

# TEIKOKU CANNED MOTOR PUMP DATA SHEET

Messrs : Evonik Degussa Corporation

No. QFH-1389A

Aug. 10 2015

Order No. : 4701013179  
 Job No. : ---  
 Project Name : ---  
 Item No. : P-9003  
 Item Name : ---  
 Model : F61-215C4BM-0204S1-AV

**CERTIFIED**  
 Drawing conforms to the  
 customer's latest specifications

Qty : 1

Sign For Receipt  
(For customer)

TEIKOKU ELECTRIC MFG. CO., LTD.

Approved by	Checked by	Designed by
R. Takeuchi	R. Matsumura	M. Morii

Operating Conditions		Materials	
Total Head (m) : 32.6	Capacity (L/min) : 23.4	Casing : SCS14(CF-8M 316 SS)	
	(m3/h) : 1.4	Impeller : SCS14(CF-8M 316 SS)	
Suction Press. (barA) : 0.56~3.24	Discharge Press. (MPaG) : ---	FBH : SUS316(316 SS)	
NPSHava. (m) : 4.56	NPSHreq. (m) : 1.4	RBH : SUS316(316 SS)	
Liquid : Acetic Anhydride		Motor Flange : SUS316L(316L SS)	
Temperature (Des./Nor.) (°C) : 25 / ---		Stator Can : SUS316L(316L SS)	
Specific gravity (Des./Nor.) : 1.07 / ---		Shaft : SUS316(316 SS)	
Viscosity (Des./Nor.) (mPa·s) : 0.85 / ---		Rotor Can : SUS316L(316L SS)	
Mechanical Design Temperature (°C) : ---		Bearing : Carbon Graphite	
Specific Heat (kJ/(kg·K)) : ---	Melting Temp. (°C) : ---	Shaft Sleeve	
Vapor Press. (BarA) : 0.007		+ Thrust Collar : SUS316(316 SS)+Stellite	
Solids Name : ---		Pump Gasket : PTFE	
Concentration (wt%) : ---	Particle Size (μm) : ---	Motor Gasket : PTFE	
Flushing or Barrier Fluid : ---	S.Gr. : ---	Other Gasket : ---	
Liquid/S.Gr. (mPa·s) : --- /		Mechanical Seal : ---	
Press. (MPaG) : S.P. + --- ± ---	Flow (L/min) : ---		

Pump Design & Construction		Performance	
Design Press (bar) : <input checked="" type="checkbox"/> 7.52	Temp. (°C) : 25	Impeller Type : CLOSE	
Code Applied : None	Nameplate : English	No. of Stage : 1	

Nozzle Connection : ASME		Finish : SMOOTH FINISH		
Nozzle	Rating	Size	Facing	Position
Suction	150LB	1-1/2"	RF	END
Discharge	150LB	1"	RF	TOP
Drain	---	---	---	---
Reverse	---	---	---	---

Jacket Design Press. (MPa) : ---				
Utilities Required	Media	Condition (Max)	Flow (Min.)	Connection
Casing	NONE	---	---	---
Motor	NONE	---	---	---
Heat Ex. Ext. Circ.	NONE	---	---	---
Motor (Stop)	---	---	---	---

Customer : Evonik Corporation  
 PO# : 4701013179  
 Project : ACA G600  
 Project# : 4142.00940  
 Evonik's Pump# : P-9003  
 Requisition# : C0078-010

Min. Flow (L/min) : ---
Min. Flow (m3/h) : ---

Spare Parts	

Accessories	

Vendor Drawings and Data	
Dimensional Dwg. : 6E-8492	Allowable Piping Forces and Moments : 4N-6993-01
Terminal Box : 4N-8988-01	<input checked="" type="checkbox"/> Thermowell : 4N-7445
Sectional View Dwg. : 6E-7804	
Material List : P-31990	
Est. Performance Curve : SFH-1389A	
Connection Diagram : <input checked="" type="checkbox"/> 4N-4415-01	
Recommended Spare Parts List : SB-4031	

Power Supply & Drive Motor		Other	
Frame No. : 215	Duty : Cont	Special Treatment : None	
Voltage(V) : 460	Frequency(Hz) : 60	Painting Color : Light Gray	
Output (kW/hp) : 1.7/2.28	Rated Amp. (A) : 3.45	Rotating Direction	
Thermal Class : 220	Start Amp. (A) : 17	Monitoring : Yes	
R.P.M. (rpm) : 3600	Direction : C.C.W. (Viewed from Pump Suction)	Bearing Wear Monitor : Radial / Local	
Voltage for protection(V) : 120	Protection Device : Thermostat b		
Dry Run Protection Relay : ---			
Terminal Box : Stud/Thread/ 1			
Power Cable Conduit : NPT1	Cable O.D. (Main) (mm) : ---		
Instrument Cable Conduit : NPT3/4	Cable O.D. (Sub) (mm) : ---		
ATEX Marking : ---			

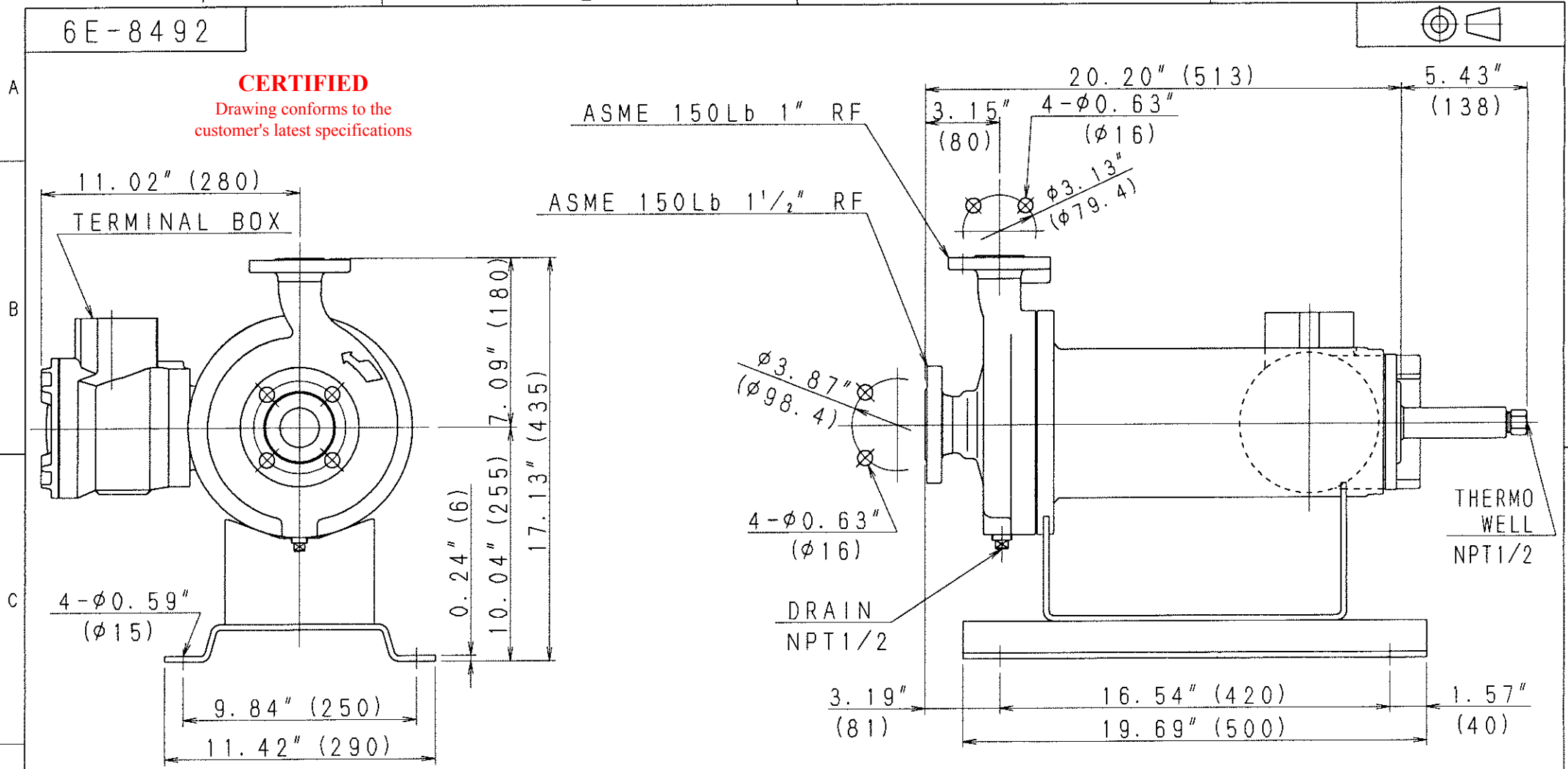
Remarks :  
 -T-USA#385330  
 -Hazardous Area Classification: Class. I, Div. 2, Gr. C&D T2  
 -Mechanical Design Temperature : 150°C (Pumps do not run at this temperature. Pumps are not expected to function post experience of this temperature.)

REVISIONS	B: Revised 3 points, Added 2 points, Deleted 1 point (2015.10.27) M. Morii
	C: Revised 1 point (2015.12.2) M. Morii

6E-8492

**CERTIFIED**

Drawing conforms to the customer's latest specifications



FH1388A

REVISIONS	Customer	:Evonik Corporation
	PO#	:4701013179
	Project	:ACA G600
	Project#	:4142.00940
	Evonik's Pump#	:P-9003
	Requisition#	:C0078-010

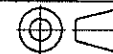
WEIGHT	
MOTOR TYPE	Lbs/kg
215	165/75
216, 217	176/80

APPROVED	CHECKED	DRAWN	SCALE
<i>R. Tanaka</i>	<i>R. Matsumura</i>	M. Morii	FREE
		Aug. 5 '15	

株式会社 帝国電機製作所  
**TEIKOKU** ELECTRIC MFG. CO., LTD.

DWG. TITLE 外形図  
**DIMENSIONAL DRAWING**  
 TYPE: F-210-0204S1-V  
 DWG. NO. **6E-8492**

4N-8988-01

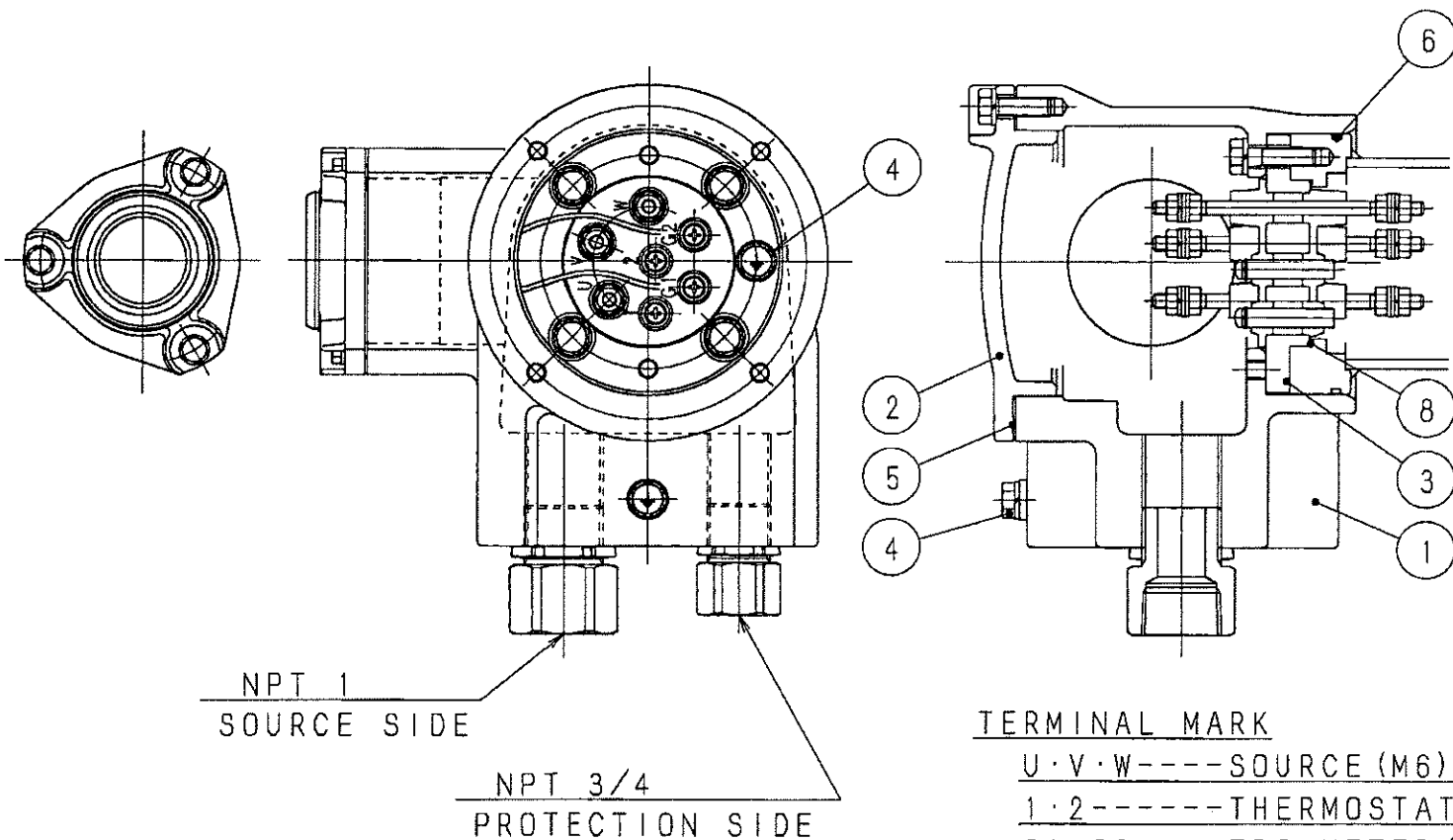


A

B

C

D



No.	NAME
1	TERMINAL BOX
2	TERMINAL COVER
3	TERMINAL PLATE
4	EARTH TERMINAL
5	GASKET
6	O-RING
7	TRG METER
8	O-RING

TERMINAL MARK

- U · V · W ---- SOURCE (M6)
- 1 · 2 ----- THERMOSTAT (M4)
- G1 · G2 ---- TRG METER (M4)

FG2021A

REVISIONS

Customer : Evonik Corporation  
 PO# : 4701013179  
 Project : ACA G600  
 Project# : 4142. 00940  
 Evonik's Pump# : P-9003  
 Requisition# : C0078-010

APPROVED	CHECKED	DRAWN	SCALE	DWG. TITLE
T. Takeuchi	R. Okamoto	K. Nakazumi	FREE	TERMINAL BOX
				SIZE : S Hermetic (Special)

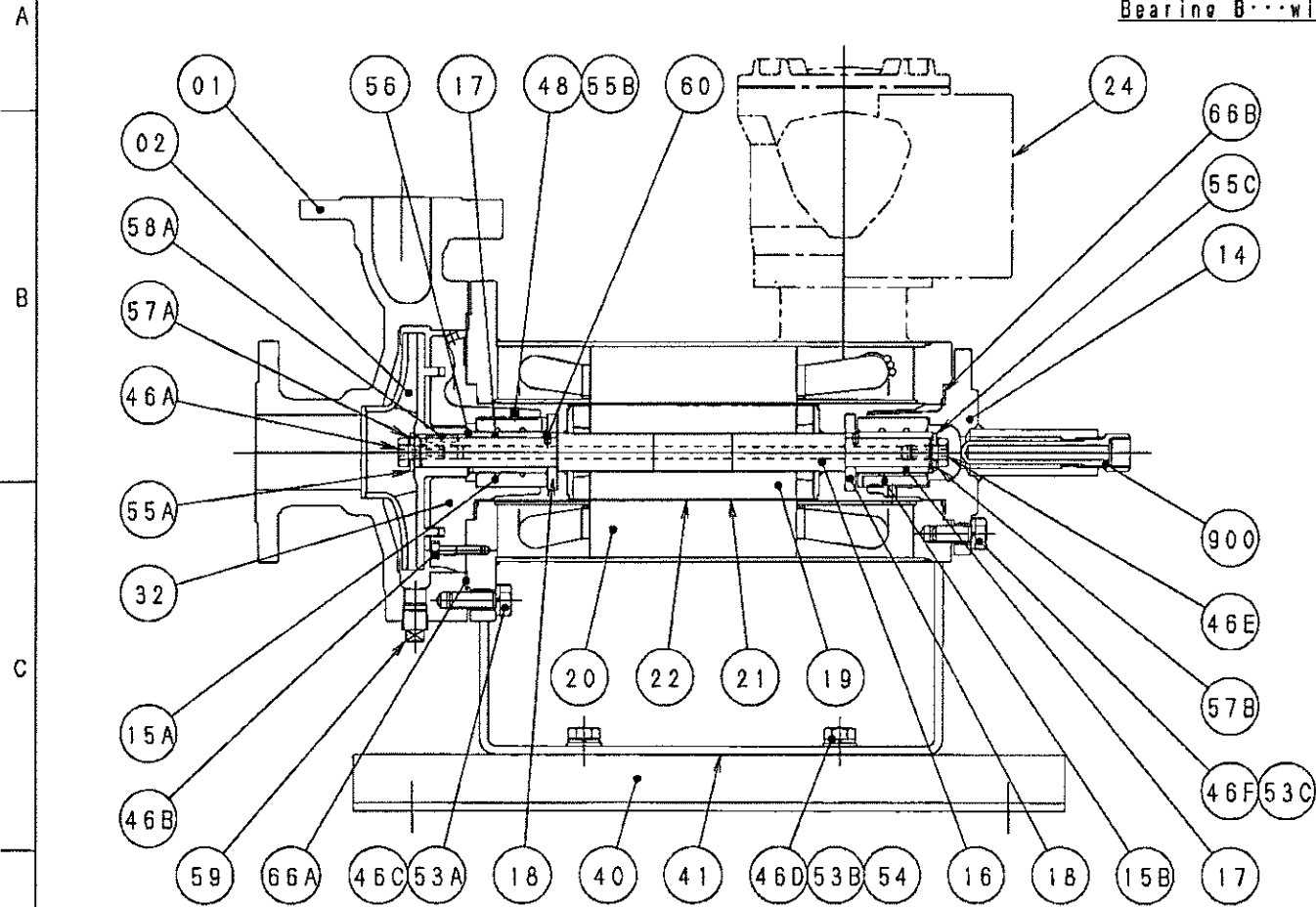
株式会社 帝国電機製作所  
**TEIKOKU** ELECTRIC MFG. CO., LTD.

DWG. NO.  
**4N-8988-01**

6E-7804

NOTE

Bearing A...with spiral & straight grooves  
 Bearing B...with spiral grooves



NO.	NAME OF PARTS	NO.	NAME OF PARTS
01	CASING	48	SET SCREW
02	IMPELLER		
14	R. B. HOUSING	53A	SPRING WASHER
15A	BEARING B	53B	SPRING WASHER
15B	BEARING A	53C	SPRING WASHER
16	SHAFT	54	PLAIN WASHER
17	SHAFT SLEEVE	55A	WASHER
18	THRUST COLLAR	55B	WASHER
19	ROTOR ASSY	55C	WASHER
20	STATOR ASSY	56	ADJUSTING WASHER
21	ROTOR CAN	57A	LOCK WASHER
22	STATOR CAN	57B	LOCK WASHER
24	TERMINAL BOX ASSY	58A	KEY
32	F. B. HOUSING	59	PLUG
		60	PIN
40	BASE		
41	HOLDER	66A	GASKET
46A	BOLT	66B	GASKET
46B	BOLT		
46C	BOLT	900	THERMOWELL
46D	BOLT		
46E	BOLT		
46F	BOLT		

FG1829A

REVISIONS	

Customer :Evonik Corporation  
 PO# :4701013179  
 Project :ACA G600  
 Project# :4142. 00940  
 Evonik's Pump# :P-9003  
 Requisition# :C0078-010

APPROVED	CHECKED	DRAWN	SCALE	DWG. TITLE 構造断面図
<i>T. T. T.</i>	<i>R. Okamoto</i>	H. Kuroda	FREE	SECTIONAL VIEW DRAWING
		Jan 30 '15		TYPE: F-V
株式会社 帝国電機製作所 TEIKOKU ELECTRIC MFG. CO., LTD.				DWG. NO.

**6E-7804**

# MATERIAL LIST

(1/1)

NO.	NAME	MATERIAL (JIS Std./Eq. ASTM, AISI Std.)	REMARKS
01	CASING	SCS14 / CF-8M 316 SS	
02	IMPELLER	SCS14 / CF-8M 316 SS	
14	R. B. HOUSING	SUSF316 or SCS14 / F 316 SS or CF-8M 316 SS	
15A	BEARING B	Carbon Graphite	
15B	BEARING A	Carbon Graphite	
16	SHAFT	SUS316 / 316 SS	
17	SHAFT SLEEVE	SUS316 / 316 SS + Stellite	
18	THRUST COLLAR	SUS316 / 316 SS + Stellite	
19	ROTOR ASS'Y	_____	
20	STATOR ASS'Y	_____	
21	ROTOR CAN	SUS316L / 316L SS	
22	STATOR CAN	SUS316L / 316L SS	
24	TERMINAL BOX ASS'Y	FC200 / Cl. No. 35 etc.	
32	F. B. HOUSING	SUSF316 or SCS14 / F 316 SS or CF-8M 316 SS	
40	BASE	SS400 / Carbon Steel	
41	HOLDER	SS400 / Carbon Steel	
46A	BOLT	SUS316 / 316 SS	
46B	BOLT	SUS316 / 316 SS	
46C	BOLT	SUS304 / 304 SS	
46D	BOLT	S20C / AISI 1020	
46E	BOLT	SUS316 / 316 SS	
46F	BOLT	SUS304 / 304 SS	
48	SET SCREW	SUS316 / 316 SS	
53A	SPRING WASHER	SUS304 / 304 SS	
53B	SPRING WASHER	SWRH / Carbon Steel	
53C	SPRING WASHER	SUS304 / 304 SS	
54	PLAIN WASHER	SPCC / Carbon Steel	
55A	WASHER	SUS316L / 316L SS	
55B	WASHER	SUS316L / 316L SS	
55C	WASHER	SUS316L / 316L SS	
56	ADJUSTING WASHER	SUS316L / 316L SS	
57A	LOCK WASHER	SUS316L / 316L SS	
57B	LOCK WASHER	SUS316L / 316L SS	
58A	KEY	SUS316 / 316 SS	
59	PLUG	SUS316 / 316 SS	
60	PIN	SUS316 / 316 SS	
66A	GASKET	T/#9007-LC / PTFE	
66B	GASKET	T/#9007-LC / PTFE	
900	THERMOWELL	SUS316 / 316 SS	

Customer	:Evonik Corporation
PO#	:4701013179
Project	:ACA G600
Project#	:4142. 00940
Evonik's Pump#	:P-9003
Requisition#	:C0078-010

(F-V)

APPROVED

*T. T. Thelmer*

CHECKED

*R. Matsumura*

DRAWN

K. Nakazumi  
Dec. 12 '13

## P-31990

FF1893A

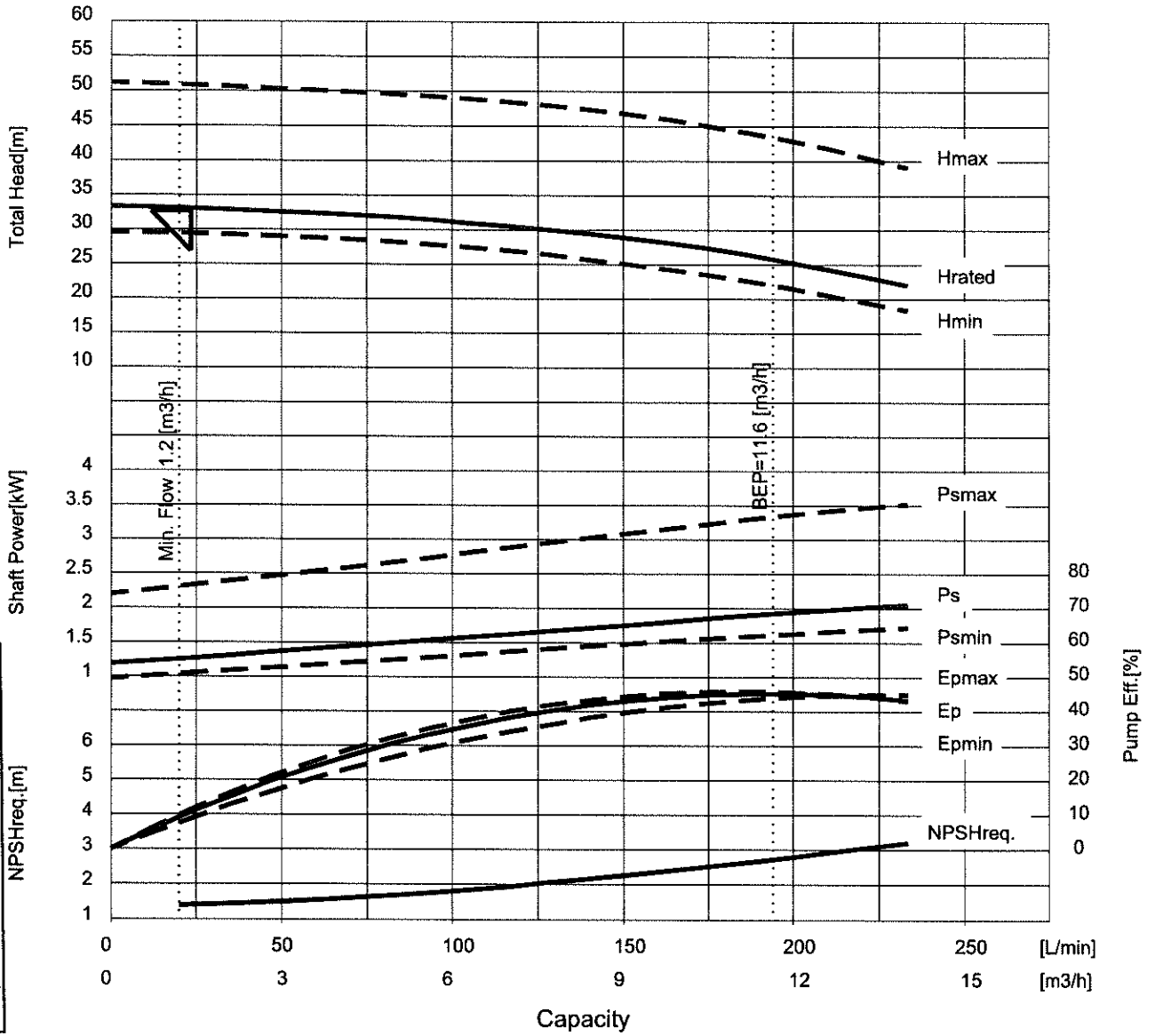


# ESTIMATED PERFORMANCE CURVE

Date : Aug. 07. 2015  
 No : E18H0022-02  
 Dwg. No. : SFH-1389A

Item No. P-9003      Item Name \*\*\*\*  
 Model F61-215C4BM-0204S1-AV

Frequency	60	Hz	Total Head	32.6	m
Voltage	460	V	Capacity	23.4	L/min      1.4      m <sup>3</sup> /h
Phase	3		Min.Flow	20	L/min      1.2      m <sup>3</sup> /h
Pole	2		Liquid	Acetic Anhydride	
Output	1.7	kW	Temp.	25	degC
Current	3.45	A	S.G.	1.07	Vis.      0.85      mPas
			NPSHavail.	4.56	m      NPSHreq.      1.4      m



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 Project# : 4142.00940  
 Evonik's Pump# : P-9003  
 Requisition# : C0078-010

**Remarks :**

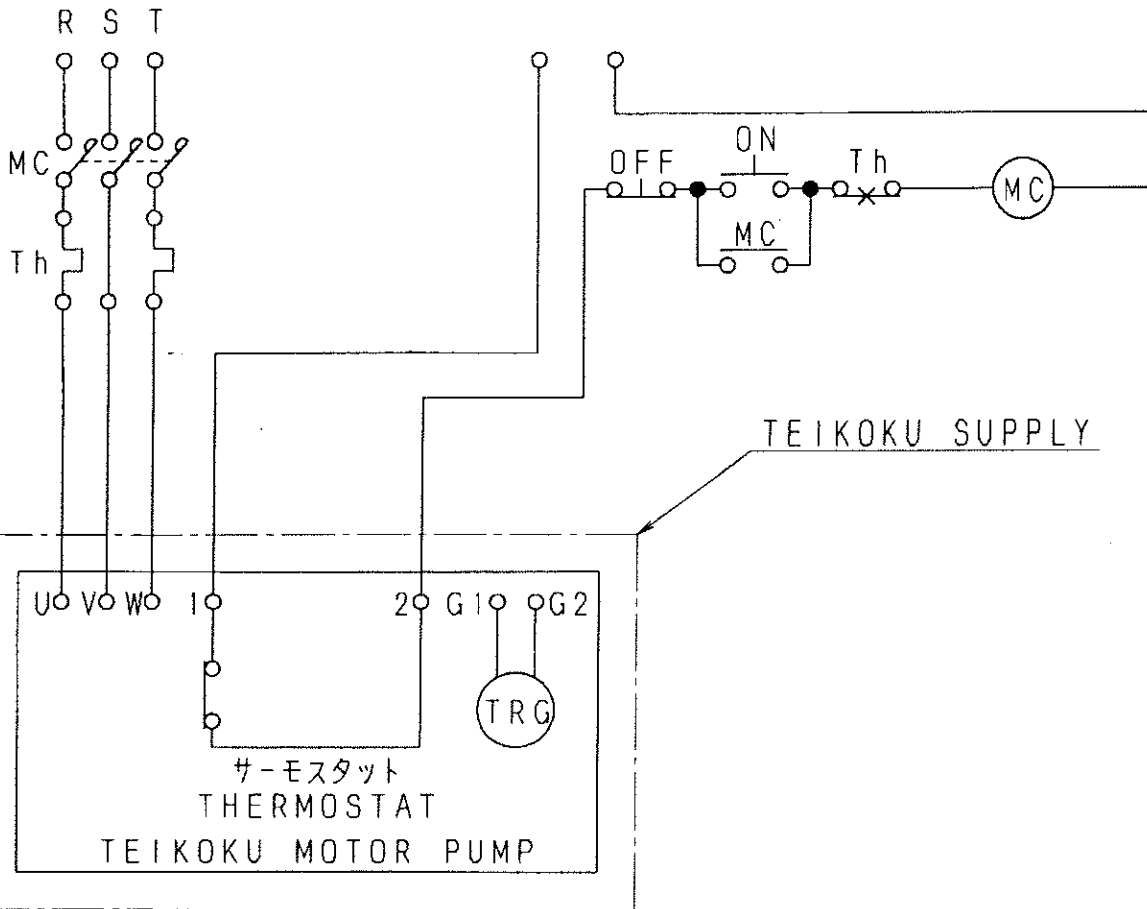
- Shut-off head : 33.3m
- 33m, 10.6%, 1.27kW, 3426rpm @ rated flow
- 14m<sup>3</sup>/hr, 2.1kW @ EOC
- 3.52kW @ EOC (max. dia.)
- Ns : 12.51, SSS : 5968
- Impeller Dia(mm):166(Max)/156(Rated)/130(Min)
- Output:2.28(hp)

REV.	Date	Description

APPROVED BY	CHECKED BY	DRAWN BY
<i>R. Tofani</i>	<i>R. Motomura</i>	<b>M. Morii</b>

TEIKOKU ELECTRIC MFG. CO., LTD.

4N-4415-01



サーモスタット THERMOSTAT	#1	#2
耐熱クラス THERMAL CLASS	220	F
定格 RATING	220°C-CUT OFF	150°C-CUT OFF
b-接点 CONTACTOR	AC250V-6.3A AC110V-10A DC24V-1.5A	AC230V-13A AC115V-18A DC24V-18A

記号 SYMBOLS	名称 NAME
R S T	電源端子 POWER TERMINAL
U V W	TMP接続端子 TMP TERMINAL
MC	電磁開閉器 MAGNETIC CONTACTOR
ON・OFF	押釦スイッチ(起動・停止用) PUSH BUTTON SWITCH
Th	サーマルリレー THERMAL RELAY
TRG	テイコクローターガード TEIKOKU ROTARY GUARDIAN

REVISEMENTS	B	Y. Takeuchi
	C	Y. Iwasaki
	Customer : Evonik Corporation	
	PO# : 4701013179	
Project : ACA G600		
Project# : 4142.00940		
Evonik's Pump# : P-9003		
Requisition# : C0078-010		

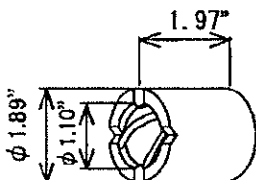
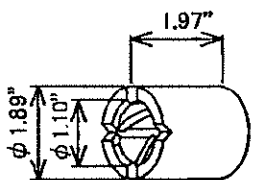
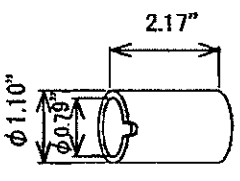
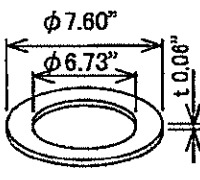
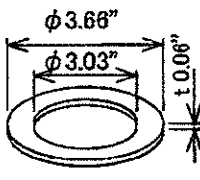
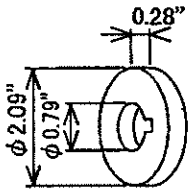
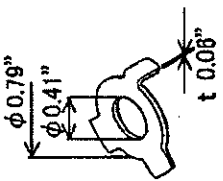

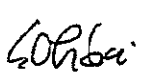

APPROVED	CHECKED	DRAWN	SCALE	DWG. TITLE
M. Sakai	T. Takeuchi	Y. Kii Jun. 10 '96	FREE	結線図 CONNECTION DIAGRAM



DWG. NO. **4N-4415-01**

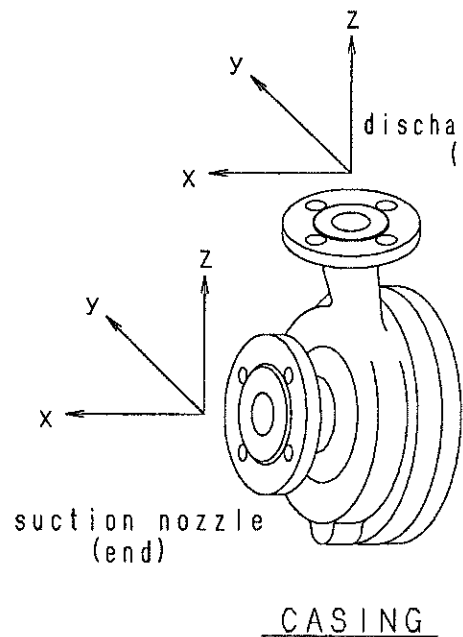
Customer :Evonik Corporation  
 PO# :4701013179  
 Project :ACA G600  
 Project# :4142.00940  
 Evonik's Pump# :P-9003  
 Requisition# :C0078-010

### RECOMMENDED SPARE PARTS LIST

TYPE		F-V, R 210-S			SB-4031		1/1	
No.	PARTS NAME	DIMENSION	MATERIAL	FOR 1SETS	REMARKS			
1	BEARING B		Carbon Graphite	1	#15A 48×28×50 (mm)			
2	BEARING A (with spiral & straight grooves)		Carbon Graphite	1	#15B 48×28×50 (mm)			
3	SHAFT SLEEVE		316 SS (SUS316) + Stellite	2	#17 28×20×55 (mm)			
4	GASKET		PTFE	1	#66A 193×171×1.5 (mm)			
5	GASKET		PTFE	1	#66B 93×77×1.5 (mm)			
6	THRUST COLLOR		316 SS (SUS316) + Stellite	2	#18 53×20×7 (mm)			
7	LOCK WASHER		316L SS (SUS316L)	2	#57A, #57B 20×10.5×1.5 (mm)			
REV.		APPROVED		CHECKED		DRAWN		
0x1950 来歴 REV. <input type="checkbox"/> Rewritten (Jun. 15' 04)K. N		 株式会社 帝国電機製作所 <b>TEIKOKU</b> ELECTRIC MFG. CO., LTD.		 G. Orba		 G. Orba		Y. Maruyama Aug. 25. '99



4N-6993-01



#No	PUMP TYPE	Fsx	Fsy	Fsz	Fdx	Fdy	Fdz	Msx	Msy	Msz	Mdx	Mdy	Mdz
1	0204	670	530	430	360	290	450	350	170	260	230	120	180
2	0405	890	710	580	530	430	670	460	230	350	350	170	260
3	0506	1110	890	730	710	580	890	710	350	540	460	230	350
4	0608	1330	1070	890	890	730	1110	950	470	720	710	350	540
5	0810	1780	1420	1160	1070	890	1330	1330	680	1000	950	470	720
6	1012	2450	1960	1600	1420	1160	1780	1820	930	1380	1330	680	1000
7	1215	3110	2490	2050	1960	1600	2450	2300	1180	1760	1820	930	1380
8	1520	4890	3780	3110	2490	2050	3110	3530	1760	2580	2300	1180	1760
9	2025	6670	5340	4450	3780	3110	4890	5020	2440	3800	3530	1760	2580
10	1015	3110	2490	2050	1420	1160	1780	2300	1180	1760	1330	680	1000
11	0408	1330	1070	890	530	430	670	950	470	720	350	170	260
12	0508	1330	1070	890	710	580	890	950	470	720	460	230	350
13	1515	3110	2490	2050	2490	2050	3110	2300	1180	1760	2300	1180	1760
14	1010	1780	1420	1160	1420	1160	1780	1330	680	1000	1330	680	1000
15	1212	2450	1960	1600	1960	1600	2450	1820	930	1380	1820	930	1380

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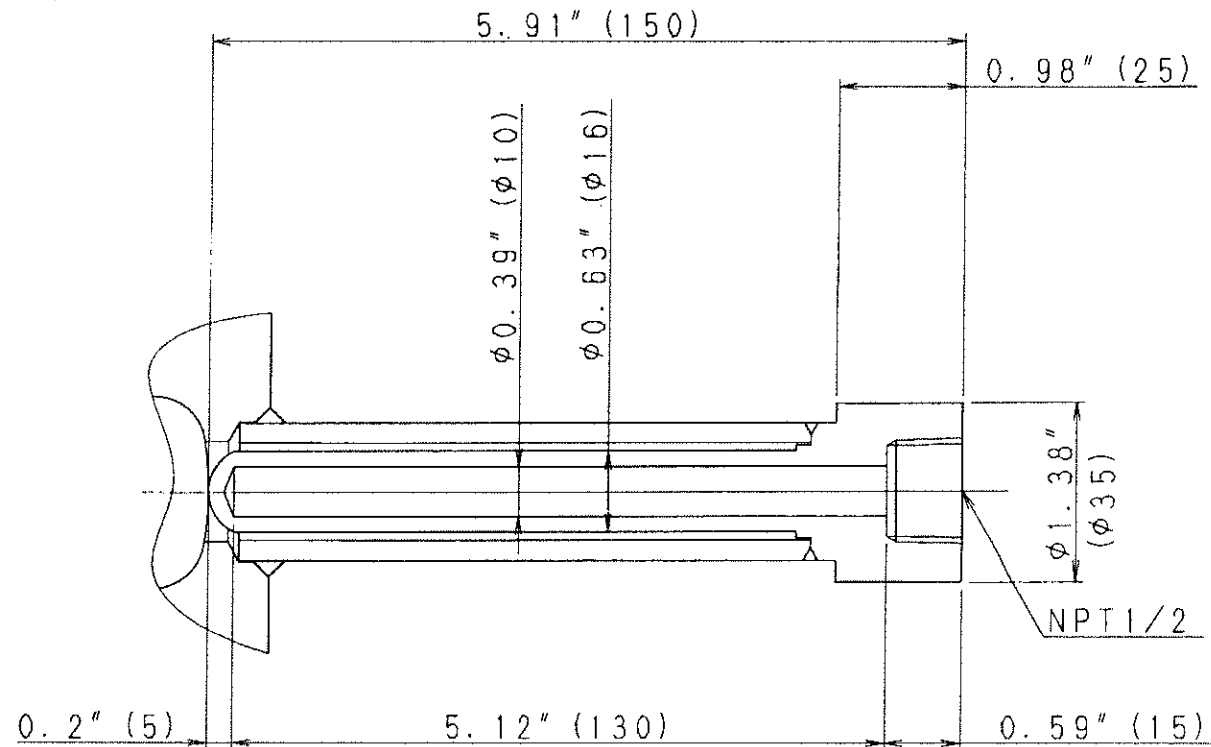
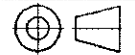
NOTE : F = force (N) M = moment (N-m)  
 S = suction nozzle  
 d = discharge nozzle

See the figure for orientation of nozzle loads (x, y, z)

DQ1377

D	REVISIONS	APPROVED	CHECKED	DRAWN	SCALE	DWG. TITLE
	B Rewritten Aug. 7 '08 K. Nakazumi	T. Takeuchi	S. Kimura	Y. Shimizu Apr. 11 '08	FREE	許容配管荷重 ALLOWABLE PIPING FORCES AND MOMENTS
	C Revised API610 8th Edition to API610 10th Edition. Sep. 3 '08 Y. Shimizu	E #14, #15 Added Mar. 20 '15 K. Nakazumi		SI Units		API610 (10th)
	D #11~#13 Added Sep. 2 '13 K. Nakazumi	E #14, #15 Added Mar. 20 '15 K. Nakazumi		DWG. NO.		4N-6993-01
株式会社 帝国電機製作所 TEIKOKU ELECTRIC MFG. CO., LTD.						

4N-7445



FB1809A  
FB1810A

REVISIONS

Customer	: Evonik Corporation
PO#	: 4701013179
Project	: ACA G600
Project#	: 4142.00940
Evonik's Pump#	: P-9003
Requisition#	: C0078-010

APPROVED

CHECKED

DRAWN

SCALE

DWG. TITLE

*S. Takahashi* *S. Takahashi*

K. Yamamoto  
Apr. 22 '10

FREE

THERMOWELL



株式会社 帝国電機製作所

TEIKOKU ELECTRIC MFG. CO., LTD.

DWG. NO.

4N-7445