0/C

CLIENT : **TEC / PT. PUPUK KALIMANTAN TIMUR**
PROJECT : **KALTIM-5 PROJECT**
JOB NO. : **10107 / BA096300 / 11-018-01**
ITEM NO. : **105-J**
SERVICE : **AMMONIA REFRIGERANT COMPRESSOR**
DOC. NO. : **K5-E3-105J-DW129 Rev.2**

COMPRESSOR ASSEMBLY DRAWINGS（105-J [LP]）

CLIENT
PT PUPUK KALIMANTAN TIMUR
PUPUK KALTIM

CONTRACTOR
CONSORTIUM IKPT & TOYO
IKPT Global Toyo CONSORTIUM

2500 MTPD AMMONIA - 3500 MTPD UREA
KALTIM-5 PROJECT

REQ. NO.	AXGB002
PO. NO.	BA096321-AXGB002
EQUIP. NO.	105-J

MITSUBISHI HEAVY INDUSTRIES COMPRESSOR CORPORATION

A1× 5 Sheets(A3 長尺縮小にて印刷)
A2× 1 Sheets(A3 長尺縮小にて印刷)
A3× - Sheets
A4× 3 Sheets Total 9 Sheets (Including Cover)

FINAL

PLAN RECORD

Please refer to next page.

ENGINEERING & DESIGN DIVISION ENG. DEPARTMENT
COMP. & TURBINE ENGINEERING SECTION

PM	*H. Fukui*
Approved	*K. Shimizu*
Checked	*S. Iwamoto*
Prepared	*H. Higuchi*

Copy to CUST. E
広品証 組立 品証T コタ計 PJ

Specified No. HBI-D01

Order	Item	Date Drawn
353N73	MCW411	Dec. 11, 2012

Drawing No.
790-44022

Rev. 0 A
両面ｺﾋﾟｰ

Date Issued C63A

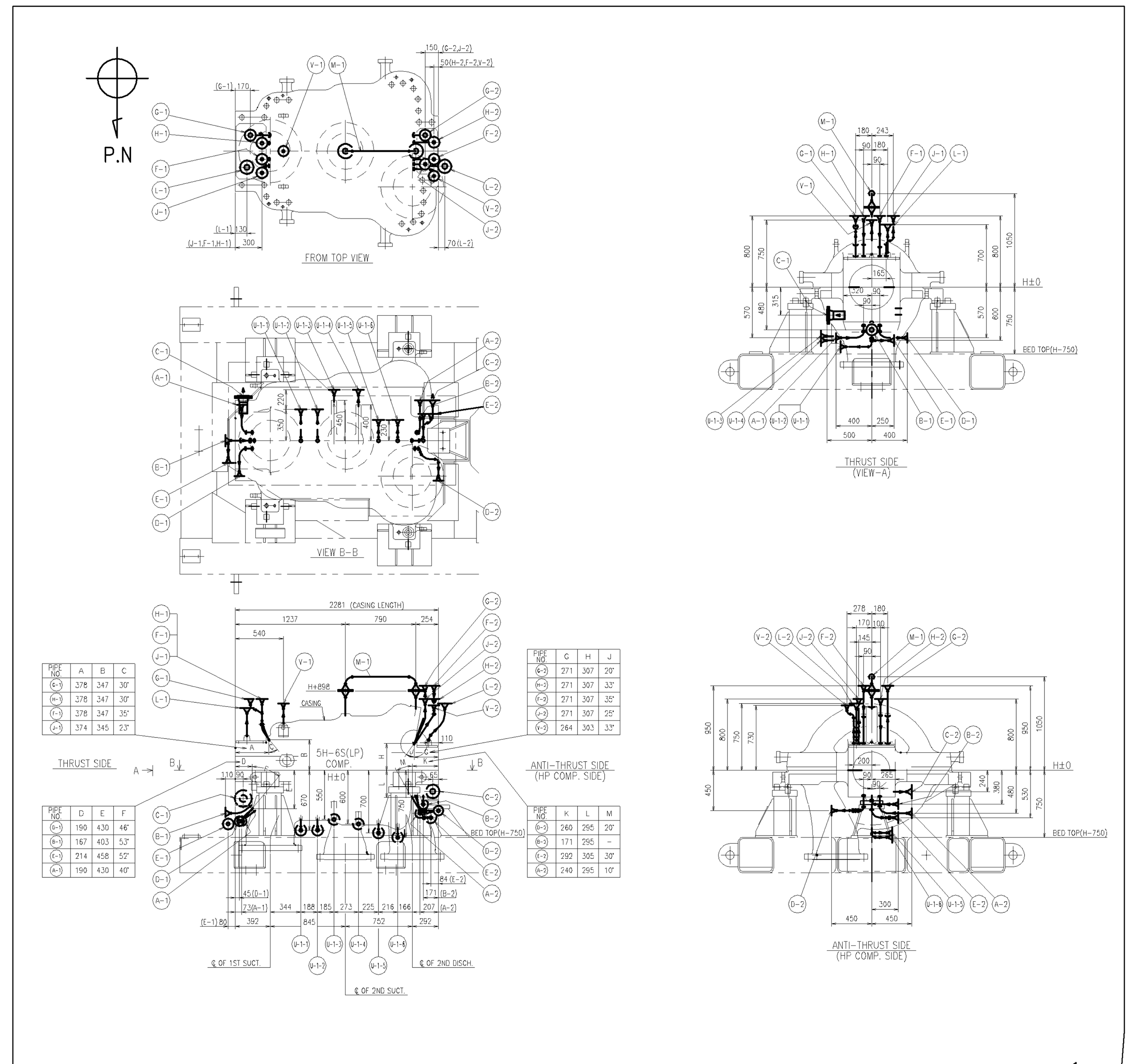
REVISION RECORD SHEET

Rev.	Date	Prepared	Checked	Approved	PM	Sheet	Revision Record
0	Dec.11,2012	-	-	-	-	All	Original Issue.
A	Jan.17,2014	H.H	S.I	K.S	-	Cover	Issued as final.

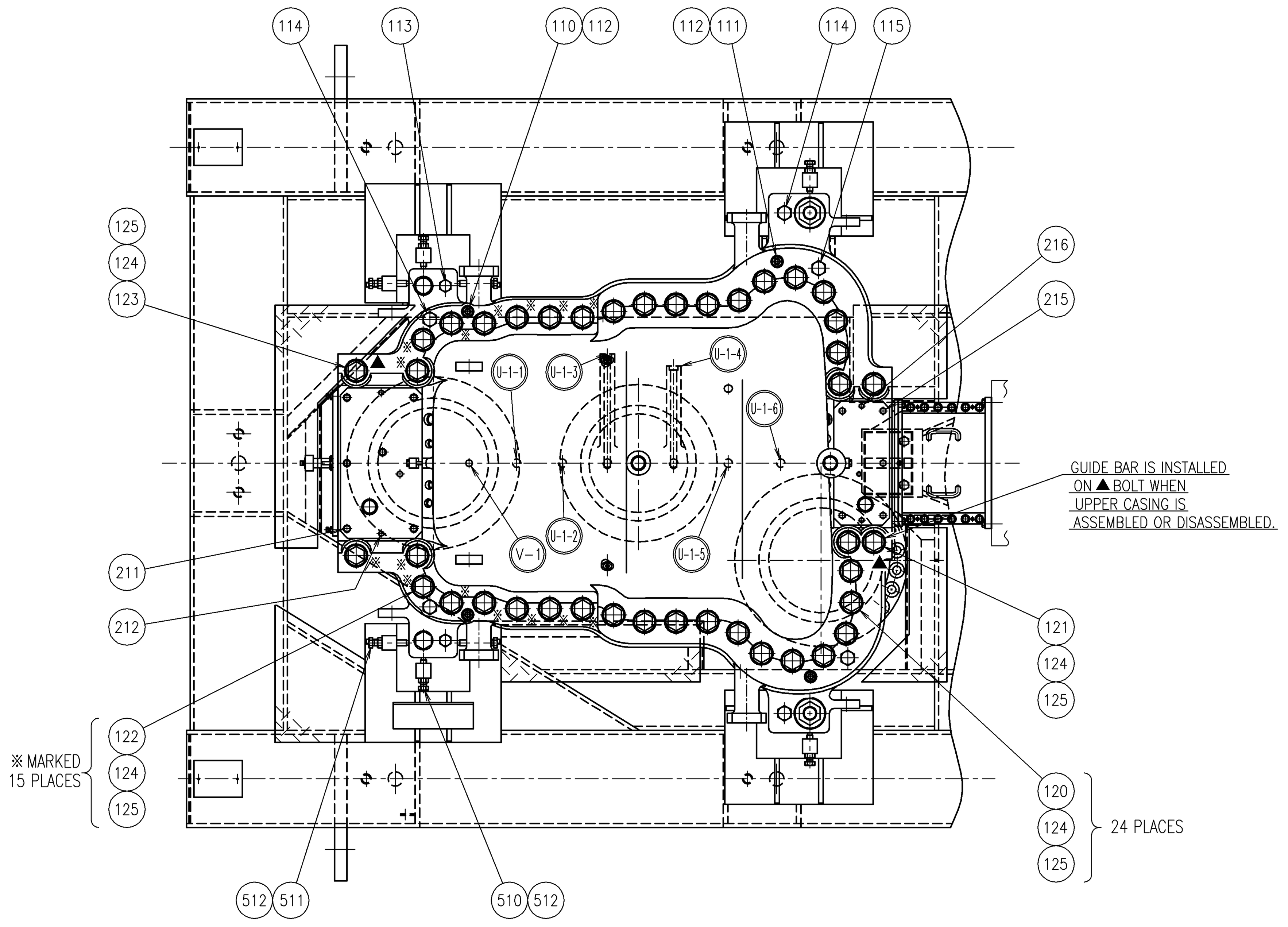
CONTENTS

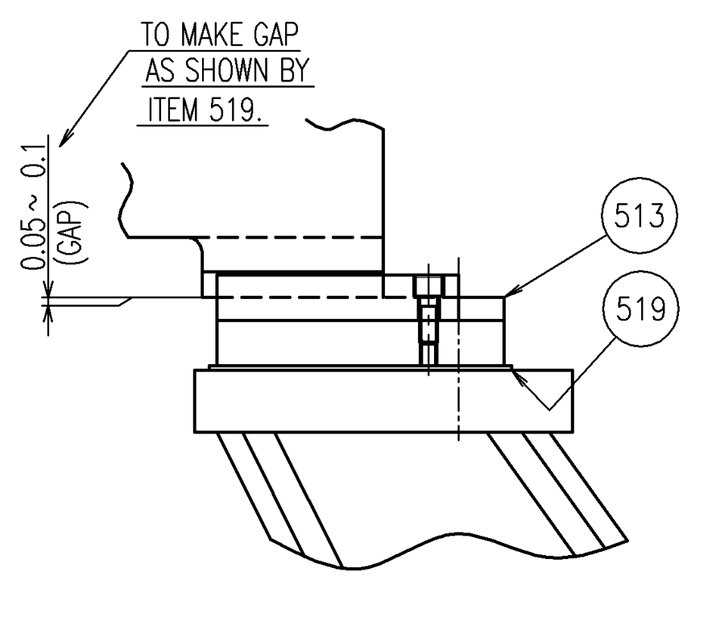
PIPING

PIPE NO. TH.SIDE	PIPE NO. ATH.SIDE	PIPE NAME	REMARKS
A−1	A−2	SEPARATION GAS SUPPLY	
B−1		L.O. SUPPLY	
	B−2		
C−1		L.O. DRAIN	
	C−2		
D−1	D−2	SECONDARY SEAL GAS DRAIN	
E−1	E−2	PRIMARY SEAL GAS DRAIN	
F−1	F−2	PRIMARY SEAL GAS SUPPLY	
G−1	G−2	SECONDARY SEAL GAS VENT	
H−1	H−2	SECONDARY SEAL GAS SUPPLY	
J−1	J−2	PRIMARY SEAL GAS VENT	
L−1	L−2	BEARING VENT	
M−1		BALANCE CONNECTOR	
U−1		CASING DRAIN	
V−1	V−2	PRESSURE DETECTION	

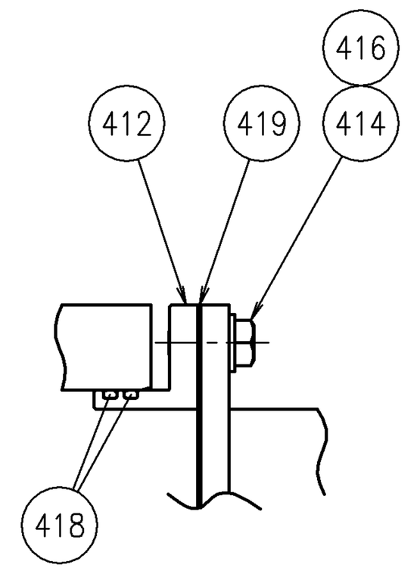


OUT SIDE VIEW INCLUDING PIPING
(FOR PIPING DETAIL REFER TO 790−19528)





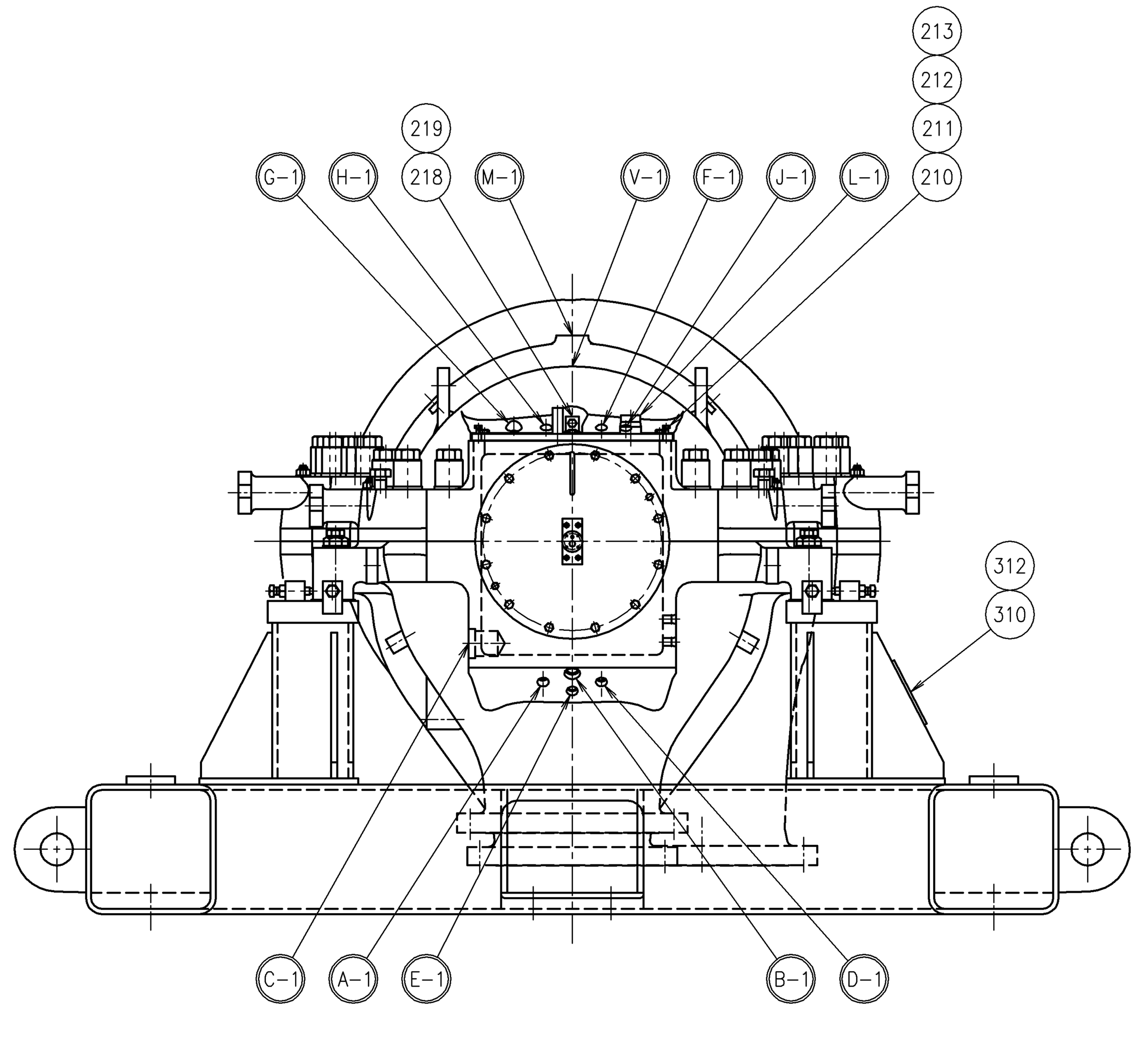
SECTION C C



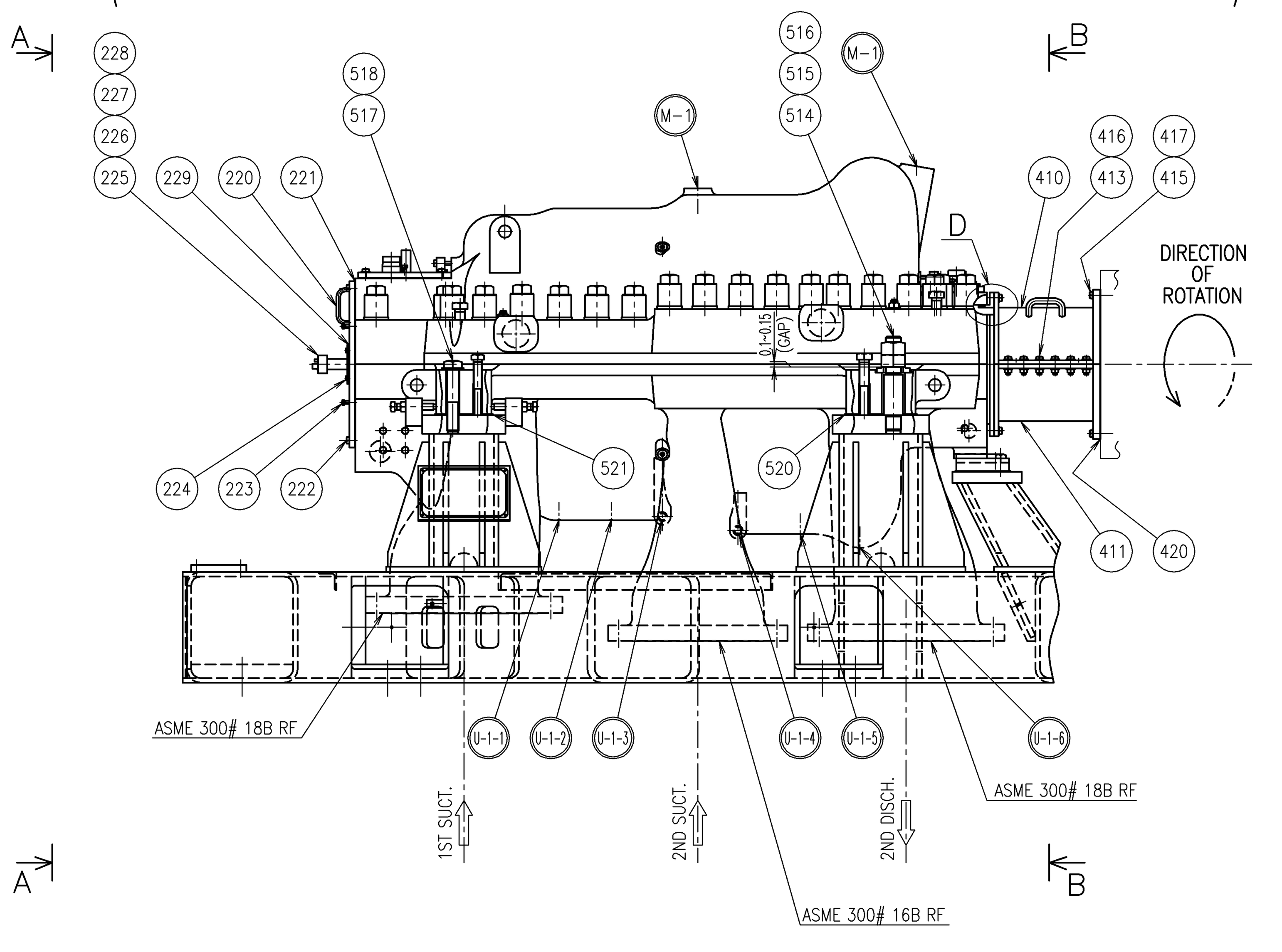
DETAIL D

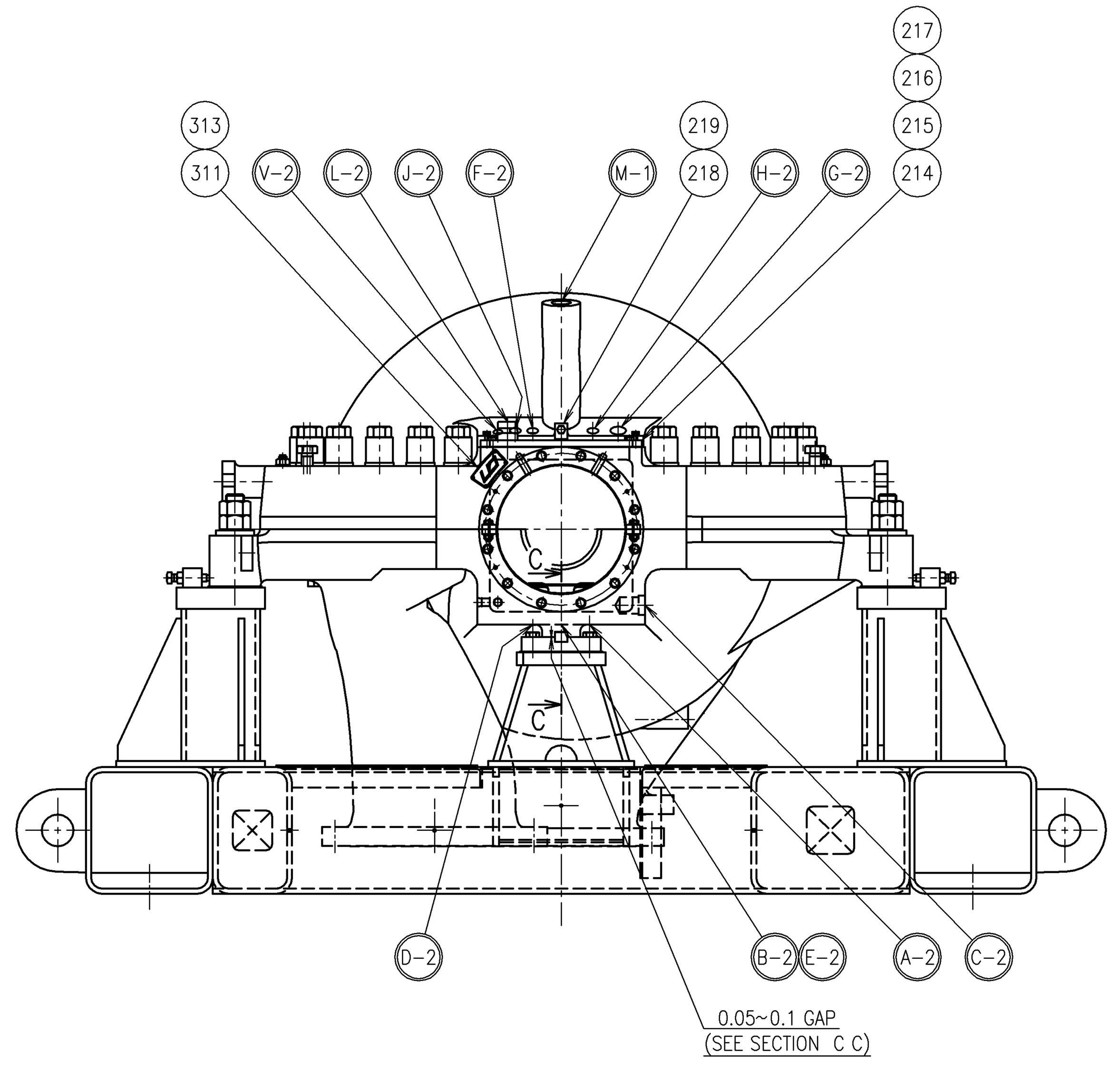
FREE END

7H−6C (HP) COMP. SIDE



VIEW A A





SECTION B B

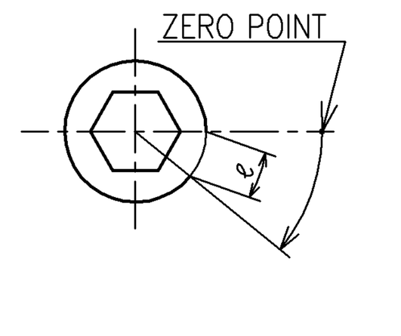
REFERENCE DWG.NO.	
INTERNAL ASSEMBLY	790−19524
ROTOR ASSEMBLY	790−28423
BEARING & SEAL ASSEMBLY DWG.(1/2)	790−19525
BEARING & SEAL ASSEMBLY DWG.(2/2)	790−19526
COUPLING ASSEMBLY	790−44025
PIPING ASS'Y DWG. AROUND 5H−6S(LP) COMPRESSOR	790−19528

TIGHTENING PROCEDURE FOR CASING STUD BOLTS AND CAP NUTS

(1) PROVISIONAL TIGHTENING
TIGHTEN THE CAP NUTS WITH TORQUE WRENCH.
NECESSARY TORQUE "M" IS SHOWN ON THE TABLE BELOW.
AFTER COMPLETION OF THE PROVISIONAL TIGHTENING, ZERO POINT SHALL BE MARKED.

(2) AFTER THE PROVISIONAL TIGHTENING, TIGHTEN THE CAP NUTS
FURTHER ACCORDING TO THE PERIPHERAL ARC LENGTH "ℓ" SHOWN ON THE TABLE BELOW.

ITEM NO. OF CAP NUTS (ITEM NO. OF STUD BOLTS)	M (kgf·m)	ℓ (mm)
124 (120,121)	31^{+2}_{0}	96^{+5}_{0}
124 (122,123)	31^{+2}_{0}	81^{+5}_{0}



M: TORQUE FOR THE PROVISIONAL TIGHTENING
ℓ: PERIPHERAL ARC LENGTH OF NUT FOR TIGHTENING

ITEM	PARTS NAME	QUANTITY	WEIGHT (Kg) PER PIECE	WEIGHT (Kg) TOTAL	PARTS NUMBER	REMARKS
521	SHIM T=6.6	2SET	0.8	1.6	1122−69	
520	SHIM T=6.6	2SET	1.4	2.8	1122−68	
519	SHIM (A−F/1SET)	1SET		2.5	1122−66	
518	WASHER M42	2	0.2	0.4	1122−59	
517	HEX BOLT M42*230	2	3.2	6.4	1122−58	
516	HEX NUT−1 M56	4	1.3	5.2	1122−57	PROVIDED BY ORDER 353N78 (items 510–521)
515	WASHER M56	2	1.1	2.2	1122−56	
514	TAP BOLT M56*340	2	7.9	15.8	1122−55	
513	LINER L=160	1		19.5	1122−51	
512	HEX NUT−1 M24	8	0.1	0.8	1122−42	
511	ADJ.BOLT M24*150	4	0.7	2.8	1122−39	
510	ADJ.BOLT M24*120	4	0.6	2.4	1122−38	
420	PACKING A=540 B=460 P=500	1		—	1451−84	
419	PACKING A=520 B=410 P=480	1		—	1451−83	
418	"O"RING D5.3*405(ID)	2		—	1451−81	
417	PLAIN WASHER 16	12		0.1	1451−76	
416	PLAIN WASHER 16	36		0.4	1451−75	
415	HEX BOLT M16*50	12		1.0	1451−62	
414	HEX BOLT M16*35	12		1.0	1451−61	
413	BOLT & NUT M16*55L	12		2.0	1451−51	
412	SLEEVE	1		13.0	1451−14	
411	GUARD BOTTOM	1		7.0	1451−13	
410	GUARD TOP	1		7.0	1451−11	
313	DRIVE SCREW 3*8	4		—	1371−75	
312	DRIVE SCREW 3*8	4		—	1371−71	
311	DIRECTION PLATE	1		—	1371−32	
310	NAME PLATE	1		—	1371−11	
229	GASKET (EARTH BRUSH)	1		—	1341−84	
228	BRUSH INSERT SCREW	2		—	1341−83	
227	BRUSH INSERT,REPLACEABLE	1		—	1341−82	
226	FLANGE	1		—	1341−81	
225	EARTH BRUSH	1		—	1341−80	
224	HB−BOLT HEX SOCK M8X16	4		0.1	1341−74	
223	JACK BOLT M12X40	2		0.1	1341−73	
222	HEX BOLT−SFIN M16X40	12	0.1	1.2	1341−72	
221	GASKET (END)	1		—	1341−71	
220	COVER (END)	1		48.2	1341−70	
219	HEX BOLT−SFIN M16X60	2	0.1	0.2	1341−31	
218	ADAPTER	2	0.4	0.8	1341−30	
217	GASKET (ANTI−THR.)	1		—	1341−24	
216	JACK BOLT M12X40	2		0.1	1341−22	
215	HEX BOLT−SFIN M16X40	5	0.1	0.5	1341−21	
214	COVER (ANTI−THR.)	1		20.2	1341−20	
213	GASKET (THRUST)	1		—	1341−14	
212	JACK BOLT M12X40	2		0.1	1341−12	
211	HEX BOLT−SFIN M16X40	5	0.1	0.5	1341−11	
210	COVER (THRUST)	1		35.9	1341−10	
125	WASHER ST 2ND M56	41	0.3	12.3	1112−53	
124	CAP NUT ST−22 M56*3	41	3.2	131.2	1112−32	
123	STUD ST−23 M56*3*324	1		5.6	1112−06	
122	STUD ST−23 M56*3*324	15	5.6	84.0	1112−05	
121	STUD ST−23 M56*3*364	1		6.2	1112−04	
120	STUD ST−23 M56*3*364	24	6.2	148.8	1112−03	
115	JACK BOLT M36*240	2	1.9	3.8	1111−44	
114	JACK BOLT M36*200	4	1.7	6.8	1111−43	
113	JACK BOLT M30*200	2	1.1	2.2	1111−41	
112	PL−WASHER 24	4		—	1111−18	
111	TPR PIN/NUT−A30*150 M=115	2	1.3	2.6	1111−17	
110	TPR PIN/NUT−A30*150 M=75	2	1.2	2.4	1111−16	

SPARE	WORKING	MARK	DESCRIPTION	MATERIAL	TEST PIECE	QUANTITY PER SET WORKING	QUANTITY PER SET SPARE	WORKS	WEIGHT(kg) PER PIECE	WEIGHT(kg) TOTAL	REMARKS
1 SET											

THIRD ANGLE PROJECTION

PLAN RECORD — THIS DRAWING REFERENCED TO: ORDER / ITEM / DRAWING NO.

ENGINEERING DEPARTMENT
COMPRESSOR & TURBINE ENGINEERING SECTION

ORDER: 353N73 — ITEM: MCW411
CUSTOMER: TEC/KALTIM−5 — APPROVED: O.I — CHECKED: Y.K
TEL 4512 — DATE: '12.11.30 — PREPARED: T.O

PM:
APPROVED: O.Isumi
CHECKED: Y.KOHNO
PREPARED: T.OUTA
DRAWN: K.OKANO
SCALE: 1/15
▽▽▽▽0.8S ▽▽▽6.3S ▽▽25S ▽100S

TEC/KALTIM−5

105−J AMMONIA REFRIGERANT COMPRESSOR 5H−6S (LP) OUTLINE ASSEMBLY DRAWING

SPECIFIED NO. 9000

DRAWING NO. 790−19529

MITSUBISHI HEAVY INDUSTRIES COMPRESSOR CORPORATION

製図日付	'12.11.29	マイクロ	初 回	改正回次	図種コード	
出図日付		日 付			類別コード	1. 2. 3. 4. 5.

配布先	部数
CUST.	
組立	2
鋳鍛	1
機生管	1
広品証	1
Pサ部	A3 RHx1 左とじ 折
コタ設	A3 RHx1 左とじ 折
控	
出 図 先	

職制コード
要求 NO.

DRAWING NO. 790−19529

図中に指示なき場合はこの表による

削り加工の普通許容差 寸法の区分	1 級
0.5以上 6以下	±0.1
6をこえ 30以下	±0.2
30 〃 120 〃	±0.3
120 〃 400 〃	±0.5
400 〃 1000 〃	±0.8
1000〃 2000 〃	±1.2
2000〃 4000 〃	±2.0
4000〃 8000 〃	±2.0
8000〃 16000 〃	±2.5

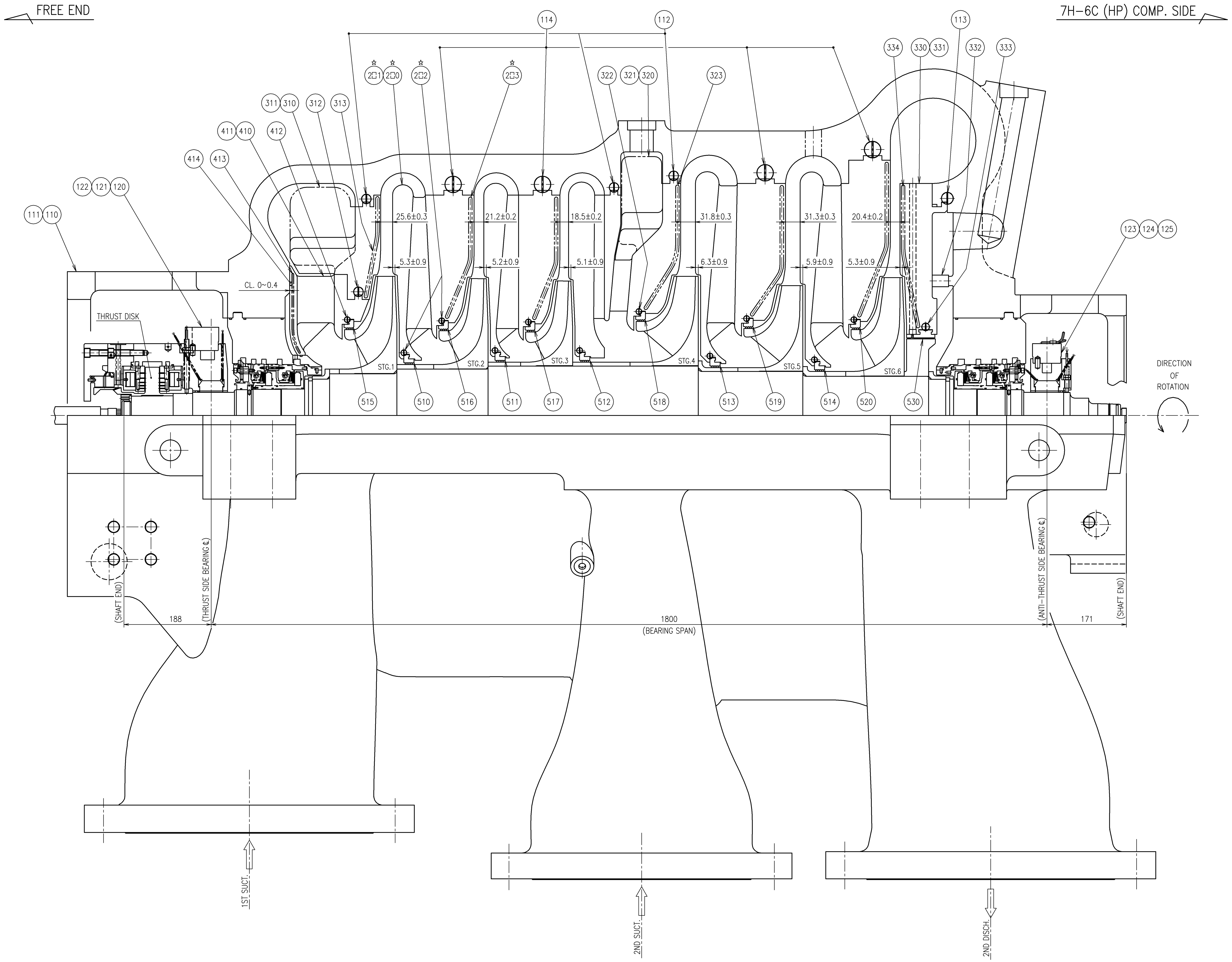
一般板金加工の普通許容差 寸法の区分	—
0.5以上 6以下	±0.2
6をこえ 30以下	±0.5
30 〃 120 〃	±0.8
120 〃 315 〃	±1.2
315 〃 1000 〃	±2.0
1000〃 2000 〃	±3.0
2000〃 4000 〃	±4.0
4000〃 8000 〃	±5.0
8000〃 16000 〃	±6.0

溶接構造物の普通許容差 寸法の区分	—
0.5以上 120以下	±1.5
120をこえ 315以下	±2.0
315 〃 1000 〃	±3.0
1000〃 2000 〃	±5.0
2000〃 4000 〃	±7.0
4000〃 8000 〃	±10.0
8000〃 16000 〃	±15.0

Auto CAD

THIRD ANGLE PROJECTION	HYDRAULIC TEST PRESS Mpa	PLAN RECORD
		THIS DRAWING REFERENCED TO: ORDER / ITEM / DRAWING NO.

NOTE☆
□ : REFER TO ITEM NO. SHOWN ON PARTS LIST.
EXAMPLE : 2□0 REFERS TO ITEM NO. 210,220,230...



ITEM	PARTS NAME	QUANTITY	WEIGHT (Kg) PER PIECE	WEIGHT (Kg) TOTAL	PARTS NUMBER	REMARKS
530	BALANCE PISTON LABY.	1			2461-11	
520	LABY.-IMP. STG.6	1			2411-36	
519	LABY.-IMP. STG.5	1			2411-35	
518	LABY.-IMP. STG.4	1			2411-34	
517	LABY.-IMP. STG.3	1			2411-33	
516	LABY.-IMP. STG.2	1			2411-32	
515	LABY.-IMP. STG.1	1			2411-31	
514	LABY.-SHAFT STG.5-6	1			2411-15	
513	LABY.-SHAFT STG.4-5	1			2411-14	
512	LABY.-SHAFT STG.3-4	1			2411-13	
511	LABY.-SHAFT STG.2-3	1			2411-12	
510	LABY.-SHAFT STG.1-2	1			2411-11	
414	O"RING CORD 4C 5.7*L950	2			2311-84	
413	O"RING CORD 4C 3.5*L220	2			2311-83	
412	LOCKING SCREW HM M6	1			2311-61	
411	INLET GUIDE (1S) BOTTOM	1		57.0	2311-20	
410	INLET GUIDE (1S) TOP	1		57.0	2311-10	
334	O"RING CORD 4C 5.7*L350	2			2221-83	
333	LOCKING SCREW HM M8	1			2221-61	
332	SPACER D=25 L=35	16			2221-41	
331	DISCHARGE WALL (BOTTOM)	1		190.0	2221-20	
330	DISCHARGE WALL (TOP)	1		190.0	2221-10	
323	O"RING CORD 4C 5.7*L330	2			2212-83	
322	LOCKING SCREW HM M6	1			2212-61	
321	INLET WALL (2S) BOTTOM	1		158.0	2212-20	
320	INLET WALL (2S) TOP	1		216.0	2212-10	
313	O"RING CORD 4C 5.7*L270	2			2211-83	
312	LOCKING SCREW M10*18	2			2211-61	
311	INLET WALL (1S) BOTTOM	1		100.0	2211-20	
310	INLET WALL (1S) TOP	1		145.0	2211-10	
253	O"RING CORD 4C D5.7*370L	2			2115-81	
252	LOCK SCREWHM M6	2			2115-61	
251	DIAPHRAGM 5-6 (BOTTOM)	1		426.0	2115-20	
250	DIAPHRAGM 5-6 (TOP)	1		426.0	2115-10	
243	O"RING CORD 4C D5.7*330L	2			2114-81	
242	LOCK SCREWHM M6	2			2114-61	
241	DIAPHRAGM 4-5 (BOTTOM)	1		383.0	2114-20	
240	DIAPHRAGM 4-5 (TOP)	1		383.0	2114-10	
232	LOCK SCREWHM M6	1			2113-61	
231	DIAPHRAGM 3-4 (BOTTOM)	1		221.0	2113-20	
230	DIAPHRAGM 3-4 (TOP)	1		221.0	2113-10	
223	O"RING CORD 4C D5.7*300L	2			2112-81	
222	LOCK SCREWHM M6	2			2112-61	
221	DIAPHRAGM 2-3 (BOTTOM)	1		320.0	2112-20	
220	DIAPHRAGM 2-3 (TOP)	1		320.0	2112-10	
213	O"RING CORD 4C D5.7*300L	2			2111-81	
212	LOCK SCREWHM M6	2			2111-61	
211	DIAPHRAGM 1-2 (BOTTOM)	1		312.0	2111-20	
210	DIAPHRAGM 1-2 (TOP)	1		312.0	2111-10	
125	SPR.LK.WSHR. NO.2 30	2		0.2	1121-24	
124	BOLT HEX SOCK M30X120	2		2.0	1121-23	
123	BEARING CAP NON-THRUST	1		10.0	1121-21	
122	SPR.LK.WSHR. NO.2 30	2		0.2	1121-14	
121	BOLT HEX SOCK M30X140	2		2.2	1121-13	
120	BEARING CAP THRUST	1		20.0	1121-11	
114	SS-SET SCREW M20*35	8			1111-33	
113	SS-SET SCREW M10*18	2			1111-32	
112	SS-SET SCREW M10*18	6			1111-31	
111	CASING (LOWER)	1		4900.0	1111-12	
110	CASING (UPPER)	1		3650.0	1111-11	

A1 広製共98(2)

NOTE
1.ALL CLEARANCES ARE MEASURED ON THE HORIZONTAL SPLIT SURFACE.
2.AXIAL DIMENSIONS ARE MEASURED WHEN THE THRUST DISC IS IN THE MIDDLE OF THE THRUST BEARING CLEARANCE.
3.LOCKING SCREWS ARE SET ON THE HORIZONTAL SPLIT SURFACE OF UPPER CASING AND/OR DIAPHRAGMS,INLET GUIDE,INLET WALL AND DISCHARGE WALL.
O-RING CORDS ARE SET ON THE HORIZONTAL SPLIT SURFACE OF DIAPHRAGMS,INLET GUIDE,INLET WALL AND DISCHARGE WALL.

IMPELLER,SHAFT AND BALANCE PISTON LABYRINTH CLEARANCES DETAIL (SEE TABLE).

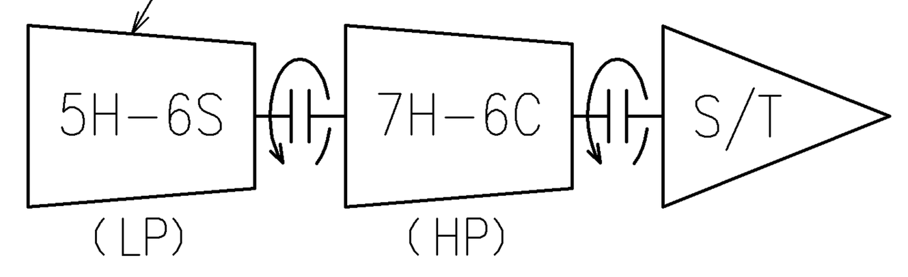
CLEARANCE TABLE FOR INITIAL ASSEMBLY

IMP.LABY. STG.	DIA. CLEARANCE (mm)	SHAFT.LABY. STG.	DIA. CLEARANCE (mm)
1	$0.7^{+0.2}_{0}$	1-2	$0.6^{+0.2}_{0}$
2		2-3	
3		3-4	
4		4-5	
5		5-6	$0.5^{+0.2}_{0}$
6			
BALANCE PISTON	$0.6^{+0.2}_{0}$		

NOTE
AFTER SHOP MECHANICAL RUNNING TEST CLEARANCES ADDED $^{+0.4}_{0}$ TO THE ABOVE VALUES ARE ACCEPTABLE.

REFERENCE DRAWING NO.	
ROTOR ASSEMBLY	790-28423
BEARING & SEAL ASSEMBLY DWG. (1/2)	790-19525
BEARING & SEAL ASSEMBLY DWG. (2/2)	790-19526
COUPLING ASSEMBLY	790-44025
COMP. OUTLINE ASSEMBLY	790-19529

THIS COMP. IS SHOWN



DRAWING NO. 790-19524

Auto CAD

SPARE	WORKING	MARK	DESCRIPTION	MATERIAL	TEST PIECE	QUANTITY PER WORKING	QUANTITY PER SPARE	WORKS	WEIGHT(kg) PER PIECE	WEIGHT(kg) TOTAL	REMARKS
1 SET											

ORDER: 353N73 ITEM: MCW411
CUSTOMER: TEC/KALTIM-5 CHECKED: Y.K APPROVED: O.I
DATE: '12.10.15 PREPARED: T.O TEL 4512

ENGINEERING DEPARTMENT
COMPRESSOR & TURBINE ENGINEERING SECTION

PM	
APPROVED	O.Isumi
CHECKED	Y.KOHNO
PREPARED	T.OUTA
DRAWN	K.OKANO
SCALE	1/4

▽▽▽▽0.8S ▽▽▽6.3S ▽▽25S ▽100S

TEC/KALTIM-5

105-J AMMONIA REFRIGERANT COMPRESSOR 5H-6S (LP) INTERNAL ASSEMBLY DRAWING

SPECIFIED NO. 2000
DRAWING NO. 790-19524

MITSUBISHI HEAVY INDUSTRIES COMPRESSOR CORPORATION

製図日付	'12.09.26	マイクロ	初 回	改正回次	図種コード	
出図日付		日 付			類別コード	1. 2. 3. 4. 5.

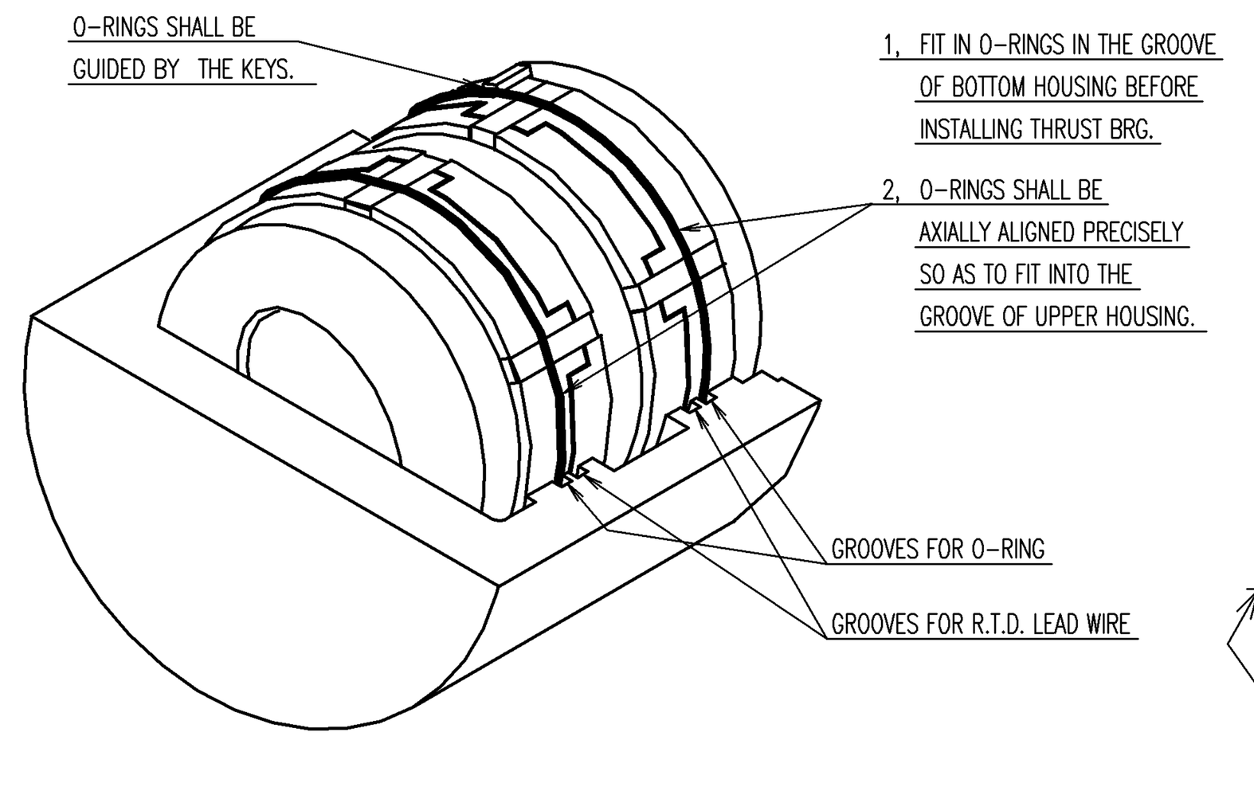
配布先	部数
CUST	
組立	4
機械	1
鋳鍛	1
機生管	1
機品証	1
Pサ部	A3 RHx1
コタ設	A3 RHx1
控	
出図先	

職制コード

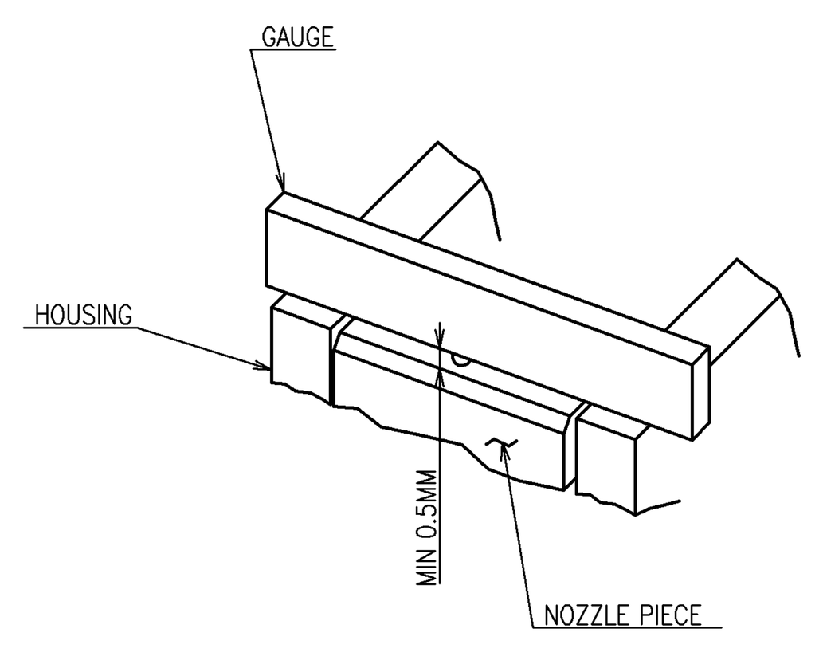
要求 NO.

129-5/

INSTALLATION PROCEDURE OF O-RINGS FOR THRUST BEARING



1. FIT IN O-RINGS IN THE GROOVE OF BOTTOM HOUSING BEFORE INSTALLING THRUST BRG.
2. O-RINGS SHALL BE AXIALLY ALIGNED PRECISELY SO AS TO FIT INTO THE GROOVE OF UPPER HOUSING.



ITEM	PARTS NAME	PARTS NUMBER	QUANTITY	PER PIECE WEIGHT (Kg)	TOTAL WEIGHT (Kg)	REMARKS
60	O-RING	4711-88	1		0.1	
59	O-RING	4711-87	1		0.1	
58	CONICAL SPR.WSHR 2ND 6	4711-85	5		0.1	
57	BOLT HEX SOCK M6X35	4711-84	5		0.1	
56	O"RING D3.5XD211.5	4711-83	1		0.1	
55	SEPARATION LABYRINTH	4711-81	1		1.5	
54	O-RING	4711-79	1		0.1	
53	POLYMER SEAL	4711-78	1		0.1	
52	O-RING	4711-77	1		0.1	
51	O-RING	4711-76	1		0.1	
50	O-RING	4711-75	1		0.1	
49	O-RING	4711-74	1		0.1	
48	POLYMER SEAL	4711-73	1		0.1	
47	TOLERANCE RING	4711-72	2		0.1	
46	GAS SEAL ASSEMBLY	4711-71	1		26.8	
45	O"RING D3.5XD246.4	4711-64	1		0.1	
44	O"RING D3.5XD401.6	4711-63	3		0.1	
43	SPRING PIN D7X20	4711-62	1		0.1	
42	SEAL HOUSING HOLDER	4711-61	1		97.0	
41	O"RING D3.5XD197.9	4711-54	1		0.1	
40	SPRING PIN D5X10	4711-53	1		0.1	
39	SHAFT SEAL LABYRINTH	4711-51	1		0.8	
38	O"RING D3.5XD29.1	4711-46	4		0.1	
37	JOINT D36XL94	4711-44	1		0.4	
36	JOINT D36XL67	4711-43	1		0.3	
35	SPRING PIN D3X6	4711-13	1		0.1	
34	RETAINING RING	4711-12	1		1.6	
33	STOP RING	4711-11	1		0.9	
32						
31						
30	O"RING D3.5XD159	4111-82	2		0.1	
29	O/H DAMPER RING	4111-81	1		4.2	
28	SPRING PIN D5X10	4111-74	1		0.1	
27	CONICAL.SPR.WSHR 2ND 12	4111-73	8		0.1	
26	BOLT HEX SOCK M12X50	4111-72	8		0.6	
25	O/H DAMPER HOUSING	4111-71	1		24.0	
24	SET BOLT M8X45 L=45	4111-62	3		0.1	
23	NOZZLE PIECE D2.0	4111-61	3		0.2	
22	SCREW +CON. M4X0.7X6	4111-53	12		0.1	
21	ADJUSTING LINER (BTM)	4111-52	2		0.3	
20	ADJUSTING LINER (TOP)	4111-51	2		0.3	
19	KINGSUBRY ASSY K-8-B (INN)	4111-43	1		8.9	
18	KINGSBURY ASSY K-8-B (OUT)	4111-42	1		8.9	
17	TILTING PAD (THRUST)	4111-41	1		3.8	
16	SPR.LK.WSHR. NO.2 10	4111-27	2		0.1	
15	BOLT HEX SOCK M10X90	4111-26	2		0.2	
14	SCREW +CON. M4X0.7X20	4111-25	2		0.1	
13	SET PIN D13X14	4111-24	2		0.1	
12	BOLT HEX SOCK M12X65	4111-23	10		0.8	
11	HOUSING COVER (BOTTOM)	4111-22	1		13.0	
10	HOUSING COVER (TOP)	4111-21	1		13.0	
9	SPR.LK.WSHR. NO.2 10	4111-19	2		0.1	
8	BOLT HEX SOCK M10X40	4111-18	2		0.1	
7	O"RING D3.52XD202.8	4111-17	2		0.1	
6	SCREW +CON. M4X0.7X20	4111-16	2		0.1	
5	SET PIN D13X14	4111-15	2		0.1	
4	SPRING PIN D10X20	4111-14	1		0.1	
3	SET BOLT M12X35	4111-13	5		0.2	
2	BEARING HOUSING (BOTTOM)	4111-12	1		35.0	
1	BEARING HOUSING (TOP)	4111-11	1		35.0	

A1 広製共98(2)

129-6/

NOTE

1.JOURNAL BEARING CLEARANCE SHALL BE MEASURED AS FOLLOWS.
1-1.THE INNER DIAMETER OF HOUSING SHOULD BE MEASURED AFTER ASSEMBLING THE HOUSING.

$D=150^{+0.02}_{0}$

1-2.TILTING PAD THICKNESS.

$T=25^{-0.01}_{-0.03}$

1-3.TOTAL CLEARANCE=$D_{AVE.}-2\times T_{AVE.}$-SHAFT DIA.=0.15~0.22
1-4.THE RESULTS OF MEASURING SHOULD BE RECORDED.
2.MARK "※" DIMENSIONS SHOW DIAMETRAL CLEARANCE.

REFERENCE DRAWING
1.BEARING & SEAL ASSEMBLY DRAWING(2/2)---- 790-19526

SPECIFICATION

1.THRUST BEARING TYPE K-8
2.JOURNAL BEARING DIA. φ100
3.SEAL DIA. φ114
4.LABYRINTH DIA. φ170

THIRD ANGLE PROJECTION

HYDRAULIC TEST PRESS. Mpa

PLAN RECORD
THIS DRAWING REFERENCED TO
ORDER | ITEM | DRAWING NO.

DRAWING NO. 790-19525

図中に指示なき場合はこの表による

削り加工の普通許容差	
寸法の区分	1 級
0.5以上 6以下	±0.1
6をこえ 30以下	±0.2
30 〃 120 〃	±0.3
120 〃 400 〃	±0.5
400 〃 1000 〃	±0.8
1000 〃 2000 〃	±1.2
2000 〃 4000 〃	±2.0
4000 〃 8000 〃	±2.0
8000 〃 16000 〃	±2.5

一般板金加工の普通許容差	
寸法の区分	—
0.5以上 6以下	±0.2
6をこえ 30以下	±0.5
30 〃 120 〃	±0.8
120 〃 315 〃	±1.2
315 〃 1000 〃	±2.0
1000 〃 2000 〃	±3.0
2000 〃 4000 〃	±4.0
4000 〃 8000 〃	±5.0
8000 〃 16000 〃	±6.0

溶接構造物の普通許容差

Auto CAD

配布先	部数
CUST	
計電設	A3 RHx1 左とじ折
組立	4
機械	1
鋳鍛	1
機生管	1
機品証	1
Pサ部	A3 RHx1 左とじ折
コタ設	A3 RHx1 左とじ折
控	

出図先

職制コード

要求 NO.

SPARE	WORKING	MARK	DESCRIPTION	MATERIAL	TEST PIECE	QUANTITY PER SET WORKING	QUANTITY PER SET SPARE	WORKS	WEIGHT(kg) PER PIECE	WEIGHT(kg) TOTAL	REMARKS
1 SET											

ORDER: 353N73 — ITEM: MCW411
CUSTOMER: TEC/KALTIM-5 — APPROVED: O.I — CHECKED: Y.K
TEL 4512 — DATE: '12.10.12 — PREPARED: T.O

ENGINEERING DEPARTMENT
COMPRESSOR & TURBINE ENGINEERING SECTION

PM
APPROVED O.Isumi
CHECKED Y.KOHNO
PREPARED T.OUTA
DRAWN K.OKANO
SCALE 1/2
▽▽▽▽0.8S ▽▽▽6.3S ▽▽25S ▽100S

TEC/KALTIM-5

105-J AMMONIA REFRIGERANT COMPRESSOR
5H-6S (LP)
BEARING & SEAL ASSEMBLY DRAWING (1/2)

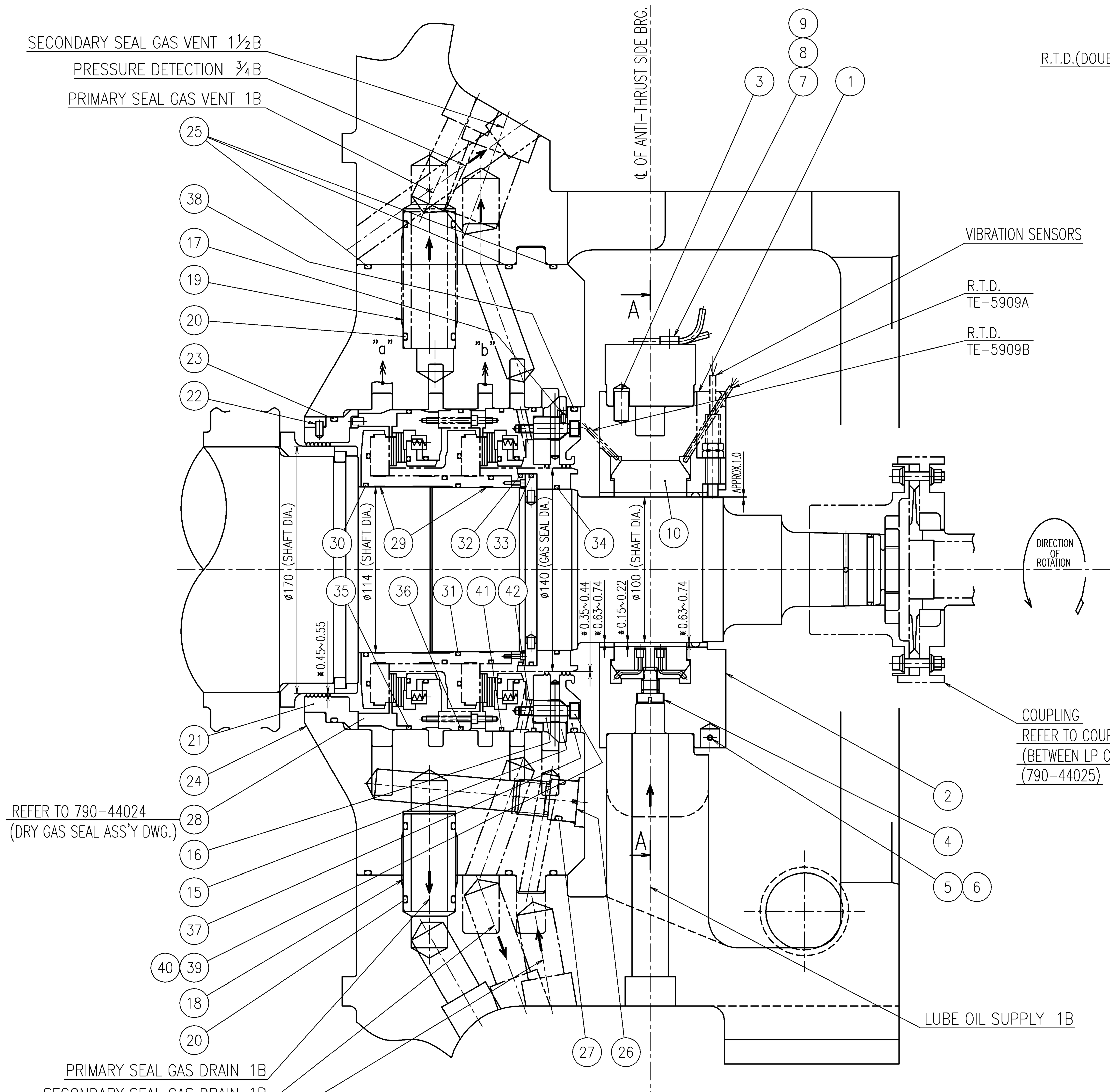
SPECIFIED NO. 4100
DRAWING NO. 790-19525

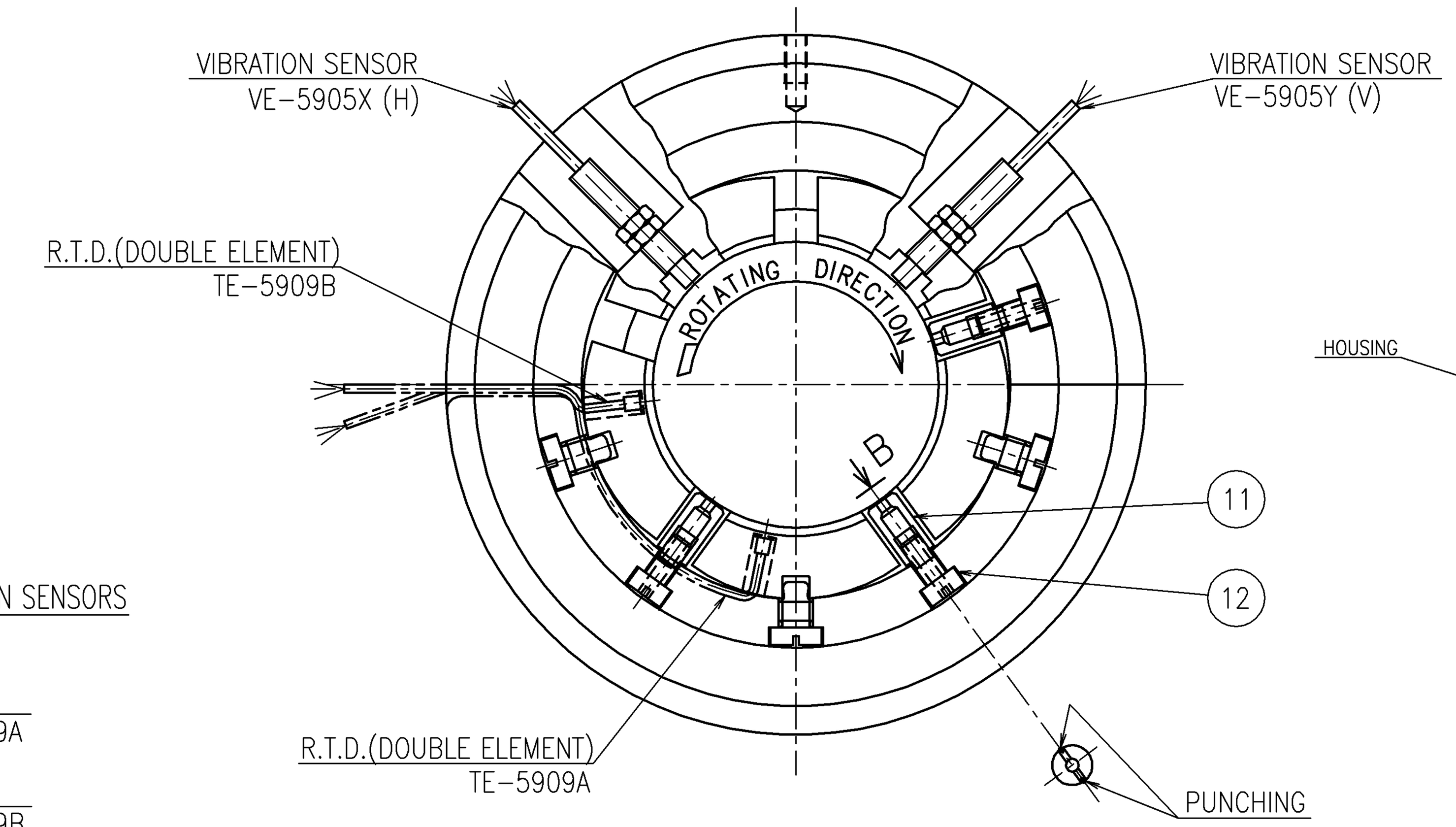
MITSUBISHI HEAVY INDUSTRIES COMPRESSOR CORPORATION

製図日付	'12.09.25	マイクロ	初 回	改正回次		図種コード	
出図日付		日 付				類別コード	1. 2. 3. 4. 5.

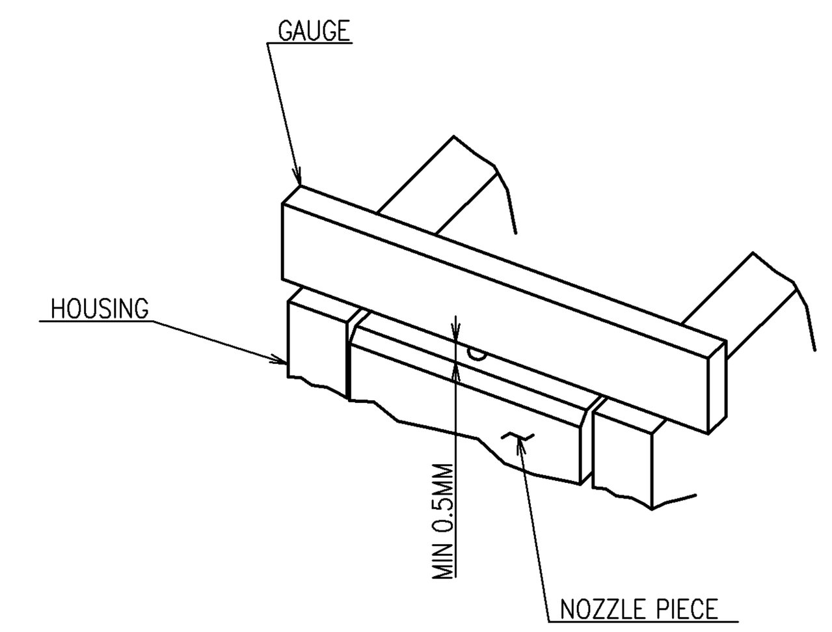
THIRD ANGLE PROJECTION

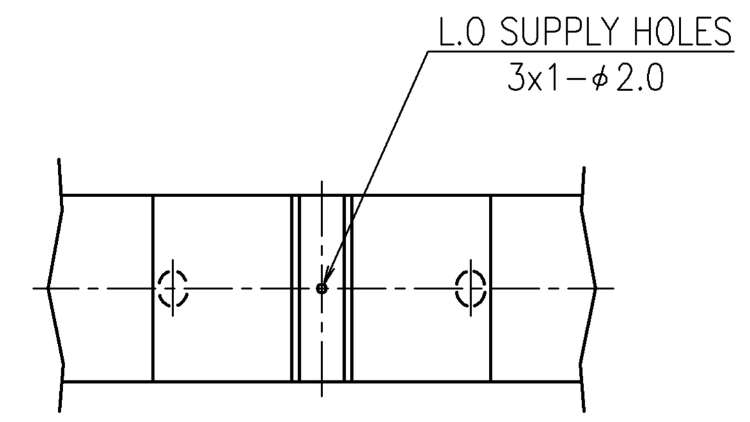
HYDRAULIC TEST PRESS	PLAN RECORD		
Mpa	THIS DRAWING REFERENCED TO		
	ORDER	ITEM	DRAWING NO.





SECTION A A



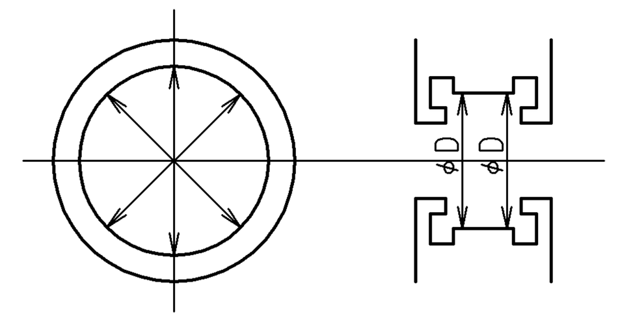


VIEW B

NOTE

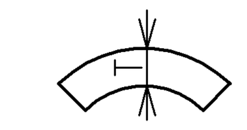
1.JOURNAL BEARING CLEARANCE SHALL BE MEASURED AS FOLLOWS.

1-1.THE INNER DIAMETER OF HOUSING SHOULD BE MEASURED AFTER ASSEMBLING THE HOUSING.



$D=150^{+0.02}_{0}$

1-2.TILTING PAD THICKNESS.



$T=25^{-0.01}_{-0.03}$

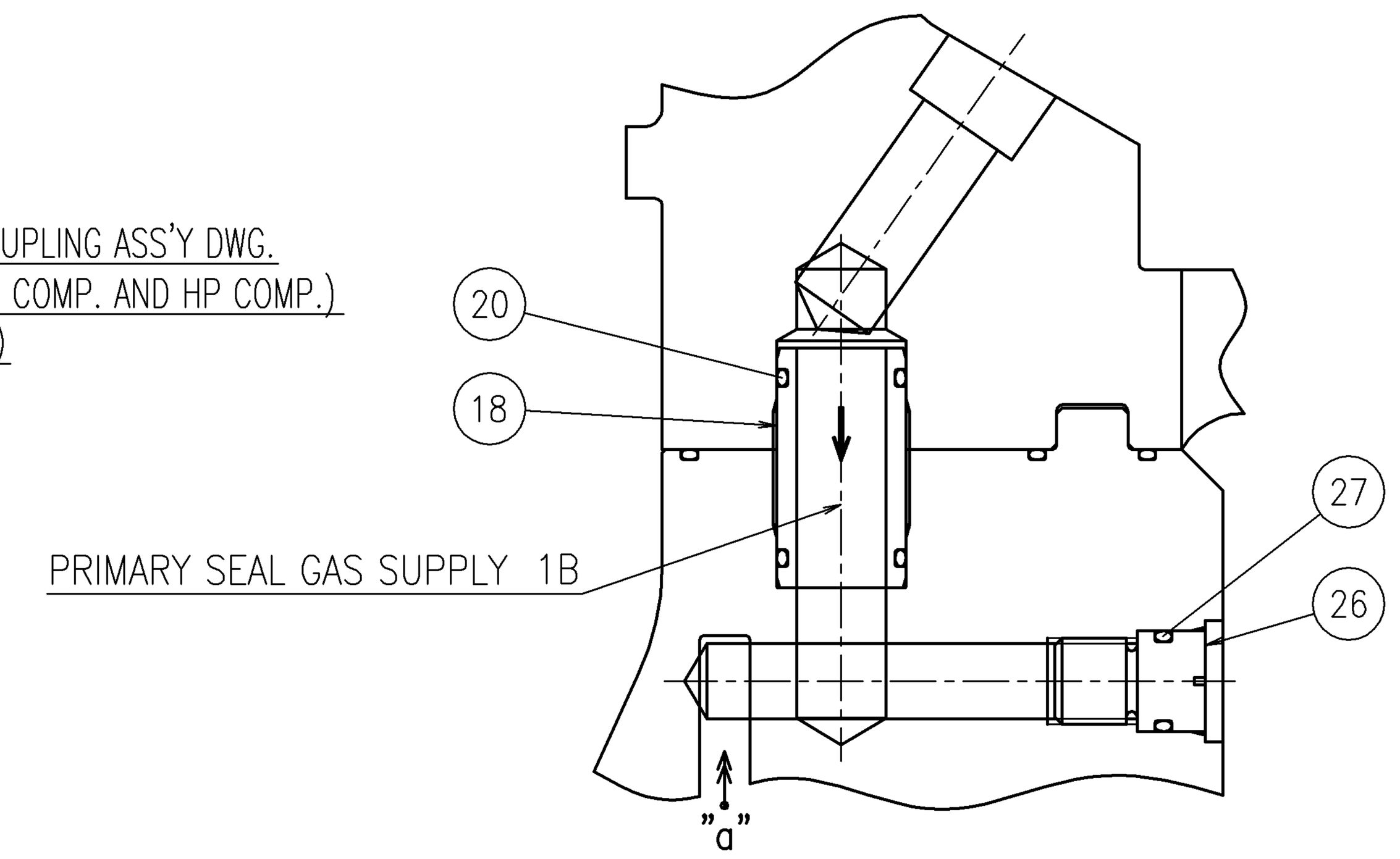
1-3.TOTAL CLEARANCE=$D_{AVE.}$−2x$T_{AVE.}$−SHAFT DIA.=0.15～0.22

1-4.THE RESULTS OF MEASURING SHOULD BE RECORDED.

2.MARK "*" DIMENSIONS SHOW DIAMETRAL CLEARANCE.

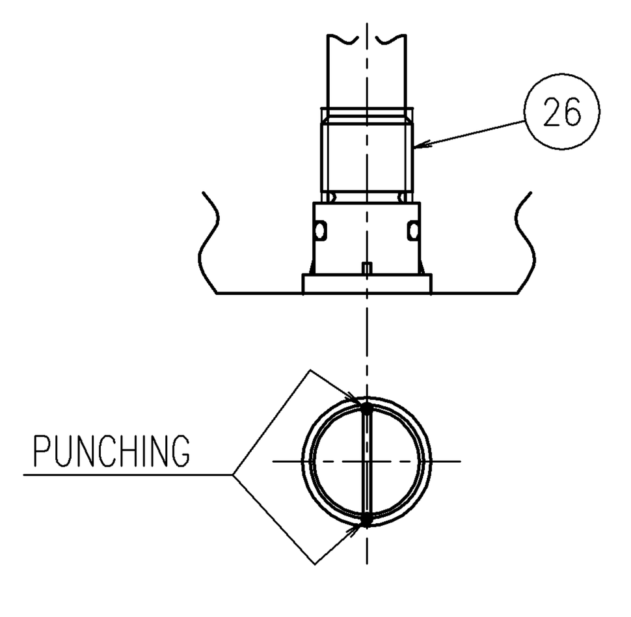
REFERENCE DRAWING

1.BEARING & SEAL ASSEMBLY DRAWING(1/2)----790-19525

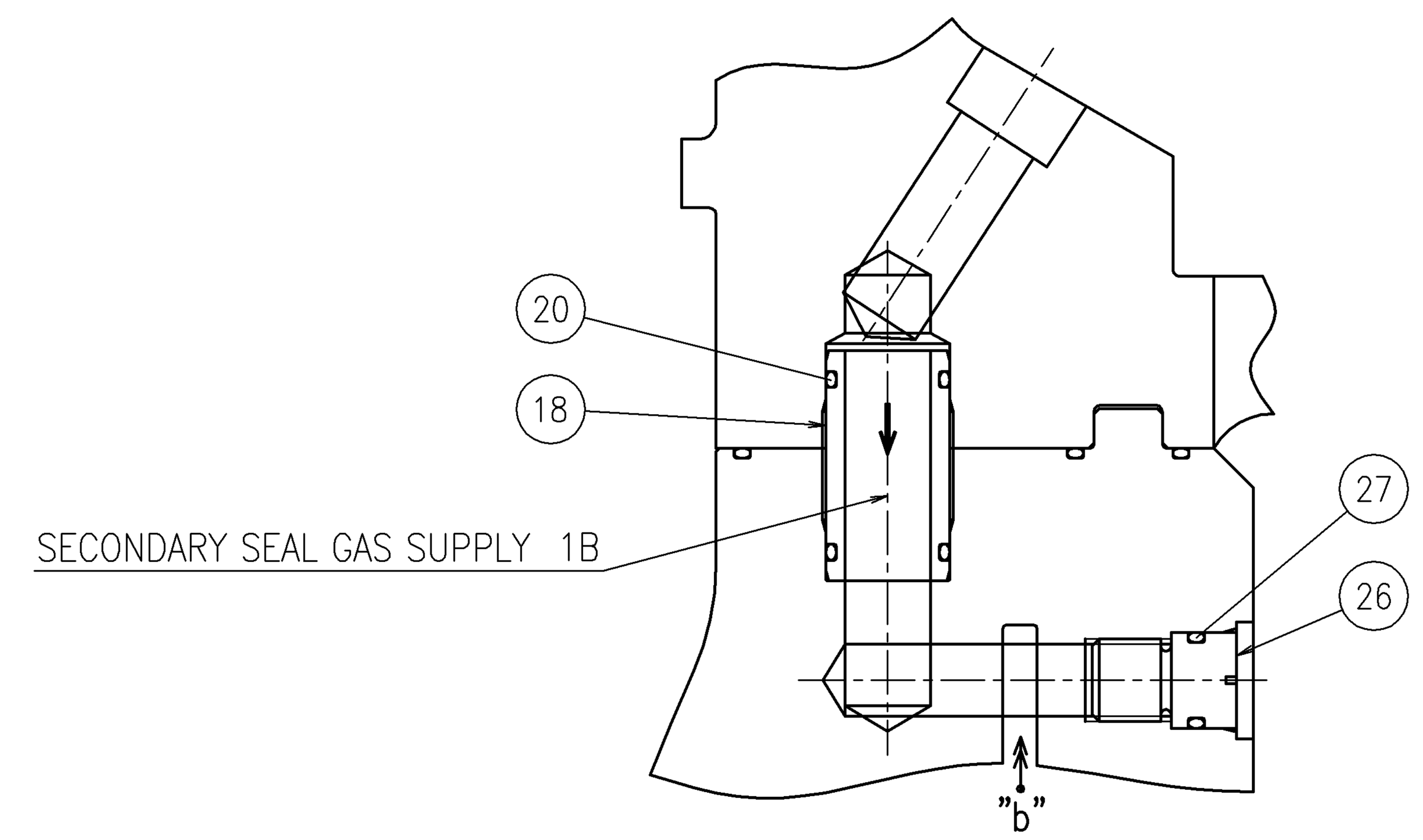


SPECIFICATION

1.JOURNAL BEARING DIA.	φ100
2.SEAL DIA.	φ114
3.LABYRINTH DIA.	φ170



DETAIL OF MARK 26



ITEM	PARTS NAME	PARTS NUMBER	QUANT-ITY	WEIGHT (Kg) PER PIECE	WEIGHT (Kg) TOTAL	REMARKS
43						
42	O-RING	4811-88	1		0.1	
41	O-RING	4811-87	1		0.1	
40	CONICAL SPR.WSHR 2ND 6	4811-85	5		0.1	
39	BOLT HEX SOCK M6X35	4811-84	5		0.1	
38	O"RING D3.5XD211.5	4811-83	1		0.1	
37	SEPARATION LABYRINTH	4811-81	1		1.5	
36	O-RING	4811-79	1		0.1	
35	POLYMER SEAL	4811-78	1		0.1	
34	O-RING	4811-77	1		0.1	
33	O-RING	4811-76	1		0.1	
32	O-RING	4811-75	1		0.1	
31	O-RING	4811-74	1		0.1	
30	POLYMER SEAL	4811-73	1		0.1	
29	TOLERANCE RING	4811-72	2		0.1	
28	GAS SEAL ASSEMBLY	4811-71	1		26.8	
27	O"RING D3.5XD20.2	4811-69	3		0.1	
26	PLUG M24	4811-66	3		0.5	
25	O"RING D3.5XD401.6	4811-63	3		0.1	
24	SEAL HOUSING HOLDER	4811-61	1		121.0	
23	O"RING D3.5XD197.9	4811-54	1		0.1	
22	SPRING PIN D5X10	4811-53	1		0.1	
21	SHAFT SEAL LABYRINTH	4811-51	1		0.8	
20	O"RING D3.5XD29.1	4811-46	8		0.1	
19	JOINT D36XL94	4811-44	1		0.4	
18	JOINT D36XL67	4811-43	3		0.9	
17	SPRING PIN D3X6	4811-13	1		0.1	
16	RETAINING RING	4811-12	1		1.6	
15	STOP RING	4811-11	1		0.9	
14						
13						
12	SET BOLT M8X17 L=17	4211-62	3		0.1	
11	NOZZLE PIECE D2.0	4211-61	3		0.2	
10	TILTING PAD (NON-THRUST)	4211-41	1		3.8	
9	SPR.LK.WSHR. NO.2 6	4211-33	4		0.1	
8	+PAN HEAD SCREW M6X10	4211-32	4		0.1	
7	CLAMP	4211-31	4		0.1	
6	SCREW +CON. M4X0.7X20	4211-16	2		0.1	
5	SET PIN D13X14	4211-15	2		0.1	
4	SET BOLT M12X16	4211-14	5		0.1	
3	SPRING PIN D10X20	4211-13	1		0.1	
2	BEARING HOUSING (BOTTOM)	4211-12	1		10.0	
1	BEARING HOUSING (TOP)	4211-11	1		10.0	

A1 広製共98(2)

SPARE	WORKING	MARK	DESCRIPTION	MATERIAL	TEST PIECE	QUANTITY PER WORKING	QUANTITY PER SET SPARE	WORKS	WEIGHT(kg) PER PIECE	WEIGHT(kg) TOTAL	REMARKS
1 SET											

ORDER: 353N73 ITEM: MCW411
CUSTOMER: TEC/KALTIM-5
APPROVED: O.I CHECKED: Y.K
DATE: '12.10.12 PREPARED: T.O
TEL 4512

ENGINEERING DEPARTMENT
COMPRESSOR & TURBINE ENGINEERING SECTION

PM	
APPROVED	O.Isumi
CHECKED	Y.KOHNO
PREPARED	T.OUTA
DRAWN	K.OKANO
SCALE	1/2

▽▽▽▽0.8S ▽▽▽6.3S ▽▽25S ▽100S

TEC/KALTIM-5

105-J AMMONIA REFRIGERANT COMPRESSOR 5H-6S (LP) BEARING & SEAL ASSEMBLY DRAWING (2/2)

SPECIFIED NO. 4200

DRAWING NO. 790-19526

MITSUBISHI HEAVY INDUSTRIES COMPRESSOR CORPORATION

製図日付	'12.09.25	マイクロ	初 回	改正回次		図種コード	
出図日付		日 付				類別コード	1. 2. 3. 4. 5.

DRAWING NO. 790-19526

Auto CAD

配布先 CUST 計電設 組立 機械 鋳鍛 機生管 機品証 Pサ部 コタ設 控 出図先 職制コード 要求 NO.

129-7/

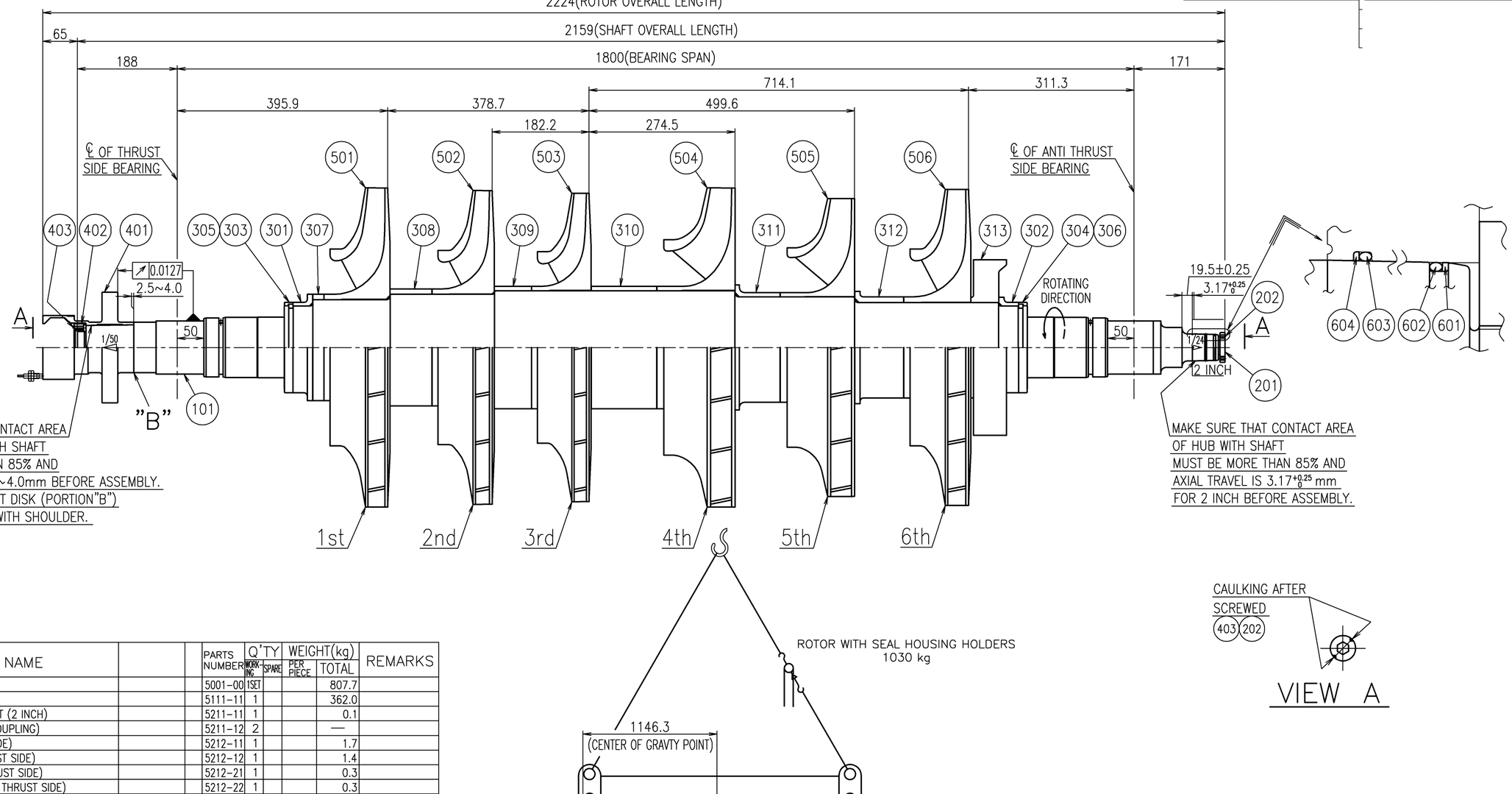
THIRD ANGLE PROJECTION	HYDRAULIC TEST PRESS Mpa	PLAN RECORD

THIS DRAWING REFERENCED TO

ORDER	ITEM	DRAWING NO.	同 / 修

DRAWING NO. 790-28423

(100) ROTOR ASSEMBLY



MAKE SURE THAT CONTACT AREA OF THRUST DISK WITH SHAFT MUST BE MORE THAN 85% AND AXIAL TRAVEL IS 2.5~4.0mm BEFORE ASSEMBLY. FAR FACE OF THRUST DISK (PORTION"B") MUST BE CONTACT WITH SHOULDER.

MAKE SURE THAT CONTACT AREA OF HUB WITH SHAFT MUST BE MORE THAN 85% AND AXIAL TRAVEL IS $3.17^{+0.25}_{0}$ mm FOR 2 INCH BEFORE ASSEMBLY.

MARK	PARTS NAME			PARTS NUMBER	Q'TY WORKING	Q'TY SPARE	WEIGHT(kg) PER PIECE	WEIGHT(kg) TOTAL	REMARKS
100	ROTOR ASSEMBLY			5001-00	1SET			807.7	
101	SHAFT			5111-11	1			362.0	
201	COUPLING LOCK NUT (2 INCH)			5211-11	1			0.1	
202	SET SCREW (FOR COUPLING)			5211-12	2			—	
301	SLEEVE (THRUST SIDE)			5212-11	1			1.7	
302	SLEEVE (ANTI THRUST SIDE)			5212-12	1			1.4	
303	SHROUD RING (THRUST SIDE)			5212-21	1			0.3	
304	SHROUD RING (ANTI THRUST SIDE)			5212-22	1			0.3	
305	SPLIT RING (THRUST SIDE)			5212-25	1			0.2	
306	SPLIT RING (ANTI THRUST SIDE)			5212-26	1			0.2	
307	1st IMPELLER SPACER			5212-31	1			1.0	
308	1st~2nd IMPELLER SPACER			5212-32	1			3.9	
309	2nd~3rd IMPELLER SPACER			5212-33	1			3.1	
310	3rd~4th IMPELLER SPACER			5212-34	1			5.3	
311	4th~5th IMPELLER SPACER			5212-35	1			3.6	
312	5th~6th IMPELLER SPACER			5212-36	1			4.5	
313	BALANCE PISTON			5213-11	1			25.6	
401	THRUST DISK			5214-11	1			10.0	
402	LOCK NUT (FOR THRUST DISK)			5214-12	1			0.5	
403	SET SCREW (FOR THRUST DISK)			5214-13	2			—	
501	1st IMPELLER			5511-20	1			68.0	
502	2nd IMPELLER			5512-20	1			64.0	
503	3rd IMPELLER			5513-20	1			60.0	
504	4th IMPELLER			5514-20	1			68.0	
505	5th IMPELLER			5515-20	1			55.0	
506	6th IMPELLER			5516-20	1			69.0	
601	BACKUP RING (2 INCH)			5711-31	1			—	
602	"O" RING (2 INCH)			5711-32	1			—	
603	"O" RING (2 INCH)			5711-33	1			—	
604	BACKUP RING (2 INCH)			5711-34	1			—	

NOTE FOR ROTOR SUPPORTING

1. LIFTING WIRE SHOULD BE PLACED AT THE TAPER PART OF THE ROTOR AND WILL BE LIFTED AS INDICATED IN ABOVE SKETCH DURING ASSEMBLY OR DISASSEMBLY OF COMPRESSOR. (LOCK NUT SHOULD BE ASSEMBLED BEFORE LIFTING TO PREVENT SLIPPING OF LIFTING WIRE.)
2. ROTOR SHALL BE SUPPORTED AT "H" POINTS AND RUBBER SHEETS SHALL BE KEPT BETWEEN ROTOR AND SUPPORTS. (SEAL PORTION SHALL BE COVERED FOR PROTECTION)

CLOCKWISE DIRECTION FROM THRUST SIDE VIEW

1K SPARE 1 SET	1K WORKING 1 SET	100 MARK	ROTOR ASSEMBLY DESCRIPTION	MATERIAL	1K TEST PIECE	1K WORKING QUANTITY PER 1 SET	SPARE	WORKS	807.7 PER PIECE WEIGHT(kg)	TOTAL WEIGHT(kg)	REMARKS
353N73 MCS411	353N73 MCW411	ORDER ITEM	TURBO MACHINERY ENG. DEPT. COMPRESSOR & TURBINE ENGINEERING SECTION	TEC/KALTIM-5							
TEC/KALTIM-5 0.I	TEC/KALTIM-5 0.I	CUSTOMER CHECKED APPROVED	PM APPROVED O.Isumi CHECKED Y.KOHNO	105-J AMMONIA REFRIGERANT COMPRESSOR 5H-6S (LP) ROTOR ASSEMBLY							
Y.K	Y.K		PREPARED A.IKENO DRAWN S.TSUCHIYAMA								
TEL 4140 '12.8.28 A.I	TEL 4140 '12.8.28 A.I	DATE PREPARED	SCALE 1/6 ▽▽▽▽0.8S ▽▽▽6.3S ▽▽25S ▽100S	SPECIFIED NO. 500A	DRAWING NO. 790-28423						

MITSUBISHI HEAVY INDUSTRIES COMPRESSOR CORPORATION

製図日付	'12.08.23	マイクロ	初回	改正回次	図種コード	
出図日付		日付			類別コード	1. 2. 3. 4. 5.

図中に指示なき場合はこの表による

削り加工の普通許容差	
寸法の区分	1 級
0.5以上 6以下	±0.1
6をこえ 30以下	±0.2
30 〃 120 〃	±0.3
120 〃 400 〃	±0.5
400 〃 1000 〃	±0.8
1000 〃 2000 〃	±1.2
2000 〃 4000 〃	±2.0
4000 〃 8000 〃	±2.0
8000 〃 16000 〃	±2.5

一般鉄金加工の普通許容差	
寸法の区分	—
0.5以上 6以下	±0.2
6をこえ 30以下	±0.5
30 〃 120 〃	±0.8
120 〃 315 〃	±1.2
315 〃 1000 〃	±2.0
1000 〃 2000 〃	±3.0
2000 〃 4000 〃	±4.0
4000 〃 8000 〃	±5.0
8000 〃 16000 〃	±6.0

溶接構造物の普通許容差	
寸法の区分	—
0.5以上 120以下	±1.5
120をこえ 315以下	±2.0
315 〃 1000 〃	±3.0
1000 〃 2000 〃	±5.0
2000 〃 4000 〃	±7.0
4000 〃 8000 〃	±10.0
8000 〃 16000 〃	±15.0

Auto CAD

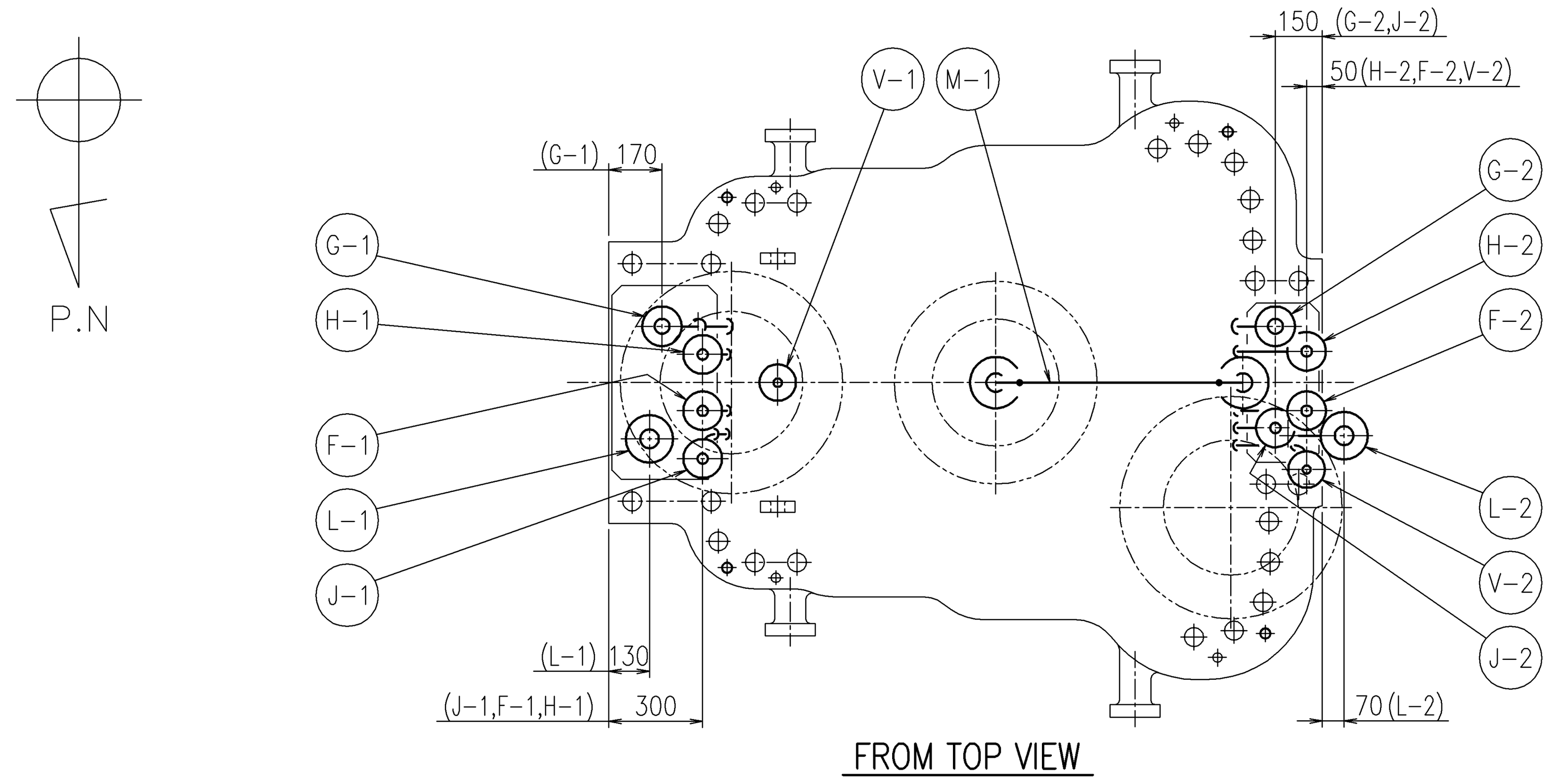
配布先	部数
CUST	

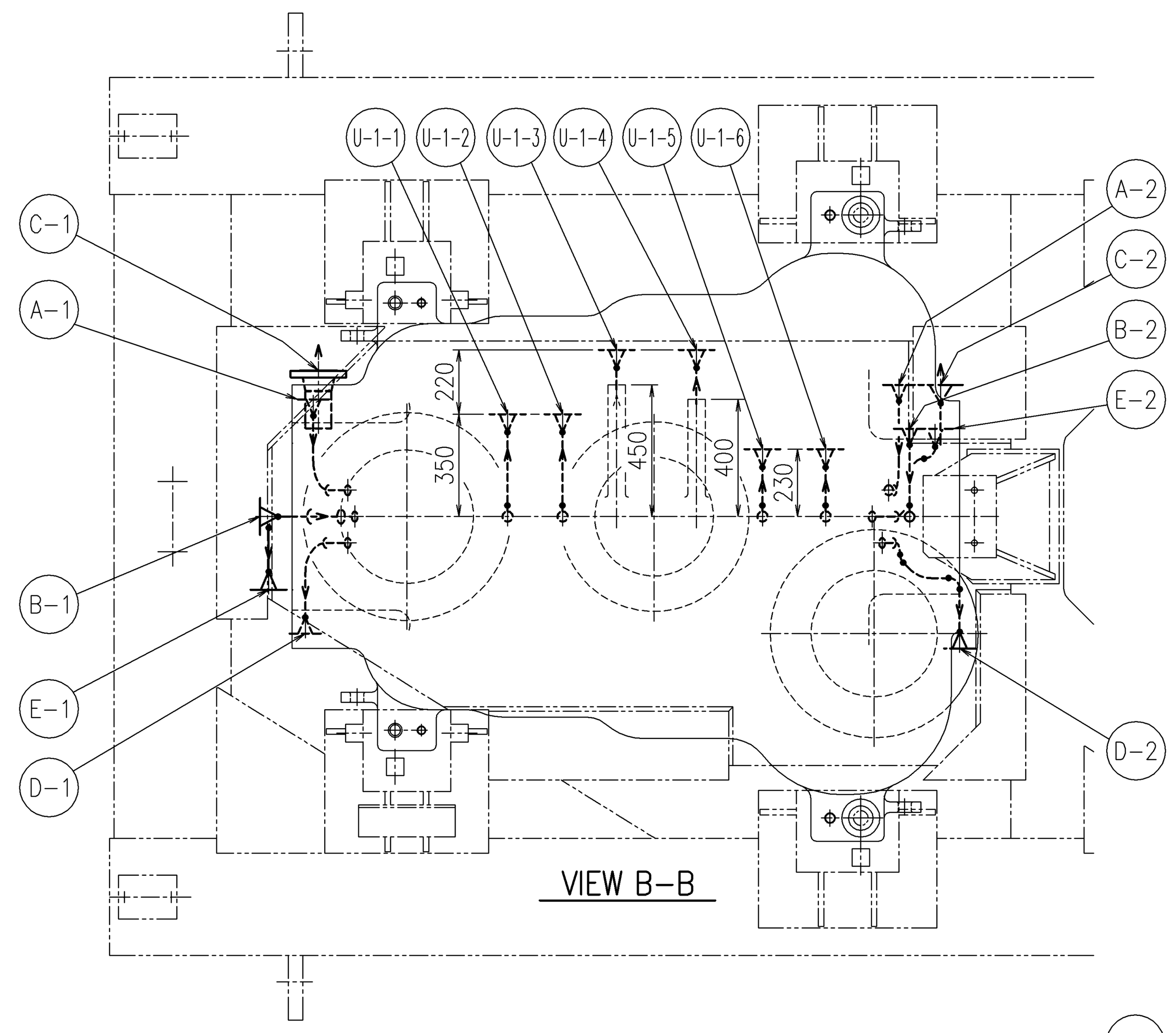
Pサ部	A3x1
控	
出図先	

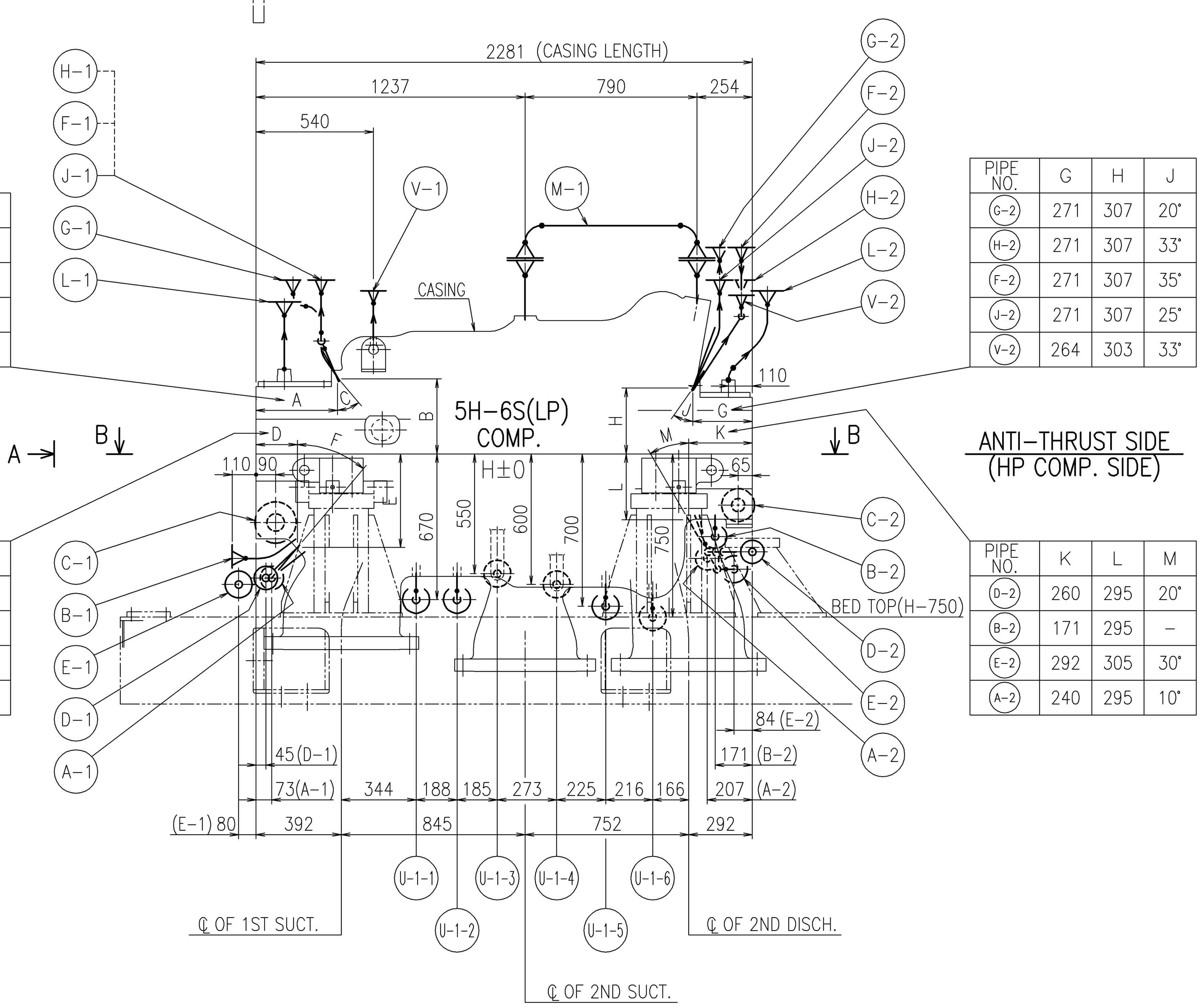
識別コード	
要求 NO.	

A2 広製共98(3)

THIRD ANGLE PROJECTION	HYDRAULIC TEST PRESS Mpa	PLAN RECORD
		THIS DRAWING REFERENCED TO: ORDER / ITEM / DRAWING NO.





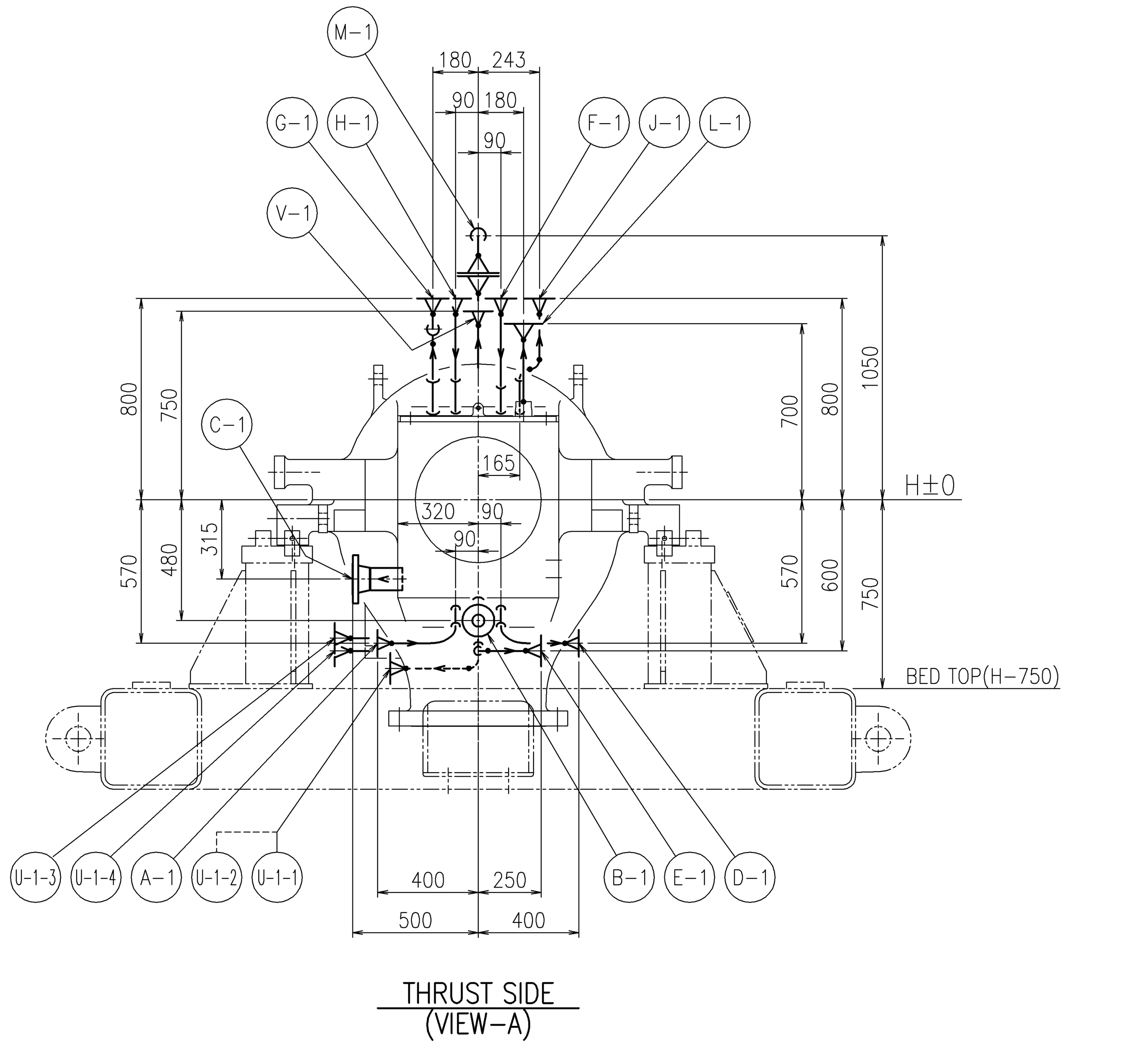


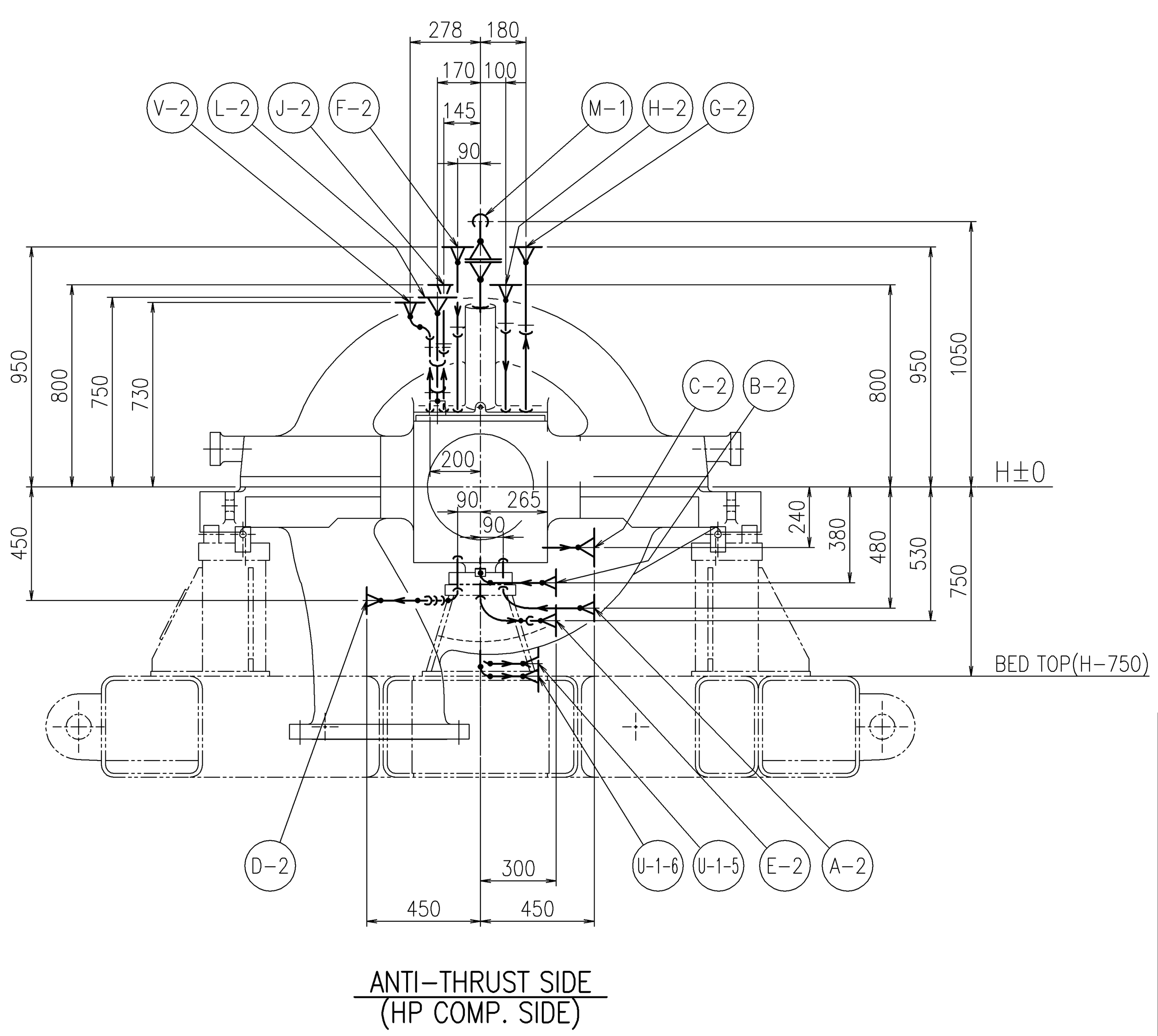
PIPE NO.	A	B	C
G-1	378	347	30°
H-1	378	347	30°
F-1	378	347	35°
J-1	374	345	23°

PIPE NO.	D	E	F
D-1	190	430	46°
B-1	167	403	53°
E-1	214	458	52°
A-1	190	430	40°

PIPE NO.	G	H	J
G-2	271	307	20°
H-2	271	307	33°
F-2	271	307	35°
J-2	271	307	25°
V-2	264	303	33°

PIPE NO.	K	L	M
D-2	260	295	20°
B-2	171	295	–
E-2	292	305	30°
A-2	240	295	10°





PIPING

PIPE NO. TH.SIDE	PIPE NO. ATH.SIDE	PIPE NAME	SIZE & RATING
A–1	A–2	SEPARATION GAS SUPPLY	1B ASME 150# RF
B–1		L.O. SUPPLY	1½B ASME 150# RF
	B–2	L.O. SUPPLY	1B ASME 150# RF
C–1		L.O. DRAIN	3B ASME 150# RF
	C–2	L.O. DRAIN	2B ASME 150# RF
D–1	D–2	SECONDARY SEAL GAS DRAIN	1B ASME 150# RF
E–1	E–2	PRIMARY SEAL GAS DRAIN	1B ASME 300# RF
F–1	F–2	PRIMARY SEAL GAS SUPPLY	1B ASME 300# RF
G–1	G–2	SECONDARY SEAL GAS VENT	1½B ASME 150# RF
H–1	H–2	SECONDARY SEAL GAS SUPPLY	1B ASME 300# RF
J–1	J–2	PRIMARY SEAL GAS VENT	1B ASME 300# RF
L–1	L–2	BEARING VENT	2B ASME 150# RF
M–1		BALANCE CONNECTOR	2B ASME 300# RF
U–1		CASING DRAIN	1B ASME 300# RF
V–1	V–2	PRESSURE DETECTION	3/4B ASME 300# RF

REF. DWG. ;

1). ISOME DWG. : 861–32381
2). 車室水圧試験要領図 : 790–28422
3). 車室 (1/7) : 961–13438B
4). 車室 (2/7) : 961–13439
5). 車室 (3/7) : 961–13440
6). 車室 (4/7) : 961–13441A
7). 車室 (5/7) : 961–13442A
8). 車室 (6/7) : 961–13443
9). 車室 (7/7) : 961–13444A
10). 軸受点検蓋 (スラスト側) [H–FOR100] : 799–20111J
11). 軸受点検蓋 (反スラスト側) [H–BAC100] : 799–20112K
12). 技術連絡メモ(P&I 線図作成用コンプレッサ廻り配管データ) : 796–81225
13). P&ID (LUBE OIL) : 750–18941B
14). P&ID (SEAL GAS) : 750–18945B

DRAWING NO. 790–19528

Auto CAD

SPARE	WORKING	MARK	DESCRIPTION	MATERIAL	TEST PIECE	WORKING QUANTITY	SPARE PER SET	WORKS	PER PIECE WEIGHT(kg)	TOTAL	REMARKS
1 SET											

PLANT ENGINEERING DEPARTMENT COMPRESSION SYSTEM DESIGN SECTION

TEC/KALTIM–5

105–J AMMONIA REF. COMPRESSOR TRAIN
PIPING ASS'Y DWG.
AROUND 5H–6S (LP) COMP.

ORDER	353N73
ITEM	MCW411
CUSTOMER	TEC/KALTIM–5
CHECKED	Y.K / O.I
PREPARED	Y.O
DATE	'12.6.25
TEL	4553
PM	
APPROVED	O.Isumi
CHECKED	Y.KOHNO
PREPARED	Y.Okamoto
DRAWN	T.FUJII
SCALE	1/20
SPECIFIED NO.	8100
DRAWING NO.	790–19528

▽▽▽▽0.8S ▽▽▽6.3S ▽▽25S ▽100S

MITSUBISHI HEAVY INDUSTRIES COMPRESSOR CORPORATION

広島証	1
組立	3
コテ設	A3x1
ブ設	A3x1
ブ設(配)	A3x1

出図先
製品コード 6211
要求 NO.

A1 広製共98(2)

129-9/