

TEIKOKU CANNED MOTOR PUMP DATA SHEET

Messrs : Evonik Degussa Corporation

No. QFH-1380A

Aug. 10 2015

Order No. : ☐ ※1
 Job No. : ---
 Project Name : ---
 Item No. : ☐ ※1
 Item Name : ---
 Model : ☐ DA61-317J4BM-0408TIV-A

CERTIFIED
 Drawing conforms to the
 customer's latest specifications

Qty : ☐ 2

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) : 42	Capacity (L/min) : 408 (m3/h) : 24.48	Casing : SCS14 (CF-8M 316 SS)	Impeller : SCS14 (CF-8M 316 SS)																									
Suction Press. (barA) : 0.42~5.06	Discharge Press. (MPaG) : ---	Adapter : SCS14 (CF-8M 316 SS)	RBH : SUS316 (316 SS)																									
NPSHava. (m) : 3.52	NPSHreq. (m) : ☐ 3	Motor Flange : SUS316L (316L SS)	Stator Can : SUS316L (316L SS)																									
Liquid : Crude ACA	Temperature (Des./Nor.) (°C) : 80.549 / ---	Shaft : SUS316 (316 SS)	Rotor Can : SUS316L (316L SS)																									
Specific gravity (Des./Nor.) : 0.96 / ---	Viscosity (Des./Nor.) (mPa·s) : 0.48 / ---	Bearing : Carbon Graphite	Shaft Sleeve : ---																									
Mechanical Design Temperature (°C) : ---	Specific Heat (kJ/(kg·K)) : ---	+ Thrust Collar : SUS316 (316 SS)+Stellite	Pump Gasket : ☐ SUS316 (316 SS)+Grafoil																									
Vapor Press. (BarA) : 0.026	Melting Temp. (°C) : ---	Motor Gasket : PTFE	O-ring : PTFE																									
Solids Name : ---	Concentration (wt%) : ---	Mechanical Seal : SiC+Carbon																										
Particle Size (μm) : ---	S. Gr. : ---																											
Flushing or Barrier Fluid : Crude ACA	Liquid/S. Gr. (mPa·s) : 0.96 / 0.48																											
Press. (MPaG) : S.P. + ☐ 0.3 ± 0.05	Flow (mL/h) : Max. 3																											
Pump Design & Construction		Performance																										
Design Press ☐ (bar) : ☐ 9.68	Temp. (°C) : 80.55	Impeller Type : CLOSE	No. of Stage : 1																									
Code Applied : None	Nameplate : ☐ English	Min. Flow (L/min) : ---	Min. Flow (m3/h) : ---																									
Nozzle Connection : ASME Finish : SMOOTH FINISH <table border="1"> <thead> <tr> <th>Nozzle</th><th>Rating</th><th>Size</th><th>Facing</th><th>Position</th></tr> </thead> <tbody> <tr> <td>Suction</td><td>150LB EQ</td><td>3"</td><td>RF</td><td>END</td></tr> <tr> <td>Discharge</td><td>150LB EQ</td><td>1-1/2"</td><td>RF</td><td>TOP</td></tr> <tr> <td>Drain</td><td>---</td><td>---</td><td>---</td><td>---</td></tr> <tr> <td>Reverse</td><td>---</td><td>---</td><td>---</td><td>---</td></tr> </tbody> </table>		Nozzle	Rating	Size	Facing	Position	Suction	150LB EQ	3"	RF	END	Discharge	150LB EQ	1-1/2"	RF	TOP	Drain	---	---	---	---	Reverse	---	---	---	---		
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Reverse	---	---	---	---																								
Jacket Design Press. (MPa) : ---		Spare Parts																										
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Customer : Evonik Corporation PO# : 4701013179/4701319034 Project : ACA G600 Project# : 4142.00940 Evonik's Pump# : P-3220/P-3220S Requisition# : C0078-010		Vendor Drawings and Data																										
Power Supply & Drive Motor		Dimensional Dwg. : 6E-8513 Allowable Piping Forces and Moments : 4N-6993-11 Terminal Box : 4N-8988-01 Sectional View Dwg. : ☐ 6E-8554 ☐ Thermowell : 4N-7445 Material List : P-32821 Est. Performance Curve : SFH-1380A Connection Diagram : ☐ 4N-4415-01 Mechanical Seal : 4N-4024-09 Recommended Spare Spare Parts List : ☐ SC-1112																										
Frame No. : 317 Duty : Cont Voltage(V) : 460 Frequency(Hz) : 60 Phase : 3 Pole : 2 Output (kW/hp) : 7.4/9.92 Rated Amp. (A) : 14.5 Start Amp. (A) : 61 Thermal Class : 220 Start Method : DIRECT R.P.M. (rpm) : 3600 Direction : C.C.W. (Viewed from Pump Suction) 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 : ---		Other																										
Special Treatment : None Painting Color : Light Gray Rotating Direction : --- Monitoring : Yes Bearing Wear Monitor : Radial / Local																												

Remarks :

- T-USA#385330
- Hazardous Area Classification : Class.1, Div.2, Gr.C&D T2
- Mechanical Design Temperature : 200°C (Pumps do not run at this temperature. Pumps are not expected to function post experience of this temperature.)
- ※1 Item No. P-3220 / Order No. 4701013179, Item No. P-3220S / Order No. 4701319034

REVISIONS

B: Revised 3 points, Deleted 1 point (Aug. 24' 15) M. Morii
C: Revised 6 points, Added 2 points, Deleted 1 point. (2015. 10. 29) M. Morii
D: Revised 3 points, Added 1 point (2015. 11. 16) M. Morii
E: Revised 6 points (2016. 1. 6) M. Morii
F: Revised 1 point. (2016. 1. 29) M. Morii

6E-8513

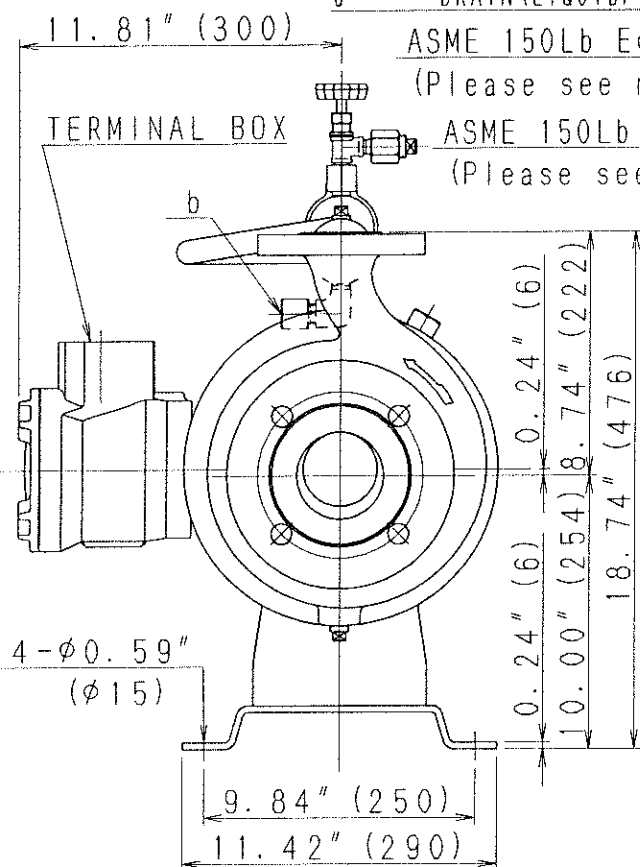
a, b -- JACKET INLET ---NPT1/2

a', b' -- JACKET OUTLET ---NPT1/2

c -----AIR VENT -----NPT1/2

d -----DRAIN (LIQUID) ---NPT1/2

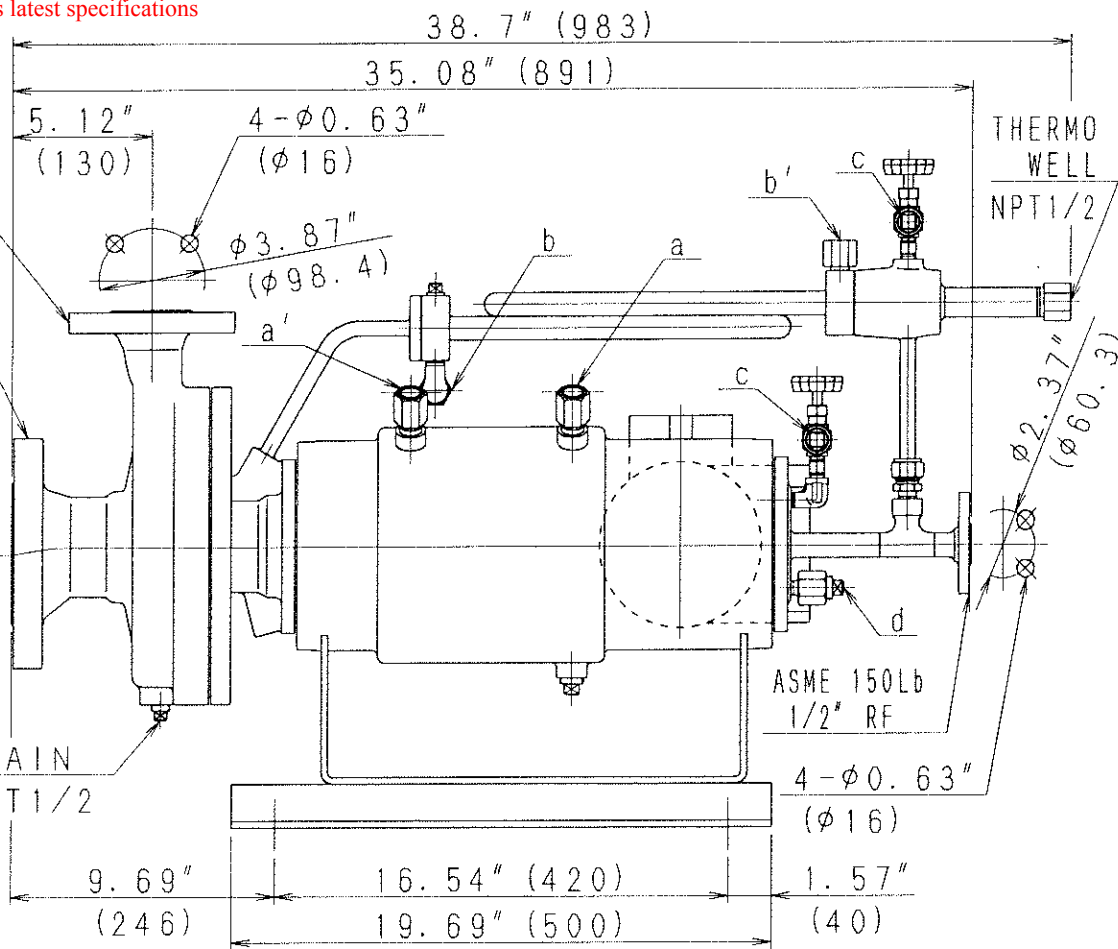
CERTIFIED
Drawing conforms to the
customer's latest specifications



4-φ0.75" (φ19)

φ6" (φ152.4)

DRAIN
NPT1/2



FH1380A

WEIGHT : 331Lb (150kg)

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

REVISIONS	B	C	D
Revised	Aug. 24, '15	Revised	Nov. 16, '15
M. Morii		M. Morii	
Revised	Jan. 6, '16		
M. Morii			

Customer : Evonik Corporation
PO# : 4701013179/4701319034
Project : ACA G600
Project# : 4142. 00940
Evonik's Pump# : P-3220/P-3220S
Requisition# : C0078-010

APPROVED	CHECKED	DRAWN	SCALE
<i>R. Tojima</i>	<i>R. Matsumoto</i>	M. Morii	FREE
		Aug. 10, '15	



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DWG. TITLE 外形
DIMENSIONAL DRAWING
TYPE: DA-310-0408T1

DWG. NO.

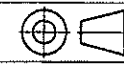
6E-8513

1
4N-8988-01

2

3

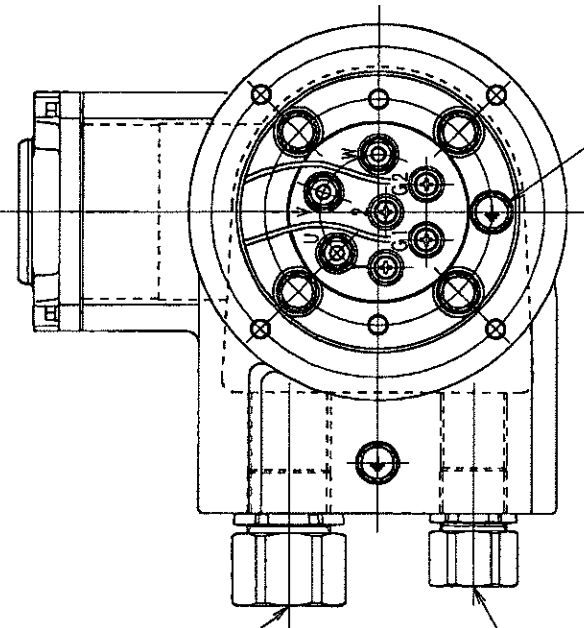
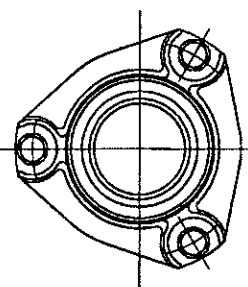
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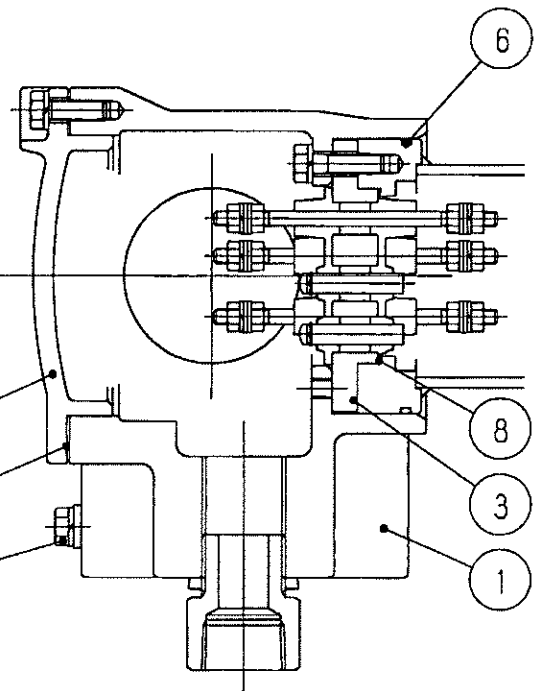
A

B

C



4



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

NPT 1
SOURCE SIDE

NPT 3/4
PROTECTION SIDE

TERMINAL MARK

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

FG2021A

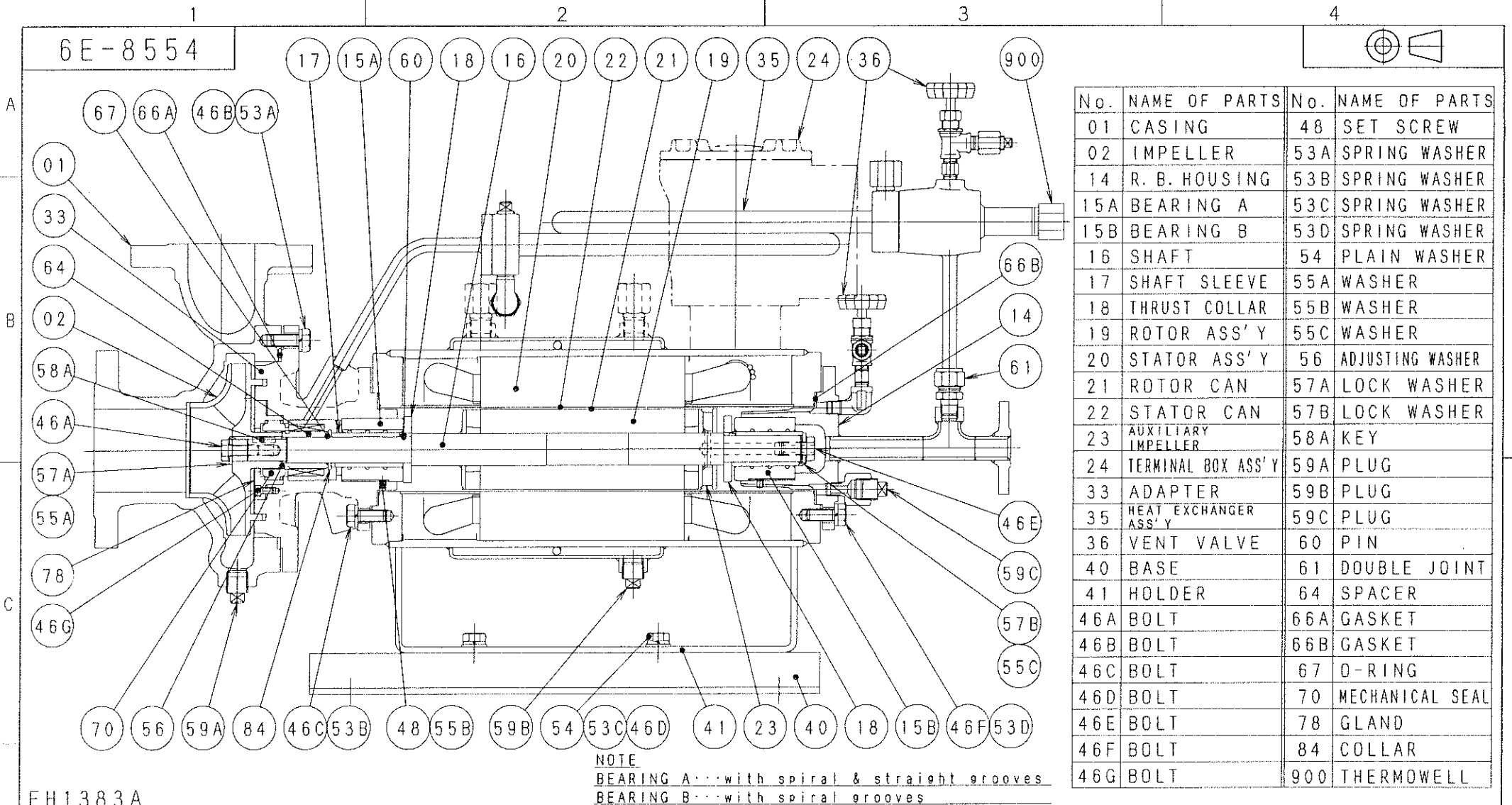
REVISIONS

Customer : Evonik Corporation
PO# : 4701013179/4701319034
Project : ACA G600
Project# : 4142. 00940
Evonik's Pump# : P-3220/P-3220S
Requisition# : C0078-010

APPROVED	CHECKED	DRAWN	SCALE	DWG. TITLE
T. Takeuchi	R. Okamoto	K. Nakazumi	FREE	TERMINAL BOX
				SIZE : S Hermetic (Special)
				DWG. NO.
				4N-8988-01



dwg



FH1383A

REVISEMENTS	B	C
	Revised Nov. 11 '15 M. Morii	Revised Jan. 6 '16 M. Morii

Customer : Evonik Corporation
PO# : 4701013179/4701319034
Project : ACA G600
Project# : 4142. 00940
Evonik's Pump# : P-3220/P-3220S
Requisition# : C0078-010

APPROVED	CHECKED	DRAWN	SCALE
R. Takemura	R. Matsumura	M. Morii	FREE
Aug. 21 '15			

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TEIKOKU ELECTRIC MFG. CO., LTD.

DWG. TITLE 構造断面図
SECTIONAL VIEW DRAWING
TYPE: DA
DWG. NO.
6E-8554

MATERIAL LIST

(1/1)

NO.	NAME	MATERIAL (JIS Std./Eq. ASTM, AISI Std.)	REMARKS
01	CASING	SCS14 / CF-8M 316SS	
02	IMPELLER	SCS14 / CF-8M 316SS	
14	R. B. HOUSING	SUSF316 or SCS14 / F 316 SS or CF-8M 316 SS	
15A	BEARING A	Carbon Graphite	
15B	BEARING B	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	
23	AUXILIARY IMPELLER	SUS316L / 316L SS	
24	TERMINAL BOX ASS'Y	FC200 / Cl. No. 35 etc.	
33	ADAPTER	SCS14 / CF-8M 316SS	
35	HEAT EXCHANGER ASS'Y	SUS316L / 316L SS etc.	
36	VENT FLANGE	SUS316 / 316 SS	
40	BASE	SS400 / Carbon Steel	
41	HOLDER	SS400 / Carbon Steel	
46A	BOLT	SUS316 / 316 SS	
46B	BOLT	CSCM435 / AISI 4137	
46C	BOLT	SUS304 / 304 SS	
46D	BOLT	S20C / AISI 1020	
46E	BOLT	SUS316 / 316 SS	
46F	BOLT	SUS304 / 304 SS	
46G	BOLT	SUS316 / 316 SS	
48	SET SCREW	SUS316 / 316 SS	
53A	SPRING WASHER	CSWRH / Carbon Steel	
53B	SPRING WASHER	SUS304 / 304 SS	
53C	SPRING WASHER	SWRH / Carbon Steel	
53D	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	
59A	PLUG	SUS316 / 316 SS	
59B	PLUG	SS400 / Carbon Steel	
59C	PLUG	SUS316 / 316 SS	
60	PIN	SUS316 / 316 SS	
61	DOUBLE JOINT	SUS316 / 316 SS	
64	SPACER	SUS316 / 316 SS	
66A	GASKET	CSUS316 / 316 SS+Grafoil	
66B	GASKET	T/#9007-LC / PTFE	
67	O-RING	PTFE	
70	MECHANICAL SEAL	SiC + Carbon	
78	GLAND	SUS316 / 316 SS	
84	COLLAR	SUS316 / 316 SS	
900	THERMOWELL	SUS316 / 316 SS	

Customer	: Evonik Corporation
PO#	: 4701013179/4701319034
Project	: ACA G600
Project#	: 4142. 00940
Evonik's Pump#	: P-3220/P-3220S
Requisition#	: C0078-010

(DA)
 B Added 1 Point (Aug. 21' 15) M. Morii
 C Revised 3 Points (Oct. 29' 15) M. Morii
 D Added 1 Point (Nov. 11' 15) M. Morii

APPROVED

R. Takeuchi

CHECKED

R. Matsumura

DRAWN

K. Nakazumi
Aug. 10 ' 15

P-32821



ESTIMATED PERFORMANCE CURVE

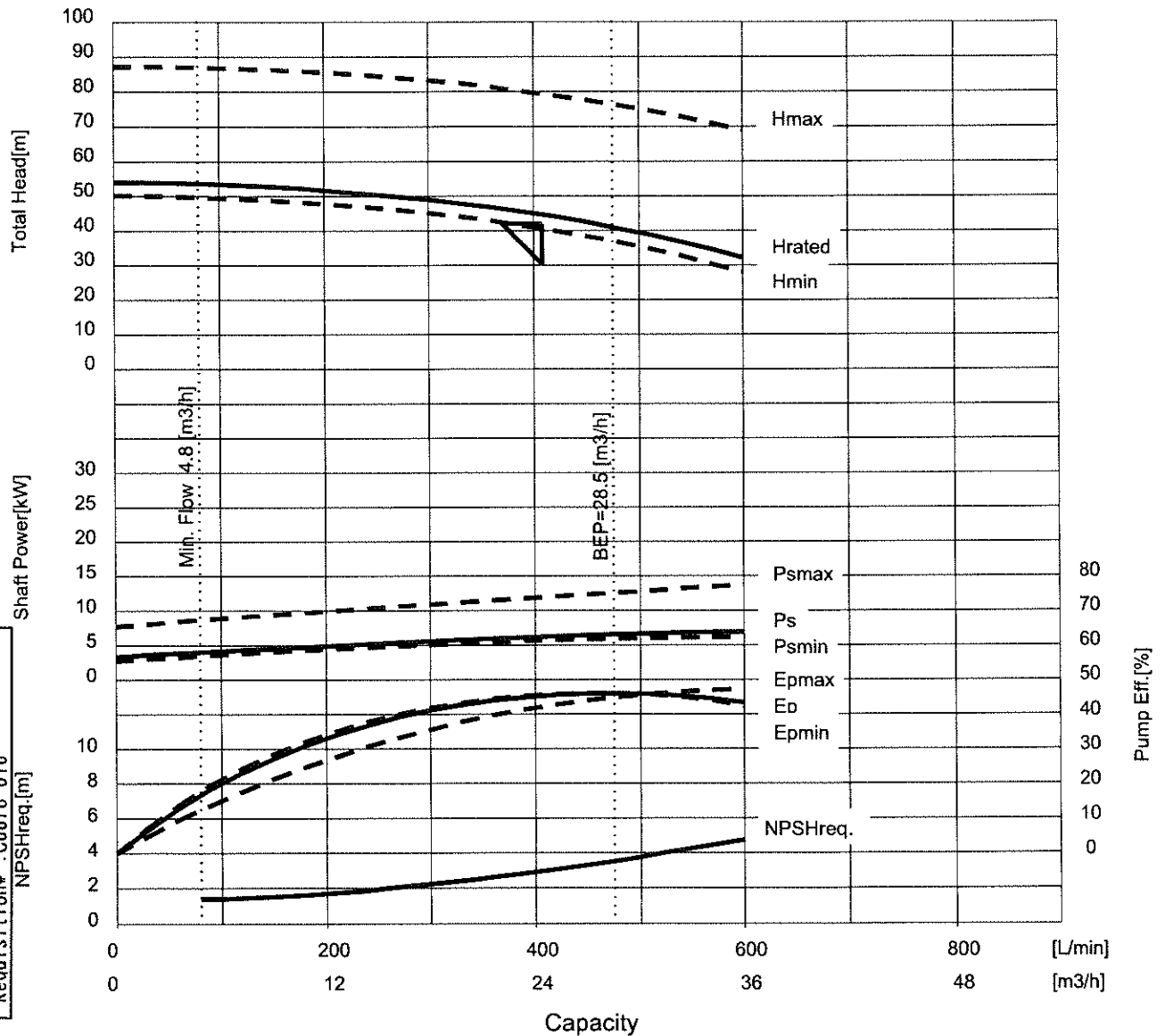
Date : Aug. 24, 2015
No : E18H0041-01
Dwg. No. : SFH-1380A

Item No. **P-3220 / P-3220S**
Model **DA61-317J4BM-0408T1V-A**

Item Name ****

Frequency 60 Hz
Voltage 460 V
Phase 3
Pole 2
Output 7.4 kW
Current 14.5 A

Total Head 42 m
Capacity 408 L/min 24.48 m³/h
Min.Flow 80 L/min 4.8 m³/h
Liquid Crude ACA
Temp. 80.54 degC
S.G. 0.96
NPSHavail. 3.52 m
Vis. 0.48 mPas
NPSHreq. 3 m



Customer : Evonik Corporation
PO# : 4701013179/4701319034
Project : ACA G600
Project# : 4142. 00940
Evonik's Pump# : P-3220/P-3220S
Requisition# : C0078-010

Remarks :

- Shut-off head : 53.9m
- 44.5m, 45.5%, 6.25kW, 3427rpm @ rated flow
- 36m³/hr, 7kW @ EOC
- 13.66kW @ EOC (max. dia.)
- Ns : 14.8, SSS : 7817
- Impeller Dia(mm):208(Max)/172(Rated)/166(Min)
- Output:9.92(hp)

C	2015.11.16	Revised 1 Point. M.Morii
B	2015.10.29	Revised 1 Point. M.Morii
REV.	Date	Description

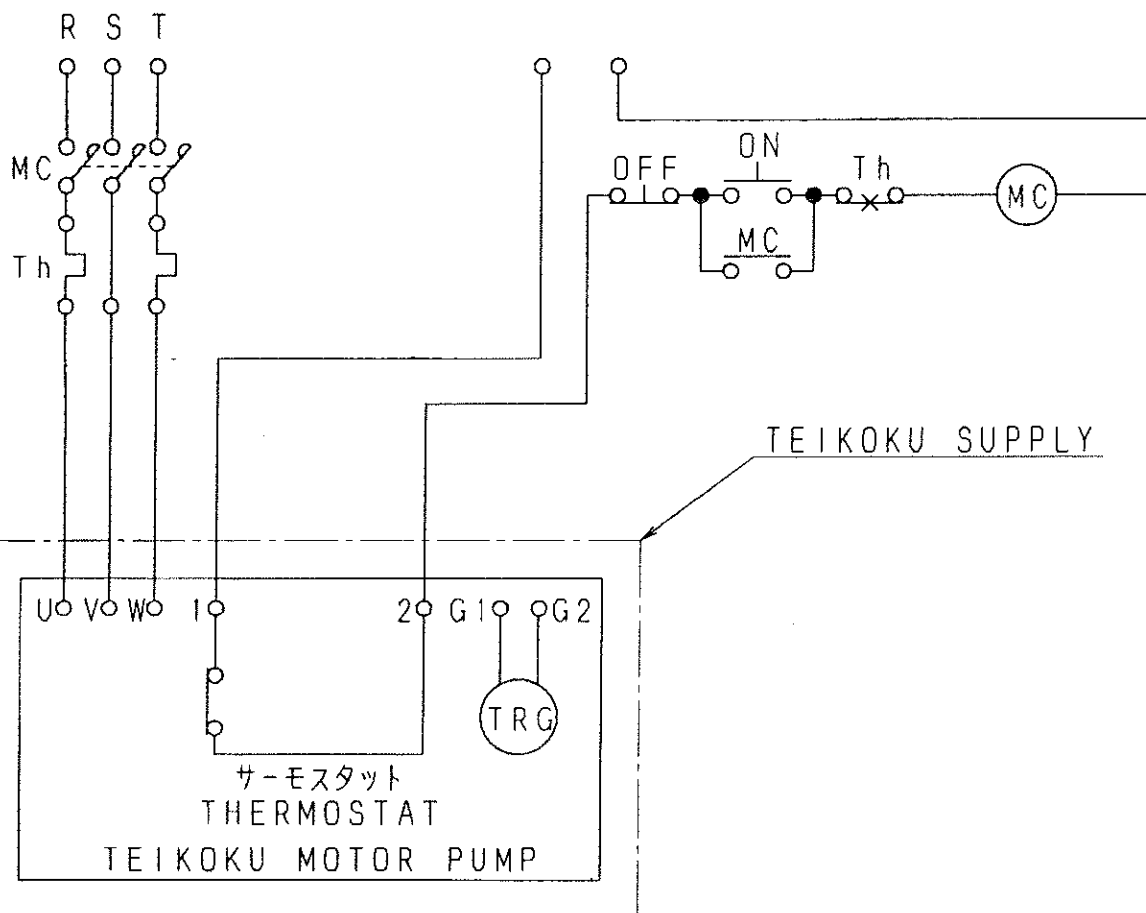
APPROVED BY	CHECKED BY	DRAWN BY
R.Takeuchi	R.Matsumura	M.Morii

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 AC250V-6.3A	150℃-CUT OFF AC230V-13A
b-接点 CONTACTOR	AC110V-10A DC24V-1.5A	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	テイクロータリーガード TEIKOKU ROTARY GUARDIAN

REVIEWS

B
Rewritten
Dec. 5, '01
Y. Takeuchi

C
Rewritten
Oct. 30, '07
Y. Iwasaki

Customer : Evonik Corporation
 PO# : 4701013179/4701319034
 Project : ACA G600
 Project# : 4142.00940
 Evonik's Pump# : P-3220/P-3220S
 Requisition# : C0078-010

APPROVED

M. Sakai

CHECKED

T. Takeuchi

DRAWN

Y. Kii
Jun. 10, '96

SCALE

FREE

DWG. TITLE

結線図

CONNECTION DIAGRAM

DWG. NO.



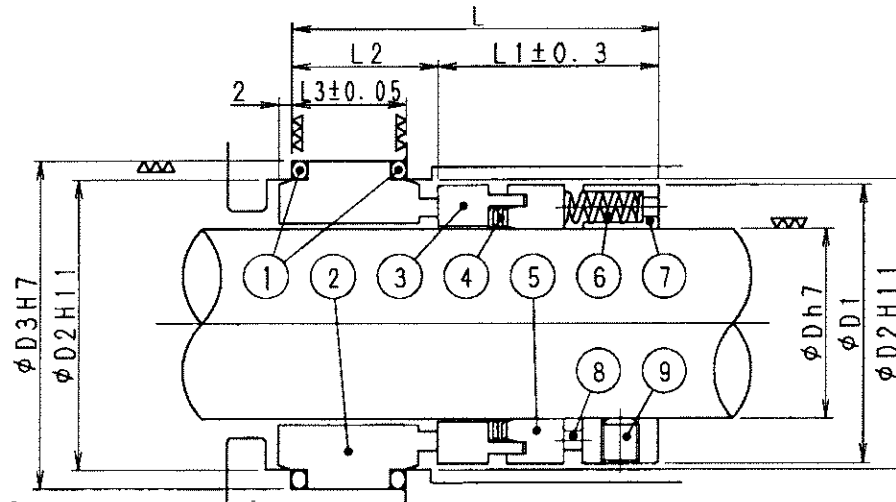
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TEIKOKU ELECTRIC MFG. CO., LTD.

4N-4415-01

C

4N-4024-09



G-No	D	D1	D2	D3	L	L1	L2	L3	G-No	D	D1	D2	D3	L	L1	L2	L3
1	20	34	36	42	58	35	23	18	16	50	66	70	76	64	39	25	20
2	22	36	38	44	58	35	23	18	17	52	68	72	78	65	40	25	20
3	24	38	40	46	58	35	23	18	18	53	69	73	79	65	40	25	20
4	25	39	41	47	58	35	23	18	19	55	71	75	81	65	40	25	20
5	28	42	44	50	58	35	23	18	20	58	76	83	89	69	41	28	22
6	30	44	46	52	58	35	23	18	21	60	78	85	91	69	41	28	22
7	32	46	48	54	58	35	23	18	22	62	80	87	93	69	41	28	22
8	33	47	49	55	58	35	23	18	23	63	81	88	94	69	41	28	22
9	35	49	51	57	58	35	23	18	24	65	83	90	96	69	41	28	22
10	38	54	58	64	63	38	25	20	25	68	86	93	99	71	41	30	24
11	40	56	60	66	63	38	25	20	26	70	90	95	101	72	42	30	24
12	42	58	62	68	63	38	25	20	27	75	95	104	110	72	42	30	24
13	43	59	63	69	63	38	25	20	28	80	100	109	115	73	42	31	25
14	45	61	65	71	63	38	25	20	29	90	110	119	125	76	45	31	25
15	48	64	68	74	63	38	25	20									

No.	NAME	NOTES
1	O リング O RING	
2	シール リング SEAL RING	
3	メーティング リング MATING RING ASS'Y	
4	V パッキン V-PACKING	
5	コンプレッション リング COMPRESSOIN RING	
6	コイル スプリング COIL SPRING	
7	カラー COLLAR	
8	ドライブ ピン DRIVE PIN	
9	セット スクリュー SET SCREW	

REVISIONS

B
Mar. 22 '01
G-29 Added
(N. Maruo)C
Aug. 19 '03
Revised
(K. Nakazumi)

Customer : Evonik Corporation
PO# : 4701013179/4701319034
Project : ACA G600
Project# : 4142. 00940
Evonik's Pump# : P-3220/P-3220S
Requisition# : C0078-010

APPROVED

M. Sakai

CHECKED

T. Takeuchi

DRAWN

R. Takeuchi
Feb. 2 '98

SCALE

FREE

DWG. TITLE メカニカル シール
MECHANICAL SEAL
TYPE: LIE

DWG. NO.

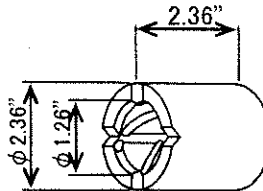
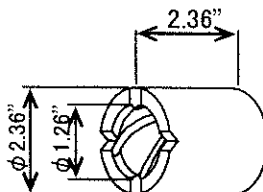
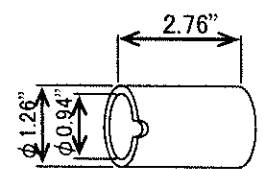
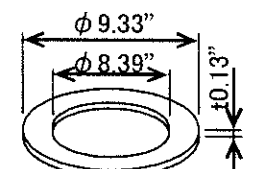
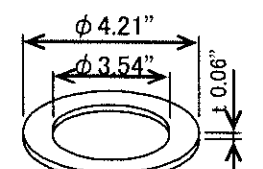
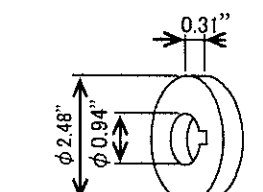
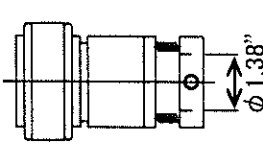
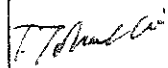


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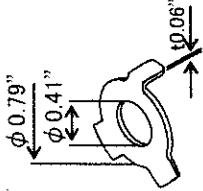
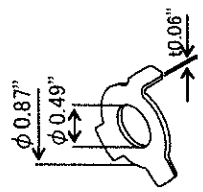
TEIKOKU ELECTRIC MFG. CO., LTD.

4N-4024-09 C

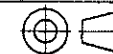
RECOMMENDED SPARE PARTS LIST

TYPE				SC-1112		1 2
DA-310-T						
No.	PARTS NAME	DIMENSION	MATERIAL	FOR 1SETS	REMARKS	
1	BEARING A (with spiral & straight grooves)		Carbon Graphite	1	#15A 60×32×60 (mm)	
2	BEARING B		Carbon Graphite	1	#15B 60×32×60 (mm)	
3	SHAFT SLEEVE		316 SS (SUS316) + Stellite	2	#17 32×24×70 (mm)	
4	GASKET		316 SS (SUS316) + Grafoil	1	#66A 237×213×3.2 (mm)	
5	GASKET		PTFE (T/#9007-LC)	2	#66B 107×90×1.5 (mm)	
6	THRUST COLLAR		316 SS (SUS316) + Stellite	2	#18 63×24×8 (mm)	
7	MECHANICAL SEAL		SiC + Carbon	1	#70 35 (mm)	
REV.		 株式会社 帝国電機製作所 TEIKOKU ELECTRIC MFG. CO., LTD.		APPROVED	CHECKED	DRAWN
					M. Fujikawa	M. Morii Oct. 29 '15

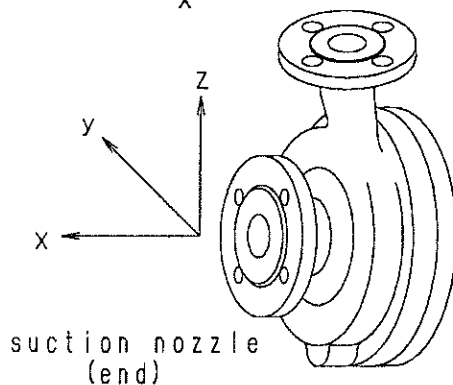
RECOMMENDED SPARE PARTS LIST

TYPE					SC-1112	2 2
No.	PARTS NAME	DIMENSION	MATERIAL	FOR 1SETS	REMARKS	
8	LOCK WASHER		316L SS (SUS316L)	1	#57A 20×10.5×1.5 (mm)	
9	LOCK WASHER		316L SS (SUS316L)	1	#57B 22×12.5×1.5 (mm)	
					Customer :Evonik Corporation PO# :4701013179/4701319034 Project :ACA G600 Project# :4142.00940 Evonik's Pump# :P-3220/P-3220S Requisition# :C0078-010	
REV.		 株式会社 帝国電機製作所 TEIKOKU ELECTRIC MFG. CO., LTD.		APPROVED	CHECKED	DRAWN
				_____	_____	_____

4N-6993-11



discharge nozzle
(top)



CASING

#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

Customer :Evonik Corporation
 PO# :4701013179/4701319034
 Project :ACA G600
 Project# :4142. 00940
 Evonik's Pump# :P-3220/P-3220S
 Requisition# :C0078-010

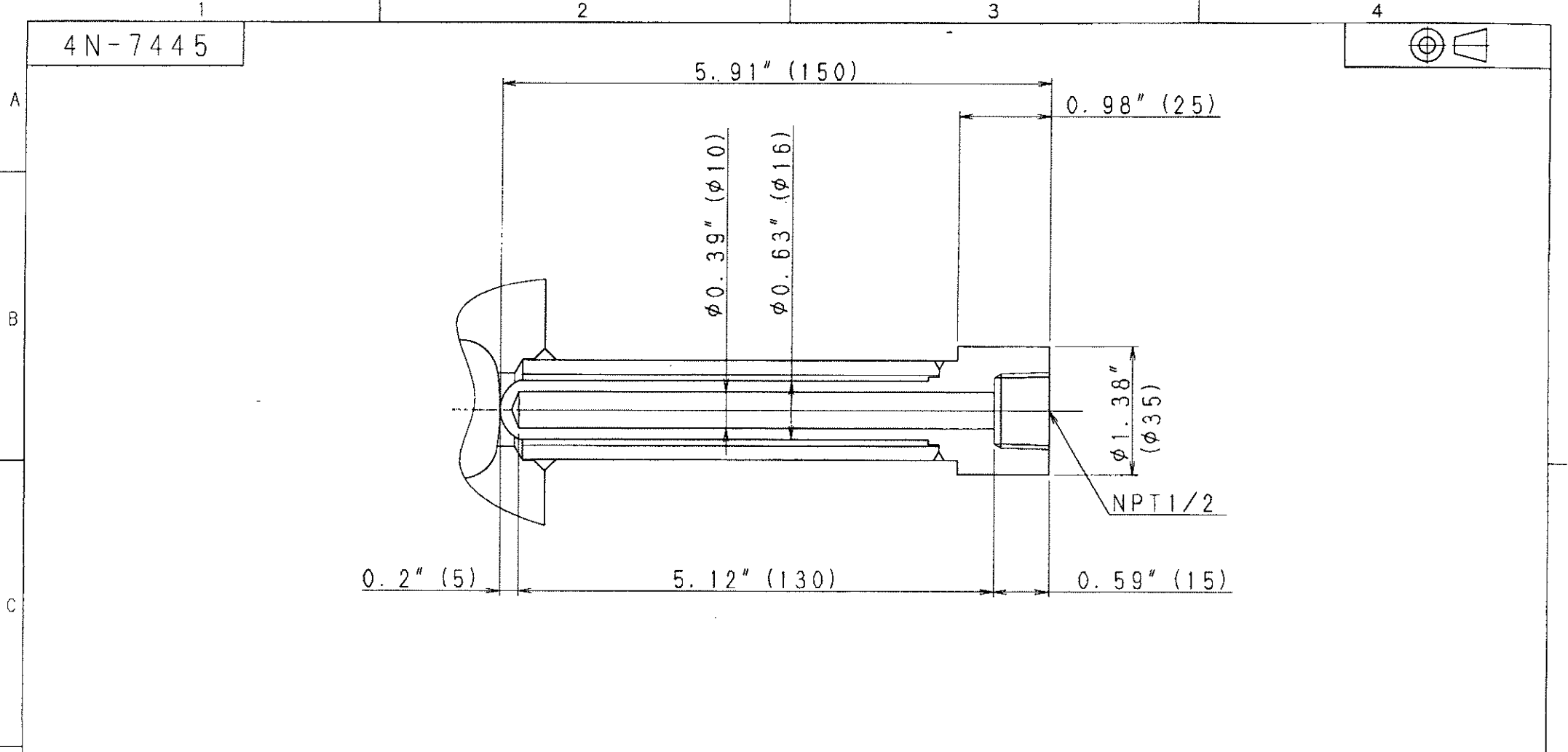
NOTE : F = force (N) M = moment (N-m)
 S = suction nozzle
 d = discharge nozzle

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

DQ1377

REVISIONS	B	C	D	E	APPROVED	CHECKED	DRAWN	SCALE	DWG. TITLE
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	T. Takeuchi	S. Kimura	Y. Shimizu Apr. 11'08	FREE	許容配管荷重 ALLOWABLE PIPING FORCES AND MOMENTS SI Units API610 (10th)
株式会社 帝国電機製作所 TEIKOKU ELECTRIC MFG. CO., LTD.									DWG. NO. 4N-6993-11

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FB1809A
FB1810A

REVISIONS		Customer :Evonik Corporation PO# :4701013179/4701319034 Project :ACA G600 Project# :4142. 00940 Evonik's Pump# :P-3220/P-3220S Requisition# :C0078-010	APPROVED	CHECKED	DRAWN	SCALE	DWG. TITLE
			<i>S. Takahashi</i>	<i>S. Takahashi</i>	K. Yamamoto	FREE	THERMOWELL
					Apr. 22 '10		
				株式会社 帝国電機製作所 TEIKOKU ELECTRIC MFG. CO., LTD.			DWG. NO. 4N-7445