

TEIKOKU CANNED MOTOR PUMP DATA SHEET

Messrs : Evonik Degussa Corporation

No. QFH-1378A

2015/8/20

Order No. : 4701013179
 Job No. : ---
 Project Name : ---
 Item No. : P-2220
 Item Name : ---
 Model : ☒ F61-217C4BM-0408S1V-AV

CERTIFIED
 Drawing conforms to the
 customer's latest specifications

Qty : 1

Sign For Receipt
 (For customer)

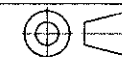
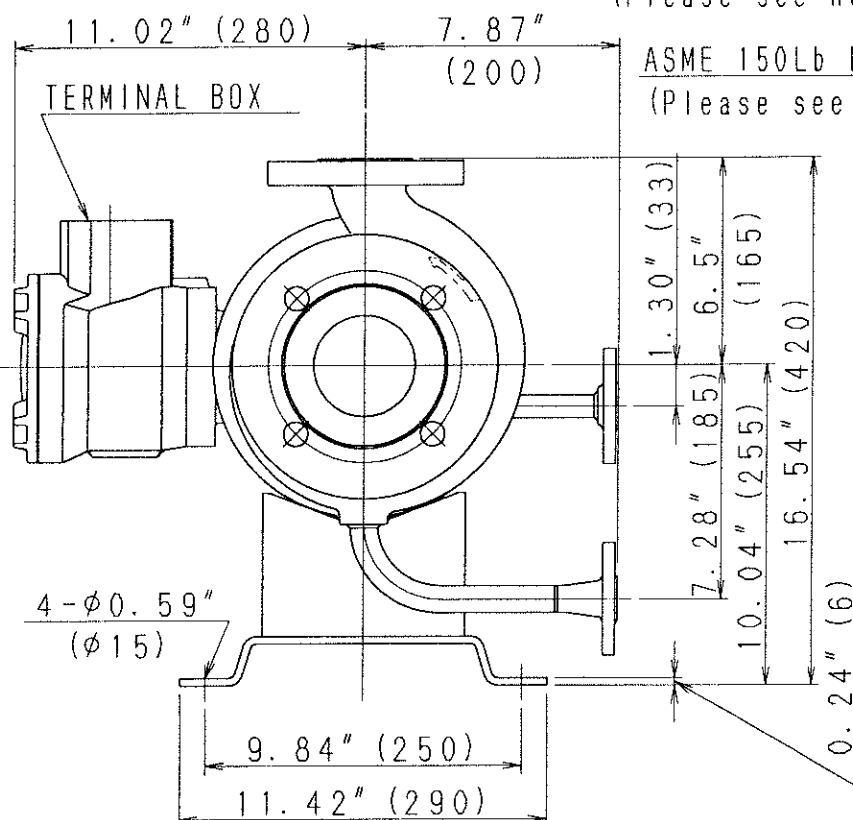
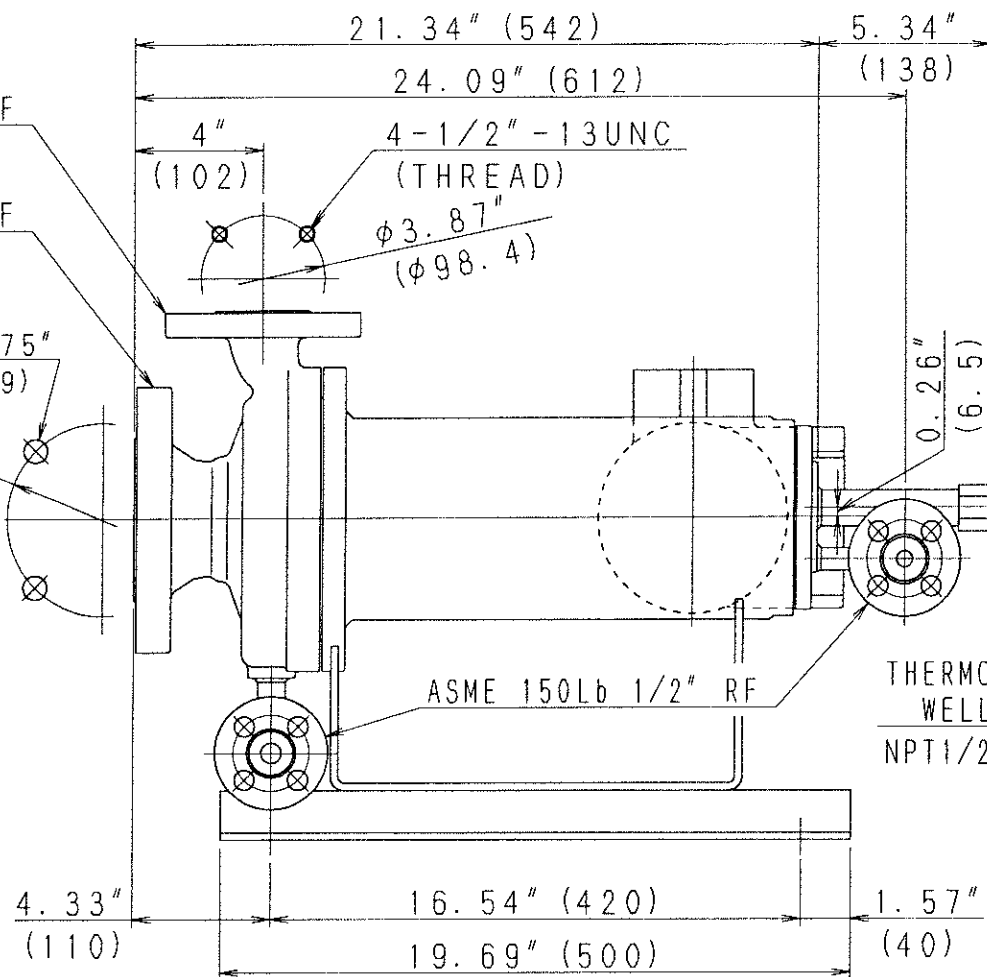
TEIKOKU ELECTRIC MFG. CO., LTD.

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

Operating Conditions		Materials	
Total Head (m) : 18.2	Capacity (L/min) : 416.7	Casing : SCS14(CF-8M 316 SS)	
	(m3/h) : 25	Impeller : SCS14(CF-8M 316 SS)	
Suction Press. (barA) : 2.01	Discharge Press. (MPaG) : ---	FBH : SUS316 (316 SS)	
NPSHava. (m) : 15.42	NPSHreq. (m) : 2.5	RBH : SUS316 (316 SS)	
Liquid : Raw ACA		Motor Flange : SUS316L (316L SS)	
Temperature (Des./Nor.) (°C) : 70.21 / ---		Stator Can : SUS316L (316L SS)	
Specific gravity (Des./Nor.) : 1 / ---		Shaft : SUS316 (316 SS)	
Viscosity (Des./Nor.) (mPa·s) : 0.54 / ---		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) : 0.435		+ Thrust Collar : SUS316+Stellite(316 SS+Stellite)	
Solids Name : ---		Pump Gasket : ☒ SUS316 (316 SS)+Grafoil	
Concentration (wt%) : ---	Particle Size (μm) : ---	Motor Gasket : ☒ SUS316 (316 SS)+Grafoil	
Flushing or Barrier Fluid : ---		Other Gasket : ---	
Liquid/S.Gr. (mPa·s) : --- /		Mechanical Seal : ---	
Press. (MPaG) : S.P. + --- ± ---	Flow (L/min) : ---		
Pump Design & Construction		Performance	
Design Press ☒ (bar) : ☒ 5.09	Temp. (°C) : 70.21	Impeller Type : CLOSE	
Code Applied : None	Nameplate : English	No. of Stage : 1	
Nozzle Connection : ASME Finish : SMOOTH FINISH		Min. Flow (L/min) : ---	
Nozzle	Rating	Size	Facing
Suction	150LB EQ	3"	RF
Discharge	150LB EQ	1-1/2"	RF
Drain	150LB	1/2"	RF
Reverse	---	---	---
Jacket Design Press. (MPa) : ---		Min. Flow (m3/h) : ---	
Utilities Required	Media	Condition (Max)	Flow (Min.)
Casing	NONE	---	---
Motor	NONE	---	---
Heat Ex /Est. Circ	NONE	---	---
Motor (Stop)	---	---	---
Customer : Evonik Corporation		Vendor Drawings and Data	
PO# : 4701013179		Dimensional Dwg. : 6E-8547	
Project : ACA G600		Terminal Box : 4N-8988-01	
Project# : 4142. 00940		Sectional View Dwg. : 6E-8546	
Evonik's Pump# : P-2220		Material List : ☒ P-33041	
Requisition# : C0078-010		Est. Performance Curve : SFH-1378A	
		Connection Diagram : ☒ 4N-4415-01	
		Recommended Spare	
		Spare Parts List : SB-4031	
Power Supply & Drive Motor		Other	
Frame No. : 217	Duty : Cont	Special Treatment : None	
Voltage(V) : 460	Frequency(Hz) : 60	Painting Color : LightGray	
Output(kW/hp) : 3.9/5.23	Rated Amp. (A) : 8	Rotating Direction : ---	
Thermal Class : 220	Start Method : DIRECT	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 :		REVISIONS	
-T-USA#385330		B: Revised 3 points, Added 2 points, Deleted 1 point	
-Hazardous Area Classification : Class.1, Div.2, Gr.C&D T2		(2015.10.27) M. Morii	
-Estimated liquid temperature rise at rated capacity. (Pump side): 0.1°C, (Motor side): 3.1°C.		C: Revised 1 point (2015.12.2) M. Morii	
☒ -Mechanical Design Temperature : 170°C (Pumps do not run at this temperature. Pumps are not expected to function post experience of this temperature.)		D: Revised 4 points (2016.1.15) M. Morii	

6E-8547

Note: Thickness and outside diameter follows those of ASME#300 flange.

**CERTIFIED**Drawing conforms to the
customer's latest specificationsASME 150Lb Equiv. 1 1/2" RF
(Please see note)ASME 150Lb Equiv. 3" RF
(Please see note)4-φ0.75"
(φ19)
φ6"
(φ152.4)

FH1378A

REVISIONS

Customer : Evonik Corporation
PO# : 4701013179
Project : ACA G600
Project# : 4142. 00940
Evonik's Pump# : P-2220
Requisition# : C0078-010

WEIGHT	
MOTOR TYPE	Lbs/kg
215	188/85
216, 217	198/90

APPROVED

CHECKED

DRAWN

SCALE

DWG. TITLE 外形

R. Mori

M. Morii
Aug. 20, '15

FREE

DIMENSIONAL DRAWING

TYPE: F-210-0408S1-V

DWG. NO.



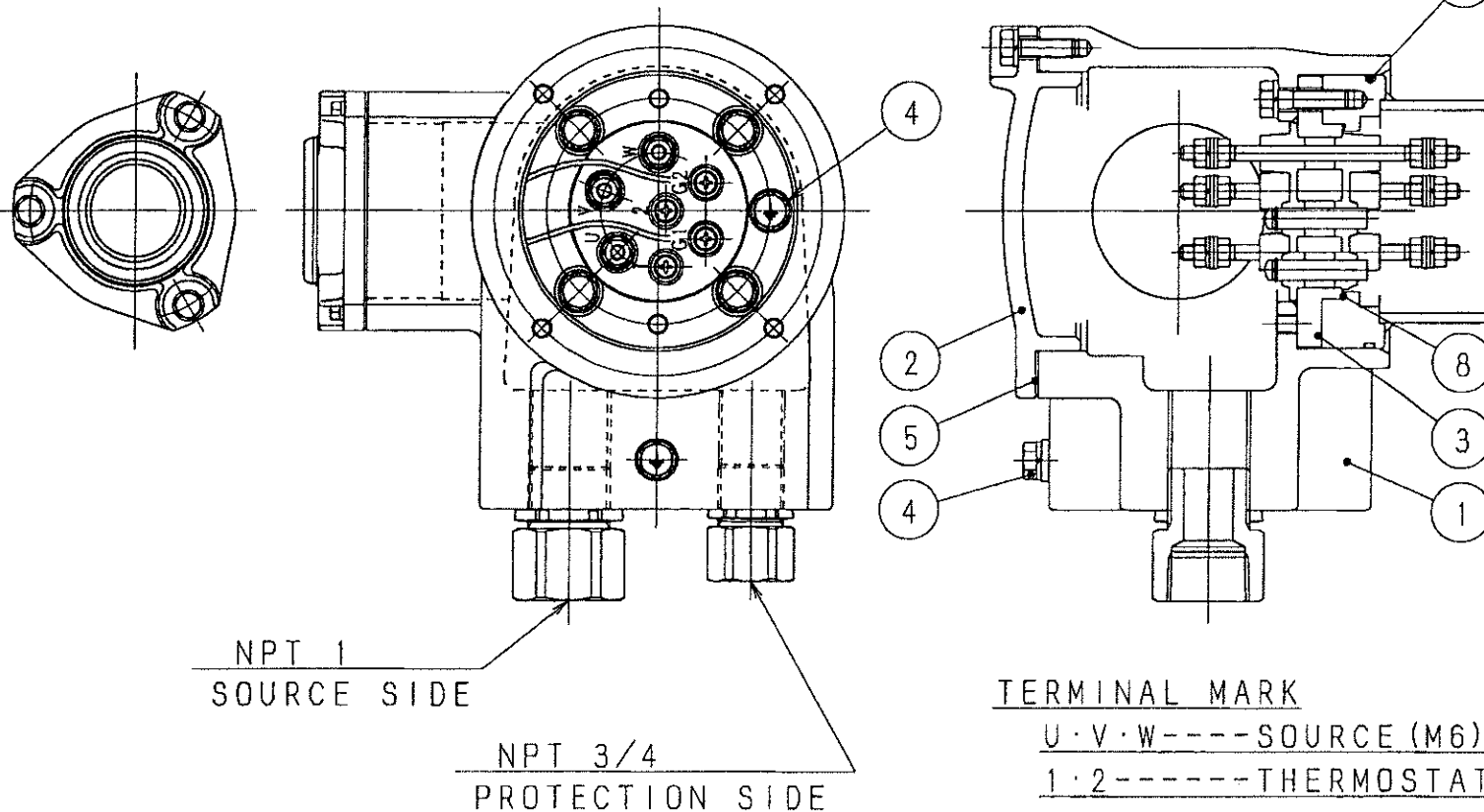
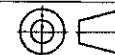
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TEIKOKU

ELECTRIC MFG. CO., LTD.

6E-8547

4N-8988-01



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-2220
Requisition# : C0078-010

APPROVED

T. Takeuchi

CHECKED

R. Okamoto

DRAWN

K. Nakazumi

Mar. 26, '15

SCALE

FREE

DWG. TITLE

TERMINAL BOX

SIZE : S

Hermetic (Special)

DWG. NO.

4N-8988-01



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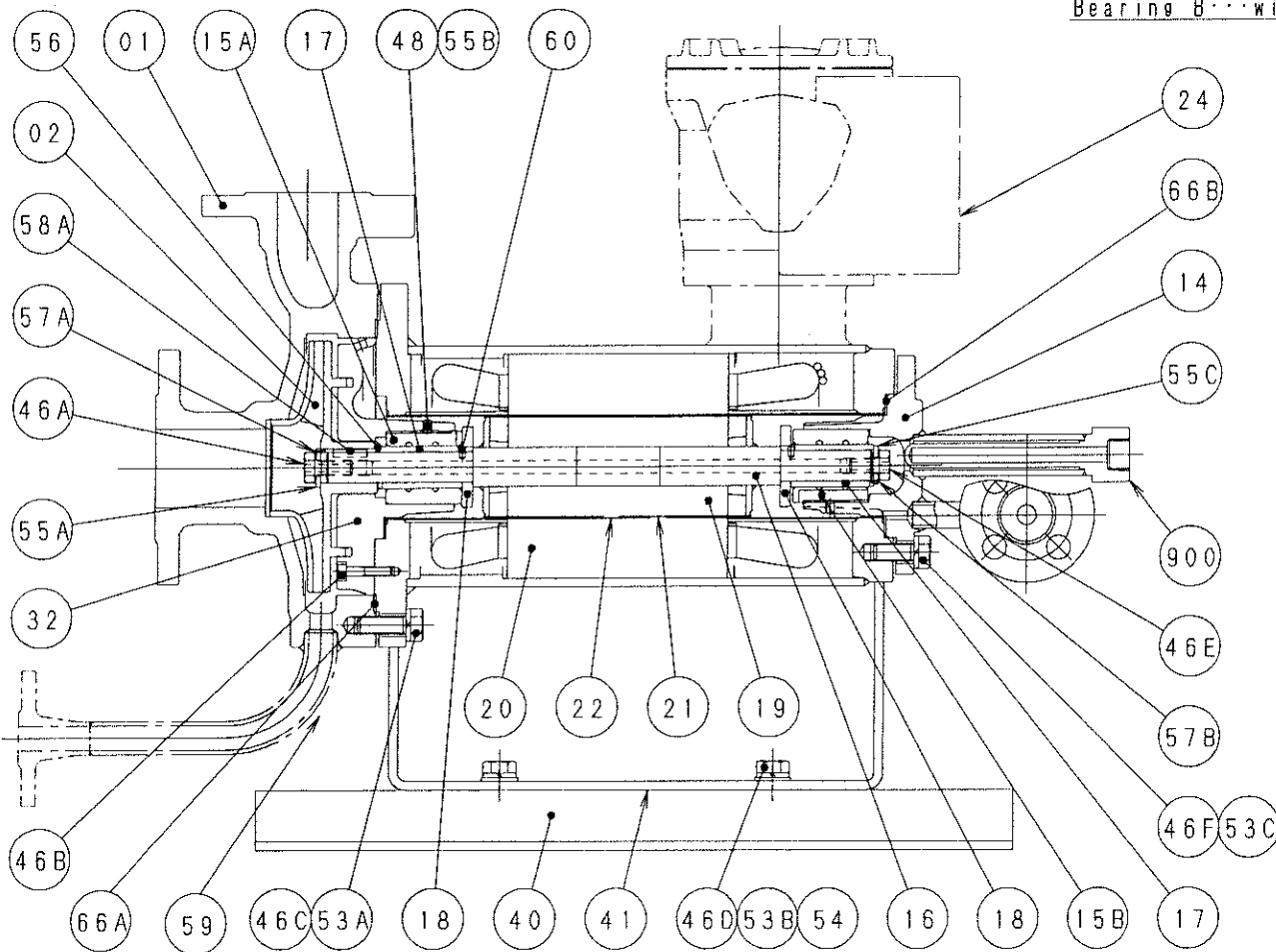
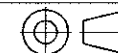
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6E-8546

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		
		60	PIN
40	BASE		
41	HOLDER	66A	GASKET
46A	BOLT	66B	GASKET
46B	BOLT		
46C	BOLT	900	THERMOWELL
46D	BOLT		
46E	BOLT		
46F	BOLT		

FH1377A

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Project# : 4142. 00940
Evonik's Pump# : P-2220
Requisition# : C0078-010

APPROVED

CHECKED

DRAWN

SCALE

DWG. TITLE 構造断面図

*R. T. ...*M. Morii
Aug 20 '15

FREE

SECTIONAL VIEW DRAWING

TYPE: F-V

DWG. NO.



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TEIKOKU ELECTRIC MFG. CO., LTD.

6E-8546

(1/1)

TEIKOKU ELECTRIC MFG. CO., LTD.



ESTIMATED PERFORMANCE CURVE

Date : Aug. 20. 2015
No : E18H0040-00
Dwg. No. : SFH-1378A

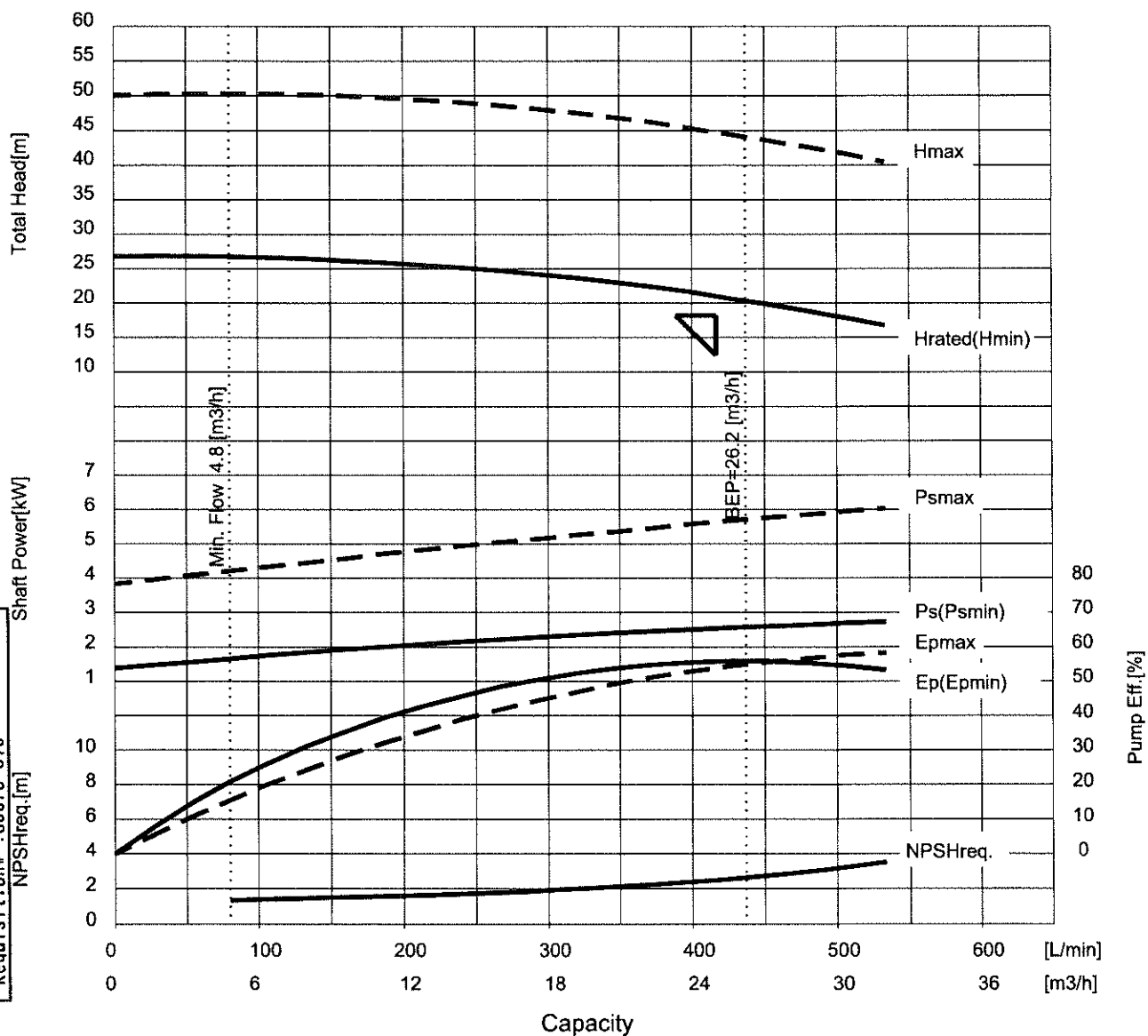
Item No. P-2220

Item Name ****

Model **F61-217C4BM-0408S1V-AV**

Frequency 60 Hz
Voltage 460 V
Phase 3
Pole 2
Output 3.9 kW
Current 8 A

Total Head 18.2 m
Capacity 416.7 L/min 25 m³/h
Min.Flow 80 L/min 4.8 m³/h
Liquid Raw ACA
Temp. 70.21 degC
S.G. 1
NPSHavail. 15.42 m
Vis. 0.54 mPas
NPSHreq. 2.5 m



Customer : Evonik Corporation
PO# : 4701013179
Project : ACA G600
Project# : 4142. 00940
Evonik's Pump# : P-2220
Requisition# : C0078-010

Remarks :

- Shut-off head : 26.7m
- 21m, 55.9%, 2.56kW, 3366rpm @ rated flow
- 32m³/hr, 2.7kW @ EOC
- 6.035kW @ EOC (max. dia.)
- Ns : 21.62, SSS : 8975
- Impeller Dia(mm):166(Max)/130(Rated)/130(Min)
- Output:5.23(hp)

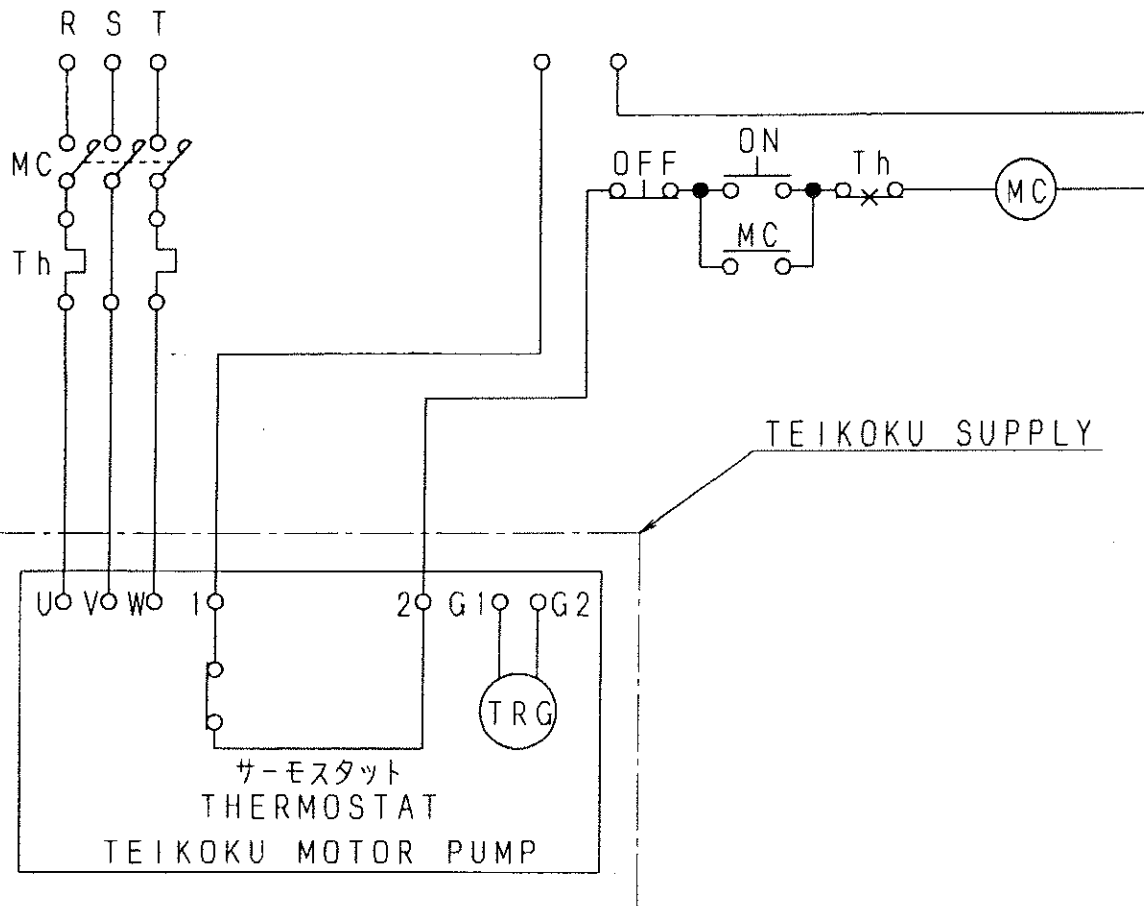
B	2016.1.15	Revised 1 Point. M.Morii
REV.	Date	Description

APPROVED BY	CHECKED BY	DRAWN BY
R.Takeuchi	R.Matsumura	M.Morii

TEIKOKU ELECTRIC MFG. CO., LTD.

UNIS Version 3.0.2
NDTS11_15

4N-4415-01

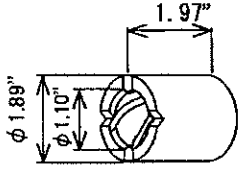
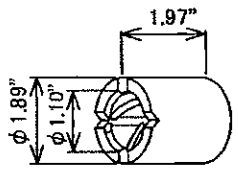
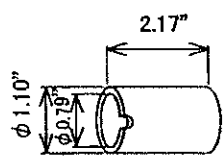
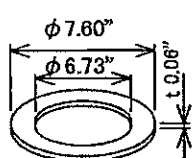
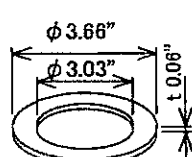
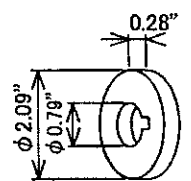
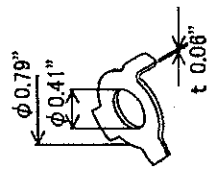


サーモスタット THERMOSTAT	#1	#2
耐熱クラス THERMAL CLASS	220	F
定格 RATING	220℃-CUT OFF	150℃-CUT OFF
b-接点 CONTACTOR	AC250V-6.3A AC110V-10A DC24V-1.5A	AC230V-13A AC115V-18A DC24V-18A

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	テイククロータリーガード・イアン TEIKOKU ROTARY GUARDIAN

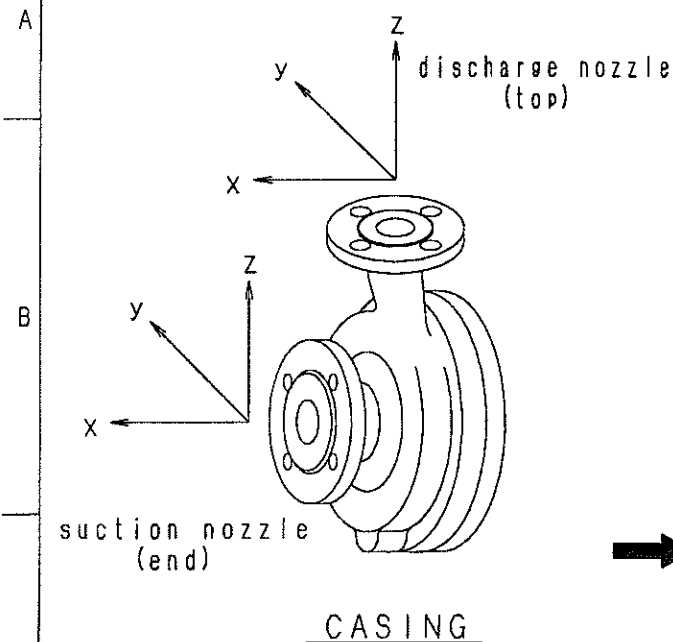
REVISIONS	B	Y. Takeuchi	C	Y. Iwasaki	Customer : Evonik Corporation PO# : 4701013179 Project : ACA G600 Project# : 4142. 00940 Evonik's Pump# : P-2220 Requisition# : C0078-010	APPROVED	CHECKED	DRAWN	SCALE	DWG. TITLE
	Rewritten Dec. 5, '01					M. Sakai	T. Takeuchi	Y. Kii Jun. 10, '96	FREE	結線図 CONNECTION DIAGRAM
						 株式会社 帝国電機製作所 TEIKOKU ELECTRIC MFG. CO., LTD.				DWG. NO. 4N-4415-01

RECOMMENDED SPARE PARTS LIST

TYPE				SB-4031		1 1
F-V, R 210-S						
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 (T/#9007-LC)	1	#66A 193 × 171 × 1.5 (mm)	
5	GASKET		PTFE (T/#9007-LC)	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	
来歴: REV.		株式会社 帝国電機製作所 TEIKOKU ELECTRIC MFG. CO., LTD.		Gohei	Y. Maruyama Aug. 25, '99	
Reritten (Jun. 15, '04) K. N				Gohei		

Customer : Evonik Corporation
 PO# : 4701013179
 Project : ACA G600
 Project# : 4142. 00940
 Evonik's Pump# : P-2220
 Requisition# : C0078-010

4N-6993-11



#No	PUMP TYPE	Fsx	Fsy	Fsz	Fdx	Fdy	Fdz	Msx	Msy	Msx	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

Customer :Evonik Corporation
 PO# :4701013179
 Project :ACA G600
 Project# :4142.00940
 Evonik's Pump# :P-2220
 Requisition# :C0078-010

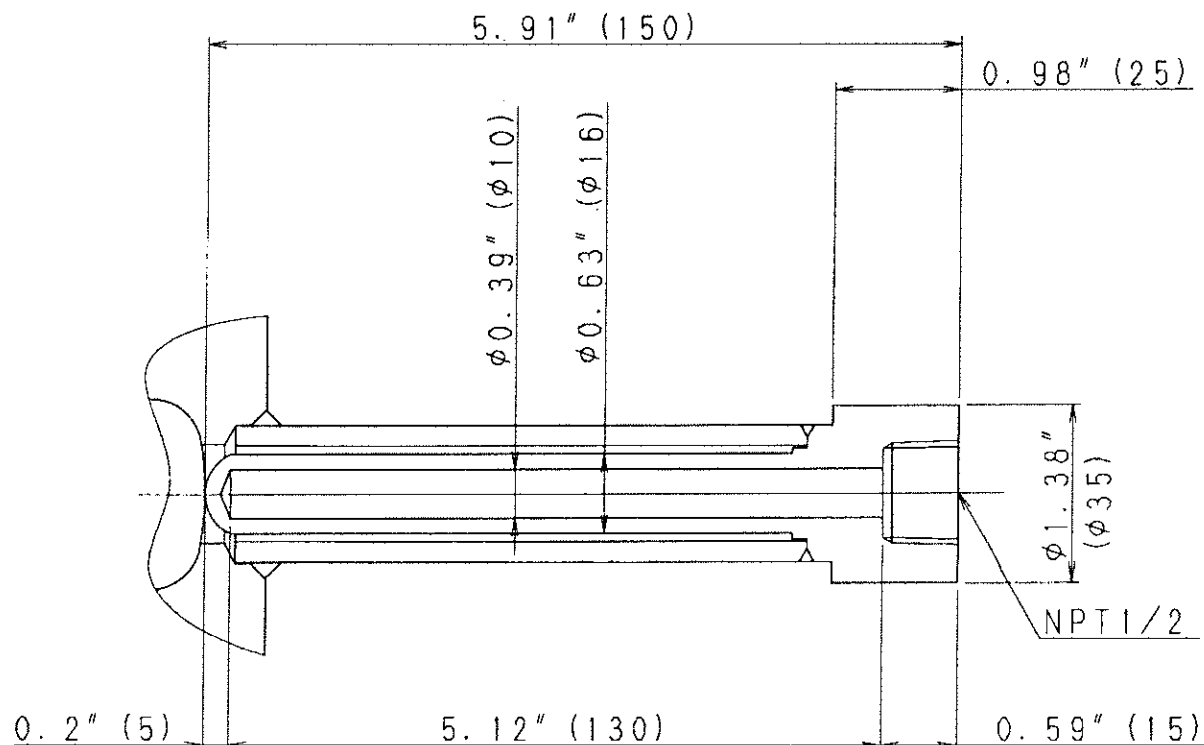
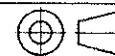
NOTE : F = force (N) M = moment (N-m)
 S = suction nozzle
 d = discharge nozzle

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

DQ1377

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

4N-7445



FB1809A
FB1810A

REVISIONS

Customer : Evonik Corporation
PO# : 4701013179
Project : ACA G600
Project# : 4142. 00940
Evonik's Pump# : P-2220
Requisition# : C0078-010

APPROVED

CHECKED

DRAWN

SCALE

DWG. TITLE

S. Takashita *S. Takashita*

K. Yamamoto
Apr. 22 '10

FREE

THERMOWELL



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TEIKOKU ELECTRIC MFG. CO., LTD.

DWG. NO.

4N-7445