

CLIENT : TEC / PT. PUPUK KALIMANTAN TIMURPROJECT : KALTIM-5 PROJECTJOB NO. : 10107 / BA096300 / 11-018-01ITEM NO. : 101-JSERVICE : AIR COMPRESSORDOC. NO. : K5-E3-101J-DW-108 Rev.2**COMPRESSOR ASSEMBLY DRAWINGS (101-J [LP])**

CLIENT	
PT PUPUK KALIMANTAN TIMUR	
PUPUK  KALTIM	
CONTRACTOR	
CONSORTIUM IKPT & TOYO	
	
2500 MTPD AMMONIA - 3500 MTPD UREA KALTIM-5 PROJECT	
REQ. NO.	AXGB002
PO. NO.	BA096321-AXGB002
EQUIP. NO.	101-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 C U S T . E	広 品 証 立 T	組 立 T	品 証 T	コ タ 計	P J	Specified No.	Order	Item	Date Drawn
						HBI-D01	353N68	MCW111	Dec. 11, 2012
Rev.						Drawing No.			
両面北-						790-44007			

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Date Issued

C63A

CONTENTS

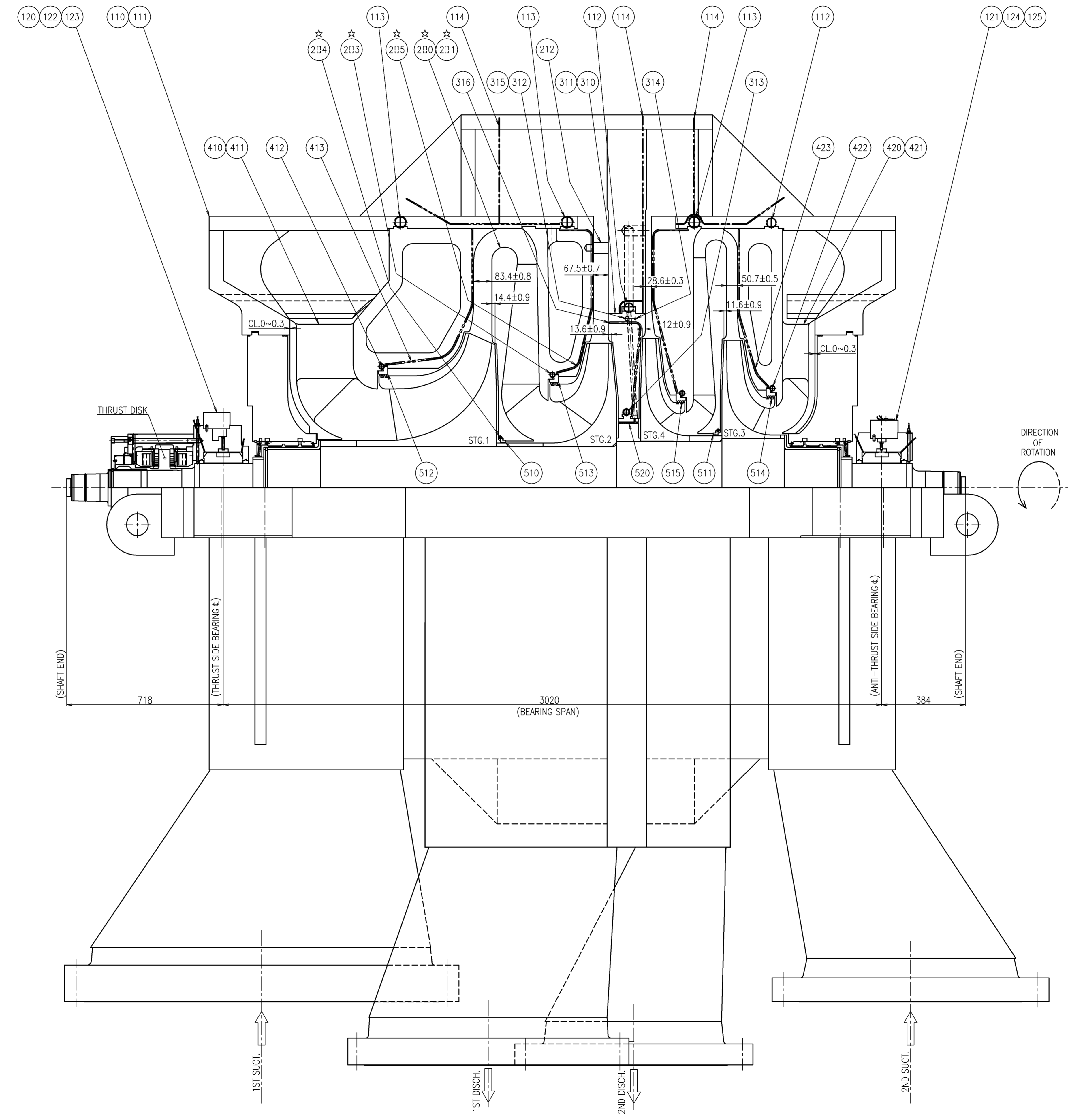
	<u>VENDOR DOC. No.</u>
(1) OUTLINE ASSEMBLY DRAWING	790-19482
(2) INTERNAL ASSEMBLY DRAWING	790-19477
(3) BEARING AND SEAL ASSEMBLY DRAWING (1/2)	790-19478
(4) BEARING AND SEAL ASSEMBLY DRAWING (2/2)	790-19479
(5) ROTOR ASSEMBLY DRAWING	790-28413
(6) PIPING ASSEMBLY AROUND COMPRESSOR	790-19481

GEAR SIDE

STEAM TURBINE SIDE

NOTE *
☆ : REFER TO ITEM NO. SHOWN ON PARTS LIST.
EXAMPLE : 210 REFERS TO ITEM NO. 210,230...

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



NOTE

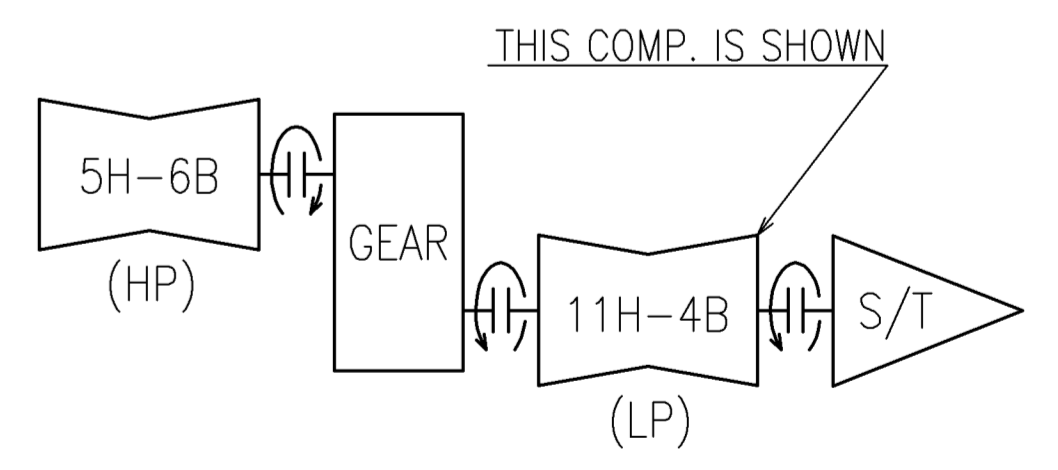
1. ALL CLEARANCES ARE MEASURED ON THE HORIZONTAL SPLIT SURFACE.
2. AXIAL DIMENSIONS ARE MEASURED WHEN THE THRUST DISK IS IN THE MIDDLE OF THE THRUST BEARING CLEARANCE.
3. LOCKING SCREWS ARE SET ON THE HORIZONTAL SPLIT SURFACE OF UPPER CASING AND/OR DIAPHRAGMS, DIVISION WALL, AND INLET GUIDE. O-RING CORDS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

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

IMP. LABY. STG.	DI. CLEARANCE (mm)	SHAFT LABY. STG.	DI. CLEARANCE (mm)
1	2.8 ^{+0.2} / ₀	1-2	0.8 ^{+0.2} / ₀
2			
3	2.7 ^{+0.2} / ₀	3-4	0.8 ^{+0.2} / ₀
4	2.1 ^{+0.2} / ₀		
BALANCE PISTON	0.9 ^{+0.2} / ₀		

NOTE
AFTER SHOP MECHANICAL RUNNING TEST CLEARANCES REPLACED ^{+0.4} TO THE ABOVE VALUES ARE ACCEPTABLE.

ROTOR ASSEMBLY	790-28413
BEARING & SEAL ASSEMBLY DWG. (1/2)	790-19478
BEARING & SEAL ASSEMBLY DWG. (2/2)	790-19479
COUPLING ASSEMBLY	790-44009
COMP. OUTLINE ASSEMBLY	790-19482



ITEM	PARTS NAME	QUANT	PER PIECE WEIGHT (Kg)	TOTAL WEIGHT (Kg)	PARTS NUMBER	REMARKS
520	BALANCE PISTON LABY.	1			2441-11	
515	LABY.-IMP. STG.4	1			2411-34	
514	LABY.-IMP. STG.3	1			2411-33	
513	LABY.-IMP. STG.2	1			2411-32	
512	LABY.-IMP. STG.1	1			2411-31	
511	LABY.-SHAFT STG.3-4	1			2411-12	
510	LABY.-SHAFT STG.1-2	1			2411-11	
423	O-RING CORD 4C 5.7*1800	2			2312-83	
422	LOCKING SCREW HM M10	1			2312-61	
421	INLET GUIDE (2S) BOTTOM	1	1995.0		2312-20	
420	INLET GUIDE (2S) TOP	1	2000.0		2312-10	
413	O-RING CORD 4C 5.7*1940	2			2311-83	
412	LOCKING SCREW HM M10	1			2311-61	
411	INLET GUIDE (1S) BOTTOM	1	3030.0		2311-20	
410	INLET GUIDE (1S) TOP	1	3040.0		2311-10	
316	O-RING CORD 4C 5.7*1600	2			2231-83	
315	SPR. LOCK WASHER NO.2 20	2			2231-75	
314	TPR.PIN W/NUT TYPE A10*35	2			2231-71	
313	LOCKING SCREW HM M12	1			2231-61	
312	HEX.SKT.HEAD BOLT M20*65	2			2231-51	
311	DIVISION WALL (BOTTOM)	1	865.0		2231-20	
310	DIVISION WALL (TOP)	1	865.0		2231-10	
235	O-RING CORD 4C D5.7*930L	2			2113-81	
234	LOCK SCREWHM M6	1			2113-62	
233	LOCK SCREWHM M10	1			2113-61	
231	DIAPHRAGM 3-4 (BOTTOM)	1	3909.0		2113-20	
230	DIAPHRAGM 3-4 (TOP)	1	3909.0		2113-10	
215	O-RING CORD 4C D5.7*900L	2			2111-81	
214	LOCK SCREWHM M6	1			2111-62	
213	LOCK SCREWHM M10	1			2111-61	
212	DIFFUSER SPACER	12			2111-41	
211	DIAPHRAGM 1-2 (BOTTOM)	1	3293.0		2111-20	
210	DIAPHRAGM 1-2 (TOP)	1	3293.0		2111-10	
125	WS-LOCKWASHER-PL W 1 5/8	2			1121-87	
124	BOLT-HEX SOCKM42*150	2			1121-86	
123	WS-LOCKWASHER-PL W 1 5/8	2			1121-77	
122	BOLT-HEX SOCKM42*150	2			1121-76	
121	BEARING CAP N-THRUST SIDE	1	82.0		1121-21	
120	BEARING CAP THRUST SIDE	1	73.0		1121-11	
114	O RING CORD D3.5X7500L	1			1111-55	
113	SET SCREW M30*50	6			1111-36	
112	SET SCREW M20*35	4			1111-34	
111	CASING (LOWER)	1	32000.0		1111-12	
110	CASING (UPPER)	1	22000.0		1111-11	

ITEM PARTS NAME QUANT PER PIECE WEIGHT (Kg) TOTAL WEIGHT (Kg) PARTS NUMBER REMARKS

DRAWING NO. 790-19477

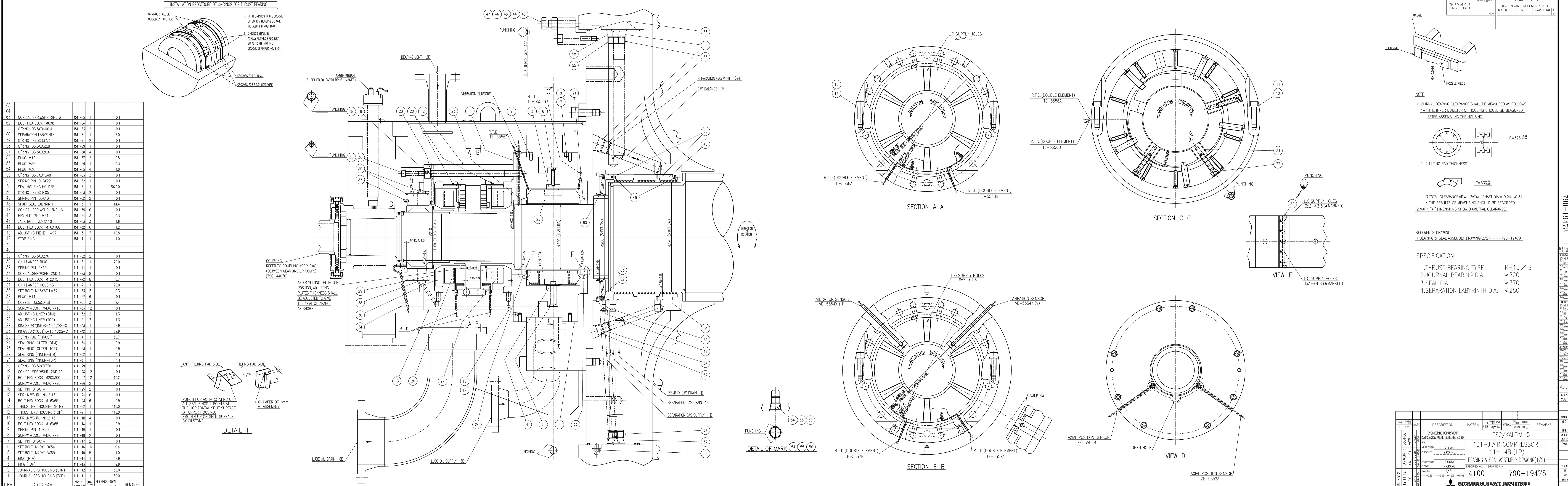
Auto CAD
配布先 部数
CUST. 1
編成 1
機生管 1
品保証 1
P/S 部 1
A3, 縦向き
P/B 1, 横向き

SPARE	WORK	MARK	DESCRIPTION	MATERIAL	TEST	QUANTITY	SPARE	WORKS	PIECE	TOTAL	REMARKS
1	SET		ENGINEERING DEPARTMENT COMPRESSOR & TURBINE ENGINEERING SECTION								
		353N68	TEC/KALTIM-5								
		MCW111	PM								
		01	APPROVED O.Isumi								
		01	CHECKED Y.KOHNO								
		01	PREPARED T.OTA								
		01	DRAWN K.OKANO								
		01	SCALE 1/10								
		01	SPECIFIED NO. 2000								
		01	DRAWING NO. 790-19477								

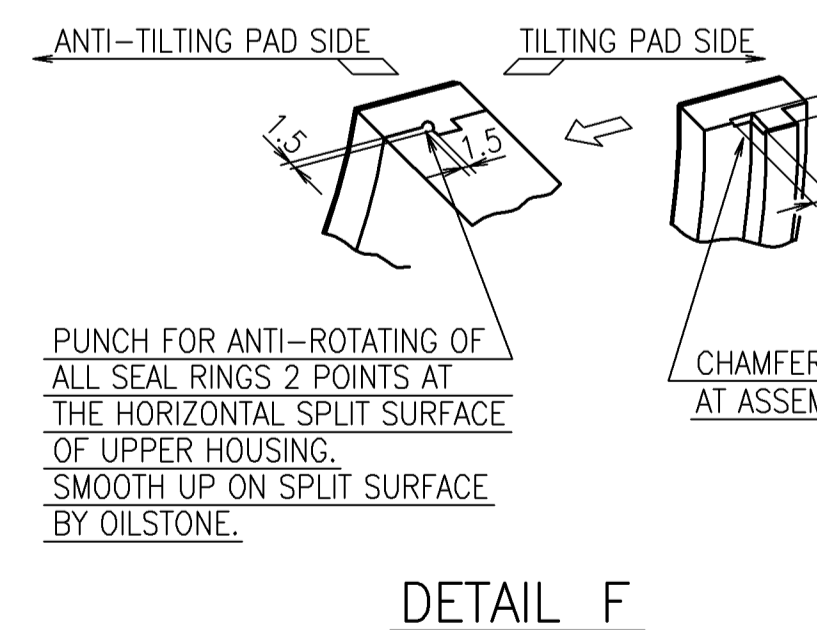
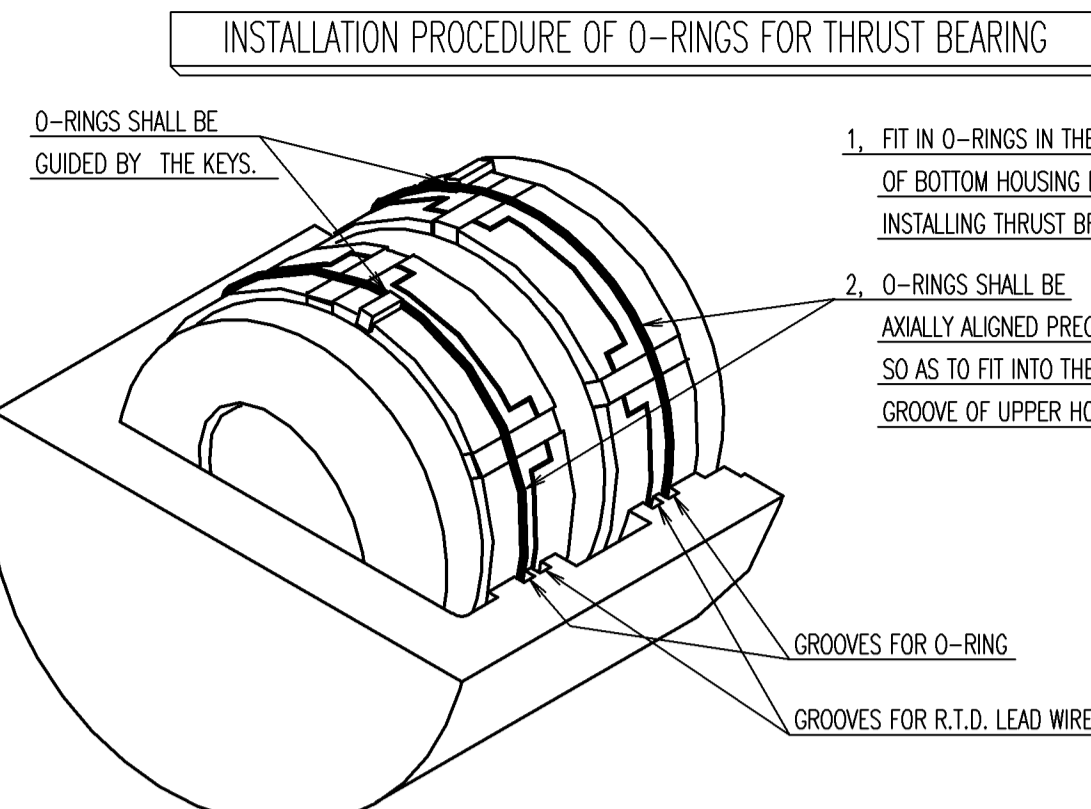
MITSUBISHI HEAVY INDUSTRIES
COMPRESSOR CORPORATION

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出図日付 日付 製図者 田中 決定部次 図検者 田中

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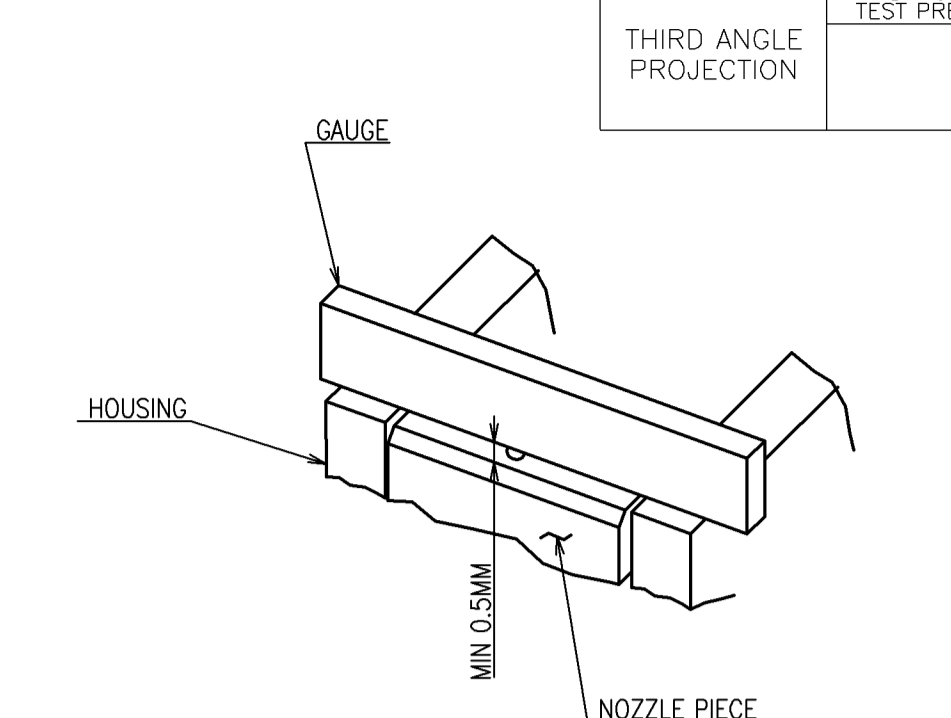


ITEM	PARTS NAME	PARTS NUMBER	QUANTITY	PER PIECE WEIGHT (KG)	TOTAL WEIGHT (KG)	REMARKS
65						
64						
63	CONICAL SPR.WSHR. 2ND 6	4511-85	1	0.1		
62	BOLT HEX SOCK M6X8	4511-84	1	0.1		
61	O'RING D3.5XD406.4	4511-83	2	0.1		
60	SEPARATION LABYRINTH	4511-81	1	6.0		
59	O'RING D3.5XD37.7	4511-71	2	0.1		
58	O'RING D3.5XD32.9	4511-69	1	0.1		
57	O'RING D3.5XD26.6	4511-68	4	0.1		
56	PLUG M42	4511-67	2	0.5		
55	PLUG M36	4511-66	1	0.3		
54	PLUG M30	4511-65	4	1.0		
53	O'RING D5.7XD1349	4511-63	3	0.1		
52	SPRING PIN D1.3X22	4511-62	1	0.1		
51	SEAL HOUSING HOLDER	4511-61	1	2070.0		
50	O'RING D3.5XD405	4511-53	2	0.1		
49	SPRING PIN D5X10	4511-52	2	0.1		
48	SHAFT SEAL LABYRINTH	4511-51	1	14.4		
47	CONICAL SPR.WSHR. 2ND 16	4511-35	6	0.1		
46	HEX NUT 2ND M24	4511-34	3	0.3		
45	JACK BOLT M24X110	4511-33	3	1.6		
44	BOLT HEX SOCK M16X100	4511-32	6	1.2		
43	ADJUSTING PIECE H=97	4511-31	3	10.8		
42	STOP RING	4511-11	1	1.0		
41						
40	O'RING D3.5XD276	4111-82	2	0.1		
38	O/H DAMPER RING	4111-81	1	20.0		
37	SPRING PIN 5X10	4111-74	1	0.1		
36	CONICAL SPR.WSHR. 2ND 12	4111-73	8	0.1		
35	BOLT HEX SOCK M12X75	4111-72	8	0.7		
34	O/H DAMPER HOUSING	4111-71	1	70.0		
33	SET BOLT M16X67 L=67	4111-63	3	0.1		
32	PLUG M14	4111-62	6	0.1		
31	NOZZLE CON. M4X0.7X10	4111-61	3	2.4		
30	SCREW +CON. M4X0.7X10	4111-53	12	0.1		
29	ADJUSTING LINER (BTM)	4111-52	2	1.3		
28	ADJUSTING LINER (TOP)	4111-51	2	1.3		
27	KINGSBURY LINER-K-13 1/2S-C	4111-43	1	52.9		
26	KINGSBURY(OUT)-K-13 1/2S-C	4111-42	1	52.9		
25	TILTING PAD (THRUST)	4111-41	1	56.7		
24	SEAL RING (OUTER-BTM)	4111-34	1	0.9		
23	SEAL RING (OUTER-TOP)	4111-33	1	0.9		
22	SEAL RING (INNER-BTM)	4111-32	1	1.1		
21	SEAL RING (INNER-TOP)	4111-31	1	1.1		
20	O'RING D3.5XD330	4111-29	2	0.1		
19	CONICAL SPR.WSHR. 2ND 20	4111-28	12	0.1		
18	BOLT HEX SOCK M20X300	4111-27	12	10.2		
17	SCREW +CON. M4X0.7X20	4111-26	2	0.1		
16	SET PIN D1.3X14	4111-25	2	0.1		
15	SPR.LK.WSHR. NO.2 16	4111-24	6	0.1		
14	BOLT HEX SOCK M16X65	4111-23	6	0.9		
13	THRUST BRG.HOUSING (BTM)	4111-22	1	110.0		
12	THRUST BRG.HOUSING (TOP)	4111-21	1	110.0		
11	SPR.LK.WSHR. NO.2 16	4111-18	4	0.1		
10	BOLT HEX SOCK M16X65	4111-14	4	0.9		
9	SPRING PIN 10X20	4111-19	1	0.1		
8	SCREW +CON. M4X0.7X20	4111-18	2	0.1		
7	SET PIN D1.3X14	4111-17	2	0.1		
6	SET BOLT M10X1.0X54	4111-16	10	0.4		
5	SET BOLT M20X1.5X65	4111-15	5	1.0		
4	RING (BTM)	4111-14	1	2.9		
3	RING (TOP)	4111-13	1	2.9		
2	JOURNAL BRG.HOUSING (BTM)	4111-12	1	130.0		
1	JOURNAL BRG.HOUSING (TOP)	4111-11	1	130.0		
ITEM	PARTS NAME	PARTS NUMBER	QUANTITY	PER PIECE WEIGHT (KG)	TOTAL WEIGHT (KG)	REMARKS

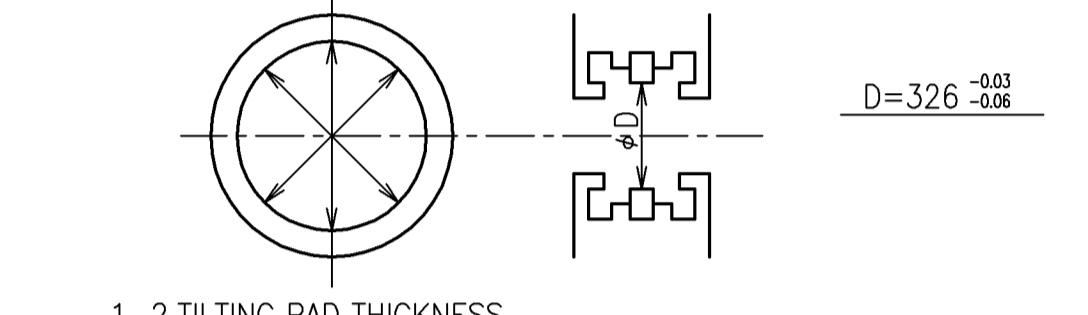


AFTER SETTING THE ROTOR POSITION, ADJUSTING PLATES THICKNESS SHALL BE ADJUSTED TO GIVE THE AXIAL CLEARANCE AS SHOWN.

COUPLING REFER TO COUPLING ASSY DWG. (BETWEEN GEAR AND LP COMP.) (790-44030)



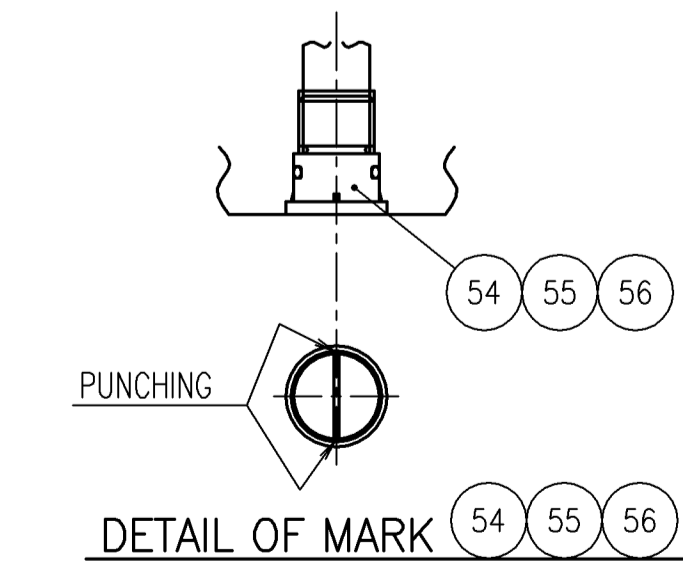
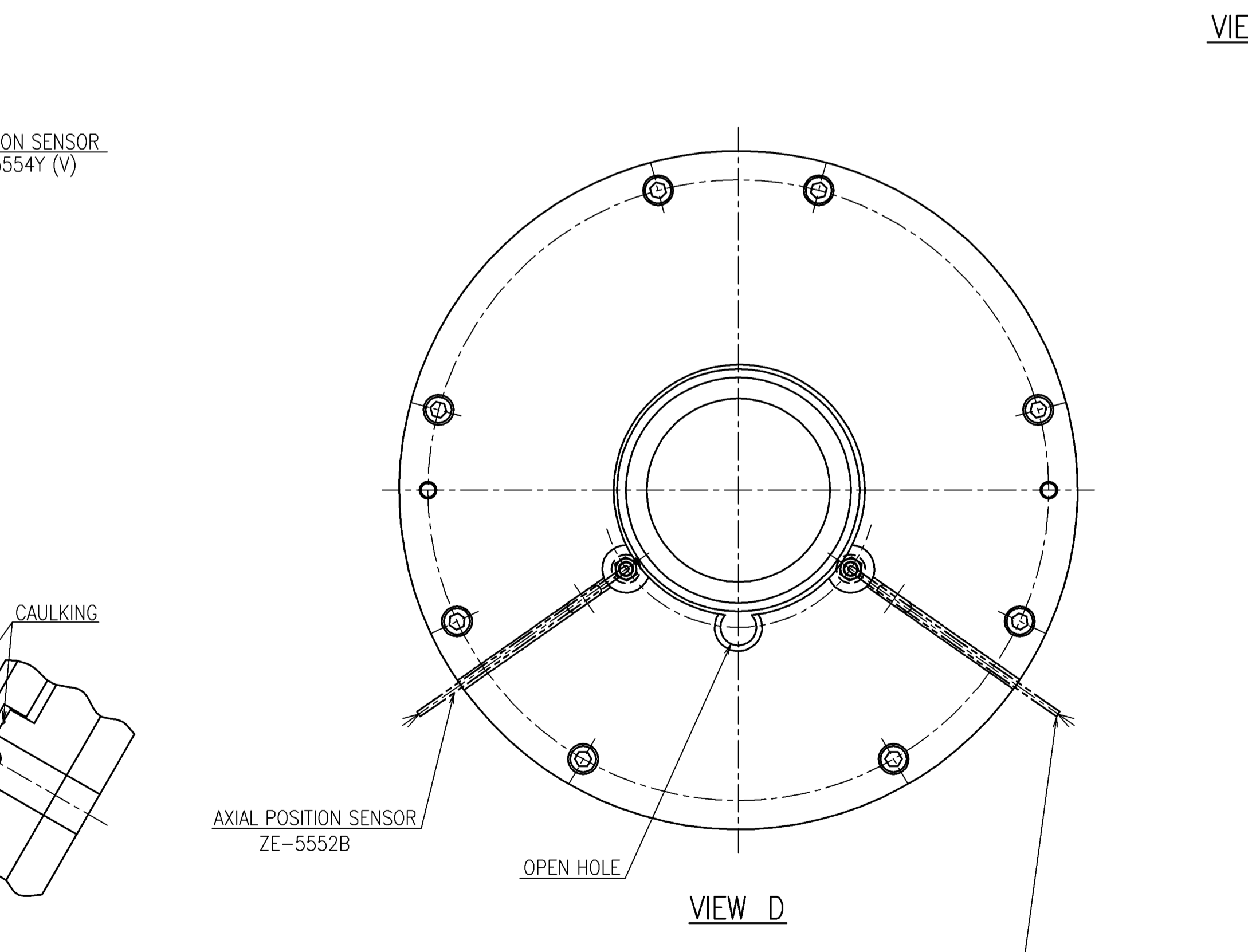
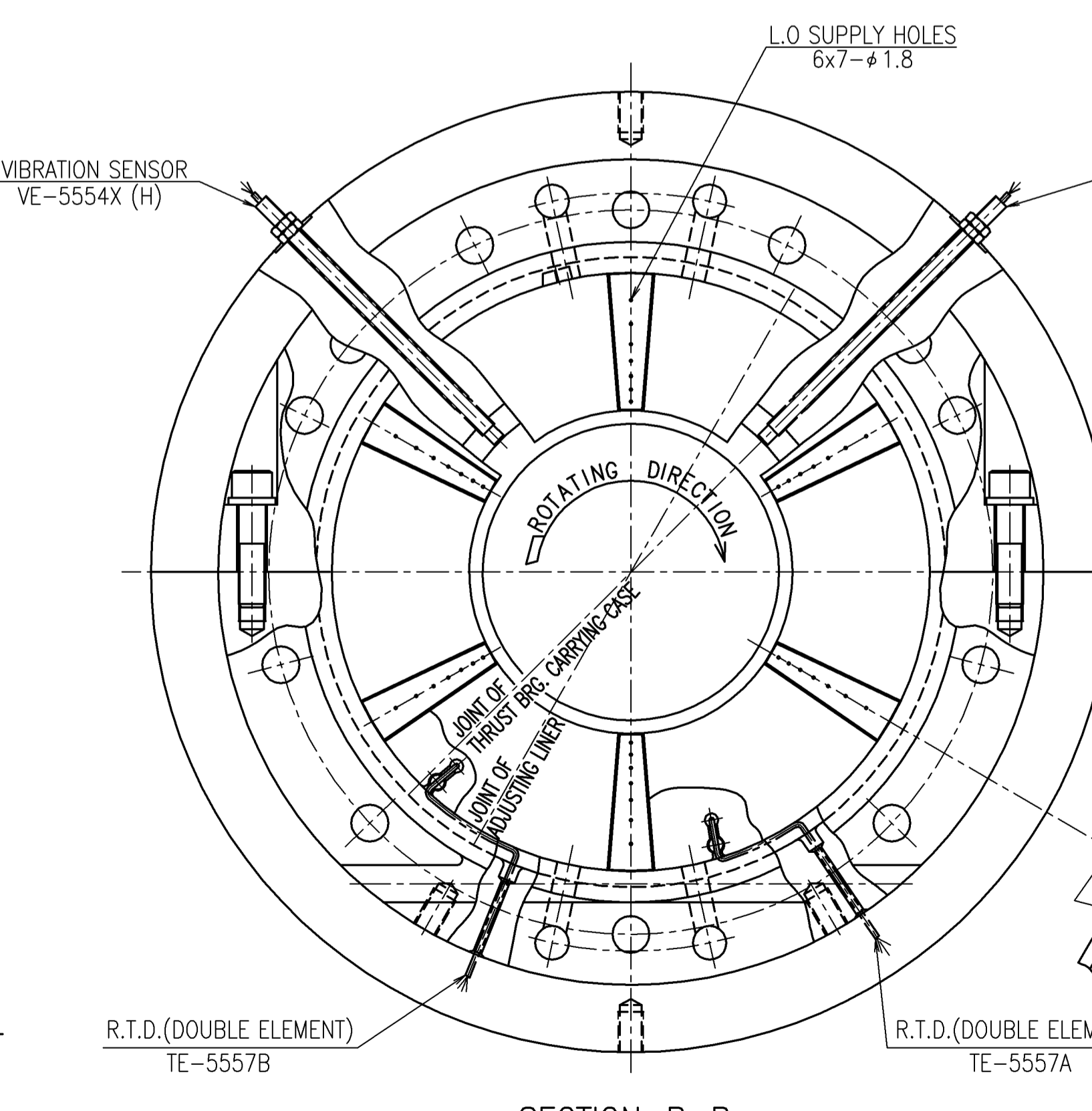
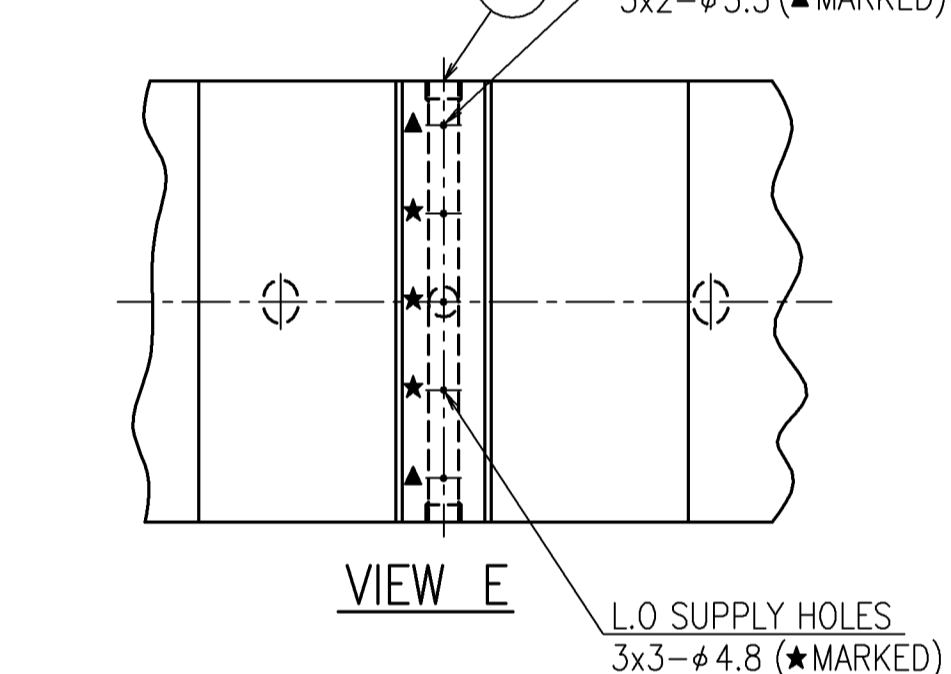
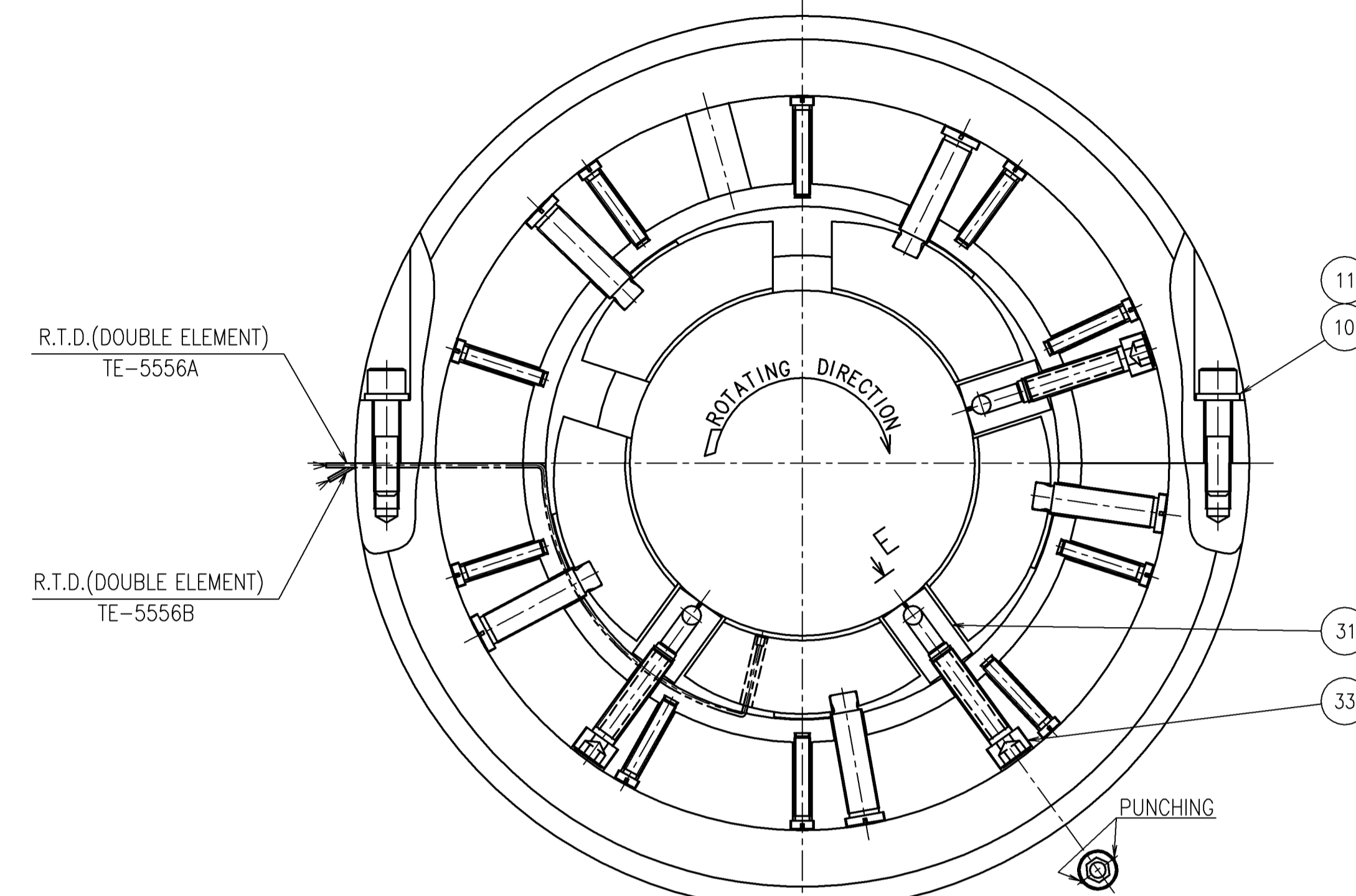
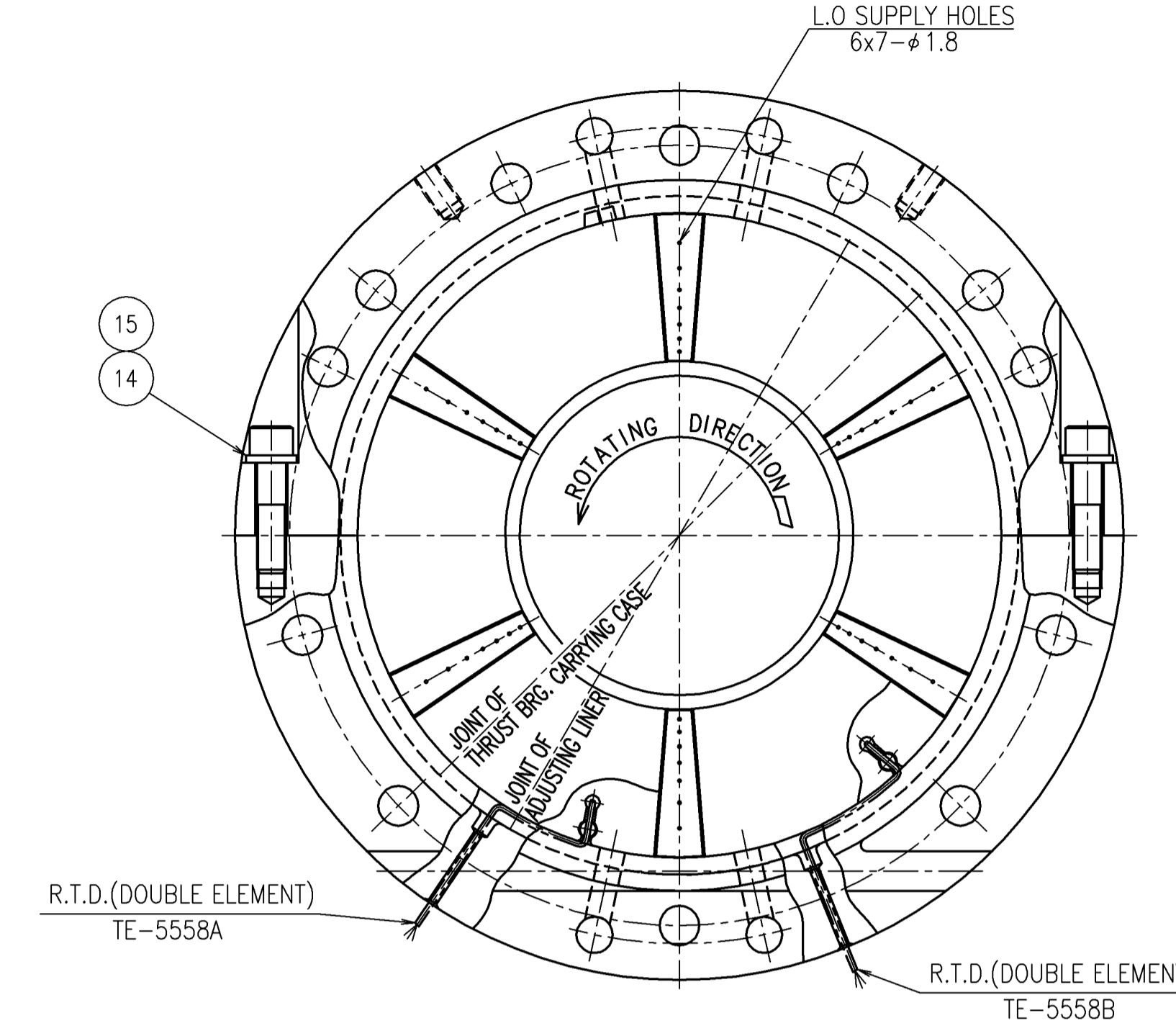
NOTE
1. JOURNAL BEARING CLEARANCE SHALL BE MEASURED AS FOLLOWS.
1-1. THE INNER DIAMETER OF HOUSING SHOULD BE MEASURED AFTER ASSEMBLING THE HOUSING.



1-2. TILTING PAD THICKNESS.
1-3. TOTAL CLEARANCE = $D_{max} - 2 \times T_{max} - \text{SHAFT DIA.} = 0.24 - 0.34$
1-4. THE RESULTS OF MEASURING SHOULD BE RECORDED.
2. MARK "*" DIMENSIONS SHOW DIAMETRAL CLEARANCE.

REFERENCE DRAWING
1. BEARING & SEAL ASSEMBLY DRAWING(2/2) --- 790-19479

SPECIFICATION
1. THRUST BEARING TYPE K-13 1/2 S
2. JOURNAL BEARING DIA. $\phi 220$
3. SEAL DIA. $\phi 370$
4. SEPARATION LABYRINTH DIA. $\phi 280$



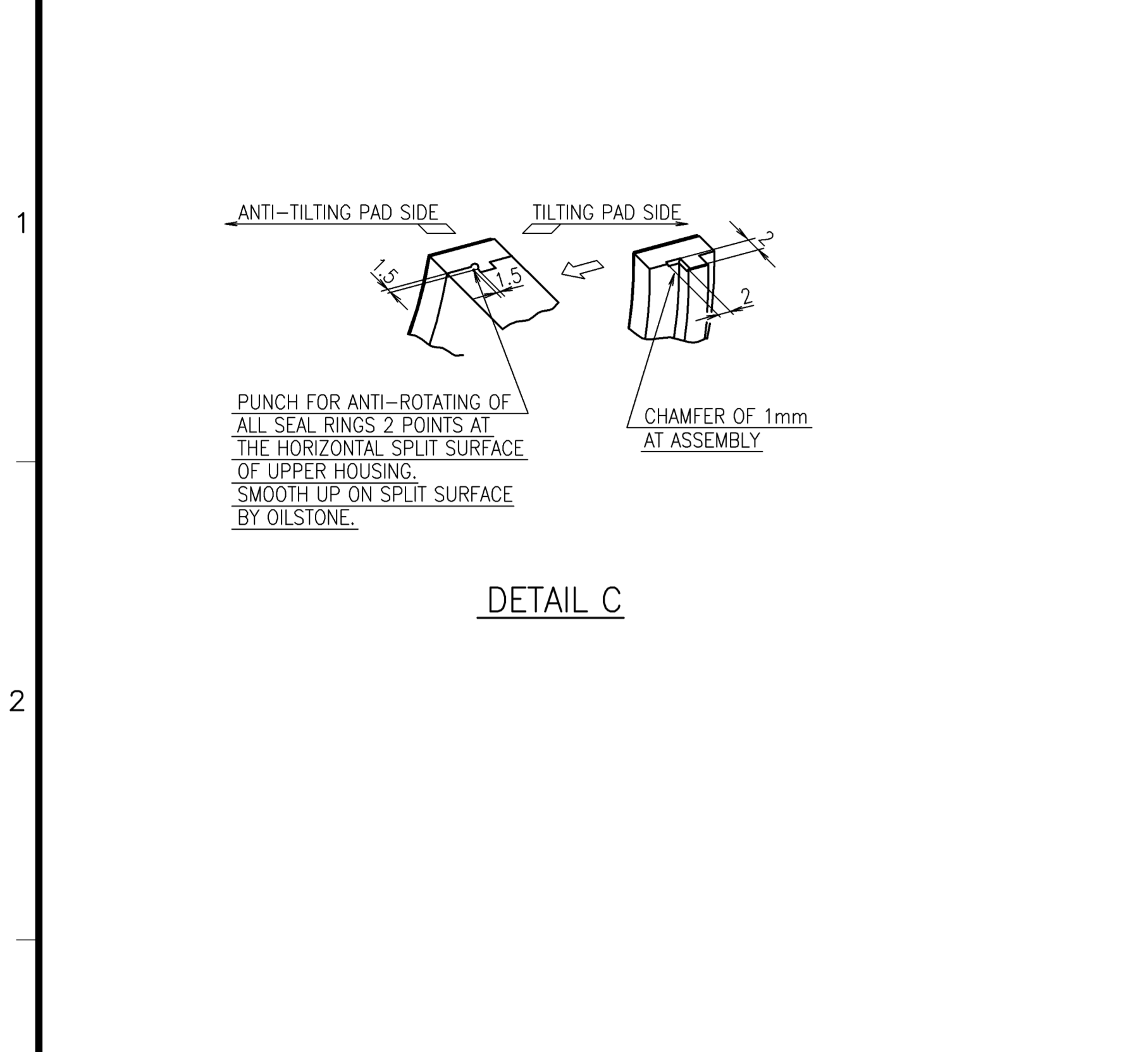
DATE	BY	CHKD	APPV	DESCRIPTION	MATERIAL	TEST	WORKS	REMARKS
12.11.12	K. OKANO			101-J AIR COMPRESSOR 11H-4B (LP) BEARING & SEAL ASSEMBLY DRAWING(1/2)				

DRAWING NO. 790-19478

NO.	REV.	DESCRIPTION
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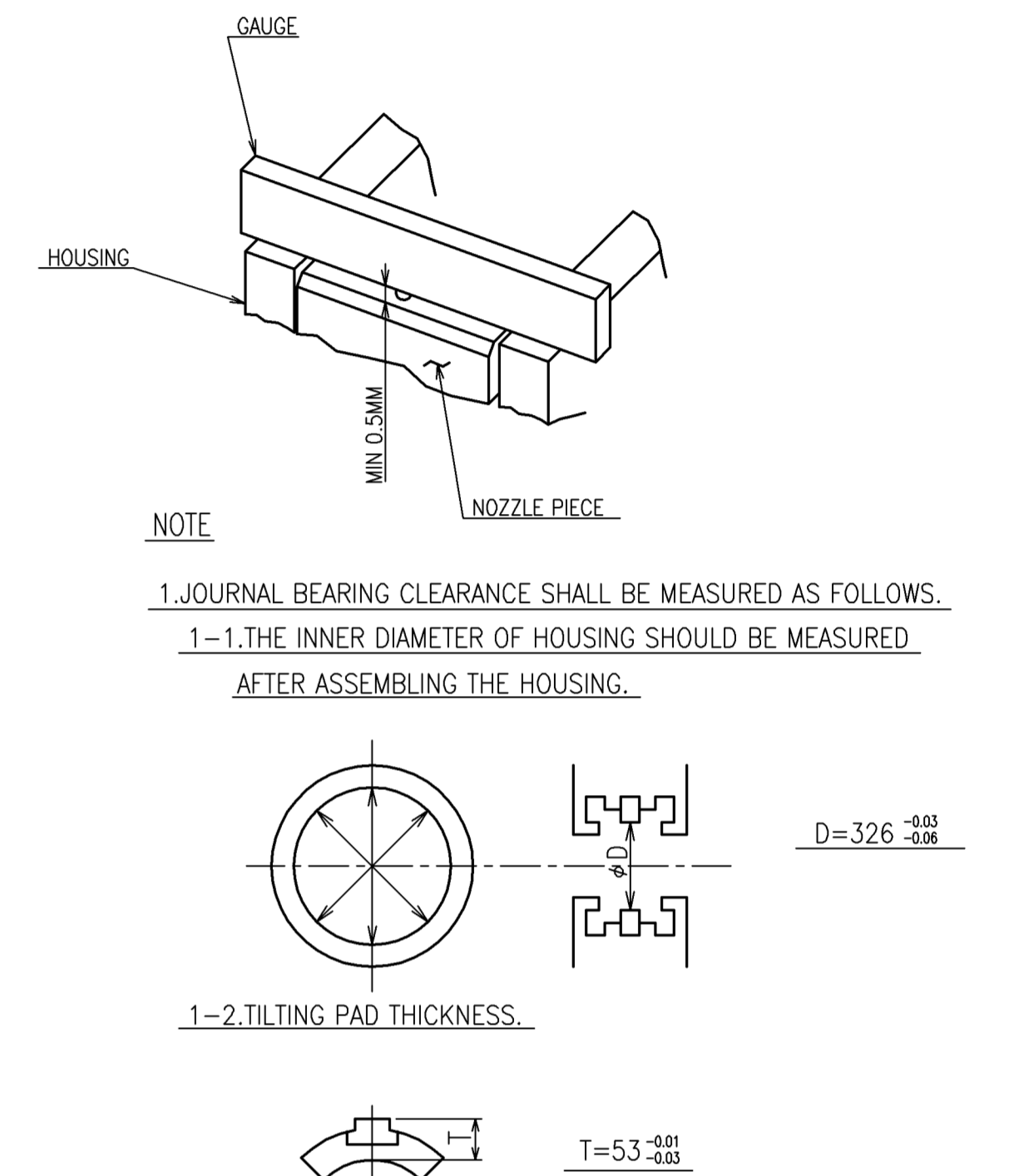
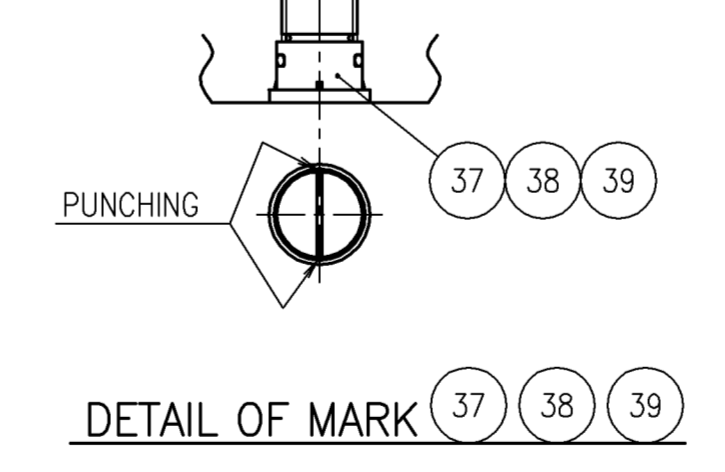
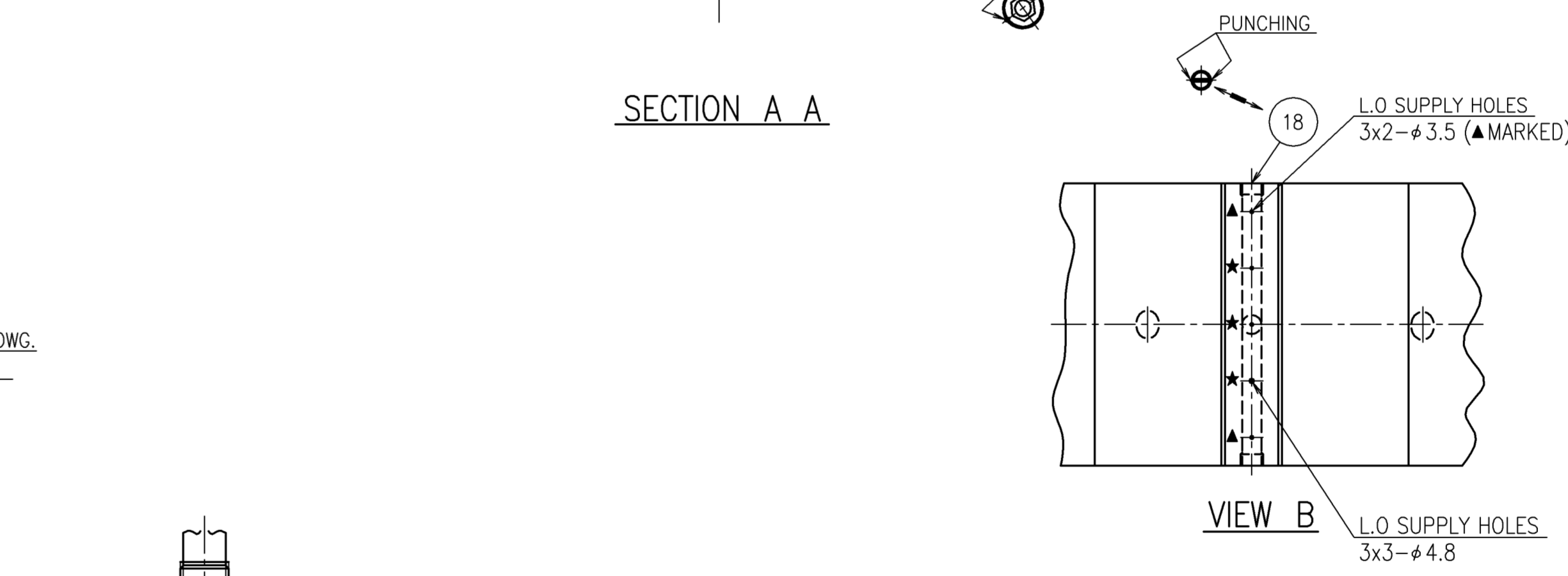
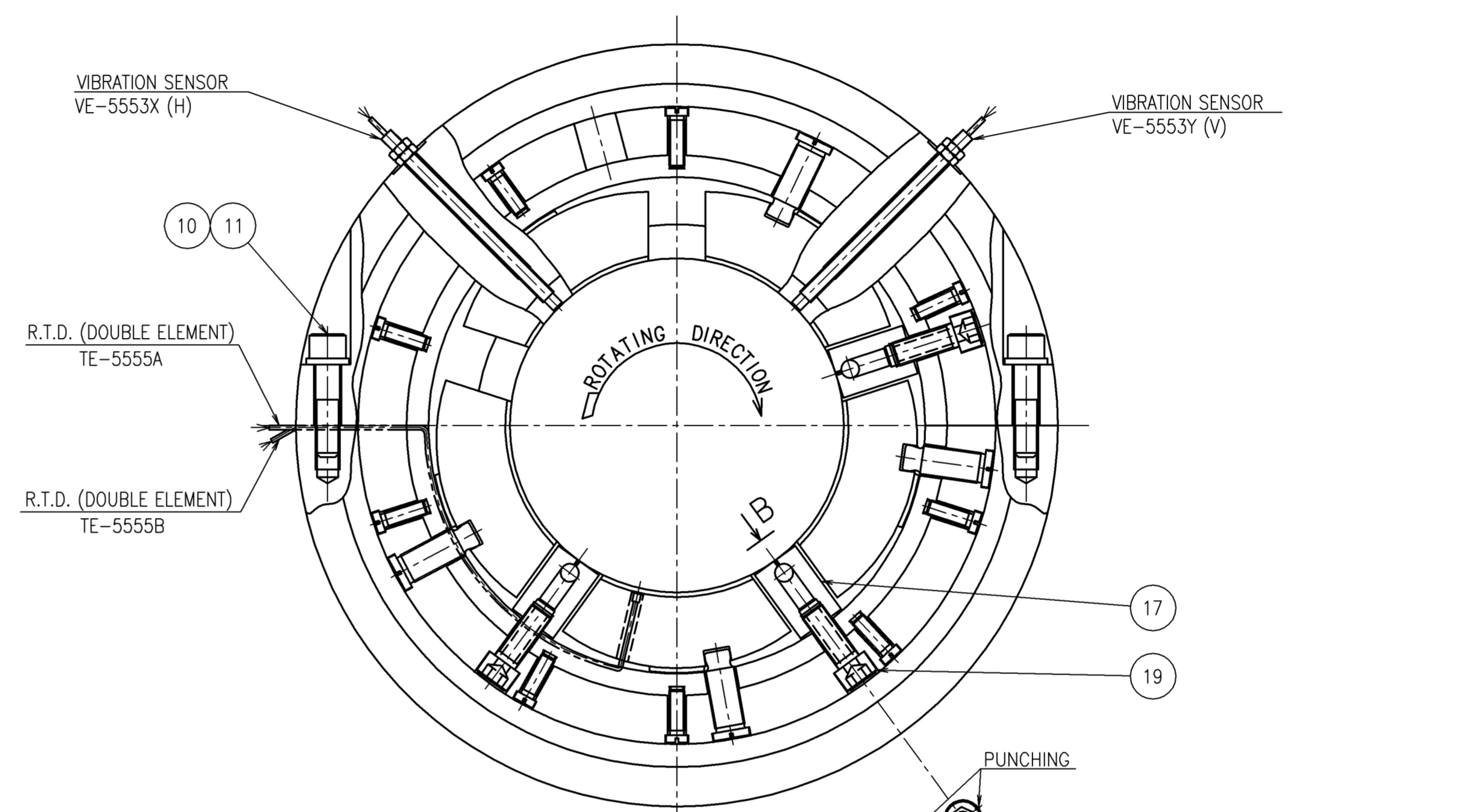
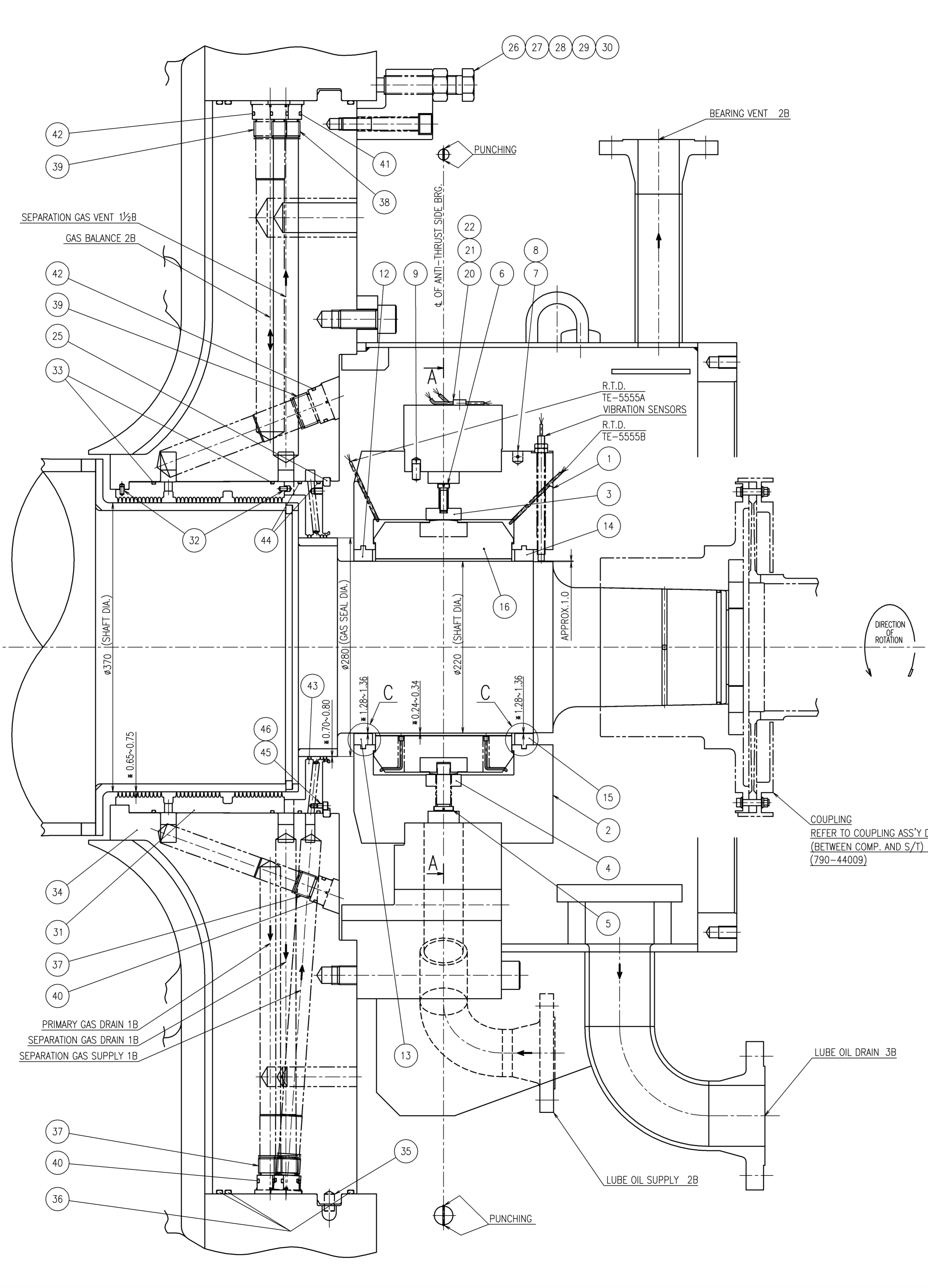
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A B C D E F G H J K L M



ITEM	PARTS NAME	PARTS NUMBER	QUANTY	PER PIECE WEIGHT (Kg)	TOTAL WEIGHT (Kg)	REMARKS
48						
47						
46	CONICAL SPR.WSHR 2ND 6	4611-85	1	0.1		
45	BOLT HEX SOCK M6X8	4611-84	1	0.1		
44	O*RING D3.5XD406.4	4611-83	2	0.1		
43	SEPARATION LABYRINTH	4611-81	1	6.0		
42	O*RING D3.5XD37.7	4611-71	2	0.1		
41	O*RING D3.5XD32.9	4611-69	1	0.1		
40	O*RING D3.5XD26.6	4611-68	4	0.1		
39	PLUG M42	4611-67	2	0.5		
38	PLUG M36	4611-66	1	0.3		
37	PLUG M30	4611-65	4	1.0		
36	O*RING D5.7XD1349	4611-63	3	0.1		
35	SPRING PIN D13X22	4611-62	1	0.1		
34	SEAL HOUSING HOLDER	4611-61	1	2070.0		
33	O*RING D3.5XD405	4611-53	2	0.1		
32	SPRING PIN D5X10	4611-52	2	0.1		
31	SHAFT SEAL LABYRINTH	4611-51	1	14.4		
30	CONICAL SPR.WSHR 2ND 16	4611-35	6	0.1		
29	HEX NUT 2ND M24	4611-34	3	0.3		
28	JACK BOLT M24X110	4611-33	3	1.6		
27	BOLT HEX SOCK M16X100	4611-32	6	1.2		
26	ADJUSTING PIECE H=97	4611-31	3	10.8		
25	STOP RING	4611-11	1	1.0		
24						
23						
22	SPR.LK.WSHR. NO.2 6	4211-73	4	0.1		
21	+PAN HEAD SCREW M6X10	4211-72	4	0.1		
20	CLAMP	4211-71	4	0.1		
19	SET BOLT M16X43 L=43	4211-63	3	0.3		
18	PLUG M14	4211-62	6	0.1		
17	NOZZLE D3.5&D4.8	4211-61	3	2.4		
16	TILTING PAD (NON-THRUST)	4211-41	1	56.7		
15	SEAL RING (OUTER-BTM)	4211-34	1	1.1		
14	SEAL RING (OUTER-TOP)	4211-33	1	1.1		
13	SEAL RING (INNER-BTM)	4211-32	1	1.1		
12	SEAL RING (INNER-TOP)	4211-31	1	1.1		
11	SPR.LK.WSHR. NO.2 16	4211-18	4	0.1		
10	BOLT HEX SOCK M16X65	4211-1A	4	0.9		
9	SPRING PIN 10X20	4211-19	1	0.1		
8	SCREW +CON. M4X0.7X20	4211-18	2	0.1		
7	SET PIN D13X14	4211-17	2	0.1		
6	SET BOLT M10X1.0X30	4211-16	10	0.2		
5	SET BOLT M20X1.5X41	4211-15	5	0.7		
4	RING (BTM)	4211-14	1	2.9		
3	RING (TOP)	4211-13	1	2.9		
2	JOURNAL BRG.HOUSING (BTM)	4211-12	1	100.0		
1	JOURNAL BRG.HOUSING (TOP)	4211-11	1	100.0		
ITEM	PARTS NAME	PARTS NUMBER	QUANTY	PER PIECE WEIGHT (Kg)	TOTAL WEIGHT (Kg)	REMARKS

A1 成製共98(2)



NOTE

- JOURNAL BEARING CLEARANCE SHALL BE MEASURED AS FOLLOWS.
 - THE INNER DIAMETER OF HOUSING SHOULD BE MEASURED AFTER ASSEMBLING THE HOUSING.
 - TILTING PAD THICKNESS.
 - TOTAL CLEARANCE = $D_{we} - 2 \times t_{we} - \text{SHAFT DIA} = 0.24 \sim 0.34$
 - THE RESULTS OF MEASURING SHOULD BE RECORDED.
- MARK "*" DIMENSIONS SHOW DIAMETRAL CLEARANCE.

REFERENCE DRAWING

- BEARING & SEAL ASSEMBLY DRAWING (1/2) --- 790-19478

SPECIFICATION

- JOURNAL BEARING DIA. $\phi 220$
- SEAL DIA. $\phi 370$
- SEPARATION LABYRINTH DIA. $\phi 280$

SPARE	MARK	DESCRIPTION	MATERIAL	TEST	SPARE	WORKS	REUSE	TOTAL	REMARKS
1	SET	ENGINEERING DEPARTMENT							
		COMPARATOR & TURBINE ENGINEERING SECTION							
		TEC/KALTIM-5							
		101-J AIR COMPRESSOR							
		11H-4B (LP)							
		BEARING & SEAL ASSEMBLY DRAWING (2/2)							
		PREPARED T. OHTA							
		DRAWN K. OKANO							
		SCALE 1/3							
		4200							
		790-19479							
		MITSUBISHI HEAVY INDUSTRIES							
		COMPRESSOR CORPORATION							

DRAWING NO. 790-19479

Auto CAD

DATE	NO.	REVISION	REMARKS
12.11.12	1		
	2		
	3		
	4		

