PURCHASE OF THE WATER PUMP TO REPLACE EXISTING PUMP #1

WHEREAS, the Village obtained proposals to purchase of a pump to replace pump #1 in the Palm Road Pump Station; and

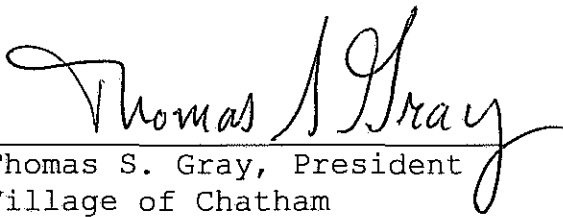
WHEREAS, the Village Engineer has evaluated the submittals and is recommending the lowest proposal from General Pump and Machinery, Inc.

NOW, THEREFORE, BE IT ORDAINED BY THE PRESIDENT AND BOARD OF TRUSTEES OF THE VILLAGE OF CHATHAM, ILLINOIS, AS FOLLOWS:

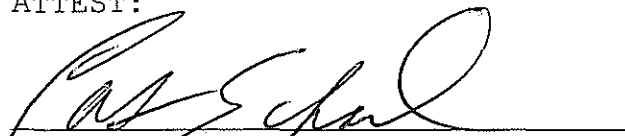
SECTION 1: That the bid from General Pump and Machinery, Inc. for a total cost of \$10,450 is hereby approved.

SECTION 2: The Village Manager is hereby directed to complete the necessary documents at the appropriate timing.

SECTION 3: This Ordinance is effective upon its passage and approval.


Thomas S. Gray, President
Village of Chatham

ATTEST:


Pat Schad, Village Clerk

AYES: 6 *HERR MAN BOYLE*
REYNOLDS KAVANAGH SCHATTEMAN PASSED: 2-22-11
NAYS: 0 APPROVED: 2-22-11
ABSENT: 0

McCord, Del

From: Stanley Bersin [stanb@greeneandbradford.com]
Sent: Tuesday, February 22, 2011 12:45 PM
To: McCord, Del
Cc: Mike Williamsen (mwconsultant@aol.com)
Subject: Replacement Pump for Chatham Pump Station
Attachments: Chatham IL - Goulds Bid - 2-21-2011.pdf; GreeneandBradford-6AE16G-75HP-US-5576-318.pdf; Chatham PreSub.pdf; sharp@gnrlpump.com_20110223_014737.pdf

Del,

Three quotations were received (attached) and are summarized as follows:

- 1) Peerless Pump Company
\$15,269.30
Estimated Schedule for Delivery: 10 weeks after Purchase Order
Quoted Deviation: Epoxoline vs. Pota-Pox paint specified (ok)
- 2) Vandevanter Engineering
ITT - Goulds Pump
\$17,939.00
Estimated Schedule for Delivery: 7 - 8 weeks after Purchase Order
Quote Deviation: Standard Goulds Factory Paint, water based chemical resistant. (Not Epoxy Paint)
Pump Efficiency 79.5% vs. 82% at duty point
- 3) General Pump and Machinery
Aurora Pump Company
\$9,950
\$500 add for field alignment and supervisory startup
\$1,500 deduct for Factory Standard Paint
Estimated Schedule for Delivery: 8 - 10 weeks after Purchase Order
Quote Deviation: Will provide either Epoxoline or Pota-Pox paint within quote
Smaller coupler but correctly sized for this Aurora Pump
Pump Efficiency 75% vs. 82% at duty point

Upon review the recommendation is made to purchase an Aurora pump at a cost of \$10,450 including field alignment and supervisory startup.

If you have any questions regarding the attachments or this recommendation please call me on my cell phone at (309)253-8371.

Stanley S. Bersin, P.E.

Greene and Bradford, Inc.
3501 Constitution Drive
Springfield, IL 62711
1-217-793-8844
1-217-793-6227(Fax)



www.gnrtpump.com

□ PEORIA, ILLINOIS

□ ATLANTA, GEORGIA

□ CHICAGO, ILLINOIS

February 22, 2011

Village of Chatham
c/o Greene & Bradford, Inc
3501 Constitution Drive
Springfield, IL 62711

Attn: Stanley S. Bersin, P.E.
Subj: Request for Quotation – Replacement Booster Pump

Stan,

Thank you for the opportunity to respond to the subject RFQ. In respect to the specifications, we offer the following quotation. You will also find attached Notes regarding our product offering, a pre-submittal detailing the quoted equipment, and a repair manual for the quoted pump.

QUOTE NO. P-KR-11022201

One (1) **AURORA** single stage, horizontal split case pump model 411-BF, 5x6x15, w/ A.O. Smith 75 Hp motor (TEFC, 3/60/230/460V, 1800 RPM, premium efficiency – inverter duty), Falk flexible coupling, steel base, and coupling guard. The pump will receive a certified performance test prior to shipment. The pump, base, and coupling guard will include one coat of Tnemec Pota-Pox epoxy prior to shipment.

(Base Bid) **TOTAL NET PRICE**, delivered to Chatham, IL. . . \$ 9950

To provide the equipment above with the factory standard surface preparation and machinery enamel primer in lieu of the specified epoxy coating, we offer:

TOTAL NET DEDUCT *(from Base Bid above)*. . . \$ 1500

The specifications do not require service after the sale. For professional shaft alignment and supervisory start up service, following installation, performed by “The Pump Shop” service division of General Pump & Machinery, we offer:

TOTAL NET ADD *(to Base Bid above)*. . . \$ 500

Thank you.

Ken Reneau
GPM Municipal Sales

VILLAGE OF CHATHAM, IL

REQUEST FOR QUOTE BOOSTER PUMP

Notes Regarding Offered Aurora Pump:

1. Two sets of O&M manuals and three sets of shop drawings, including a certified performance curve will be provided upon receipt of order. One set of each is provided with the bid.
2. The proposed pump will have a 5" discharge flange x 6" suction flange. Both flanges will be drilled to 125# ANSI pattern.
3. The proposed pump will include optional impeller rings as specified.
4. The proposed pump will include John Crane type 21 mechanical seals with a material code comparable to that specified, including a ceramic seat.
5. The proposed pump will include a Falk #1050T10 Steel-Flex coupling, appropriately sized for the pump and motor shaft sizes, horsepower, and speed.
6. In compliance with Line 16 of the specifications, the proposed motor will be premium efficient, meeting the current requirements of the Energy Independence and Security Act. It will also be suitable for inverter duty.
7. The Tnemec web site defines their series 141 as Epoxoline coating. In compliance with the stated coating named on Line 17 of the specifications, our Base Bid for the proposed pump will include series N140 Pota-Pox Plus a quoted. The surfaces of the pump, base, and coupling guard will be blasted to SSPC-SP6 standard to provide suitable adherence of the Pota-Pox primer. **As this surface preparation and coating are rather expensive, we are offering a DEDUCT for providing those surfaces with the factory standard surface preparation and machinery enamel coating.**
8. Typical pump efficiency at the specified duty point is 75%, based on a pump with packed stuffing boxes. Actual pump efficiency will be determined during the certified performance test.



Submittal Data For

- Regan. Turbine Pumps
- End Suction Pumps
- Inline Pumps
- Split Case Pumps
- Sewage Pumps
- Other

NO. OF PRINTS	
<input type="checkbox"/>	For Approval
<input type="checkbox"/>	Final
<input type="checkbox"/>	Reproducible

Sales Office: General Pump & Machinery - Peoria, IL P.O. No. _____
 Factory Order No.: _____ Service: Booster Pump
 Job: Replacement Booster Pump
 Engineer: Greene & Bradford, Inc
 Contractor: _____
 Sold To: Village of Chatham P.O. No. _____
 Reference: Request for Quotation

PUMP

Number of Units 1 Pump Only

Model 411 Rotation: _____

Size 5x6x15 RH

GPM 1146 LH

TDH 162 Connections: _____

RPM 1750 Threaded

Flanged

Construction: MATL CODE 21

Standard Fitted

Bronze Fitted

Case iron

Imp. bronze Lubrication: _____

Shaft steel Grease

Sleeve bronze Oil

Case Ring bronze Stuffing Box: _____

Imp. Ring bronze Mech. Seal JC21

Ch. Ring _____ BP1C1

Spacer _____ Packing

Lantern Ring

MOTOR

HP: 75

Phase: 3

Hertz: 60

Volts: 230

RPM: 1800

Frame: 365TS

Enclosure:

ODP

TEFC

X Proof

Vertical

Horizontal

Part Winding

Hi Efficiency

Aurora To Furnish

Others To Furnish

Factory Choice

Mfg: A.O. Smith

OPTIONS

Base:

Steel Drip Rim

Steel Form

Fabricated Steel

Cast Iron Ring Type

Fab. Steel Ring Type

Close Coupled Unit

Pedestal Unit

Coupling: _____

Mfg: Falk

Size: 1050T10

Spacer

Guard

Test:

Certified Performance

Wit. Certified Performance

Hydro

Note: Motor not mounted at factory on vertical units.

SPECIAL REQUIREMENTS:

Bse Bjd: SSPC-SP6 surface preparation & (1) Primer Coat Tnemec N140 Pota-Pox Plus on pump, base, and coupling

CERTIFIED Section: 410 Page: 252 Curve Number: 2PC-117379A

PRINT: Special: _____ Maintenance Sent: Sect. 6 / Item 410

By: KLR Date: 2/21/11 Office: GPM - Peoria

This order will not be processed for manufacturing until approval is received.
 Prints are not to scale and are certified correct only for this order. All orders
 are subject to acceptance at Aurora Pump, North Aurora, Illinois.

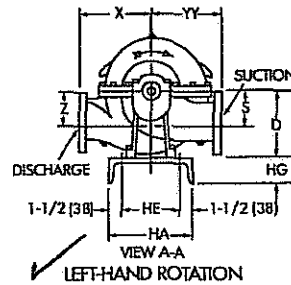
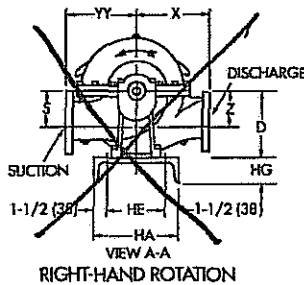
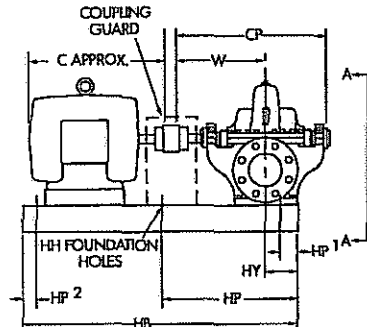
Supersedes Section 410 Page 252
Dated February 2007

AURORA MODEL 411 PUMPS

ON STEEL BASE

4" THRU 8" PUMPS

POWER SERIES NO. 4-4A-5-5A



BASE	SIZE	HA	HB	HE	HG	HH	HP	HP1	HP2
5	12 x 38	12 (305)	38 (965)	9 (229)	3 (76)	5/8 (16)	20 (508)	-	-
7	13 x 42	13 (330)	42 (1067)	10 (254)	4 (102)	3/4 (19)	24 (610)	-	-
9	15 x 44	15 (381)	44 (1118)	12 (305)	3-3/8 (86)	3/4 (19)	24 (610)	-	-
10	18 x 44	18 (457)	44 (1219)	15 (381)	4 (102)	3/4 (19)	24 (610)	-	-
11	18 x 48	18 (457)	48 (1219)	15 (381)	4 (102)	3/4 (19)	24 (610)	1 (25)	-
12	18 x 54	18 (457)	54 (1372)	15 (381)	4 (102)	3/4 (19)	24 (610)	1 (25)	1 (25)
13	18 x 60	18 (457)	60 (1524)	15 (381)	4 (102)	3/4 (19)	24 (610)	-	-
14	18 x 65	18 (457)	65 (1651)	15 (381)	4 (102)	3/4 (19)	24 (610)	-	-
15	22 x 60	22 (559)	60 (1524)	19 (483)	4 (102)	3/4 (19)	24 (610)	-	-
16	22 x 72	22 (559)	72 (1829)	19 (483)	4 (102)	3/4 (19)	24 (610)	1 (25)	-
17	22 x 84	22 (559)	84 (2134)	19 (483)	4 (102)	3/4 (19)	24 (610)	-	-

PUMP SIZE		CASE BORE	PORTS SOLD	D	S	W	X	Z	CP	HY	YY
DISCH	SUCT										
4	6	1B8	4	12-1/2 (318)	6-1/4 (159)	14 (356)	6-1/4 (159)	16 (406)	16 (406)	16 (406)	16 (406)
5	6	11A & C	4	11" (279)	5-1/2 (140)	11-1/4 (286)	5-1/2 (140)	13-1/4 (337)	5-1/2 (140)	15 (381)	13-1/4 (337)
5	6	15	4	12-1/2 (318)	6-1/4 (159)	13-1/4 (337)	6-1/4 (159)	15 (381)	28-1/2 (724)	6 (152)	15 (381)
5	6	17	4	12-1/2 (318)	6-1/4 (159)	14 (356)	6-1/4 (159)	15 (381)	28-1/2 (724)	6 (152)	15 (381)
6	8	11	4	12-1/2 (318)	6-1/4 (159)	11-3/4 (298)	6-1/4 (159)	14-1/2 (368)	28-1/2 (724)	6 (152)	14-1/2 (368)
8	8	11B	4	12-1/2 (318)	6-1/4 (159)	12 (305)	6-1/4 (159)	14-1/2 (368)	28-1/2 (724)	6 (152)	14-1/2 (368)
6	8	11HH	4A	16-1/2 (419)	8-5/8 (219)	18-1/8 (461)	8-5/8 (219)	32-3/4 (832)	7 (178)	17 (432)	17 (432)
6	8	14B	5A	16-1/2 (419)	7-1/2 (191)	20-7/16 (519)	7-1/2 (191)	36-3/4 (933)	7 (178)	17 (432)	17 (432)
6	8	15	5	13-1/2 (343)	6-3/4 (171)	14-1/4 (362)	6-3/4 (171)	16-3/4 (425)	7 (178)	17 (432)	16-3/4 (425)
6	8	18A, B & C	5	14-3/4 (375)	8 (203)	16 (406)	8 (203)	18 (457)	7 (178)	17 (432)	18 (457)
6	8	20	5	14-3/4 (375)	8 (203)	15-3/4 (400)	8 (203)	18 (457)	7 (178)	17 (432)	18 (457)
8	10	12 & 12A	5	14-3/4 (375)	8 (203)	17 (432)	8 (203)	19-3/4 (499)	7 (178)	17-3/4 (451)	17-3/4 (451)
8	10	15A & B	5	14-3/4 (375)	8 (203)	17 (432)	8 (203)	19-3/4 (499)	7 (178)	17-3/4 (451)	17-3/4 (451)
8	10	17B	5	14-3/4 (375)	8 (203)	17 (432)	8 (203)	19-3/4 (499)	7 (178)	17-3/4 (451)	17-3/4 (451)

FRAME		313T	215T	254T	256T	284TS	284T	285TS	286T	324TS	324T	326TS	326T	364TS	364T	365TS	365T	404TS	404T	405TS	405T	444TS	444T	445TS	445T	447TS	447T	449TS	449T																				
PUMP SIZE	C	16 (406)	18 (457)	21 (533)	23 (584)	22 (559)	24 (610)	24 (610)	25 (635)	25 (635)	26 (660)	26 (660)	28 (711)	27 (686)	29 (737)	28 (711)	30 (762)	30 (762)	33 (838)	31 (787)	35 (891)	34 (864)	38 (965)	35 (1016)	40 (1014)	40 (1014)	44 (1118)	45 (1143)	49 (1245)																				
4 x 6 x 1B8	BASE																																																
5 x 6 x 11A & C	BASE																																																
5 x 6 x 15	BASE	5	7	9	10	11											12											15											16										
5 x 6 x 17	BASE																																																
6 x 8 x 11	BASE																																																
8 x 8 x 11B	BASE																																																
6 x 8 x 11HH	BASE																																																
6 x 8 x 14B	BASE																																																
6 x 8 x 15	BASE																																																
6 x 8 x 18A, B & C	BASE																																																
6 x 8 x 20	BASE																																																
8 x 10 x 12 & 12A	BASE																																																
8 x 10 x 15A & B	BASE																																																
8 x 10 x 17B	BASE																																																

NOTES:

- All dimensions in inches (mm).
 - Dimensions may vary $\pm 3/8"$ (10).
 - Not for construction purposes unless certified.
 - Coupling gap may vary $1/8"$ (3) to $2-1/16"$ (52).
 - Conduit box is shown to approximate location.
- Dimensions are not specified as they vary with each motor manufacturer.

- Discharge and suction flanges - ANSI Standard flat face.
- Dimension "D" is 12" (305) when using frames 404TS thru 449T.
- 1/4" NPT gauge tap on top of suction/discharge flanges.
- Dimension "D" is 14-1/2" (368) when using frames 404TS thru 449T.



Company: Village of Chatham

Name: Booster Pump

Date: 2/16/2011



AURORA
Pentair Water

Pump:

Size: 5x6x15
 Type: 410 1 STG SPLIT CASE
 Synch speed: 1800 rpm
 Curve: 2PC-117379A
 Specific Speeds:
 Dimensions:

Speed: 1775 rpm
 Dia: 13.625 in
 Impeller: 444V328
 Ns: 977
 Nss: 5783
 Suction: 6 in
 Discharge: 5 in

Search Criteria:

Flow: 1146 US gpm Head: 162 ft

Fluid:

Water
 Density: 62.37 lb/ft³
 Viscosity: 1.105 cP
 NPSHa: —

Temperature: 60 °F
 Vapor pressure: 0.2563 psi a
 Atmospheric pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: ODP
 Sizing criteria: Max Power on Design Curve

Size: 75 hp
 Speed: 1800
 Frame: 365T

Pump Limits:

Temperature: 275 °F
 Pressure: 250 psi g
 Sphere size: 0.813 in

Power: —
 Eye area: —

Data Point:

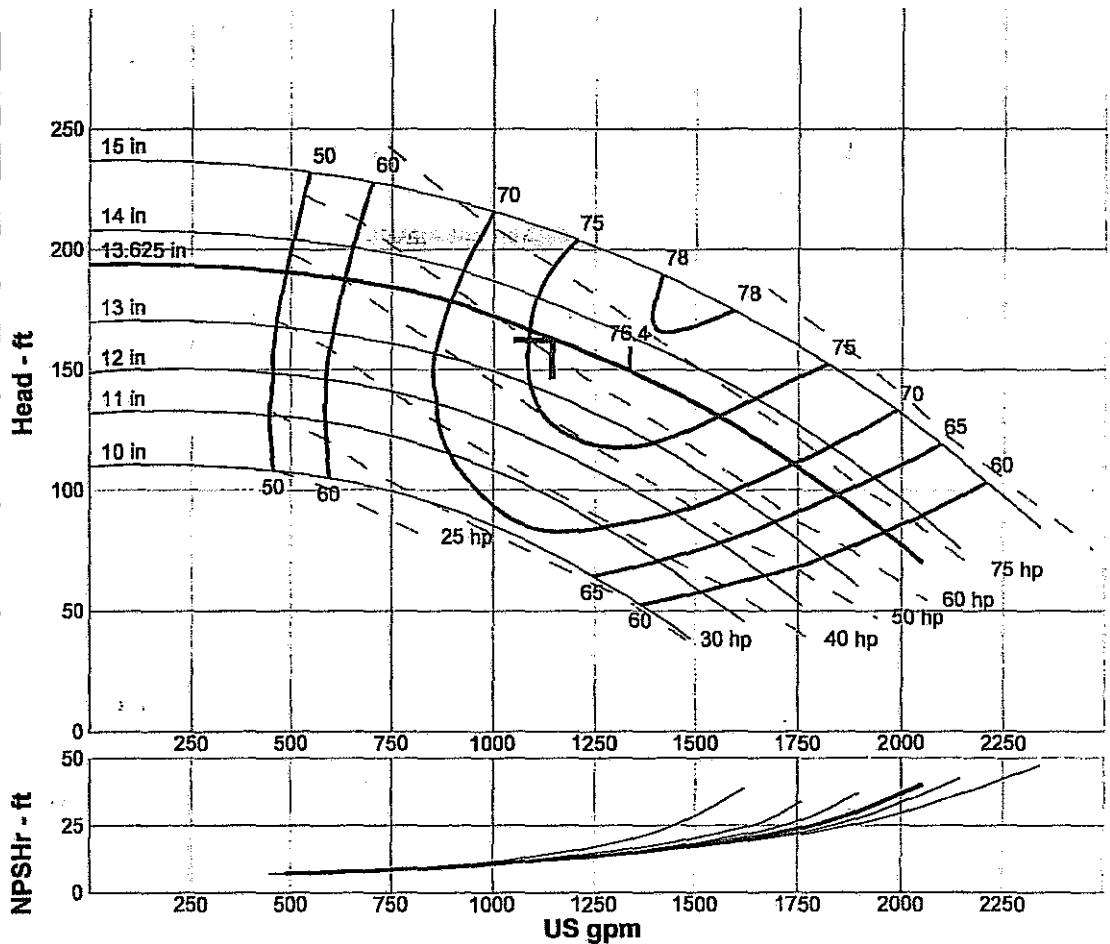
Flow: 1146 US gpm
 Head: 163 ft
 Eff: 75%
 Power: 62.3 hp
 NPSHr: 12.6 ft

Design Curve:

Shutoff head: 194 ft
 Shutoff dP: 83.9 psi
 Min flow: —
 BEP: 76% @ 1335 US gpm
 NOL power: 70.3 hp @ 1843 US gpm

Max Curve:

Max power: 97.1 hp @ 2096 US gpm



Curve efficiencies are typical. For guaranteed values, contact Aurora Pump or your local distributor. Las eficiencias en curvas son típicas. Para valores garantizados contacte a Aurora Pump o a su distribuidor local.


Performance Evaluation:

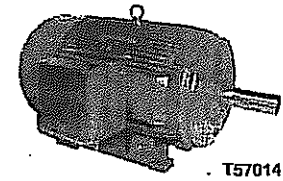
Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1375	1775	146	76	66.5	15.6
1146	1775	163	75	62.3	12.6
917	1775	177	71	58.1	9.93
688	1775	186	62	51.7	8.29
458	1775	191	48	48.4	6.93

Three Phase TEFC Motors

Continued from previous page



















Features:

- Ball Bearings
- Class F Insulation
- Continuous Duty
- Energy Efficient \$
- NEMA Design B
- Rigid Base
- Squirrel Cage
- Cast Iron
- Standard, EPAct  CC001A (E-Plus[®] motors) and Premium (E-Plus[®] 3 motors) Efficiency
- Totally Enclosed
- 1/4 thru 400 HP
- 1.15 Service Factor
- 40°C Ambient
- 60 Hz
- 56 Frame and larger
- 3600, 1800 and 1200 RPM
- E-Plus[®] Motors meet the requirements of the Energy Policy Act of 1992. E-Plus[®] 3 motors exceed the requirements of the Energy Policy Act of 1992. E+3(NP) is NEMA Premium Efficient.



Applications:

Pumps, fans, compressors, conveyors, machine tools, designed to stand up to abusive treatment...moist, dirty, dusty and factory applications.


HP	RPM	Volts	Full Load Amps	Frame	Stock Number	Insul. Class	Cast Iron	Type	"C" Dim.	Efficiency	Notes	
60	3600	200-230/460	155.0-136.0/68.0	364TS	E790 	F	✓	E+3(NP)	31.1	93.6	1,11	
		230/460	136.0/68.0	364TS	T57014 	F	✓	E+3(NP)	30.4	93.6	362,364 New!	
	1800	200-230/460	162.4-144.0/72.0	364T	T46039 	F	✓	E+	32.5	93.6	23,364,367 New!	
		200-230/460	162.0-144.0/72.0	364T	E720 	F	✓	E+3(NP)	33.3	95.0	1,8,11,28	
		230/460	143.0/71.5	364T	T57039 	F	✓	E+3(NP)	32.5	95.0	362,364 New!	
		230/460	143.0/71.5	364TS	TS18039 	F	✓	E+3(NP)	30.4	95.0	362,364 New!	
		575	57.6	364T	T48039 	F	✓	E+	32.5	93.6	13,364,366 New!	
		575	57.2	364T	T59039 	F	✓	E+3(NP)	32.5	95.0	13,364,366 New!	
	1200	200-230/460	183.5-146.0/73.0	404T	E793 	F	✓	E+3(NP)	40.0	94.5	1,11	
		230/460	148.0/74.0	404T	T57064 	F	✓	E+3(NP)	39.1	94.5	362,364 New!	
	75	3600	200-230/460	197.0-168.0/84.0	365TS	E791 	F	✓	E+3(NP)	31.1	93.6	1,11
			230/460	168.0/84.0	365TS	T57015 	F	✓	E+3(NP)	31.4	93.6	362,364 New!
1800		200-230/460	199.1-178.0/89.0	365T	T46040 	F	✓	E+	33.5	94.1	23,362,364 New!	
		230/460	180.0/90.0	365TS	TS18040 	F	✓	E+3(NP)	31.4	95.4	362,364 New!	
		230/460	180.0/90.0	365T	T57040 	F	✓	E+3(NP)	33.5	95.4	362,364 New!	
		575	71.2	365T	T48040 	F	✓	E+	33.5	94.1	13,364,366 New!	
1200		200-230/460	204.0-182.0/91.0	405T	T59040 	F	✓	E+3(NP)	33.5	95.4	13,364,366 New!	
		230/460	181.0/90.5	405T	T57065 	F	✓	E+3(NP)	40.0	94.5	1,11	
								40.6	94.5	362,364 New!		

Notes:

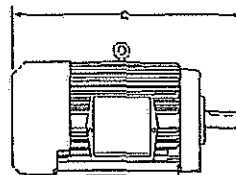
1. Item to be discontinued when stock is depleted
8. NEMA Design A
11. C flange kit available
13. Six lead motor suitable for part winding start
23. Suitable for 200/400 Volt and 50HZ
28. Blower kit adaptable, TEFC
362. 12 lead - Capability for Y Start-Delta Run
364. Open bearings with regreasing provisions
366. 6 leads
367. 12 leads

Continues on next page



Motors specially designed, tested and warranted to be Corona-Free for compatible inverter duty are marked on this page with a . See page 4 and 5 of this catalog for more Speed Engineered[®] motors information.

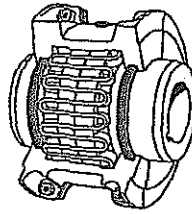
Published efficiency on tri-voltage rated motors applies at 230/460 volts.
Performance at 200 or 208 volts may not be in accordance with NEMA standards.
Published efficiency on 200-208 volt motors applies at 200 volts.



COUPLINGS

GRID TYPE SELECTION TABLE

F.O.B. NO. AURORA, ILLINOIS



H.P.	R.P.M								H.P.
	3500	2900	1750	1450	1150	875	700	580	
1/4									1/4
1/3									1/3
1/2									1/2
3/4							1020T10	1020T10	3/4
1				1020T10	1020T10	1020T10			1
1-1/2		1020T10	1020T10						1-1/2
2	1020T10								2
3									3
5									5
7-1/2							1030T10	1030T10	7-1/2
10						1030T10			10
15				1030T10	1030T10			1040T10	15
20			1030T10			1040T10	1040T10		20
25					1040T10		1050T10	1050T10	25
30		1030T10				1050T10			30
40	1030T10		1040T10					1060T10	40
50					1050T10		1060T10		50
60		1040T10	1050T10	1050T10		1060T10		1070T10	60
75	1040T10				1060T10		1070T10		75
100				1060T10		1070T10		1080T10	100
125	1050T10	1050T10	1060T10		1070T10		1080T10		125
150				1070T10					150
200		1060T10	1070T10		1080T10			1090T10	200
250	1060T10			1080T10			1090T10		250
300		1070T10				1090T10			300
350	1070T10		1080T10					1100T10	350
400					1090T10		1100T10		400
450				1090T10					450
500		1080T10				1100T10		1110T10	500
600	1080T10		1090T10						600
700				1100T10	1100T10		1110T10	1120T10	700
800		1090T10				1110T10			800

SIZE	1020T10	1030T10	1040T10	1050T10	1060T10	1070T10	1080T10	1090T10	1100T10	1110T10	1120T10
MAXIMUM BORE DIAMETER INCHES (MM)	1-1/8 (28)	1-3/8 (34)	1-5/8 (40)	1-7/8 (47)	2-1/8 (54)	2-1/2 (63)	3 (76)	3-1/2 (88)	4 (102)	4-1/2 (114)	5 (127)

NOTES: Shaft bore size may require using larger coupling size than listed. After selecting coupling, check maximum bore diameter requirements for pump and driver (refer to motor shaft dimensions by frame size in section 1005 page 354). If required, move to the right until the shaft sizes fit within the limits of the coupling.

How To Use This Manual

This manual provides detailed instructions on maintenance, lubrication, installation, and parts identification. Use the table of contents below to locate required information.

Table of Contents

Introduction.....	Page 1
Lube Fittings.....	Page 1
Limited End Float.....	Page 1
Lubrication.....	Pages 1-2
Installation & Alignment Instructions.....	Pages 2-4
Annual Maintenance, Relube & Disassembly.....	Page 4
Installation & Alignment Data.....	Page 5
Parts Identification & Parts Interchangeability.....	Page 6

CAREFULLY FOLLOW THE INSTRUCTIONS IN THIS MANUAL FOR OPTIMUM PERFORMANCE AND TROUBLE FREE SERVICE.

INTRODUCTION

This manual applies to Sizes 1020T thru 1140T and 20T thru 140T10 Falk Steelflex Tapered Grid Couplings. Unless otherwise stated, information for Sizes 1020T thru 1140T applies to Sizes 20T thru 140T respectively, e.g. 1020T = 20T, 1100T = 100T, etc. These couplings are designed to operate in either the horizontal or vertical position without modification. Beginning in 1994, these couplings are being supplied with one set of inch series fasteners and one set of metric fasteners. Use either set of fasteners, depending on your preference. Refer to Page 6 for part interchangeability.

The performance and life of the couplings depend largely upon how you install and service them.

CAUTION: Consult applicable local and national safety codes for proper guarding of rotating members. Observe all safety rules when installing or servicing couplings.

WARNING: Lockout starting switch of prime mover and remove all external loads from drive before installing or servicing couplings.

LUBE FITTINGS

Cover halves have 1/8 NPT lube holes. Use a standard grease gun and lube fitting as instructed on Page 4.

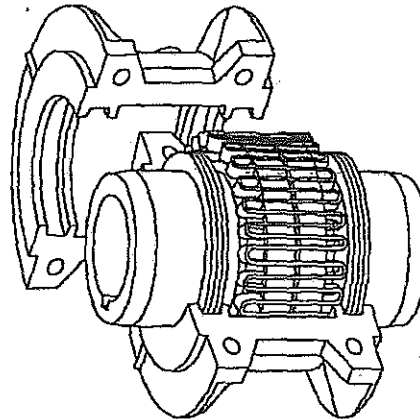
LIMITED END FLOAT

When electric motors, generators, engines, compressors and other machines are fitted with sleeve or straight roller bearings, limited axial end float kits are recommended for protecting the bearings. Falk Steelflex couplings are easily modified to limit end float; refer to Manual 428-820 for instructions.

LUBRICATION

Adequate lubrication is essential for satisfactory operation. Page 2 provides a list of typical lubricants and specifications for general purpose and long term greases. Because of its superior lubricating characteristics and low centrifuge properties, Falk Long Term Grease (LTG) is highly

TYPE T10 STEELFLEX COUPLING



recommended. Sizes 1020T to 1090T10 are furnished with a pre-measured amount of grease for each coupling. The grease can be ordered for larger size couplings.

The use of general purpose grease requires re-lubrication of the coupling at least annually.

Long Term Grease (LTG)

The high centrifugal forces encountered in couplings separate the base oil and thickener of general purpose greases. Heavy thickener, which has no lubrication qualities, accumulates in the grid-groove area of Steelflex couplings resulting in premature hub or grid failure unless periodic lubrication cycles are maintained.

Falk Long Term Grease (LTG) was developed specifically for couplings. It resists separation of the oil and thickener. The consistency of Falk LTG changes with operating conditions. As manufactured it is an NLGI #1/2 grade. Working of the lubricant under actual service conditions causes it to become semifluid while the grease near the seals will set to a heavier grade, helping to prevent leakage.

LTG is highly resistant to separation, easily out performing all other lubricants tested. The resistance to separation allows the lubricant to be used for relatively long periods of time.

Steelflex couplings initially lubricated with LTG will not require re-lubrication until the connected equipment is stopped for servicing. If a coupling leaks grease, is exposed to extreme temperatures, excessive moisture, or experiences frequent reversals, more frequent lubrication may be required.

Although LTG grease is compatible with most other coupling greases, the mixing of greases may dilute the benefits of LTG.

USDA Approval

LTG has the United States Department of Agriculture Food Safety & Inspection Service approval for applications where there is no possibility of contact with edible products. (H-2 ratings).

CAUTION: Do not use LTG in bearings.

MORE>



Specifications — Falk LTG

The values shown are typical and slight variations are permissible.
AMBIENT TEMPERATURE RANGE — -20°F (-29°C) to 250°F (121°C). Min. Pump = 20° F (-7° C).

MINIMUM BASE OIL VISCOSITY — 3300SSU (715cSt) @ 100°F (38°C).

THICKENER — Lithium & soap/polymer.

CENTRIFUGE SEPARATION CHARACTERISTICS — ASTM #D4425 (Centrifuge Test) — K36 = 2/24 max., very high resistance to centrifuging.

NLGI GRADE (ASTM D-217) — 1/2

MINIMUM DROPPING POINT — with 60 stroke worked penetration value in the range of 320 to 365 — 350°F (177°C) min.

MINIMUM TIMKEN O.K. LOAD — 40 lbs.

ADDITIVES — Rust and oxidation inhibitors that do not corrode steel or swell or deteriorate synthetic seals.

Packaging

14 oz. (0,4 kg) CARTRIDGES — Individual or case lots of 10 or 60.

35 lb. (16 kg) PAIL, 120 lb. (54 kg) KEG & 400 lb. (181 kg) DRUMS.

General Purpose Grease

Annual lubrication — The following specifications and lubricants for general purpose grease apply to Falk Steelflex couplings that are lubricated annually and operate within ambient temperatures of 0°F to 150°F (-18°C to 66°C). For temperatures beyond this range (see Table 1), consult the factory.

If a coupling leaks grease, is exposed to extreme temperatures, excessive moisture or experiences frequent reversals, more frequent lubrication may be required.

Specifications — General Purpose Coupling Lubricants

The values shown are typical and slight variations are permissible.

DROPPING POINT — 300°F (149°C) or higher.

CONSISTENCY — NLGI No. 2 with 60 stroke worked penetration value in the range of 250 to 300.

SEPARATION AND RESISTANCE — Low oil separation rate and high resistance to separation from centrifuging.

LIQUID CONSTITUENT — Possess good lubricating properties equivalent to a high quality, well refined petroleum oil.

INACTIVE — Must not corrode steel or cause swelling or deterioration of synthetic seals.

CLEAN — Free from foreign inclusions.

General Purpose Greases Meeting Falk Specifications

Lubricants listed below are typical products only and should not be construed as exclusive recommendations.

TABLE 1 — General Purpose Greases

Ambient Temperature Range	0°F to 150°F (-18°C to 66°C)	-30°F to 100°F (-34°C to 38°C)
Manufacturer	Lubricant †	Lubricant †
Amoco Oil Co.	Amolith Grease #2	Amolith Grease #2
BP Oil Co.	Energrease LS-EP2	Energrease LS-EP1
Chevron U.S.A. Inc.	Duro-Lith EP2	Duro-Lith EP1
Cigo Petroleum Corp.	Premium Lithium Grease EP2	Premium Lithium Grease EP1
Conoco Inc.	EP Conolith Grease #2	EP Conolith Grease #2
Exxon Company, USA	Unirex N2	Unirex N2
E.F. Houghton & Co.	Cosmolube 2	Cosmolube 1
Imperial Oil Ltd.	Unirex N2L	Unirex N2L
Kendall Refining Co.	Lithium Grease L421	Lithium Grease L421
Keystone Div. (Pennwalt)	81 EP-2	81 EP-1
Lyondell Petrochemical (ARCO)	Ultholine H EP 2 Grease	Ultholine H EP 2 Grease
Mobil Oil Corp.	Mobilux EP111	Mobilith AW1
Petro-Canada Products	Multipurpose EP2	Multipurpose EP1
Phillips 66 Co.	Philube Blue EP	Philube Blue EP
Shell Oil Co.	Alvania Grease 2	Alvania Grease 2
Shell Canada Ltd.	Alvania Grease 2	Alvania Grease 2
Sun Oil Co.	Ultra Prestige 2EP	Ultra Prestige 2EP
Texaco Lubricants	Starplex HD2	Multifak EP2
Unocal 76 (East & West)	Unolube EP2	Unolube EP2
Valvoline Oil Co.	Multilube Lithium EP Grease	...

* Grease application or re-lubrication should be done at temperatures above 20°F (-7°C). If grease must be applied below 20°F (-7°C), consult The Falk Corporation.

† Lubricants listed may not be suitable for use in the food processing industry; check with lube manufacturer for approved lubricants.

INSTALLATION OF TYPE T10 STEELFLEX TAPERED GRID COUPLINGS

Installation

Only standard mechanics tools, wrenches, a straight edge and feeler gauges are required to install Falk Steelflex couplings. Coupling Sizes 1020T thru 1090T are generally furnished for CLEARANCE FIT with setscrew over the keyway. Sizes 1100T and larger are furnished for an INTERFERENCE FIT without a setscrew.

CLEARANCE FIT HUBS — Clean all parts using a non-flammable solvent. Check hubs, shafts and keyways for burrs. Do not heat clearance fit hubs. Install keys, mount hubs with flange face flush with shaft ends or as otherwise specified and tighten setscrews.

INTERFERENCE FIT HUBS — Furnished without setscrews. Heat hubs to a maximum of 275°F (135°C) using an oven, torch, induction heater or an oil bath. To prevent seal damage, DO NOT heat hubs beyond a maximum temperature of 400°F (205°C).

When an oxy-acetylene or blow torch is used, use an excess acetylene mixture. Mark hubs near the center of their length in several places on hub body with a temperature sensitive crayon, 275°F (135°C) melt temperature. Direct flame towards hub bore using constant motion to avoid overheating an area.

MORE>

WARNING: If an oil bath is used, the oil must have a flash point of 350°F (177°C) or higher. Do not rest hubs on the bottom of the container. Do not use on open flame in a combustible atmosphere or near combustible materials.

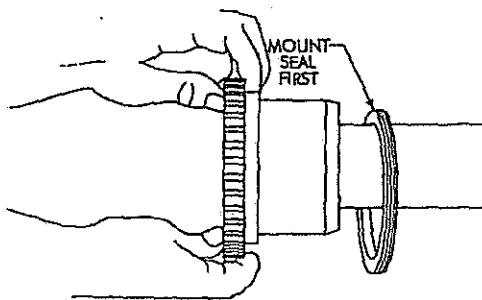
Heat hubs as instructed above. Mount hubs as quickly as possible with hub face flush with shaft end. Allow hubs to cool before proceeding. Insert setscrews (if required) and tighten.

Maximize Performance And Life

The performance and life of couplings depend largely upon how you install and maintain them. Before installing couplings, make certain that foundations of equipment to be connected meet manufacturers' requirements. Check for soft foot. The use of stainless steel shims is recommended. Measuring misalignment and positioning equipment within alignment tolerances is simplified with an alignment computer. These calculations can also be done graphically or mathematically.

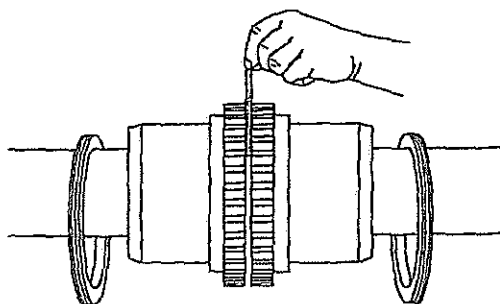
Alignment is shown using spacer bar and straight edge. This practice has proven to be adequate for many industrial applications. However, for superior final alignment, the use of dial indicators (see Manual 458-834 for instructions), lasers, alignment computers or graphical analysis is recommended.

1 — Mount Seals And Hubs



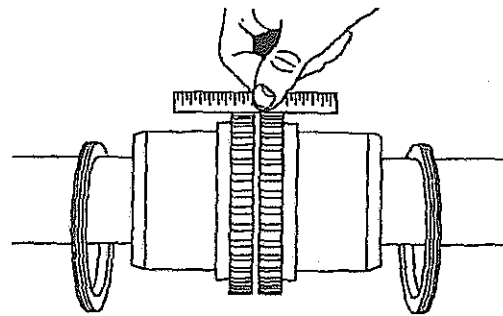
Lock out starting switch of prime mover. Clean all metal parts using a non-flammable solvent. Lightly coat seals with grease and place on shafts BEFORE mounting hubs. Heat interference fit hubs as previously instructed. Seal keyways to prevent leakage. Mount hubs on their respective shafts so the hub face is flush with the end of its shaft unless otherwise indicated. Tighten setscrews when furnished.

2 — Gap and Angular Alignment



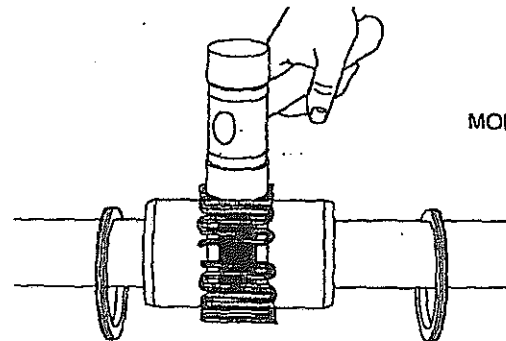
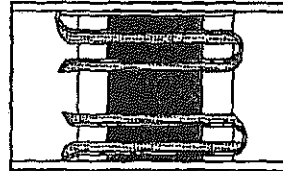
Use a spacer bar equal in thickness to the gap specified in Table 2, Page 5. Insert bar as shown below left, to same depth at 90° intervals and measure clearance between bar and hub face with feelers. The difference in minimum and maximum measurements must not exceed the ANGULAR installation limits specified in Table 2.

3 — Offset Alignment



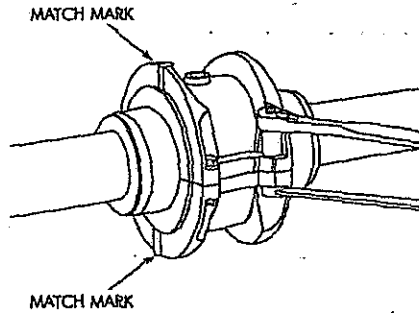
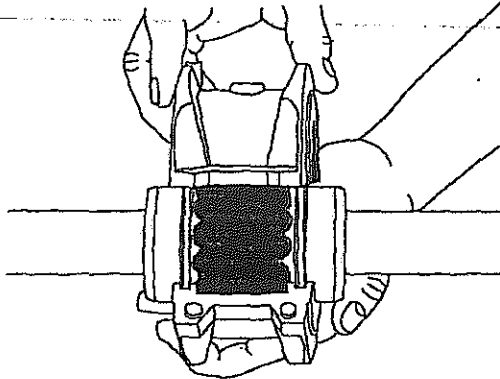
Align so that a straight edge rests squarely (or within the limits specified in Table 2) on both hubs as shown above and also at 90° intervals. Check with feelers. The clearance must not exceed the PARALLEL OFFSET installation limits specified in Table 2. Tighten all foundation bolts and repeat Steps 2 and 3. Realign coupling if necessary.

4 — Insert Grid

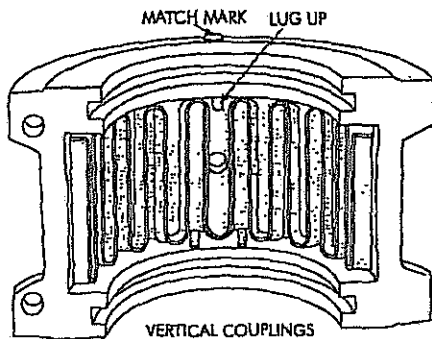


Pack gap and grooves with specified lubricant before inserting grid. When grids are furnished in two or more segments, install them so that all cut ends extend in the same direction (as detailed in the exploded view picture above); this will assure correct grid contact with non-rotating pin in cover halves. Spread the grid slightly to pass over the coupling teeth and seat with a soft mallet.

5 — Pack With Grease And Assemble Covers



Pack the spaces between and around the grid with as much lubricant as possible and wipe off excess flush with top of grid. Position seals on hubs to line up with grooves in cover. Position gaskets on flange of lower cover half and assemble covers so that the match marks are on the same side (see above). If shafts are not level (horizontal) or coupling is to be used vertically, assemble cover halves with the lug and match mark



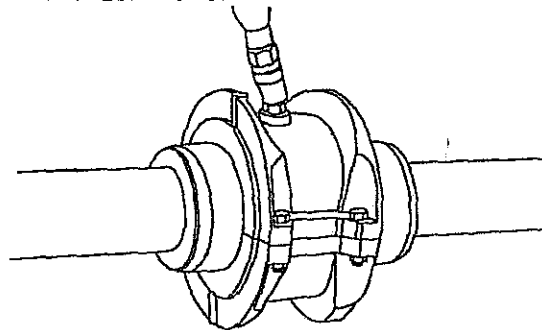
UP or on the high side. Push gaskets in until they stop against the seals and secure cover halves with fasteners, tighten to torque specified in Table 2. Make sure gaskets stay in position during tightening of fasteners. **CAUTION:** Make certain lube plugs are installed before operating.

ANNUAL MAINTENANCE

For extreme or unusual operating conditions, check coupling more frequently.

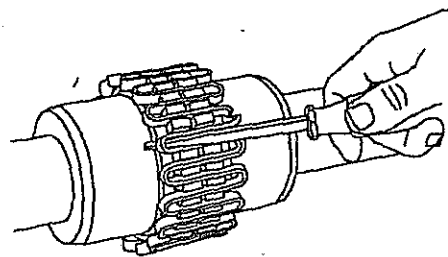
1. Check alignment per steps on Page 3. If the maximum operating misalignment limits are exceeded, realign the coupling to the recommended installation limits. See Table 2 for installation and operating alignment limits.
2. Check tightening torques of all fasteners.
3. Inspect seal ring and gasket to determine if replacement is required. If leaking grease, replace.
4. When connected equipment is serviced, disassemble the coupling and inspect for wear. Replace worn parts. Clean grease from coupling and repack with new grease. Install coupling using new gasket as instructed in this manual.

Periodic Lubrication



The required frequency of lubrication is directly related to the type of lubricant chosen, and the operating conditions. Steelflex couplings lubricated with common industrial lubricants, such as those shown in Table 1, should be relubed annually. The use of Falk Long Term Grease (LTG) will allow relube intervals to be extended to beyond five years. When relubing, remove both lube plugs and insert lube fitting. Fill with recommended lubricant until an excess appears at the opposite hole. **CAUTION:** Make certain all plugs have been inserted after lubricating.

Coupling Disassembly And Grid Removal



Whenever it is necessary to disconnect the coupling, remove the cover halves and grid. A round rod or screwdriver that will conveniently fit into the open loop ends of the grid is required. Begin at the open end of the grid section and insert the rod or screwdriver into the loop ends. Use the teeth adjacent to each loop as a fulcrum and pry the grid out radially in even, gradual stages, proceeding alternately from side to side.

TYPE T COUPLING INSTALLATION & ALIGNMENT DATA

Maximum life and minimum maintenance for the coupling and connected machinery will result if couplings are accurately aligned. Coupling life expectancy between initial alignment and maximum operating limits is a function of load, speed and lubrication. Maximum operating values listed in Table 2 are based on cataloged allowable rpm.

Values listed are based upon the use of the gaps listed, standard coupling components, standard assemblies and cataloged allowable speeds.

Values may be combined for an installation or operating condition.

Example: 1060T max. operating misalignment is .016" parallel plus .018" angular.

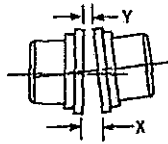
NOTE: For applications requiring greater misalignment, refer application details to Falk.

Angular misalignment is dimension X minus Y as illustrated below.

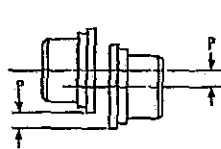
Parallel misalignment is distance P between the hub center lines as illustrated below.

End float (with zero angular and parallel misalignment) is the axial movement of the hub(s) within the cover(s) measured from "O" gap.

ANGULAR MISALIGNMENT



PARALLEL OFFSET MISALIGNMENT



END FLOAT

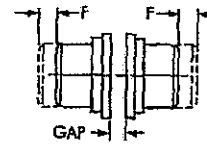


TABLE 2 — Misalignment & End Float

SIZE	Installation Limits						Operating Limits						Cover Fastener Tightening Torque Values		Allow Speed (rpm)	Lube Wt	
	Parallel Offset-P		Angular (x-y)		Hub Gap ± 10%		Parallel Offset-P		Angular (x-y)		End Float Physical Limit (Min) 2 x F		In Series Fasteners (lb-in)	Metric Fasteners (Nm)		lb	kg
	Max Inch	Max mm	Max Inch	Max mm	Inch	mm	Max Inch	Max mm	Max Inch	Max mm	Inch	mm					
1020T	.006	0.15	.003	0.08	.125	3	.012	0.30	.010	0.25	.210	5.33	100	11.3	4500	.06	0.03
1030T	.006	0.15	.003	0.08	.125	3	.012	0.30	.012	0.30	.198	5.03	100	11.3	4500	.09	0.04
1040T	.006	0.15	.003	0.08	.125	3	.012	0.30	.013	0.33	.211	5.36	100	11.3	4500	.12	0.05
1050T	.008	0.20	.004	0.10	.125	3	.016	0.41	.016	0.41	.212	5.38	200	23.6	4500	.15	0.07
1060T	.008	0.20	.005	0.13	.125	3	.016	0.41	.018	0.46	.259	6.55	200	23.6	4350	.19	0.09
1070T	.008	0.20	.005	0.13	.125	3	.016	0.41	.020	0.51	.259	6.58	200	23.6	4125	.25	0.11
1080T	.008	0.20	.006	0.15	.125	3	.016	0.41	.024	0.61	.268	7.32	200	23.6	3600	.38	0.17
1090T	.008	0.20	.007	0.18	.125	3	.016	0.41	.028	0.71	.286	7.26	200	23.6	3600	.56	0.25
1100T	.010	0.25	.008	0.20	.188	5	.020	0.51	.033	0.84	.429	10.90	312	35	2440	.94	0.43
1110T	.010	0.25	.009	0.23	.188	5	.020	0.51	.036	0.91	.429	10.90	312	35	2250	1.1	0.51
1120T	.011	0.28	.010	0.25	.250	6	.022	0.56	.040	1.02	.556	14.12	650	73	2025	1.6	0.74
1130T	.011	0.28	.012	0.30	.250	6	.022	0.56	.047	1.19	.551	14.00	650	73	1800	2.0	0.91
1140T	.011	0.28	.013	0.33	.250	6	.022	0.56	.053	1.35	.571	14.50	650	73	1650	2.5	1.14

TABLE 3 — Coupling Cover Fastener Identification

SIZE	Inch Series Fasteners				METRIC FASTENERS	
	Old Style		New Style			
1020-1070T10		SAE Grade 8 *		SAE Grade 8		Property Class 10.9
1080-1090T10		SAE Grade 8		SAE Grade 8		Property Class 10.9
1100-1140T10		SAE Grade 5		SAE Grade 5		Property Class 8.8

* Older style covers, Sizes 1020T10 thru 1070T10 must utilize socket head cap screws and locknuts held by the cover.

PARTS IDENTIFICATION

All coupling parts have identifying part numbers as shown below. Parts 3 and 4 (Hubs and Grids), are the same for both Type T10 and T20 couplings. All other coupling parts are unique to Type T10. When ordering parts, always SPECIFY SIZE and TYPE shown on the COVER.

PARTS INTERCHANGEABILITY

Parts are interchangeable between Sizes 20T and 1020T, 30T and 1030T, etc. except as noted.

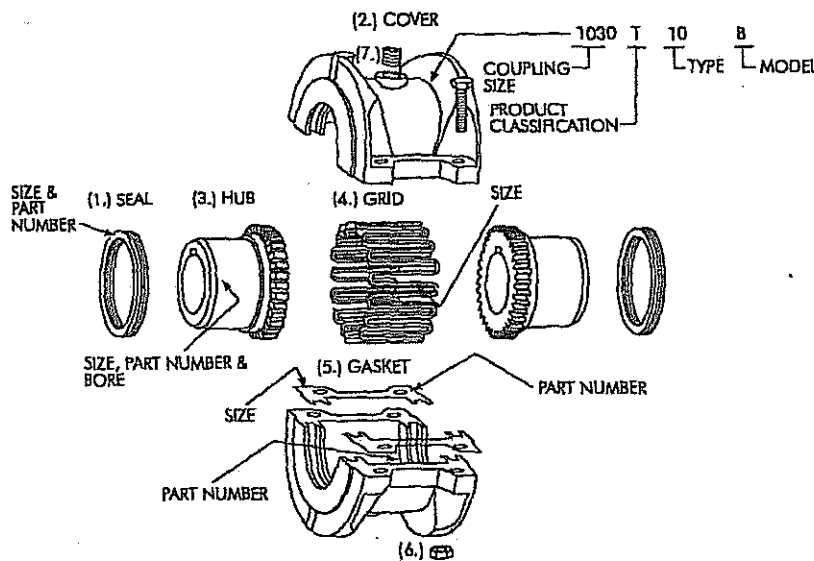
GRIDS — Size 1020T thru 1140T Steelflex couplings use blue grids. Older models, 20T thru 140T, use orange grids.

CAUTION: Blue grids may be used in all applications, but DO NOT substitute orange grids for blue.

COVERS — CAUTION: DO NOT mix cover halves of different designs. Sizes 1020T thru 1070T10 covers have been manufactured in several different two-rib designs and 80T thru 140T covers have been manufactured with two and three ribs.

HARDWARE — Older style covers, Sizes 1020T10 thru 1070T10, utilized socket head cap screws with captured locknuts. The new style covers use hex head cap screws (either inch or metric) and unrestrained locknuts. Specify either inch series SOCKET head or metric series HEX head cap screws when ordering replacement parts.

PART NUMBER LOCATION



PART DESCRIPTION

1. Seal (T10)
2. Cover (T10)
3. Hub (Specify bore and keyway)
4. Grid
5. Gasket (T10)
6. Fasteners (T10) — Coupling may be supplied with one set each of inch series fasteners and metric fasteners.
7. Lube Plug

ORDER INFORMATION

1. Identify part(s) required by name above.
2. Furnish the following information.

EXAMPLE:

Coupling Size: 1030
 Coupling Type: T10
 Model: B
 Bore: 1.375
 Keyway: .375 x .187

3. Price parts from Price List 422-110 and appropriate discount sheet.

SSPC-SP-5

Sa 3

NACE 1

White Metal Blast Cleaning - Removal of all mill scale, rust, rust scale, paint or foreign matter by the use of abrasives propelled through nozzles or by centrifugal wheels. A White Metal Blast Cleaned Surface Finish is defined as a surface with a gray-white, uniform metallic color, slightly roughened to form a suitable anchor pattern for coatings. The surface, when viewed without magnification, shall be free of all oil, grease, dirt, visible mill scale, rust, corrosion products, oxides, paint, or any other foreign matter.

SSPC-SP6

Sa 2

NACE 3

Surface Preparation Standards

Page 3 of 4

Commercial Blast Cleaning - Removal of mill scale, rust, rust scale, paint or foreign matter by the use of abrasives propelled through nozzles or by centrifugal wheels, to the degree specified. A Commercial Blast Cleaned Surface Finish is defined as one from which all oil, grease, dirt, rust scale and foreign matter have been completely removed from the surface and all rust, mill scale and old paint have been completely removed except for slight shadows, streaks, or discolorations caused by rust stain, mill scale oxides or slight, tight residues of paint or coating that may remain; if the surface is pitted, slight residues of rust or paint may be found in the bottom of pits; at least two-thirds of each square inch of surface area shall be free of all visible residues and the remainder shall be limited to the light discoloration, slight staining or tight residues mentioned above.

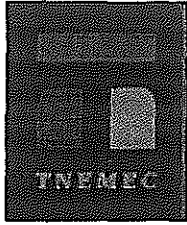
SSPC-SP-7

Sa 1

Brush-Off Blast Cleaning - Removal of loose mill scale, loose rust, and loose paint, to the degree hereafter specified, by the impact of abrasives propelled through nozzles or by centrifugal wheels. It is not intended that the surface shall be free of all mill scale, rust, and paint. The remaining mill scale, rust, and paint should be tight and the surface should be sufficiently abraded to provide good adhesion and bonding of paint. A Brush-Off Blast Cleaned Surface Finish is defined as one from which all oil, grease, dirt, rust scale, loose mill scale, loose rust and loose paint or coatings are removed completely but tight mill scale and tightly adhered rust, paint and coatings are permitted to remain provided that all mill scale and rust have been exposed to the abrasive blast pattern sufficiently to expose numerous flecks of the underlying metal fairly uniformly distributed over the entire surface.

SSPC-SP-8

Pickling - Removal of all mill scale, rust and rust scale by chemical reaction, or by electrolysis, or by both. It is intended that the pickled surface shall be completely free of all scale, rust, and foreign matter. Furthermore, the surface shall be free of unreacted or



- [Products](#)
- [Projects](#)
- [Resources](#)
- [Contact](#)

- **Find Your Coatings Consultant**

Find and contact a coatings consultant near you

Search

GO

Series N140 | Pota-Pox Plus

- [Tech Data](#)
- [Colors](#)
- [Similar](#)

Below is only a summary of product data. Please download the product datasheet for complete details.
 English: [Product Data MSDS](#) Spanish: [Product Data MSDS](#) French: [Product Data MSDS](#)

Generic Type Polyamidoamine Epoxy

Innovative potable water coating which offers high-build edge protection and allows for application at a wide range of temperatures (down to 35°F or 2°C with 44-700 Accelerator). For use on the interior and exterior of steel or concrete tanks,

Common Usage reservoirs, pipes, valves, pumps and equipment in potable water service. **Note:** Series V140 conforms with air pollution regulations limiting Volatile Organic Compounds (VOC) to a maximum of 250 grams/litre (2.08 lbs/gal). In areas requiring less than 100 grams/litre VOC, please refer to the Series L140 data sheet.

Colors

1211 Red Oxide, 1255 Beige, 11WH White, 15BL Tank White, 35GR Black and 39BL Delft Blue. **Note:** Epoxies chalk with extended exposure to sunlight. Lack of ventilation, incomplete mixing, miscatalyzation or the use of heaters that emit carbon dioxide and carbon monoxide during application and initial stages of curing may cause yellowing to occur.

Primers

Self-priming, [20](#), [FC20](#), [22](#), 91-H₂O, 94-H₂O, [L140](#), [L140F](#), [N140F](#), [V140](#), [V140F](#)
Interior: Series [20](#), [FC20](#), [22](#), [L140](#), [L140F](#), [N140F](#), [V140](#), [V140F](#).

Topcoats

Exterior: Series [27](#), [66](#), [L69](#), [L69F](#), [N69](#), [N69F](#), [V69](#), [V69F](#), [73](#), [L140](#), [L140F](#), [N140](#), [N140F](#), [V140](#), [V140F](#), [161](#), [180](#), [700](#), [701](#), [1074](#), [1074U](#), [1075](#), [1075U](#), [1080](#), [1081](#). Refer to COLORS on applicable topcoat data sheets for additional

information. **Note:** When topcoating with Series 700, an intermediate coat of Series 73 or 1075 is required. **Note:** The following recoat times apply for Series N140: *Immersion Service*—Surface must be scarified after 60 days. *Atmospheric Service*—After 60 days, scarification or an epoxy tie-coat is required. Contact your Tnemec representative for specific recommendations.

Volume Solids	67.0 ± 2.0% (mixed—A, B & 44-700 Epoxy Accelerator) † 2.0 to 10.0 mils (50 to 225 microns) per coat. Note: MIL-PRF-4556F applications require two coats at 4.0-6.0 mils (100-150 microns) per coat. Otherwise, the number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.
Recommended DFT	
Volatile Organic Compounds	N140: Unthinned: 2.4 lbs/gallon (285 grams/litre) V140: Unthinned: 1.95 lbs/gallon (234 grams/litre) Thinned 5% (#60): 2.6 lbs/gallon (311 grams/litre) Thinned 2.5% (#4): 2.08 lbs/gallon (250 grams/litre) Thinned 10% (#4): 2.8 lbs/gallon (334 grams/litre) †
HAPS	N140: Unthinned: 2.4 lbs/gal solids Thinned 5% (#60): 2.4 lbs/gal solids Thinned 10% (#4): 3.3 lbs/gal solids V140: Unthinned: 2.1 lbs/gal solids Thinned 2.5% (#4): 2.3 lbs/gal solids
Theoretical Coverage	1,070 mil sq ft/gal (27.2 m ² /L at 25 microns). See APPLICATION for coverage rates. †
Number of Components	Two: Part A (amine) and Part B (epoxy) or Three: Part A, Part B and 44-700 Epoxy Accelerator

The products listed below are not exact equivalents. They are only products that you may consider as alternatives in a general sense. Substrate type, condition, temperatures, surface preparation, primer/topcoat selection and intended use are just a few factors that will affect product selection. Please contact your local Tnemec Coatings Consultant for product recommendations.

This Product *Polyamidoamine Epoxy*

Volume Solids	Rec. DFT	V.O.C.	# of Components
67.0 ± 2.0% (mixed—A, B & 44-700 Epoxy Accelerator) †	2.0 to 10.0 mils (50 to 225 microns) per coat. Note: MIL-PRF-4556F applications require two coats at 4.0-6.0 mils (100-150 microns) per coat. Otherwise, the number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.	N140: Unthinned: 2.4 lbs/gallon (285 grams/litre) V140: Unthinned: 1.95 lbs/gallon (234 grams/litre) Thinned 5% (#60): 2.6 lbs/gallon (311 grams/litre) Thinned 2.5% (#4): 2.08 lbs/gallon (250 grams/litre) Thinned 10% (#4): 2.8 lbs/gallon (334 grams/litre) †	Two: Part A (amine) and Part B (epoxy) or Three: Part A, Part B and 44-700 Epoxy Accelerator

Series V140 | Pota-Pox Plus

Polyamidoamine Epoxy

Hide this product's data

Volume Solids	Rec. DFT	V.O.C.	# of Components
67.0 ± 2.0% (mixed—A, B & 44-700 Epoxy Accelerator) †	2.0 to 10.0 mils (50 to 225 microns) per coat. Note: MIL-PRF-4556F applications require two coats at 4.0-6.0 mils (100-150 microns) per coat. Otherwise, the number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.	N140: Unthinned: 2.4 lbs/gallon (285 grams/litre) V140: Unthinned: 1.95 lbs/gallon (234 grams/litre) Thinned 5% (#60): 2.6 lbs/gallon (311 grams/litre) Thinned 2.5% (#4): 2.08 lbs/gallon (250 grams/litre) Thinned 10% (#4): 2.8 lbs/gallon (334 grams/litre) †	Two: Part A (amine) and Part B (epoxy) or Three: Part A, Part B and 44-700 Epoxy Accelerator

[Email this product](#)



Series N140 Pota-Pox Plus was applied to the immersion and non-immersion areas of the Moline WTP in Moline, IL.

Support Documents

- [Water Tank Estimating Guide](#)
- [Systems Guide for Potable Water Storage Tanks](#)
- [City Avoids Superfund Stigma by Tapping Advanced Water Treatment Technology](#)
- [Greensburg Water Tower Symbolizes City's Recovery from 2007 Tornado](#)

About Tnemec

Tnemec manufactures the most advanced line of coatings in the world.

Established in 1921, Tnemec Company is one of the largest privately held companies in the United States specializing in industrial coatings for new construction and maintenance. Tnemec manufactures more than one hundred industrial and architectural coatings — from premium epoxies and polyurethanes to specialized fluoropolymer and new generation polymer products — formulated

specifically for extreme durability, enduring performance and enhanced aesthetics. Tnemec maintains its strengths through innovative and creative research and development for superior performance and leading technology in the paint and coatings industry.

Tnemec's product line provides coating protection for a number of different industries including water storage tanks, water and wastewater treatment, specialty architectural, industrial and processing/manufacturing. In addition, Tnemec offers StrataShield floor and wall coatings as well as Chemprobe masonry coatings.

Tnemec has a worldwide reputation among specifiers and contractors for consistently producing high quality industrial coatings that are used on everything from water tanks to large stadiums. Tnemec also features the most knowledgeable sales representatives in the coatings industry who provide support and industry expertise from start to finish.

Keep In Touch With Tnemec

[Facebook](#) [YouTube](#) [Linkedin](#) [Twitter](#)

1-800-TNEMEC1 (1-800-863-6321) 6800 Corporate Drive Kansas City, MO 64120
Copyright © Tnemec Inc. All Rights Reserved. [Privacy Policy](#) [Terms and Conditions](#)

Surface Preparation Standards



**SUPERIOR
ENVIRONMENTAL PRODUCTS INC.**
Multi-Functional Novolac Coatings

Home Page

- National Association of Corrosion Engineers (NACE)
- Steel Structures Painting Council (SSPC)
- Swedish Standards (Sa,St)

National Association of Corrosion Engineers (NACE)

- NACE 1 White Metal Blast Cleaning
- NACE 2 Near-White Blast Cleaning
- NACE 3 Commercial Blast Cleaning

Steel Structures Painting Council (SSPC)

- SP-1 Solvent Cleaning
- SP-2 Hand Tool Cleaning
- SP-3 Power Tool Cleaning
- SP-4 Flame Cleaning
- SP-5 White Metal Blast Cleaning
- SP-6 Commercial Blast Cleaning
- SP-7 Brush-Off Blast Cleaning
- SP-8 Pickling
- SP-9 Weathering Followed By Blast Cleaning
- SP-10 Near-White Blast Cleaning

Swedish Standard (St,Sa)

- St 2 Hand Tool Cleaning
- St 3 Power Tool Cleaning
- Sa 1 Brush-Off Blast Cleaning
- Sa 2 Commercial Blast Cleaning
- Sa 2 1/2 Near-White Blast Cleaning
- Sa 3 White Metal Blast Cleaning

*DEDUCTIVE SURFACE
PREPARATION*

SSPC-SP-1

Solvent Cleaning - Removal of all detrimental foreign matter such as oil, grease, dirt, soil, salts, drawing and cutting compounds, and other contaminants from steel surfaces by the use of solvents, emulsions, cleaning compounds, steam or other similar materials and methods which involve a solvent or cleaning action.

COATING SPECIFICATION

MATERIAL SPECIFICATION

667

GLOSS BLUE ENAMEL

NAME OF COATING:  STANDARD GLOSS BLUE WATER REDUCIBLE AIR-DRY ENAMEL, COATING SPECIFICATION NO. 667

GENERIC MAKEUP: WATER REDUCIBLE MODIFIED ALKYD

RECOMMENDED USE: FOR ALL PRODUCTS THAT ARE TO BE PAINTED UNLESS OTHERWISE SPECIFIED. (STANDARD PAINT)

COLOR: GLOSS BLUE (4D601)

SURFACE PREP: SURFACE MUST BE DRY AND FREE OF ALL DUST, DIRT, GREASE, OIL, LOOSE PAINT AND RUST.

RECOMMENDED PRIMER: NONE AS STANDARD.

RECOMMENDED THINNER: WATER, IF NECESSARY
NOTE: PAINT TO BE SHIPPED TO NORTH AURORA AT SPRAY VISCOSITY. (45-55 SECONDS NO.4 FORD CUP)

METHOD OF APPLICATION: SPRAY

PERCENT OF SOLIDS: 40.0%

DESIRED WET FILM THICKNESS PER COAT: 2.8-3.4 MILS.

DESIRED DRY FILM THICKNESS PER COAT: 1.0-1.4 MIL.

DRYING TIME: (TO TOUCH) 30 MINUTES TO 1 HOUR.

CLEANUP: LACQUER THINNER OR SOAP AND WATER
EQUIPMENT: SOAP AND WATER
OTHER:

THEORETICAL COVERAGE: 500 SQ. FT. PER GALLON AT 1 MIL (DRY)

WARNING: THIS COATING IS FOR INDUSTRIAL USE ONLY, NOT INTENDED FOR USE AROUND THE HOME. THIS MATERIAL IS FLAMMABLE, VAPOR IS HARMFUL, AND IS NOT TO BE TAKEN INTERNALLY. USE WITH ADEQUATE VENTILATION. THIS MATERIAL MUST CONFORM TO LOCAL, STATE, AND FEDERAL AIR POLLUTION RULES AND REGULATION. PUMP MANUFACTURER IS NOT RESPONSIBLE FOR DAMAGE TO THE COATING INCURRED DURING SHIPMENT OR INSTALLATION.

NOTE: COLOR FORMULA CHANGED FROM 4D245 TO 4D601 AROUND 10/17/96 TO GIVE HIGHER GLOSS FINISH.

DEDUCTIVE COATING

C 9-20-05 REMOVED AURORA LF CJ

PREPARED BY M.AHRENS DATE: 1/17/97
CHECKED BY MSK PAGE 1 OF 1
APPROVED BY DRW REVISION C

THIS MATERIAL SPECIFICATION CONSTITUTES THE LAST 3 DIGITS OF THE 10 DIGIT PART NUMBER INDICATED ON OUR PURCHASE ORDER.



Pump Division
North Aurora Operations



Peerless Pump Company
 Indianapolis, IN 46202
 Tammy Schroeder
 Phone 317-924-7318
 Fax 317-924-7202

Customer : Greene and Bradford, Inc.
 3501 Constitution Drive
 Springfield, IL
 62711
 USA

Project :
 Quote No. : US-5576-318

Page No : 1

Contact : Stanley S Bersin
 Phone : 217.793.8844 Fax : 217.793.6227
 Date : Monday, February 21, 2011

Item: 1	Flow (US gpm)	Head (ft)	Eff. (%)	Power (hp)	Speed (RPM)
Model : Peerless - 6AE16G	1146	162	82.6	58.53	1771
	Liquid	Temp. (°F)	Sp. Gravity	Visc. (cSt)	Dia. (inch)
	Water	60	1.001	1.125	13.83

Summary Quotation:

Item No	Description	Weight (lb)	Qty
1	6AE16G - CI/Brz Fit Horiz Mount, Mechanical Seal	850	1
2	CI Casing with 125lb Suct /125lb Disch FF ANSI flanges	0	1
3	Hardware & Gasket for 125lb/125lb ANSI Flanged Casing	0	1
4	Bronze Impeller with Integral Rings	0	1
5	Bronze Casing Rings	0	2
6	Standard Grease Lube Bearings	0	1
7	LH Steel Shaft Double Row Outboard Bearing	0	1
8	Bronze Shaft Sleeves (set of 2)	0	1
9	Crane Type 21 Mech Seal 225° F Max BF501O101 Ceramic Seat (Set of 2)	0	1
10	No Mechanical Seal Flush Piping	0	1
11	Double Row Outboard/Sgl Row Inboard Brgs with Std Lip Seals	0	1
12	Steelflex 1070T10, Flexible Coupling, Falk	23	1
13	Standard Fab Steel, ANSI B15.1 Shell Type Coupling Guard, Factory	5	1
14	Horiz Fab Non-Drip Rim Base, Mounting Parts, Factory	210	1
15	75Hp 1800Rpm 365T Frame 1.15 SF, Horiz Foot Mtd Elect Motor, Factory Quoted motor, Obtain quote from Factory & add as a line item (TLS)	0	1
16	USEM Electric Motor, Model AA25, 75HP, 1785Rpm, 3Ph, 60Hz, 230/460V, Full Volt Start, 365T Frame, TEFC Enclosure, Inverter Duty, 10:1 Speed Range Variable Torque, 5:1 Speed Range Constant Torque, Class "F" Insulation, Premium Efficient, Counter-Clockwise (TLS)	0	1
17	Tnemec 141 (Epoxoline) Epoxy Coating on Exterior of Pump Casing (TLS)	0	1
18	Quotation is based on Peerless Pump interpretation of Village of Chatham, IL Request for Quotation and Village of Chatham, IL Request for Quotation Addendum #1 (TLS)	0	1





Peerless Pump Company

Indianapolis, IN 46202
Tammy Schroeder
Phone 317-924-7318
Fax 317-924-7202

Customer : Greene and Bradford, Inc.
3501 Constitution Drive
Springfield, IL
62711
USA

Project :
Quote No. : US-5576-318

Page No : 2

Contact : Stanley S Bersin
Phone : 217.793.8844 Fax : 217.793.6227
Date : Monday, February 21, 2011

Terms of Payment:

Shipment Terms (INCOTERM)

Estimated Schedule (week[s]):

10

Net Weight Total (lb):

1088

Payment Terms:

Total (\$): 15,269.30

Plus Applicable Taxes

Prices quoted subject to acceptance of the Company's
Terms, Conditions, Warranty and our acceptance within 30 days
from the date quoted herein.





Peerless Pump Company

Indianapolis, IN 46202
Tammy Schroeder
Phone 317-924-7318
Fax 317-924-7202

Customer : Greene and Bradford, Inc.
3501 Constitution Drive
Springfield, IL
62711
USA

Project :
Quote No. : US-5576-318

Page No. : 3

Contact : Stanley S Bersin
Phone : 217.793.8844 Fax : 217.793.6227
Date : Monday, February 21, 2011

Pump Model: Peerless - 6AE16G
Type: AE Horiz Mtg - Horizontal
Split Case Single Stage

Nom. Speed: 1771 RPM, 60 Hz Electric
Impeller Dia.: 13.83 inch

Duty Flow : 1146 US gpm
Duty Head : 162 ft
Efficiency : 82.6 %

Temperature: 60 °F
Viscosity: 1.125 cSt
Sp. Gravity: 1.001

Power Required : 58.5 hp
NPSH Required : 12 ft
Peak Power: 62 hp
Closed Valve Pressure 193.2 ft

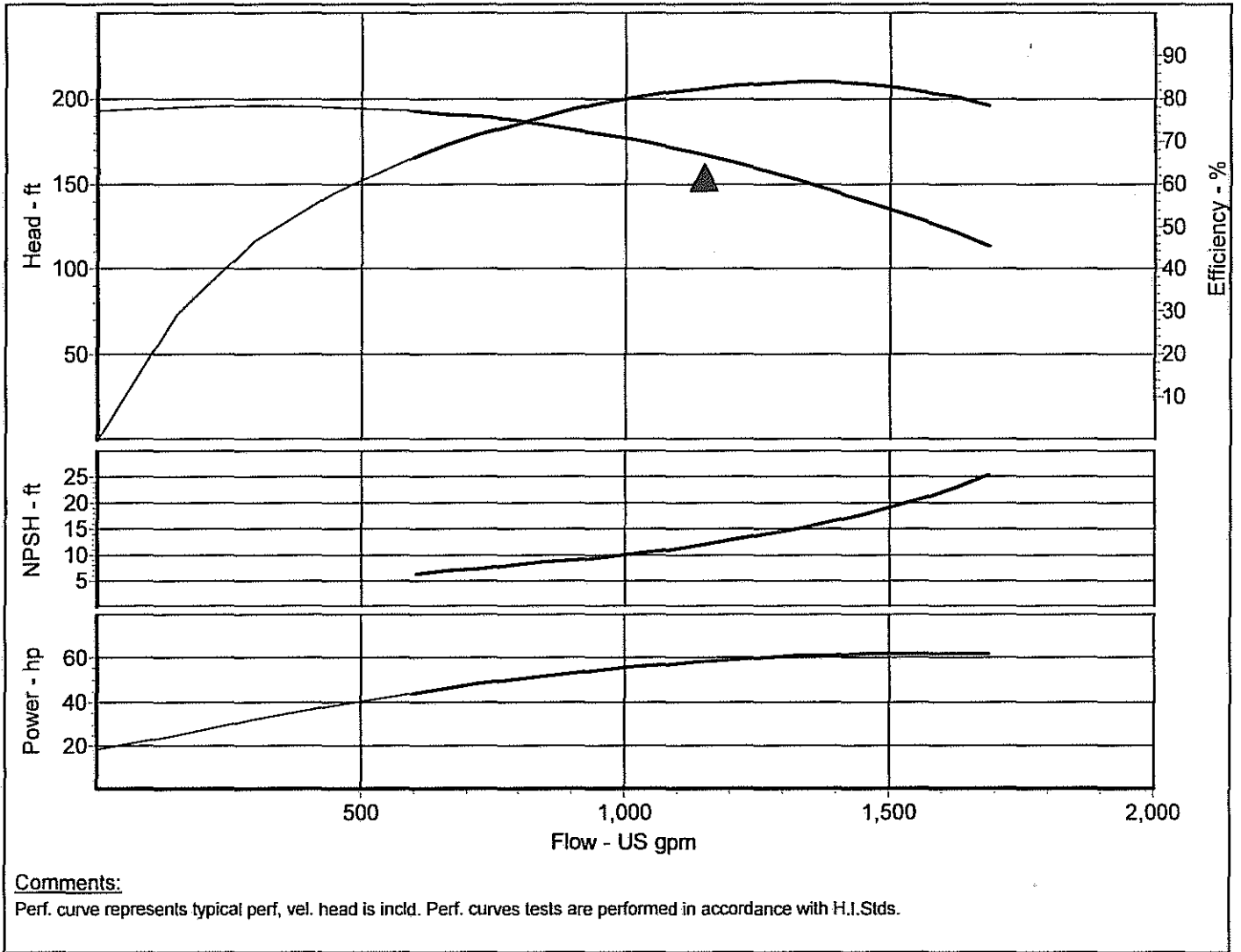
Curve No.: 3132108

Impeller No. 2692933

Item : 1

Your Ref.:

Tolerance : Hyd Inst-Peerless Std



Comments:

Perf. curve represents typical perf, vel. head is incld. Perf. curves tests are performed in accordance with H.I.Stds.





Peerless Pump Company

Indianapolis, IN 46202
Tammy Schroeder
Phone 317-924-7318
Fax 317-924-7202

Customer : Greene and Bradford, Inc.
3501 Constitution Drive
Springfield, IL
62711
USA

Project :
Quote No. : US-5576-318

Page No. : 4

Contact : Stanley S Bersin
Phone : 217.793.8844 Fax : 217.793.6227
Date : Monday, February 21, 2011

Flow (US gpm)	Head (ft)	Efficiency (%)	Power Required (hp)	NPSH Required (ft)
596.2	192.7	66.2	43.9	
732.4	188.9	72.0	48.6	7.6
868.6	183.5	76.6	52.6	8.8
1004.8	176.2	80.1	55.9	10.2
1141.0	167.2	82.5	58.4	11.9
1277.2	156.5	83.7	60.3	14.1
1413.4	144.0	83.6	61.5	16.9
1549.6	129.8	82.0	62.0	20.6
1685.8	113.8	78.5	61.8	





Peerless Pump Company

Indianapolis, IN 46202
 Tammy Schroeder
 Phone 317-924-7318
 Fax 317-924-7202

Customer : Greene and Bradford, Inc.
 3501 Constitution Drive
 Springfield, IL
 62711
 USA

Project :
 Quote No. : US-5576-318

Page No : 5

Contact : Stanley S Bersin
 Phone : 217.793.8844 Fax : 217.793.6227
 Date : Monday, February 21, 2011

Item: 1
 Model : Peerless - 6AE16G

Flow (US gpm)	Head (ft)	Eff. (%)	Power (hp)	Speed (RPM)
1146	162	82.6	58.53	1771
Liquid	Temp. (°F)	Sp. Gravity	Visc. (cSt)	Dia. (inch)
Water	60	1.001	1.125	13.83

Technical Information:

Technical Information: 6AE16G

Casing Suction Design	Double
Casing Volute Design	Single
Nominal Casing Thickness Inches	0.56
Corrosion Allow Inches	0.12
Max Suct Press PSI MechSeal 125# Suct less than or = to 150°F CI	150
Max Suct Press PSI MechSeal 250# Suct less than or = to 150°F CI	Refer to factory
Max Suct Press PSI MechSeal 250# Suct less than or = to 150°F DI	Not Available
Max Suct Press PSI Packed 125# Suct CI Csg	175
Max Suct Press PSI Packed 250# Suct CI Csg	Refer to factory
Max Suct Press PSI Packed 250# Suct DI Csg	Not Available
Max Work Press PSI MechSeal 125# Dischg less than or = to 150°F CI	175
Max Work Press PSI MechSeal 250# Dischg less than or = to 150°F CI	300
Max Work Press PSI MechSeal 250# Dischg less than or = to 150°F DI	Refer to factory
Max Work Press PSI Packed 125# Disch CI Csg	175
Max Work Press PSI Packed 250# Disch CI Csg	300
Max Work Press PSI Packed 250# Disch DI Csg	Not Available
Max Suct Press PSI Mech Seal 125# Suct 200°F CI	150
Max Suct Press PSI Mech Seal 250# Suct 200°F CI	Refer to the Factory
Max Suct Press PSI Mech Seal 250# Suct 200°F DI	Not Available
Max Suct Press PSI Packed 125# Suct 200°F CI	162
Max Suct Press PSI Packed 250# Suct 200°F CI	Refer to the Factory
Max Suct Press PSI Packed 250# Suct 200°F DI	Not Available
Max Work Press PSI Mech Seal 125# Disc 200°F CI	162





Peerless Pump Company

Indianapolis, IN 46202
 Tammy Schroeder
 Phone 317-924-7318
 Fax 317-924-7202

Customer : Greene and Bradford, Inc.
 3501 Constitution Drive
 Springfield, IL
 62711
 USA

Project :
 Quote No. : US-5576-318

Page No : 6

Contact : Stanley S Bersin
 Phone : 217.793.8844 Fax : 217.793.6227
 Date : Monday, February 21, 2011

Max Work Press PSI Mech Seal 250# Disc 200°F CI	280
Max Work Press PSI Mech Seal 250# Disc 200°F DI	Not Available
Max Work Press PSI Packed 125# Disch 200°F CI	162
Max Work Press PSI Packed 250# Disch 200°F CI	280
Max Work Press PSI Packed 250# Disch less than or = to 200°F DI	Not Available
Max Suct Press PSI Mech Seal 125# Suct less than or = to 225°F CI	150
Max Suct Press PSI Mech Seal 250# Suct less than or = to 225°F CI	150
Max Suct Press PSI Mech Seal 250# Suct less than or = to 225°F DI	Not Available
Max Suct Press PSI Packed 125# Suct less than or = to 250°F CI	150
Max Suct Press PSI Packed 250# Suct less than or = to 250°F CI	Refer to the Factory
Max Suct Press PSI Pack 250# Suct 250° F DI	Not Available
Max Work Press PSI Mech Seal 125# Dischg less than or = to 225°F CI	160
Max Work Press PSI Mech Seal 250# Dischg less than or = to 225°F CI	270
Max Work Press PSI Mech Seal 250# Dischg less than or = to 225°F DI	Not Available
Max Work Press PSI Pack 125# Dischg less than or equal to 250°F CI	150
Max Work Press PSI Packed 250# Dischg less than or = to 250°F CI	260
Max Work Press PSI Packed 250# Dischg less than or = to 250°F DI	Not Available
Shaft Diameter Through Impeller Inches	1.75
Shaft Dia Through Coupling Inches	1.562
Cutwater Diameter Inches	17.41
Impeller Diameter at 90% of Cutwater Diameter	15.67
Impeller Diameter at 85% of Cutwater Diameter	14.8
Minimum Impeller Diameter Inches	12
Minimum Impeller Average Diameter Inches	Not Applicable
WR2 Lb-Ft2 Wet Bronze Impeller	7.3
Number of Impeller Vanes	8
Stuffing Box Shaft Sleeve Diameter Inches	2
Stuffing Box Bore Inches	3
Stuffing Box Depth Inches	3.31
Stuffing Box Face Nearest Obstruction Along Shaft In	1.74
Stuffing Box Square Packing Inches	0.5
Stuffing Box Packing Rows without Lantern Ring	6





Peerless Pump Company

Indianapolis, IN 46202
Tammy Schroeder
Phone 317-924-7318
Fax 317-924-7202

Customer : Greene and Bradford, Inc.
3501 Constitution Drive
Springfield, IL
62711
USA

Project :
Quote No. : US-5576-318

Page No : 7

Contact : Stanley S Bersin
Phone : 217.793.8844 Fax : 217.793.6227
Date : Monday, February 21, 2011

Stuffing Box Packing Rows with Lantern Ring	5
Stuffing Box Gland Bolt Circle	5.25
Stuffing Box Gland Bolt Dia Inches	0.5
Radial Single Row Bearing Size	208
Thrust Single Row Bearing Size	307
Thrust Double Row Bearing Size Optional	5307
Priming Connection NPT	0.5
Discharge Drain NPT	1
Suction Drain NPT	0.5
First Critical Speed RPM	3841
Max Pump RPM Standard Construction	1800
Max Pump RPM	Not Available
Rotor Series	3
Specific Speed 8 Pole 60Hz Motor	0
Specific Suction Speed 8 Pole 60Hz Motor	0
Specific Speed 6 Pole 60Hz Motor	880
Specific Suction Speed 6 Pole 60Hz Motor	3876
Specific Speed 4 Pole 60Hz Motor	880
Specific Suction Speed 4 Pole 60Hz Motor	4982
Specific Speed 2 Pole 60Hz Motor	0
Specific Suction Speed 2 Pole 60Hz Motor	0



CAST IRON BRONZE FITTED

ITEM NUMBER	DESCRIPTION	MATERIAL
1A, 1B	UPPER AND LOWER CASING	CAST IRON
2	IMPELLER	BRONZE
6	PUMP SHAFT	STEEL ①
7	CASING RING	BRONZE
8	IMPELLER RING (OPTIONAL)	BRONZE
13	PACKING RING	GRAPHITED / PTFE
14	SHAFT SLEEVE (RH)	BRONZE①
14A	SHAFT SLEEVE (LH)	BRONZE①
16	INBOARD BALL BEARING	STEEL ASSEMBLY
17	PACKING GLAND	304 STAINLESS STEEL
17B	GLAND BOLT	STEEL
18	OUTBOARD BALL BEARING	STEEL ASSEMBLY
18A	BEARING RETAINING RING	STEEL
22	BEARING LOCKNUT	STEEL
29	LANTERN RING (OPTIONAL)	PTFE
31	INBOARD BEARING HOUSING	CAST IRON
32	IMPELLER KEY	STAINLESS STEEL
33	OUTBOARD BEARING HOUSING	CAST IRON
35	INBOARD BEARING HOUSING COVER	CAST IRON
37	OUTBOARD BEARING HOUSING COVER	CAST IRON
40A	INBOARD DEFLECTOR	RUBBER
40B	OUTBOARD DEFLECTOR	RUBBER
41	INBOARD BEARING HOUSING CAP	CAST IRON
43	OUTBOARD BEARING HOUSING CAP	CAST IRON
46	COUPLING KEY	STEEL
47	INBOARD BEARING COVER SEAL	STEEL/RUBBER ASSEMBLY
63	STUFFING BOX BUSHING	BRONZE
65	MECHANICAL SEAL STATIONARY ELEMENT	CERAMIC ②
73A	CASING GASKET (NOT SHOWN)	VEGETABLE FIBER
73B	BEARING COVER GASKET	FIBER
77	LUBRICATOR	ZINC DIE-CAST/PLASTIC ASSEMBLY
80	MECHANICAL SEAL ROTATING ELEMENT	BUNA/CARBON/STAINLESS STEEL
80A	SHAFT COLLAR	STAINLESS STEEL
119A	O RING, SHAFT SLEEVE	BUNA N RUBBER
119B	O RING, SHAFT SLEEVE	BUNA N RUBBER
123	BEARING END COVER	STEEL
127	WATER SEAL PIPING (OPTIONAL)	COPPER WITH BRASS FITTINGS
169	BEARING HOUSING SEAL	STEEL/RUBBER ASSEMBLY

MECHANICAL SEAL PUMP SUPPLIED

PACKED GLAND PUMP SUPPLIED

① OPTIONAL MATERIAL AISI 416 STAINLESS STEEL

② OPTIONAL MATERIAL SILICON CARBIDE OR TUNGSTEN CARBIDE



Peerless Pump Company
Indianapolis, IN 46202
Tammy Schroeder
Phone 317-924-7318
Fax 317-924-7202

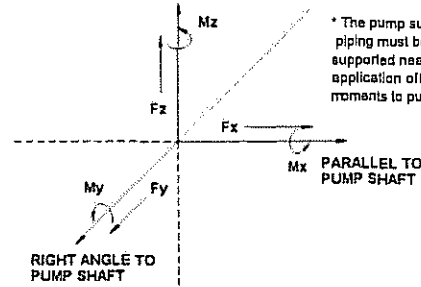
Date : Monday, February 21, 2011

Page No : 9

Peerless Pump Company - RAPID v8.25.6 - 23rd March 2007.

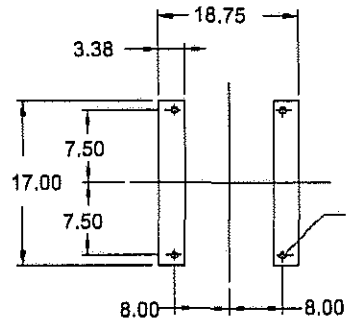
Project :	Capacity:	1146 (US gpm)	Frame/Model:	365T
Customer:	Total Head:	162 (ft)	Elec. Spec.:	Ph.
Item No.:	Pump Speed:	1771 (RPM)	Service Factor:	CounterCW
Quote No. :	Impeller Dia.:	13.83 (inch)	Rotation:	
Pump Model:	Power:	75 (hp)	Enclosure/Type:	

NOZZLE LOADING MAXIMUM FORCES & MOMENTS*



* The pump suction and discharge piping must be restrained and supported near the pump to avoid application of forces and moments to pump casing.

PLAN VIEW OF FEET

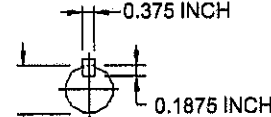


8 INCH SUCTION FLANGE
 □ 125 LB ANSI FLG DRILLING
 □ 250 LB ANSI FLG DRILLING

6 INCH DISCHARGE FLANGE
 □ 125 LB ANSI FLG DRILLING
 □ 250 LB ANSI FLG DRILLING
 SOME HOLES MAY BE TAPPED

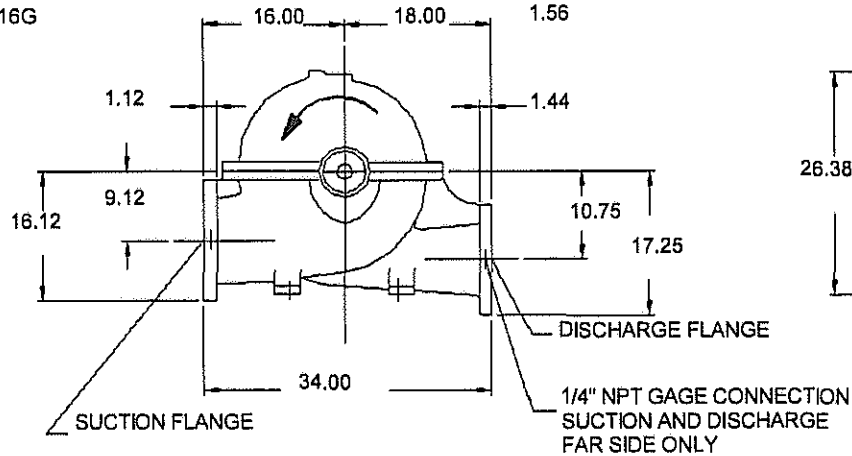
0.75 DIA 4 HOLES

DETAIL - SHAFT END

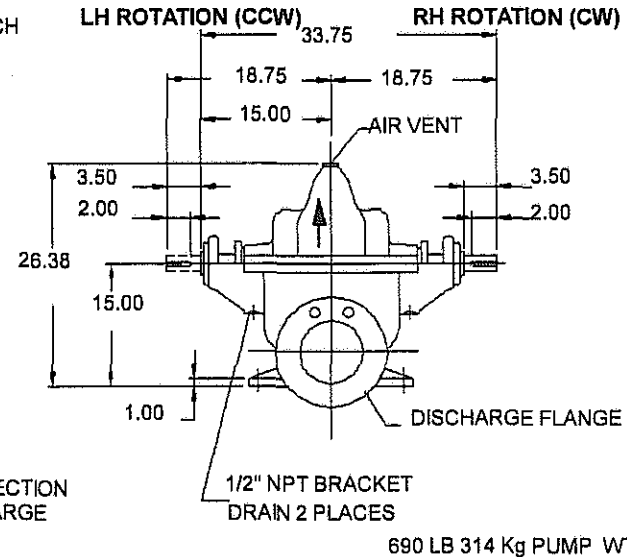


PUMP FLANGE	UNITS	AXIS			UNITS	AXIS		
		F _x	F _y	F _z		M _x	M _y	M _z
SUCTION	Lb	800	2000	800	Lb-Ft	2000	4000	2000
DISCHARGE	Lb	800	1500	800	Lb-Ft	1500	3000	1500
SUCTION	N	3559	8888	3559	N-m	2712	5423	2712
DISCHARGE	N	2669	6672	2669	N-m	2034	4068	2034

6AE16G



A-A VIEW FROM DRIVER END A-A VIEW FROM DRIVER END



690 LB 314 Kg PUMP WT

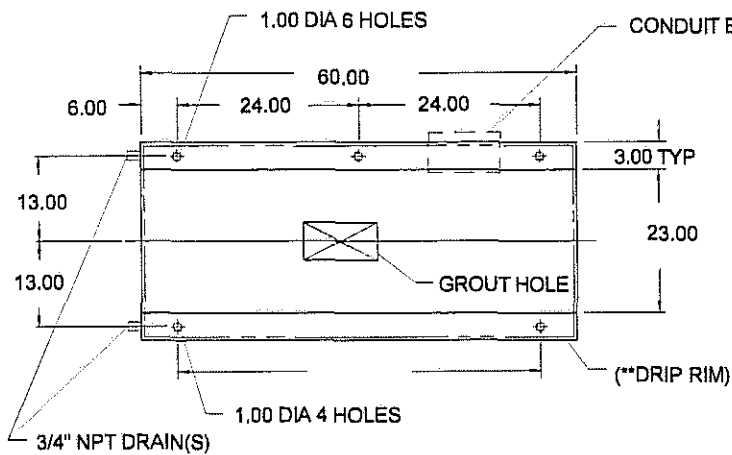
Dimensions in (inch)

Project:	Capacity:	1146 (US gpm)	Frame/Model:	365T
Customer: Greene and Bradford, Inc.	Total Head:	162 (ft)	Elec. Spec.:	Ph.
Item No.: 1	Pump Speed:	1771 (RPM)	Service Factor:	
Quote No.: US-5576-318	Impeller Dia.:	13.83 (inch)	Rotation:	CounterCW
Pump Model: Peerless - 6AE16G	Power:	75 (hp)	Enclosure/Type:	



Peerless Pump Company
 Indianapolis, IN 46202
 Tammy Schroeder
 Phone 317-924-7318
 Fax 317-924-7202

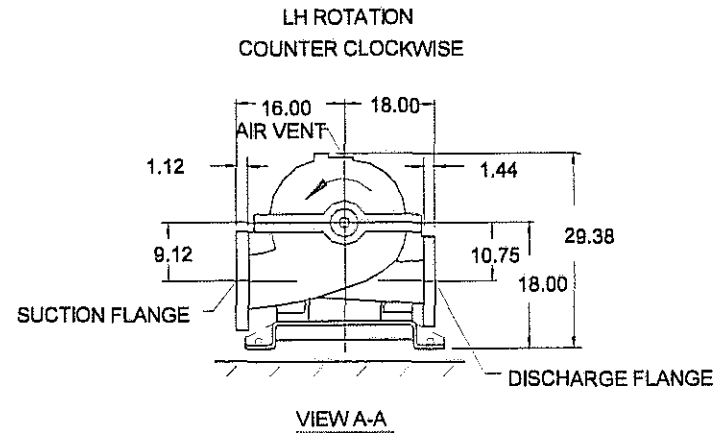
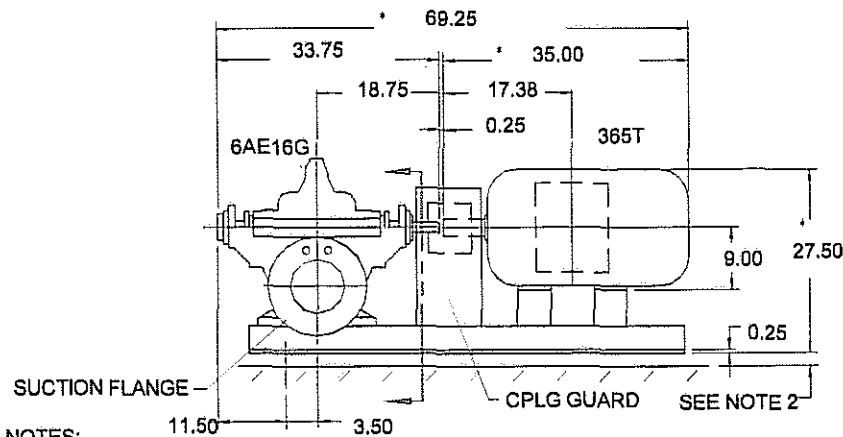
Date: Monday, February 21, 2011
 Page No: 10



8 INCH SUCTION FLANGE 6 INCH DISCHARGE FLANGE
 125 LB ANSI FLG DRILLING 125 LB ANSI FLG DRILLING
 250 LB ANSI FLG DRILLING 250 LB ANSI FLG DRILLING
 SOME HOLES MAY BE TAPPED

PUMP WT 690 LB / 314 Kg
 CPLG WT 16 LBS 7 Kg
 MOTOR WT 630 LBS 286 Kg
 BASE & CPLG GUARD WT 210 LBS 95 Kg
 TOTAL WT 1546 LBS 703 Kg

STEEL NON-DRIP RIM BASE FURNISHED
 STEEL DRIP RIM BASE FURNISHED (** SHOWN IN PHANTOM LINES)



NOTES:

1. UNIT INSTALLATION & FINAL CPLG ALIGNMENT MUST BE IN ACCORDANCE TO BULLETIN 2880549.
 2. CUSTOMER MUST FILL BASE WITH GROUT ALLOWING .75 TO 1.50 INCH OF GROUT BETWEEN FOUNDATION AND BOTTOM OF BASE.
- *MAXIMUM DIMENSIONS, MAY BE LESS WITH DIFFERENT MAKE MOTORS OR ENCLOSURES.

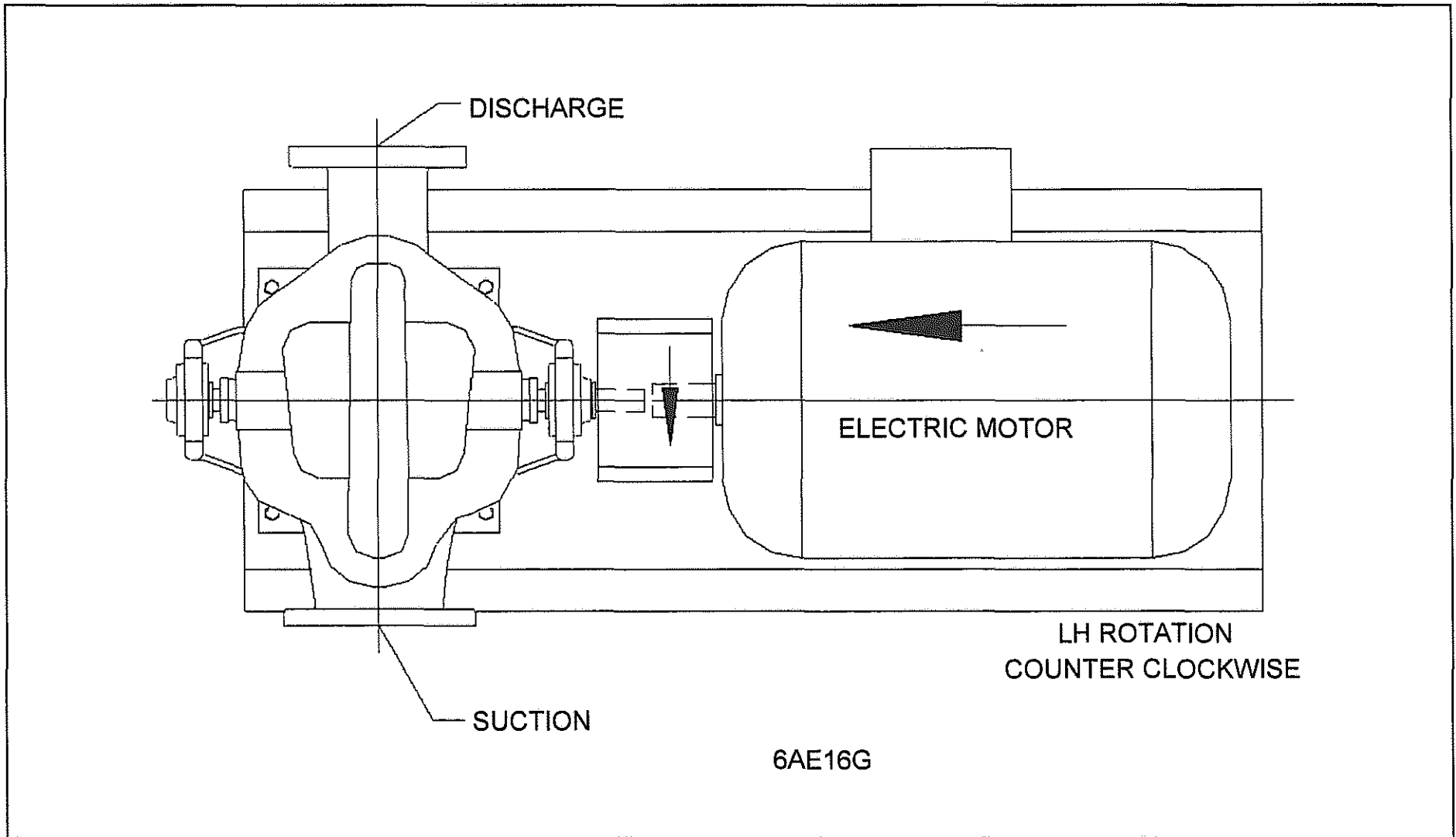
Dimensions in (Inch)

Project :	Capacity: 1146 (US gpm)	Frame/Model: 365T
Customer: Greene and Bradford, Inc.	Total Head: 162 (ft)	Elec. Spec.: Ph.
Item No.: 1	Pump Speed: 1771 (RPM)	Service Factor:
Quote No. : US-5576-318	Impeller Dia.: 13.83 (inch)	Rotation: CounterCW
Pump Model: Peerless - 6AE16G	Power: 75 (hp)	Enclosure/Type:



Peerless Pump Company
 Indianapolis, IN 46202
 Tammy Schroeder
 Phone 317-924-7318
 Fax 317-924-7202

Date : Monday, February 21, 2011
 Page No : 11



Dimensions in (Inch)

Project :	Capacity: 1146 (US gpm)	Frame/Model: 365T
Customer: Greene and Bradford, Inc.	Total Head: 162 (ft)	Elec. Spec.: Ph.
Item No.: 1	Pump Speed: 1771 (RPM)	Service Factor:
Quote No. : US-5576-318	Impeller Dia.: 13.83 (inch)	Rotation: CounterCW
Pump Model: Peerless - 6AE16G	Power: 75 (hp)	Enclosure/Type:



Peerless Pump Company
 Indianapolis, IN 46202
 Tammy Schroeder
 Phone 317-924-7318
 Fax 317-924-7202

Date : Monday, February 21, 2011
Page No : 12



Peerless Pump Company - Indianapolis, IN 46207-7026

RAPID Technical Data Verification Sheet (TDS)

Pump Application (Service)	
Project Name	
Project Quote Number	US-5576-318
Project Item Number	1
Your Reference Number	
Customer Name	Greene and Bradford, Inc
Customer Purchase Order Number	
Pump Manufacturer & Pump Model	Peerless 6AE16G
Cune Number & Pump Speed	3132108 & 1771 RPM
Testing Tolerance	Hyd Inst-Peerless Std
NPSH available at Rated Condition & Head	32 ft at 1146 US gpm & 162 ft
NPSH required at Rated Condition & Head	11.967 ft at 1146 US gpm & 162 ft
Static Suction Pressure psiG	0.01
Total Shut Off Pressure psiG	83.69
Pump to operate at shut off?	
Site Ambient Temperature & Altitude	32 °F & 0 ft
Fluid Type & Solids Size & Content	Water & 0.00 inch & 0%
Pump Construction	CI/Brz Fit Horiz Mount
Efficiency (Typical Performance) For guarantee refer to factory.	82.6%
BHP at Condition Point	58.53 hp
Maximum BHP	62.03 hp
BHP at Shut Off	18.33 hp
Maximum BHP of Motor Loaded to Full Service Factor	86.25
Pump Rotation Viewed from Driver End	CounterCW
Replacement of Pump Serial Number (if applicable)	

*DDS FORM required if you have specific DRAWING or Installation, Operation and Maintenance REQUIREMENTS.

*DDS FORM required if you have MATERIAL or PERFORMANCE TEST REQUIREMENTS.

*CDS FORM required if you have special COMMERCIAL TERMS, PENALTIES, ETC.

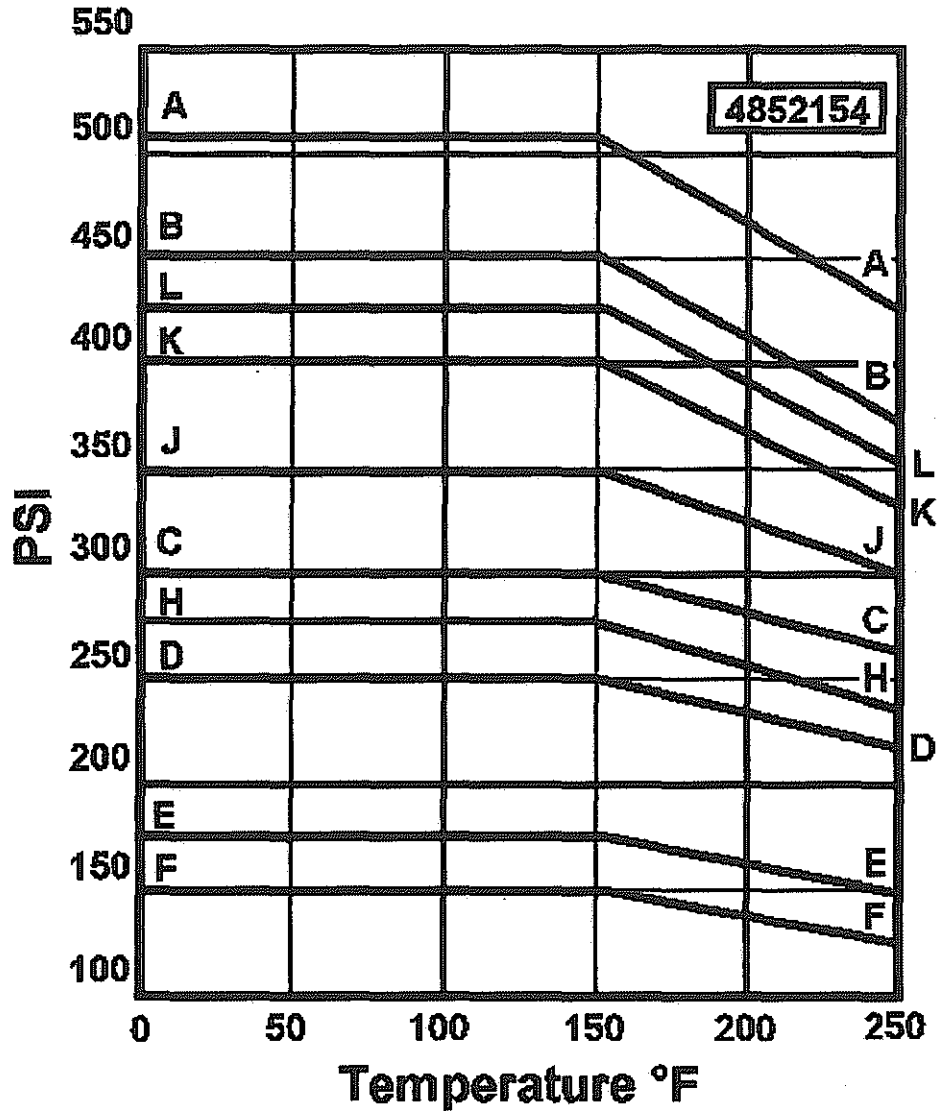
*If DDS or CDS information applies to your order please include the form and make a note on the RAPID detailed quotation form as an individual line item referencing the requirement. This information will be required on the RAPID detailed quotation for the documentation/requirements to be supplied.

For use with RAPID detailed quotation form and RAPID Order Header Forms for order entry. Pricing to be set to distributor net upon submission.



Peerless Pump Company - Indianapolis, IN 46207-7026

AE PUMPS
Working Pressure and Temperature Limitations



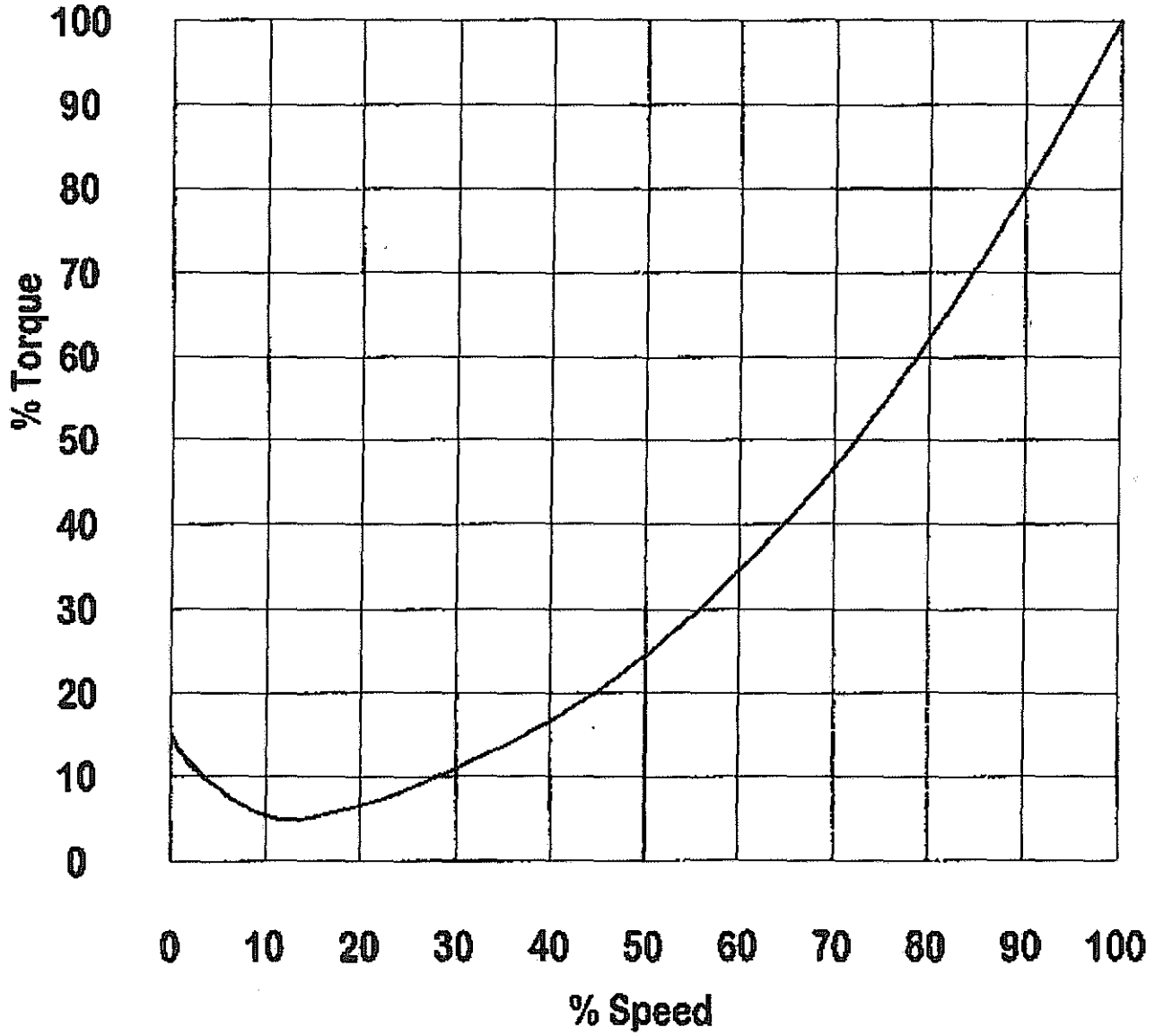
Pump Model	6AE16G
Cast Iron Casing 125 Lb ANSI Discharge Flange Curve	E-E
Cast Iron Casing 250 Lb ANSI Discharge Flange Curve	C-C
Ductile Iron Casing 250 Lb ANSI Discharge Flange Curve	N.A.
Cast Iron Casing 125 Lb ANSI Suction Flange Curve	E-E
Cast Iron Casing 250 Lb ANSI Suction Flange Curve	R.F.
Ductile Iron Casing 250 Lb ANSI Suction Flange Curve	R.F.

Note: For AE Ductile Iron Casings refer to the factory for pricing other than 5AE12 (D I isstd on 5AE12 with 125/250 or 250/250 Lb Casing)



Peerless Pump Company - Indianapolis, IN 46207-7026

SPEED TORQUE CURVE
FOR PUMP 6AE16G



Pump Flow	1146 US gpm
Pump Head	162 ft
100% Speed = True running speed (RPM)	1771 RPM
100% Torque Based on Bhp Closed Valve Starting @100% Speed	54.33 Ft-Lbs
100% Torque Based on Bhp Open Valve Starting @100% Speed	173.51 Ft-Lbs
WR ^{1/2} for pump only	7.3 Lb-Ft ^{1/2} bronze wet impeller

GENERAL TERMS AND CONDITIONS

1. **ACCEPTANCE.** Peerless Pump Company (hereinafter called "Seller"), hereby acknowledges Purchaser's order. The order will be filled only after credit approval and acceptance of the order at Seller's administrative offices in Indianapolis, Indiana. Any acceptance of the order is subject to the terms and conditions set forth herein, which supersede any inconsistent or additional terms and conditions contained in Purchaser's order form. There are no agreements or representations, oral or otherwise, outside of the acknowledgment. Submittal of technical information does not constitute acceptance of Purchaser's Terms and Conditions.

2. **DEFINITIONS.** (a) As used herein "Service" refers to all labor, equipment, materials, accessories and/or parts which Seller proposes in Seller's quotation to provide for repair and/or Service. (b) As used herein "Equipment" refers to all equipment, materials, accessories and/or parts which Seller proposes to sell hereunder.

3. **SHIPPING DATE.** Seller will give its best efforts to the prompt delivery of Equipment and Service. Though Seller recognizes the desirability of delivering Equipment and Service promptly, the dates specified herein for shipping of Equipment or for Service are approximate only. Seller will ship Equipment as soon as manufacturing is completed and Equipment meets design and performance specifications. SELLER SHALL NOT BE RESPONSIBLE FOR ANY LOSS OR DAMAGE OF ANY KIND, INCLUDING LIQUIDATED DAMAGES, RESULTING FROM ANY DELAY IN DELIVERY OR FAILURE TO DELIVER THE EQUIPMENT OR SERVICE, UNLESS AGREED TO UP FRONT AND IN WRITING PRIOR TO ACCEPTANCE OF THE ORDER.

4. **FORCE MAJEURE.** Seller shall not be responsible for any loss or damage, including liquidated damages resulting from any delay in delivery or failure to deliver the Equipment or Service where such delay or failure is caused by fire, flood, natural causes, labor troubles (including strikes, slowdowns and lockouts), war, government regulations, riots, civil disorders, interruption of or delay in transportation, power failure, inability to obtain materials and supplies, accidents, acts of God or any other cause beyond Seller's control.

5. **SHIPMENTS.** All prices are EXW (Ex-works) Plant of Manufacture, packed for domestic shipment (Incoterms 2000), unless otherwise agreed. The origin point of shipment, method of transportation, and routing are at the Seller's discretion. If Purchaser specifies "freight collect," it is clearly understood that there will be no freight allowance. Purchaser may request shipment via a transportation mode other than truck. In such case, all additional expenses incurred will be billed to the Purchaser. If shipment is accepted by Purchaser at one destination and re-forwarded by Purchaser, the re-forwarding is at the Purchaser's expense and risk. The risk shall pass to Customer when the Equipment made available for delivery in accordance with this paragraph. If a copy of a freight bill is required, we will provide a Peerless freight invoice as we have confidential contracts with our carriers and neither we nor the carrier can supply a copy of the carrier's freight bill.

6. **PRICES.** Unless otherwise specified by Seller, prices set forth herein are firm, provided, within thirty (30) days after the date of Seller's Acknowledgment, this proposal becomes a binding contract (Buyer provides to Seller all necessary credit information, and Seller approves Purchaser's credit and accepts the order). Further, if Purchaser fails to furnish Seller with all necessary drawings duly approved by the Purchaser within thirty (30) days after submission of drawings to Purchaser by Seller, Seller's prices are subject to change at Seller's sole discretion after notice to Purchaser. Where shipment is requested by Purchaser beyond the normal shipment schedule, or in the event that shipment is deferred at the request of the Purchaser by failure of Purchaser to fulfill its obligations to facilitate shipment as agreed, by any other act or failure to act on the part of the Purchaser resulting in a delay of timely shipment without fault on the part of Seller, including but not limited to providing necessary shipment information to Seller or failure to schedule carrier in a timely manner if so required or by reason of Government action, Purchaser agrees to pay a delayed delivery storage fee at the rate of three percent (3%) of the Equipment price per month beyond the normal shipping date.

7. **TAXES.** Prices specified herein do not include any federal, state or municipal sales, use, excise or other taxes. Therefore, in addition to the prices specified herein, the amount of any such sales, use, excise or other taxes applicable to the sale of the Equipment shall be paid by Purchaser, or in lieu thereof, Purchaser shall furnish Seller with tax-exemption certificates acceptable to said taxing authorities. Taxes payable outside the United States are the responsibility of the Purchaser, unless otherwise agreed.

8. **PAYMENTS.** Payment for the Equipment is due upon shipment or when Seller notifies Purchaser that Equipment is packed for shipment EXW (Ex-works) Plant of Manufacture, whichever occurs first, unless otherwise specified herein. Payment for Service is due upon completion unless otherwise specified herein. In some circumstances, Seller may agree to Progress Payments. Normally Progress Payments shall become due and payable as partial shipments are made hereunder. In the event delay in making any partial shipment is caused by Purchaser, payment for such shipment shall be due on the date Seller notifies Purchaser that Seller is prepared to make such shipment. Shipment date is not subject to Purchaser's prior approval of performance testing where testing has demonstrated that the Equipment meets performance specifications, unless otherwise agreed to in writing prior to acceptance of the order or contract. If Purchaser's financial condition does not justify continuance of production or shipment on the terms of payment specified herein, Purchaser will, upon request by Seller, furnish further assurance of ability to make payments. Seller may also refuse to make shipment except upon payment of cash fully or partially in advance.

If specified in Seller's acknowledgement or in any event for any order totaling \$300,000.00 and above (before taxes) must include the Standard Progress Payment Plan in the payment terms. "Standard Progress Payment Plan" is defined as a payment plan that includes the following terms in the Purchase Order or in the acknowledgment:

- (a) Fifteen percent (15%) of the Sales Price (and a proportionate amount of any applicable taxes) is payable before the release for production or when drawings are approved, whichever occurs first.
- (b) Sixty percent (60%) of the Sales Price (and a proportionate amount of any applicable taxes) is payable in equal payments every sixty (60) days throughout the proposed manufacturing schedule; the first of these equal payments shall be due sixty (60) days after the first payment of 15% is made.
- (c) The last twenty-five percent (25%) of the Sales Price (and a proportionate amount of any applicable taxes) is payable no later than thirty (30) days after the Equipment is shipped or thirty (30) days after notification that Seller is ready to ship, whichever occurs first.

Progress payments are payable upon receipt of Invoice. In the event that a progress payment is not paid when due, Seller, at its sole discretion, may do any and all of the following: (a) Delay partial shipments until Buyer's progress payments are brought current, (b) Revise payment terms, (c) Adjust delivery dates and schedule without penalty, breach, damages, or any liability therefore.

In orders where there are no shipments to be made, Seller may allow the following Progress Payments, at Seller's sole discretion, as agreed to in writing at the time of the Agreement:

- (a) Ten Percent (10%) on receipt of approved drawings
- (b) Thirty Percent (30%) on receipt of castings at our facility
- (c) Thirty Five Percent (35%) on receipt of motors or drives at our facility (or direct ship to site)
- (d) Twenty Five (25%) upon final shipment from Peerless factory

If for any reason the Purchaser should fail to pay the Seller at the time the payment of any amount becomes due, then the Seller may charge the Buyer 18% per annum for said invoice(s). Purchaser acknowledges that payment is due as set forth above, and that Purchaser may not retain or withhold payment as an offset to any claim Purchaser may allege against Seller, whether arising under this or any other Purchase Order or Contract (except in accordance with retainage terms agreed to in writing by the parties at the time of acceptance of the Purchaser's order). In addition to the foregoing, should Purchaser fail to pay Seller when payment is due, the Seller may, at its option, stop work until Purchaser has paid in full the amount owed, and the Contract Price will be adjusted for the additional costs of shutdown, delay and start-up. Failure to pay Seller when payment is due is a material breach of this agreement. The foregoing is in addition to all other rights and remedies available to the Seller under this agreement or at law or equity. In addition, Purchaser shall be liable to Seller for Seller's reasonable costs (including attorney fees) to collect Seller's overdue payments. If Purchaser is in default on payment to Seller, Purchaser will not undertake repair or replacement activities under Seller's limited warranty until Purchaser's account with Seller is brought current. If Seller stops work under the provisions of this section, Seller at Seller's sole discretion, may adjust date of Seller's performance and delivery for periods equal to the length of the stoppage, or for an additional period if reasonably caused by the work stoppage, without penalty or liability.

9. **CANCELLATION.** Purchaser may cancel its order at any time prior to shipment or Service, but only upon payment to Seller of reasonable cancellation charges, which shall include expenses already incurred, the cost to Seller of canceling, and Seller's anticipated profit.

10. **LIMITED WARRANTY.** NEW EQUIPMENT MANUFACTURED BY SELLER OR SERVICE SUPPLIED BY SELLER IS WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND SERVICE FOR A PERIOD OF ONE YEAR FROM DATE OF SHIPMENT. IN THE CASE OF SPARE OR REPLACEMENT PARTS MANUFACTURED BY SELLER, THE WARRANTY PERIOD SHALL BE FOR A PERIOD OF TWELVE MONTHS FROM SHIPMENT. SELLER'S OBLIGATION UNDER THIS WARRANTY IS LIMITED TO REPAIRING OR REPLACING, AT ITS OPTION, ANY PART FOUND TO ITS SATISFACTION TO BE SO DEFECTIVE, PROVIDED THAT SUCH PART IS, UPON REQUEST, RETURNED TO SELLER'S FACTORY FROM WHICH IT WAS SHIPPED, TRANSPORTATION PREPAID. PARTS REPLACED UNDER WARRANTY SHALL BE WARRANTED ONLY FROM DATE OF REPAIR. THIS WARRANTY DOES NOT COVER PARTS DAMAGED BY DECOMPOSITION FROM CHEMICAL ACTION OR WEAR CAUSED BY ABRASIVE MATERIALS, NOR DOES IT COVER DAMAGE RESULTING FROM MISUSE, ACCIDENT, NEGLIGENCE, OR FROM IMPROPER OPERATION, MAINTENANCE, INSTALLATION, MODIFICATION OR ADJUSTMENT. THIS WARRANTY DOES NOT COVER PARTS REPAIRED OUTSIDE SELLER'S FACTORY WITHOUT PRIOR WRITTEN APPROVAL. SELLER MAKES NO WARRANTY AS TO STARTING EQUIPMENT, ELECTRICAL APPARATUS OR OTHER MATERIAL NOT OF ITS MANUFACTURE. IF PURCHASER OR OTHERS REPAIR, REPLACE, OR ADJUST EQUIPMENT OR PARTS WITHOUT SELLER'S PRIOR WRITTEN APPROVAL, SELLER IS RELIEVED OF ANY FURTHER OBLIGATION TO PURCHASER UNDER THIS SECTION WITH RESPECT TO SUCH EQUIPMENT OR PARTS, UNLESS SUCH REPAIR, REPLACEMENT, OR ADJUSTMENT WAS MADE AFTER SELLER FAILED TO SATISFY WITHIN A REASONABLE TIME SELLER'S OBLIGATIONS UNDER THIS PARAGRAPH. SELLER'S LIABILITY FOR BREACH OF THESE WARRANTIES (OR FOR BREACH OF ANY OTHER WARRANTIES FOUND BY A COURT OF COMPETENT JURISDICTION TO HAVE BEEN GIVEN BY SELLER) SHALL BE LIMITED TO: (A) ACCEPTING RETURN OF SUCH EQUIPMENT EXW PLANT OF MANUFACTURE, AND (B) REFUNDING ANY AMOUNT PAID THEREON BY PURCHASER (LESS DEPRECIATION AT THE RATE OF 15% PER YEAR IF PURCHASER HAS USED EQUIPMENT FOR MORE THAN THIRTY [30] DAYS), AND CANCELING ANY BALANCE STILL OWING ON THE EQUIPMENT. (C) IN THE CASE OF SERVICE, AT SELLER'S OPTION, REDOING THE SERVICE, OR REFUNDING THE PURCHASE ORDER AMOUNT OF THE SERVICE OR PORTION THEREOF UPON WHICH SUCH LIABILITY IS BASED. THESE WARRANTIES ARE EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, AND SELLER SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND IN LIEU OF ANY OTHER OBLIGATION OR LIABILITY ON THE PART OF THE SELLER WHETHER A CLAIM IS BASED UPON NEGLIGENCE, BREACH OF WARRANTY, OR ANY OTHER THEORY OR CAUSE OF ACTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL OR PUNITIVE DAMAGES OF ANY KIND. FOR PURPOSES OF THIS SECTION, THE EQUIPMENT WARRANTED SHALL NOT INCLUDE EQUIPMENT, PARTS, AND WORK NOT MANUFACTURED OR PERFORMED BY SELLER. WITH RESPECT TO SUCH EQUIPMENT, PARTS, OR WORK, SELLER'S ONLY OBLIGATION SHALL BE TO ASSIGN TO PURCHASER THE WARRANTIES PROVIDED TO SELLER BY THE MANUFACTURER OR SUPPLIER PROVIDING SUCH EQUIPMENT, PARTS OR WORK. NO EQUIPMENT FURNISHED BY SELLER SHALL BE DEEMED TO BE DEFECTIVE BY REASON OF NORMAL WEAR AND TEAR, FAILURE TO RESIST EROSIVE OR CORROSIVE ACTION OF ANY FLUID OR GAS, PURCHASER'S FAILURE TO PROPERLY STORE, INSTALL, OPERATE, OR MAINTAIN THE EQUIPMENT IN ACCORDANCE WITH GOOD INDUSTRY PRACTICES OR SPECIFIC RECOMMENDATIONS OF SELLER, INCLUDING, BUT NOT LIMITED TO SELLER'S INSTALLATION AND OPERATION MANUALS, OR PURCHASER'S FAILURE TO PROVIDE COMPLETE AND ACCURATE INFORMATION TO SELLER CONCERNING THE OPERATIONAL APPLICATION OF THE EQUIPMENT.

11. **COMPLIANCE WITH LAWS.** Purchaser shall be solely responsible for securing any necessary permits under and for compliance with all safety, health and sanitation laws, ordinances and regulations in connection with the installation, service, repair and operation of the Equipment. Purchaser agrees to provide Seller, upon request, with evidence of the securing of any such permits and of compliance with any such laws, ordinances and regulations. Seller shall be responsible for requesting any U. S. Export License Permits which may be required, and Purchaser agrees to provide all necessary information to enable Seller to apply for the permit. Purchaser agrees to comply with applicable United States international trade laws and regulations in its business dealings with Seller and will deliver to Seller at the time of execution of this agreement an executed original of Exhibit 1 signed by an authorized officer or owner of Purchaser. Purchaser agrees to disclose the name and address and business of the user of the goods supplied upon Seller's request. Purchaser shall automatically disclose this information if the goods are to be exported outside of the United States. Notwithstanding Purchaser's sole responsibility to ensure compliance with all relevant laws, Seller reserves the right to cancel order without compensation to Purchaser if Seller considers or suspects that goods may breach any laws of the United States.

12. **INDEMNIFICATION.** It is understood that Seller has relied upon data furnished by and on behalf of Purchaser with respect to the safety aspects of the Equipment, and that it is Purchaser's responsibility to assure that the Equipment will, when installed and put in use, be in compliance with safety requirements fixed by law and otherwise legally adequate to safeguard against injuries or damage to persons or property. Purchaser hereby agrees to defend, indemnify and hold harmless Seller, its agents and employees against any and all losses, costs, damages, claims, liabilities or expenses, including but not limited to reasonable attorneys' fees, arising out of or resulting from any injury or damage to any person or property caused by the inadequacy of safety features, devices or characteristics in the Equipment or arising out of the installation, Service, repair, or use or operation of the same, except where the injury or damage is solely caused by Seller's negligence and except for claims for repair or replacement of defective parts in accordance with Paragraph 10 hereof. Purchaser indemnifies Seller for any loss to Seller, including reasonable attorneys' fees, caused by Seller's manufacturing, installing or building to specifications provided by the Purchaser.

13. **RISK OF LOSS.** The risk of loss or damages to Equipment is on Purchaser from and after goods are made available for delivery to Purchaser or in accordance with the agreed terms under Incoterms 2000.

14. **LIMITATION OF DAMAGES AND DISCLAIMER OF CONSEQUENTIAL DAMAGES OR PENALTIES.** TO THE EXTENT PERMITTED BY LAW, SELLER SHALL NOT BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL OR PUNITIVE DAMAGES, ARISING OUT OF THE CONTRACT, OR OUT OF ANY BREACH OF ANY OF SELLER'S OBLIGATIONS HEREUNDER, OR OUT OF ANY DEFECT IN, OR FAILURE OF, OR MALFUNCTION OF THE EQUIPMENT, WHETHER OR NOT CAUSED BY SELLER'S NEGLIGENCE. CONSEQUENTIAL DAMAGES, FOR THE PURPOSE OF THIS AGREEMENT, SHALL INCLUDE BUT NOT BE LIMITED TO, PERSONAL INJURY, LOSS OF USE, LOST INCOME OR PROFITS, LOST INTEREST, LOST GOODWILL, WORK STOPPAGE, IMPAIRMENT OF OTHER EQUIPMENT, ENVIRONMENTAL DAMAGE, INCREASED EXPENSES OF OPERATION, COST OF PURCHASE OF REPLACEMENT POWER OR CLAIMS OF PURCHASER OR CUSTOMERS OF PURCHASER FOR SERVICE INTERRUPTION, DAMAGE TO PROPERTY (INCLUDING, BUT NOT LIMITED TO, PRODUCTS MANUFACTURED, PROCESSED OR TRANSPORTED BY THE USE OF THE EQUIPMENT), OR ANY OTHER LOSS OCCASIONED BY OR ARISING OUT OF THE OPERATION, USE, INSTALLATION, REPAIR OR REPLACEMENT OF THE EQUIPMENT OR OTHERWISE, WHETHER OR NOT SUCH LOSS IS BASED UPON CONTRACT, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHERWISE. SELLER'S DAMAGES ARE LIMITED TO DAMAGES SET FORTH IN PARAGRAPH 10, WARRANTY. SELLER SHALL NOT BE LIABLE FOR ANY DAMAGES, PENALTIES OR LIQUIDATED DAMAGES BASED UPON OR RELATING TO SELLER'S FAILURE OR INABILITY TO SHIP WITHIN A SPECIFIED TIME. THE FOREGOING NOTWITHSTANDING, SELLER'S MAXIMUM AGGREGATE LIABILITY RELATED TO THE PERFORMANCE OF THIS CONTRACT SHALL NOT EXCEED THE PURCHASE ORDER AMOUNT OF THE EQUIPMENT OR SERVICE PORTION THEREOF UPON WHICH SUCH LIABILITY IS BASED. ALL SUCH LIABILITY SHALL TERMINATE FOUR YEARS FROM THE DATE OF THE PURCHASE ORDER IF NOT SOONER TERMINATED.

15. **GENERAL.** (a) Any Purchaser document which contains terms in addition to or inconsistent with the terms of the acknowledgment or a rejection of any term of the acknowledgment shall be deemed to be a counter offer to Seller and shall not be binding upon Seller unless specifically accepted in writing by a duly authorized representative of Seller. This clause shall constitute a continuing objection to any such items not specifically so accepted by Seller. (b) All questions relating to the

formation of or performance under the contract based hereon shall be determined in accordance with the laws of the State of Indiana. The parties stipulate that the state and federal courts of Marion County, Indiana, or any other court in which Seller initiates proceedings, have exclusive jurisdiction over all matters arising out of this agreement, and that service of process in any such proceeding will be effective if served by Certified mail to Purchaser at 2005 Dr. Martin Luther King Jr. Street, Indianapolis, IN 46202. For international sales (sales of Equipment by Peerless Pump Company ["Seller"] to a Purchaser outside of the United States or a Purchaser organized or with a principal place of business or substantial assets outside of the United States ["International Agreement"], all disputes arising in connection with the agreement shall be finally settled by arbitration in accordance with the rules set forth by the United Nations Commission for International Trade Law (UNCITRAL) Arbitration Rules, under the auspices of the American Arbitration Association (Arbitration).

In the event of any dispute or difference arising out of or relating to an International Agreement or the breach thereof, the parties hereto first shall use their best endeavors to settle such disputes or differences. To this effect, the parties shall consult and negotiate with each other, in good faith and understanding of their mutual interest, to reach a just and equitable solution satisfactory to both parties. If the parties do not reach such solution within a period of ninety (90) days from the commencement of consultations and negotiations, before arbitration may be invoked, one of the parties must, by written notice to the other party, have the dispute referred to their respective Chief Executive Officers (or the equivalent), or to their designated representatives who have the final authority to resolve the dispute, with the request that they attempt in good faith to resolve the dispute within ninety (90) calendar days after valid notice is served pursuant to this Agreement. No party may invoke arbitration without first complying with the provisions of this section.

In the event that the foregoing designated representatives of the parties are not able, for whatever reason, to resolve such dispute in good faith within the ninety (90) calendar day period, the parties agree that the disputes or differences shall be settled by arbitration in accordance with the rules set forth by the United Nations Commission for International Trade Law (UNCITRAL) Arbitration Rules, under the auspices of the American Arbitration Association (Arbitration).

The arbitration shall take place in Indianapolis, Indiana, USA, or another location, at the sole discretion of Peerless Pump Company. The arbitration shall be conducted in and the award rendered in English and payable in US Dollars, and such award shall be final and binding on the parties, not subject to any appeal, and shall deal with the question of costs of arbitration and all matters related thereto.

The parties agree that any judgment, decision, or award of the arbitrators shall be made enforceable in any court of competent jurisdiction, including courts in the country of Purchaser. Judgment upon the award rendered may be entered into any court having jurisdiction, or application may be made to such court for a judicial recognition of the award or an order of enforcement thereof, as the case may be.

The terms of this paragraph shall survive any termination or expiration of this Agreement. This agreement shall be governed by and construed in accordance with the laws of the State of Indiana, USA, excluding the application of its conflicts of law provisions. The United Nations Convention on contracts for the International Sales of Goods shall have no application to this Agreement or to any proceeding brought pursuant hereto (c) If any part hereof is contrary to, prohibited by, or deemed invalid under applicable laws or regulations, such provision shall be inapplicable and deemed omitted to the extent so contrary, prohibited or invalid, but remainder hereof shall not be invalidated and shall be given effect so far as possible. (d) No waiver of any term or condition or the breach of any term or condition of this agreement shall be deemed to constitute a waiver of any subsequent breach of such term or condition nor justify or authorize a nonobservance upon any occasion of such term or condition or any other term or condition.; nor shall the acceptance of payment by Seller at any time when Purchaser is in default of any term or condition be construed as a waiver of such default or waiver of Seller's right to terminate this agreement on account of such default. (e) The Purchaser warrants and represents that only persons with authority to execute the documents related to this agreement will sign on behalf of the Purchaser and that electronic orders will be placed only by persons so authorized by the Purchaser and shall be binding on the Purchaser upon acceptance by the Seller with or without hand written signature of Purchaser.

As approved 9/20/07



**Proposal # 022111MR1
February 21, 2011**

**Mr. Stanley S. Bersin, P.E.
Green and Bradford, Inc.
3501 Constitution Drive
Springfield, IL 62711**

RE: CHATHAM, IL REQUEST FOR QUOTE

Dear Stanley,

Dick Koch of my office has sent me your original RFQ and also the Addendum that is requiring the use of a 75HP non-overloading Motor. We will be Supplying the Goulds Model 3408A Pump to bid this RFQ. The Pump will not have the Epoxy paint, But will be supplied with the Standard Goulds Factory Paint. It will be configured With a CCW rotation from the Motor Looking at the Pump. We will provide the required documentation for this unit when we receive the order for the equipment. We propose to supply the following for use by the City of Chatham:

ONE (1) Goulds Model 3408A 3A Size 6 X 8- 17M Pump, Complete with 75 HP Motor, Steel Base Plate, Coupling Guard and Coupling per the attached drawings and performance curve, delivered to the address listed on request for quotation.

**PRICE FOR ALL LISTED ABOVE:.....\$17,939.00
Normal Delivery is 7 - 8 Weeks after receipt of Your Signed Proposal or Purchase Order. Standard Terms and Conditions will apply.**

F.O.B. Factory - Freight is allowed.

TERMS: NET 30 days with approved credit. An interest charge of 1-1/2% will be added to balances over 30 days. Retainage of any invoiced amount is unacceptable unless specifically agreed to by Vandevanter Engineering at the time of order, and shall in no case exceed a period of 120 days.

Any sales/use tax will be in addition to the above price, and will be added to the billing unless the purchaser provides an exemption certificate acceptable to the taxing authorities. Prices quoted shall remain firm for a period of **thirty (30) days, after which they are subject to change without notice.**

DECATUR

ST. LOUIS

**1510 E. MERRIDE AVENUE
SUITE C
DECATUR, IL 62526
217-428-5686 MAIN
217-428-5694 FAX**

**1217 MANUFACTURERS DR
ST. LOUIS, MO 63026**

**800-779-8880 TOLL FREE
636-343-8880 MAIN
636-343-1720 FAX
636-343-9066 HOURS**



Proposal # 022111MR1

Page -2-

If, after reviewing the above proposal, you have any further questions or comments regarding this proposal, please feel free to contact me at (636) 343-8880. If the proposal meets with your approval, please sign, date and mail or fax a copy back to our office and we will order your equipment. This Proposal does not include installation.

Thank you for the opportunity to furnish this proposal for the CITY OF CHATHAM. If I can be of further assistance to you on this or future projects, please let me know.

Sincerely,

Michael A. Rynd
VANDEVANTER ENGINEERING CO.

Aftermarket/Service Representative

MAR/mar

ACCEPTED THIS DATE _____ BY _____

COMPANY _____ TITLE _____

DECATUR

ST. LOUIS

1510 E. MERRIDE AVENUE
SUITE C
DECATUR, IL 62526
217-428-5686 FAX
217-428-5694 FAX

1617 MANUFACTURERS DR.
ST. LOUIS, MO 63036

800-779-8880 TOLL FREE
636-343-8880 FAX
636-343-1720 FAX
636-343-9066 FAX



BRI INC

Greene and Bradford

Proposal No: VE110217-1
Item No: ITEM 001

Andrea Erler
240 C Sovereign Court
Ballwin, MO 63011
636-227-2535
636-227-2151 Fax
aerler@bri-inc.com

February 21, 2011

MODEL:3408A 3A SIZE:6x8-17M QTY: 1

Operating conditions

SERVICE

LIQUID Water Temp. 70.0 deg F, SP.GR 1.000, Viscosity 1.125 cp, rated / max. suction pressure 0.0 / 0.0 psi g
CAPACITY Rated 1,146.0 gpm
HEAD 162.0 (ft)

Performance at 1780 RPM

PUBLISHED EFFY 79.5% (CDS)
RATED EFFY 79.5%
RATED POWER 59.2 hp (Run out 69.4 hp)
NPSHR 10.5 ft
DISCH PRESSURE (R) 70.5 psi g (79.7 psi g @ Shut off) based on 0.0 psi g rated suction pressure
PERF. CURVE A-8093-5 (Rotation CCW viewed from coupling end)
SHUT OFF HEAD 184.0 ft
MIN. FLOW Continuous Stable: 522.3 gpm Hydraulic: 522.3 gpm Thermal: N/A

Materials

CONSTRUCTION Cast Iron-bronze fitted
CASING Cast iron (max.casing pressure @ rated temperature 175.0 psi g)
CASING WEAR RING Bronze
ST.BOX Cast iron
IMPELLER Bronze - Enclosed (13.6000 in rated, max=17.0000 in, min=10.0000 in)
SHAFT MATERIAL 416SS
LUBRICATION Grease ball bearings
BEARINGS 6208 (Inboard) 5307 (Outboard)
COUPLING T.B. Wood's - Standard-Sure Flex-S.F. 1.00
COUPLING GUARD Carbon steel
BASEPLATE Channel steel

Sealing Method

MECHANICAL SEAL John Crane 21 BF(50)10(10)1 - (Conventional - Single)

Flanges

125# flat face

Liquid end features

Impeller balanced to ISO 1940 G6.3



Driver : Electric motor Manufacturer : Pump mfg's choice

FURNISHED BY	Pump mfg	MOUNTED BY	Pump mfg
RATING	75.0 hp (55.9 KW)	ENCLOSURE	TEFC Premium Efficiency
PHASE/FREQ/VOLTS	3/60 Hz/230/460	SPEED	1800 RPM
INSULATION/SF	F/1.15	FRAME	365T

Weights

TOTAL NET UNIT WEIGHT 1,925.0 lb

Program Version 1.35.0.0

Our offer does not include specific review and incorporation of any Statutory or Regulatory Requirements and the offer is limited to the requirements of the design specifications. Should any Statutory or Regulatory requirements need to be reviewed and incorporated then the Customer is responsible to identify those and provide copies for review and revision of our offer.

Our quotation is offered in accordance with our comments and exceptions identified in our proposal.

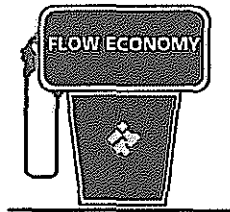
[Click here to download the pump Bulletin](#)

PUMPSMART FLOW ECONOMY ESTIMATES

FIXED SPEED

20.8
gpm/kW

Expected range for typical operation 17.2 to 24.1 gpm/kW



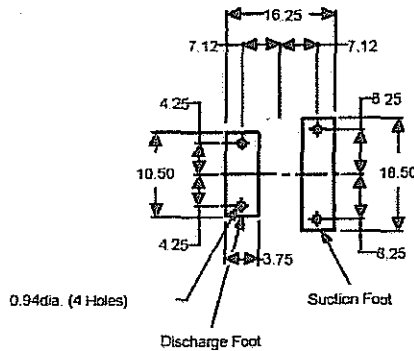
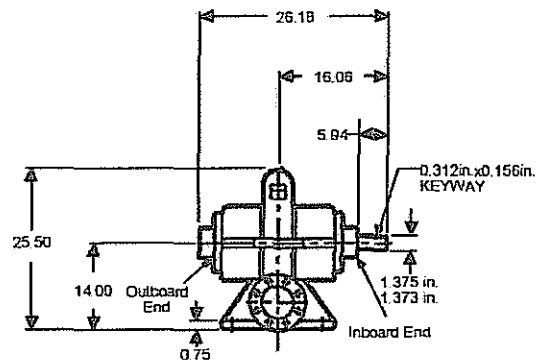
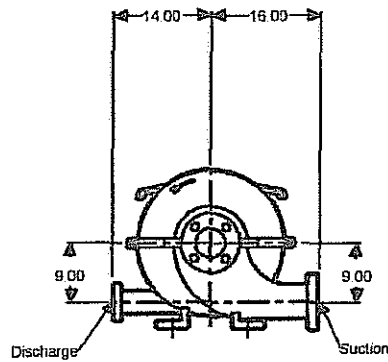
PUMPSMART

29.3
gpm/kW

Expected range for typical operation 24.1 to 33.5 gpm/kW

[Click Here To Learn More!](#)

Estimated Annual Savings 6,959 USD



Pump specification

SUCT.FLANGE SIZE 8"	DRILLING ANSI 125#	FACING FF	FINISH
DISCH.FLANGE SIZE 6"	DRILLING ANSI 125#	FACING FF	FINISH
PUMP ROTATION (LOOKING AT PUMP FROM MOTOR)		CCW	
TYPE OF LUBRICATION GREASE BALL BEARINGS		COOLED NO	
TYPE OF STUFFING BOX STANDARD		COOLED NO	
TYPE OF SEALING MECHANICAL SEAL			

Weights and Measurements

PUMP	750.0 lb
MOTOR	835.0 lb
BASEPLATE	340.0 lb
TOTAL	1,925.0 lb
GR.VOLUME w/BOX	N/A
GR.WEIGHT w/BOX	N/A

Motor specification

MOTOR BY PUMP MFG	MOUNT BY PUMP MFG	MFG. PUMP MFG'S CHOICE
FRAME 365T	POWER 75.0 hp	RPM 1800
PHASE 3	FREQUENCY 60 HZ	VOLTS 230/460
INSULATION F	S.F. 1.15	
ENCLOSURE TEFC PREMIUM EFFICIENCY		

Notes and References

-Tolerance for all pump dimensions is +0.13 in, unless otherwise specified

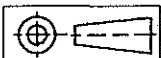
Auxiliary specification

COUPLING BY PUMP MFG	CPLG TYPE T.B. WOOD'S STANDARD-SURE FLEX
CPL GUARD BY PUMP MFG.	CPLG GUARD MATL. CARBON STEEL
BASEPLATE CHANNEL STEEL	
MECH.SEAL JOHN CRANE 21 BF(50)10(10)1	

DRAWING IS FOR REFERENCE ONLY.
NOT CERTIFIED FOR CONSTRUCTION UNLESS SIGNED.

Customer: Greene and Bradford
Serial No:
Customer P.O. No:
Item No: ITEM 001
End User: Vandevanter
Service:

DRAWING NO VE110217-1/ITEM 001



All dimensions are in inches.
Drawing is not to scale
Weights (lbs) are approximate

Model: 3408A

Size: 6x8-17M

Group: 3A

60Hz

RPM: 1780

Stages: 1

Job/Inq.No. :

Purchaser : Greene and Bradford

End User : Vandevanter

Issued by : Andrea Eler

Item/Equip.No. : ITEM 001

Quotation No. : VE110217-1

Date : 02/21/2011

Service :

Order No. :

Certified By :

Rev. : 0

Operating Conditions

Pump Performance

Liquid: Water

Published Efficiency: 79.5 %

Suction Specific Speed: 6,177 gpm(US) ft

Temp.: 70.0 deg F

Rated Pump Efficiency: 79.5 %

Min. Hydraulic Flow: 522.3 gpm

S.G./Visc.: 1.000/1.125 cp

Rated Total Power: 59.2 hp

Min. Thermal Flow: N/A

Flow: 1,146.0 gpm

Non-Overloading Power: 69.4 hp

TDH: 162.0 ft

Imp. Dia. First 1 Stg(s): 13.6000 in

NPSHa: 0.0 ft

NPSHr: 10.5 ft

Solid size:

Shut off Head: 184.0 ft

% Susp. Solids (by wtg):

Vapor Press:

Max. Solids Size: 0.4700 in

- Notes: 1. Power and efficiency Losses are not reflected on the curve below.
- 2. Elevated temperature effects on performance are not included.

