

**INSPECTION AND TEST PROCEDURE**

Vendor Document No: LNH3-HEI-ITP-QC-002




Rev. No. 0



Page 1 of 27

**OWNER : TORISHIMA PUMP MFG. CO.,LTD**  
**PROJECT TITLE : LNH3 TESTING FACILITY**  
**PO NO : 3100099788 & 3100099789**  
**VENDOR : PT. HANAZONO ENGINEERING INDONESIA**  
**LOCATION : TORISHIMA PUMP MFG. CO.,LTD - JAPAN**

**FOR APPROVAL**



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0	February 08, 2024	For Approval	BENRIDHO	RUSNANDI	MURASATO	CLIENT
REV	DATE ISSUED	ISSUE PURPOSE	PREPARED	CHECKED	APPROVED	AUTHOLIZED

	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
	Rev. No: 0	Page 2 of 27	



## **CONTENTS**

<b>1. GENERAL .....</b>	<b>4</b>
1.1 Scope .....	4
1.2 Reference .....	4
<b>2. INSPECTION AND TEST (FABRICATION) .....</b>	<b>5</b>
2.1 Receiving Material Inspection .....	4
2.2 Material Identification .....	5
2.3 Cutting and Edge Preparation .....	5
2.4 Fit-Up .....	6
2.5 Dimensional .....	7
2.6 General Dimensional Tolerance .....	10
2.7 Welding .....	13
2.8 Visual .....	15
2.9 Non Destructive Examination (NDE) .....	17
2.10 Pressure Test .....	18
2.11 Pickling .....	18
2.12 Bolt Tightening & Bolt Up .....	18
2.13 Packing & Shipping .....	19
<b>3. INSPECTION AND TEST RECORDS .....</b>	<b>19</b>
Attachment 1 Receipt Inspection Checklist Report .....	21
Attachment 2 Material Traceability Report .....	22
Attachment 3 Dimensional Report .....	23
Attachment 4 Visual Inspection Report .....	24
Attachment 5 Welding Traceability & NDE Clearance Report .....	25
Attachment 6 Certification of Leak Test .....	26
Attachment 7 Packing Inspection Report .....	27

	<b>LNH3 TESTING FACILITY</b>	
<b>INSPECTION &amp; TEST PROCEDURE</b>	Vendor Doc No: LNH3-HEI-ITP-QC-002	
	Rev. No: 0	Page 3 of 27

### Revision History

Rev	Date	Description of Change
0	February 08, 2024	For Approval

	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
		Rev. No: 0	Page 4 of 27

## 1. GENERAL

### 1.1. Scope

This Procedure covers the requirements for fabrication of Ammonia (LNH3) Pump Testing Facility and accessories for **“TORISHIMA PUMP MFG. CO.,LTD”**.

### 1.2. Reference

This procedure prepared in accordance with following reference:

- JIS Standards
- ASME Standards
- ASME Section II, Part A
- ASME Section II, Part C
- ASME Section V
- ASME Section VIII, Div. 1
- ASME Section IX
- ASTM Standards
- Fabrication Drawing (AFC)

### 1.3. Equipment of Supply

Scope of Equipment to be supply in accordance with following below :



No.	Item Name	Material Specification	Quantity
1.	LNH3 Test Tank	Carbon Steel	1
2.	Coil	SS 304	1
3.	Scrubber	Carbon Steel	1

## 2. INSPECTION AND TEST (FABRICATION)

Fabrication of the equipment's shall be carried out in accordance with the requirements prescribed in the reference par.1.1. and 1.2. (General).

### 2.1. Receiving Material Inspection

- 2.1.1. Before receiving the material, the QC Dept must prepare a PO, BOM, as reference the inspection material.
- 2.1.2. When the material arrives at shop QC inspector will be checked based on packing list.
- 2.1.3. after unloading the material and put at laydown area, Inspection will done such as dimensional, quantity, visual, heat/lot no. and material specification.

	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
		Rev. No: 0	Page 5 of 27



- 2.1.4. The identification all the material will be done for easy to traceability of material report.
- 2.1.5. All item material receiving will compare to the purchase order, so that there are no deviations in the material receiving process. Result of Receiving Inspection Checklist Report will be created and distribute to other Department.
- 2.1.6. If any reject, the material must be separated and marked.

## 2.2. Material Identification

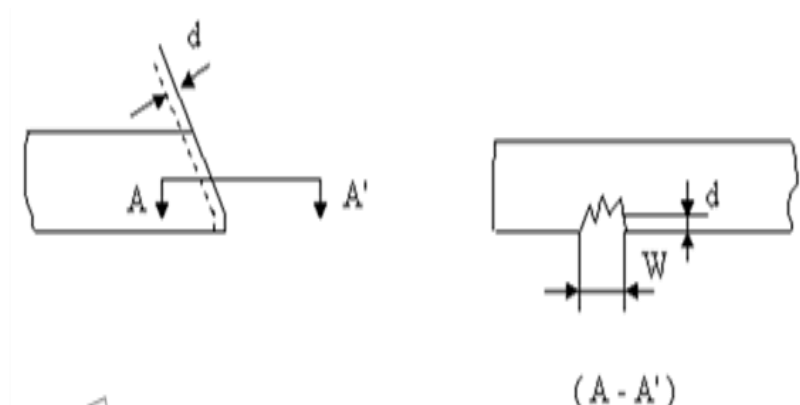
- 2.2.1. Material shall be checked that they are coincided with the designation. The identification of each material shall be visually and dimensional inspected with the mill test certificate/ certificates.
- 2.2.2. During shop fabrication, in case that the mill marking is unavoidably cut out or the material is divided into two or more pieces, heat number, shall be properly stamped or marked on each piece of the material before cutting.
- 2.2.3. PMI (Positive Material Identification) for Anchorage & Dissimilar metal welds shall be conducted before installation in accordance with approved Positive Material Identification Procedure.

## 2.3. Cutting and Edge Preparation

- 2.3.1. Plates and other parts may be cut to shape and sized by mechanical means such as machining, grinding, or by plasma arc cutting. All slag and detrimental discoloration of material which has been molten shall be removed by grinding prior to further fabrication.
- 2.3.2. Bevels of the butt weld connection, etc. are finished with plasma arc cutting, machining, grinding by stainless steel disc.
- 2.3.3. Stainless Steel material, shall be cut by plasma arc cutting, and edge preparation shall use special grinding tool/ brushes used for Stainless Steel, and shall be segregated from Ferritic' s inclusion.
- 2.3.4. The plate shall be cut by thermal means and the contamination such as oxide scale, slag which would be adversely affected to the quality or strength of the weld shall be removed up to 2 mm to remove hard scale and HAZ.
- 2.3.5. Plate edge shall be closely inspected by visual, and shall free from cutting notch and lamination defect.

	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
		Rev. No: 0	Page 6 of 27

2.3.6. Uneven surface of plate edge shall be treated as follows.



Part	Size of notch (mm)	Treatment	Remarks
Root face	$d \leq 1, w \leq 2$	Smooth by grinder	
	$d > 1, w > 2$	Weld repair and MT or PT	(*1)
Bevel	$d \leq 1, w \leq 2$	Smooth by grinder	
	$d > 1, w > 2$	Weld repair and MT or PT	(*1)

Note: (\*1) Repair welds shall be performed by a qualified welder and approved Welding Procedure Specification (WPS).

## 2.4. Fit-Up

2.4.1. Prior to assembling / fit up, marking of each part, dimensions shall be checked with shop drawing.

2.4.2. The parts to be welded shall be cleaned out and free from scale, rust, oil and other deleterious foreign material for a distance of at least 13 mm from the welding joint preparation.

2.4.3. The following dimensional tolerances shall apply.

- Offset in butt welding (Alignment tolerance: UW-33 of ASME Section VIII, Div. 1)

Section Thickness (mm)	Joint Category	
	A	B, C & D
$T \leq 13 \text{ mm}$	$\frac{1}{4} T$	$\frac{1}{4} T$

**INSPECTION & TEST PROCEDURE**

Vendor Doc No: LNH3-HEI-ITP-QC-002

Rev. No: 0

Page 7 of 27

Over 13 to 19, incl	3 mm	$\frac{1}{4}$ T
Over 19 to 38, incl	3 mm	5 mm
Over 38 to 51, incl	3 mm	$\frac{1}{8}$ T
Over 51	Lesser of $\frac{1}{16}$ T or 10 mm	Lesser of $\frac{1}{8}$ T or 19 mm

Where: T is Thickness

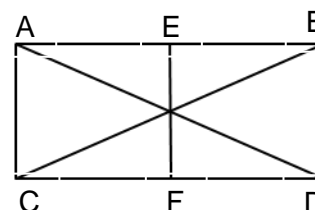
- Root gap bevelled angle to be within the range specified on the approved WPS or Drawing, unless otherwise specified another Code/ Standard.

2.5. Dimensional

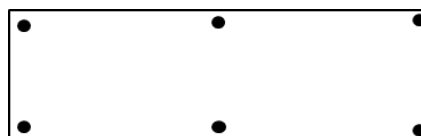
2.5.1. Shell Plate

- The dimension inspection of shell plates shall be performed prior to bending. The dimensional tolerances of shell are as follows :

Measurement items	Tolerance (mm)
Width (AC, BD, EF)	$\pm 3$
Length (AB, CD)	$\pm 3$
Diagonal (AD-BC)	$\pm 3$





- To check the thickness of the plate at the six points on each plate after rolling process as shown below, using the micrometer or ultrasonic thickness meter.



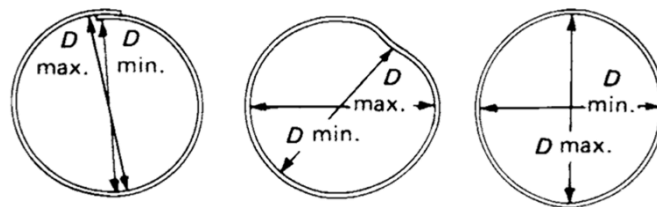
Measuring Point

- The curvature of shell plate shall be checked by a curvature gauge with the tank radius as shown below.  
The deviation (C1, C2, E) of curvature on the inside surface of shell plate shall be 3mm and less.

	<b>LNH3 TESTING FACILITY</b>	
<b>INSPECTION &amp; TEST PROCEDURE</b>	Vendor Doc No: LNH3-HEI-ITP-QC-002	
	Rev. No: 0	Page 8 of 27



- The shell of a completed stacks shall be substantially round and shall meet the following requirements:
  - a) The difference between the maximum and minimum inside diameters at any cross section shall not exceed 1% of the nominal diameter at the cross section under consideration.
  - b) When the cross section passes through an opening or within 1 I.D. of the opening measured from the centre of the opening, the permissible difference in inside diameters given above may be increased by 2% of the inside diameter of the opening. When the cross section passes through any other location normal to the axis of the vessel, including head-to-shell junctions, the difference in diameters shall not exceed 1%.



$$\frac{\text{Maximum ID} - \text{Minimum ID}}{\text{Nominal ID}} \times 100\% \leq 1\%$$

- c) Straightness of the stacks shall be measured with piano string / wire / theodolite and shall not be greater of  $\pm 1.0$  mm per 1000 mm of length.
- d) At the time of trial assembly, the stack shall be levelling by X and Y coordinate to within 2 in. (50 mm) in 100 ft (30 m) with using theodolite.
- e) Local dents in plates shall be no deeper than one-half the plate thickness.

#### 2.5.2. Nozzle and manhole attached to shell plate.

The dimensional tolerances of nozzle and manhole attached to shell plate are as follows:



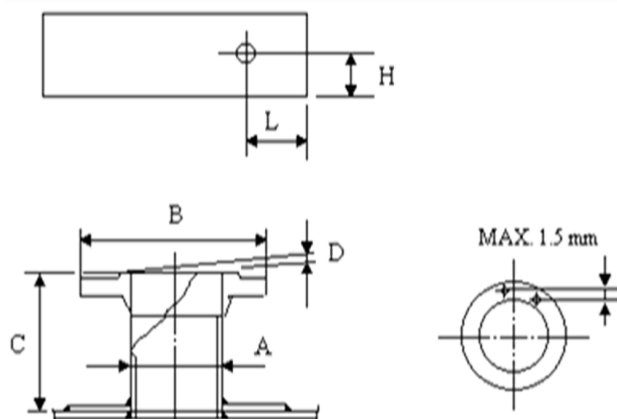
**INSPECTION & TEST PROCEDURE**

Vendor Doc No: LNH3-HEI-ITP-QC-002

Rev. No: 0

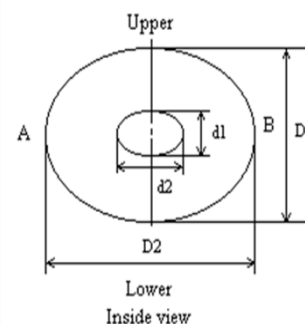
Page 9 of 27

Item	Measurement items	Tolerance (mm)
Nozzle	Projection (C)	-0, +5
	Inclination of flange face to neck (D)	$\pm 0.5^\circ$
	Location (H) and (L)	$\pm 4$ $\pm 2$
	Nominal Thickness	-0.125 mm
Manhole & Blind Cover	Projection (C)	-0, +5
	Inclination of flange face to neck (D)	$\pm 1.0^\circ$
	O.D of manhole neck (A)	$A_{max}-A_{min} = 0.01A$
	O.D of flange (B)	$\pm 4$
	Thickness of plate flange	-0, +3
	Location (H, L)	$\pm 5$
	Nominal Thickness	-0.125 mm



- 2.5.3. Reinforcing pad for nozzle and manhole.  
The allowable tolerance of reinforcing pad is as follows :

Measurement items	Tolerance (mm)
d1, d2	$\pm 1.5$
D1, D2	$\pm 3.0$



**INSPECTION & TEST PROCEDURE**

Vendor Doc No: LNH3-HEI-ITP-QC-002

Rev. No: 0

Page 10 of 27

2.6. General Dimensional Tolerance.

This is General tolerance for Test Tank.

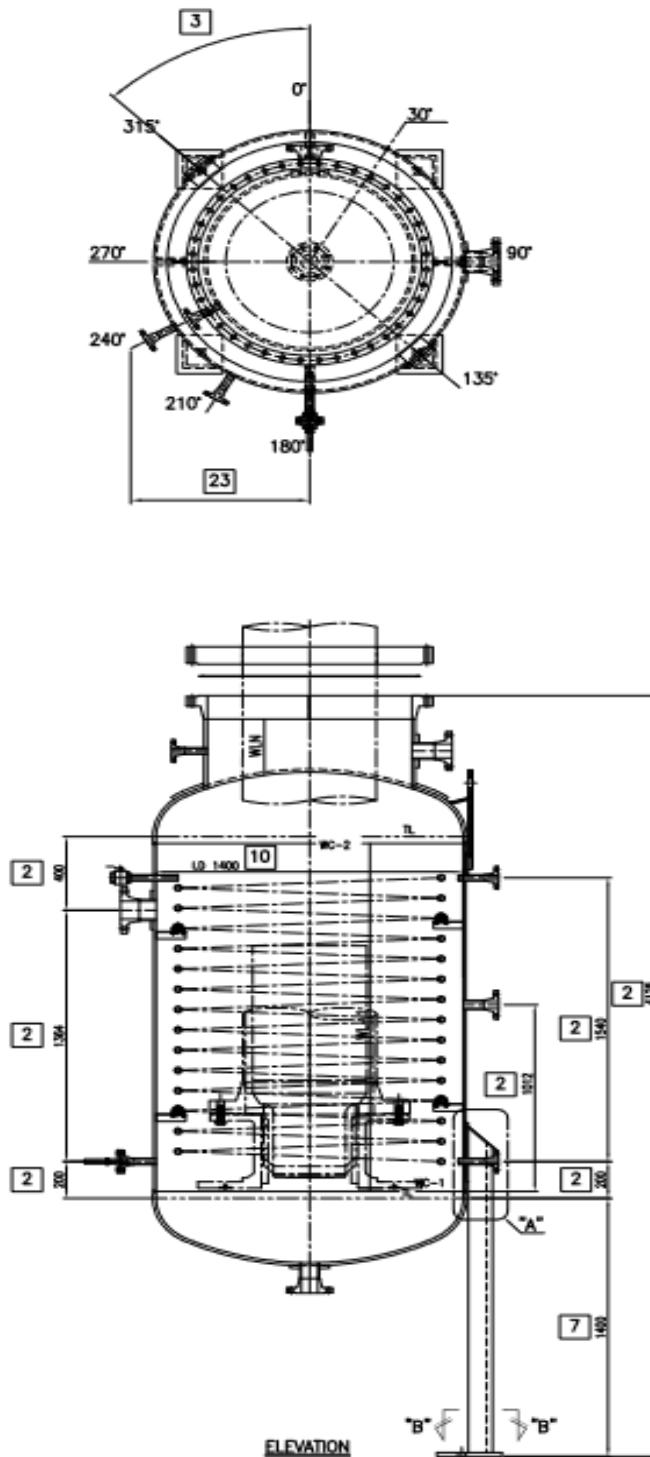






FIGURE -1

	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
	Rev. No: 0	Page 11 of 27	

## NOTES FOR FIGURE 1:



1. The tolerance on dimensions not specified herein or specifically shown on project drawings shall be  $\pm 1/4$  inch.
2. Items not covered by Notes 16,17 and 18 which have been located on project drawings by elevation or by a dimension from a tangent or reference line shall be located from the reference plane, within a tolerance of  $\pm 1/4$  inch.
3. The tolerance on orientation from the reference center line to the center line of a nozzle or manhole is  $\pm 1$  degree, except the circumferential measurement shall have a maximum tolerance of  $\pm 1$  inch.
4. The tolerance on the distance from the face of a nozzle to the vessel surface is  $\pm 1/4$  inch.
5. The tolerance on the distance from the inside vessel wall to downcomer support bars or weirs is shown on the tray manufacturer's tower attachment drawing.
6. The tolerance on the height of downcomer bolting bars above tray support rings is as shown on the tray manufacturer's tower attachment drawing.
7. The tolerance on the length of downcomer bolting bars is as shown on the tray manufacturer's tower attachment.
8. The tolerance on the alignment of a nozzle flange face with the indicated plane is  $\pm 1$  degree in any direction
9. The tolerance on the distance from the face of a manhole flange to the vessel surface is  $\pm 1/2$  inch.
10. The maximum deviation of the actual circumference (as determined by strapping) from the nominal circumference is as shown in Column C, Table 1
11. The tray support rings shall be perpendicular to the longitudinal axis of the vessel within the limits given in Column B, Table 1. Dimensions shown in Table 1 represent total permissible out of level across diameter of vessel.
12. The top surface of tray support rings shall be perpendicular to the vessel shell within  $1/16$  inch in the width of the ring.
13. The top of weld-attached weir plates shall be perpendicular to the longitudinal axis of the vessel within the limits given in Column C, Table 1.
14. The tolerance on the distance between adjacent tray supports is  $\pm 1/8$  inch.
15. The maximum deviation in the elevation between each adjoining clip, bracket, and similar structural attachment located in the same plane is  $\pm 1/8$  inch. The tolerance on location from the tangent or reference line for each individual clip, bracket, or attachment is shown in Note 2.
16. The tolerance on the distance from the reference plane to support lug is  $+1/4$  inch & -0.
17. The tolerance on the distance from the reference plane to the bottom of baseplate is +0, &  $-1/4$  inch.

	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
	Rev. No: 0	Page 12 of 27	

18. The tolerance on the distance from the reference plane to horizontal vessel support (saddle) is +1/4 inch, & -0.
  19. The tolerance on the distance from the vessel surface to the bottom of horizontal vessel support saddles is +1/4 inch, & -0.
  20. The reference plane shall be located 2 inches above the root land (face) in a vertical vessel bottom course and 2 inches from the root land in a horizontal vessel end course at the side from which dimensions are run. The plane shall be punch marked inside and outside at 0, 90, 180, 270 degree points. Punch marks shall be circled with paint.
  21. The tolerance on the specified dimension between two nozzles, connections, or clip is  $\pm 1/8$  inch.
  22. The maximum deviation from a straight line perpendicular to the reference plane of any cylindrical element of the vessel shell (including cylindrical or similar supports extending beyond the shell of vertical vessels) shall be 1/8 inch for each 10 feet of length.
  23. The tolerance on the distance from the face of a hillside shell nozzle to the vessel centerline is  $\pm 1/4$  inch.
  24. The tolerance on nozzle bolt hole orientation is  $\pm 1/16$  inch measured at the bolt circle diameter.
  25. The tolerance for external clip orientation and clip face alignment is as shown in Notes 3 and 8.
  26. Bolt circle diameter and pitch between bolt holes, or distance between the bolt holes of support saddles:
    - a. Nominal I.D.  $\leq 7$  ft:  $\pm 1/8$  inch
    - b. Nominal I.D.  $> 7$  ft:  $\pm 1/4$  inch
- Flange face of bottom draw-off nozzles from the reference plane,  $\pm 1/4$  inch.

Table 1 – Variable Tolerances

Column/Tower Diameter ft.	Tolerance, Inches		
	A	B	C
4 ft. & Less	3/8	1/8	1/8
4 ft. to 8 ft.	1/2	1/4	3/16
8ft. to 15ft.	1	5/16	1/4
Over 15ft.	1 1/2	3/8	5/16

	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
		Rev. No: 0	Page 13 of 27

## 2.7. Welding.

### 2.7.1. Welding Qualification Test.

- Welding Procedure Specification (WPS).

The welding procedure specification shall be supported by the records of Procedure Qualification Record (PQR) as required by ASME Sec. IX. WPS/ PQR shall be Endorsement and approved by the Purchaser prior to commencement of production welding.

- Welding procedure specification shall be carried out in accordance with WPS/PQR & Welding & NDE Map.
- Welder Performance Qualification Testing (WPQT).
- The welders and welding operators shall be carried out in accordance with Welder List & Certificates.
  - a). The welders and welding operators who weld pressure parts and join non pressure parts, such as all permanent and temporary clips and lugs, to pressure parts shall be qualified in accordance with ASME Sec. IX.
  - b). If a new qualification test for welders is to be taken, the welder performance qualification test shall be performed in accordance with ASME Sec. IX.
  - c). Welders shall be initially qualified by Radiography Test.



### 2.7.2. Welding Process

- Gas Tungsten Arc Welding (GTAW).
- Shield Metal Arc Welding (SMAW).

### 2.7.3. Preparation of Welding.

The surfaces of the parts to be welded shall be clean free from scale, rust, oil, grease and deleterious foreign material for a distance of at least 13mm for the welding joint preparation for ferrous materials and at least 51mm for non-ferrous materials.

- The welding shall be done by qualified welders.
  - a. The welding shall be carried out in “FLAT” position as far as possible and the welding sequence shall be established in order to minimize residual stresses.
  - b. Usually, tack weld is applied to prepare edge for welding using the same welding materials as main welding and the same WPS, and they shall be

	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
		Rev. No: 0	Page 14 of 27

removed by arc gouging and / or grinding so that they are not merged into the actual weld.

- c. Detail welding procedure shall be in accordance with WPS & PQR approved by purchaser.
- d. During shop fabrication, identification for welding process shall be properly record or marked on each piece of the material before welding.

#### 2.7.4. During of Welding.

When process welding, the QC Inspection shall check of welder activities, that is as follows :

- The wire welding rod according specification or WPS.
- The welding area is shall be clean and free form mill scale, dust, cutting notch or other foreign material.
- Welding material shall be kept on the hand dryer or portable dryer.
- Travel speed of welding, voltage, ampere and pre-heat temperature must be kept according procedure.
- Making weld identification joint for traceability of welding such as : joint no, ID welder, WPS No., and weld process.
- Making welding record.



#### 2.7.5. After Welding.

This is inspection after all welding activity completed, the Inspector having responsibility among them are as follows :

- Final visual welding inspection will be carry out for each welding joint refer to para 2.7 Visual.
- All surface of welding area shall clean and free from defect welding such as : spatter, crack, undercut, slag, irregular weld, etc.
- Check of deformation after weld.
- The welding data to be record each welding joint.
- Final visual examination report inspection refer to attachment-IV

#### 2.7.6. Connections

- All The inner corners of the nozzle shall be rounded off to remove sharp corners.

	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
	Rev. No: 0	Page 15 of 27	

- Openings for connections shall not pass-through main seams as far as possible. When unavoidable, the portion of the welded seam that is covered by reinforcing pad shall be ground smooth with the surface of the shell plate, and liquid penetrant and 10% radiographic examination shall be made prior to installation of the pad.

#### 2.7.7. Welding and Removal of Temporary.

- Temporary attachments such as jigs, bars, clamps, etc. are used to hold the roundness of edges to be welded. These welding shall be done by qualified welders using the same quality rods as main welding and qualified welding procedure.
- Arc strikes on the pressure components shall be avoided. When they occur, the surface shall be ground smooth and examined by PT and the minimum design thickness shall not be violated
- Temporary weld, removal jig, and load fillet welding shall be removed by thermal cutting and grinding surface ground shall be subjected to liquid penetrant examination.



#### 2.7.8. Repair of Defects.

- Unacceptable defect such as cracks, porosity's, incomplete fusion and other defects shall be removed by gouging and / or grinding.
- After Removing the defects, the part shall be examined by liquid penetrant examination (LPT) or MT. The area to be repaired shall be re-welded by qualified welder and using qualified WPS.
- Repair of Welding shall be carried out in accordance with Weld Repair Procedure.

### 2.8. Visual.

#### 2.8.1. Full length of welded joint shall be inspected visually, and limitation for imperfection and thickness of reinforcement, shall not exceed the following value:

- |                              |                         |
|------------------------------|-------------------------|
| - Crack                      | : Not permitted, remove |
| - Overlap                    | : Not permitted         |
| - Under cut                  | : Not Exceed 0.4 mm     |
| - Bead width non uniformity  | : Not Exceed 5 mm       |
| - Bead height non uniformity | : Not Exceed 1.5 mm     |



	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
	Rev. No: 0	Page 16 of 27	

- Incomplete penetration or Lack of Fusion : Not permitted
- Insufficient toe length of fillet weld : Add weld
- Crater : Remove
- Spatter : Remove
- Slag and porosity : Non exposed
- Fitting and welded spots for temp. Asst : Remove
- Fitting and welded spots for temp. Assy : Remove
- Weld reinforcement shall be as following table (UW-35 of ASME Section VIII, Div. 1).

Material Nominal Thickness (mm)	Max. Reinforcement Thickness (mm)	
	Category B & C Butt Joint	Other Welds
2.4 to 4.8, incl.	3	1.5
Over 4.8 to 13, incl.	4	2.5
Over 13 to 25, incl.	5	2.5
Over 25 to 51, incl.	6	3

- Complete fusion and required penetration exist at the joint between the weld metal and the base metal.
- 2.8.2. Welds that failed to meet the visual inspection criteria given in item para 2.6.1, and will be re-inspection after repairs.
- 2.8.3. Welding on the structural miscellaneous and accessories steel.
- Platform
  - Vertical Ladder
  - Handrail, etc.
- 2.8.4. Repair for welding shall be done before hydrostatic testing in accordance with the following.
- Any defects shall be removed by mechanical means or thermal gouging process.
  - All defects in areas thicker than the minimum shall be feathered to at least a 1:4 taper. Minimum thickness shall be confirmed after grinding.



	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
		Rev. No: 0	Page 17 of 27

- The repair weld shall be visually examined.
- The gasket contact surface of the flange shall be visually checked to ensure cleanliness and is free from any surface defect.

## 2.9. Non Destructive Examination (NDE).

### 2.9.1. NDE Sub-contractor.

- N.D.E shall be done by subcontractor on the request of Vendor's QC Inspector.
- N.D.E subcontractor shall provide the technical procedures and shall perform accordance with the approved NDE procedure and personnel by ASNT Level III.

### 2.9.2. NDE Personnel.

- N.D.E personnel who are performing the inspection shall be qualified by possessing of actual certificates and those documents shall be produced to customer for approval.
- Residue from magnetic particle examination and penetrant developer from liquid penetrant shall be removed from working surfaces of the vessel at pickling or prior to painting.

### 2.9.3. NDE Report.

N.D.T reports shall be prepared by the NDT sub-contractor and shall be reviewed and approved by Vendor's QC Inspector and Customer.



### 2.9.4. Radiographic Testing.

The extent of radiographic examination shall be in accordance with the approved drawing the method of radiographic examination shall be in accordance with ASME Section VIII Div.1 UW-52

- The radiographic examination shall cover a part of the main butt weld line (category A & B). However, Intersection of the longitudinal and circumferential weld line shall be certainly radiographed.
- The acceptance criteria of welds examined by radiography shall be in accordance with ASME Section VIII Div.1 UW-52.
- Radiographic Testing 100% for but joint.

### 2.9.5. Liquid Penetrant Testing.

Penetrant Testing shall be carried out ASME section V Art 6.

	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
	Rev. No: 0	Page 18 of 27	

Acceptance criteria: ASME Sect VIII Div.1 Appendix 8.

Scope: Penetrant Testing shall be performed as following area

- Back chip
- Welding of loaded parts
- Welding of Stainless steel
- Dissimilar material for stainless and carbon steel parts
- All final welding but joint for material stainless steel PT 100%

#### 2.9.6. Magnetic Particle Testing.

Magnetic Particle Testing shall be carried out ASME Section V Art 7

Acceptance criteria: ASME Sect VIII Div.1 Appendix 6

Scope: MT shall be performed as following carbon steel area.

- Back chip
- Welding of loaded parts
- Final welding but joint for Carbon Steel MT 100%

#### 2.9.7. Positive Material Identification.

PMI for Anchorage & Dissimilar weld metal shall be conducted before installation in accordance with client's specification requirements.

#### 2.10. Pressure Test.

##### 2.9.1. Leaking Test (Soap Bubble Test)

Air Leak Test shall be applied for nozzle reinforcing pad with pressure 1.5 kg/ cm<sup>2</sup>, and than holding time around 10 until 15 minute. Acceptance criteria specified by the Owner.

##### 2.9.2. Hydrostatic Testing

All pressure part shall hydrotest according design pressure of the part, for Test Tank and pipe will be testing with pressure 30,59Kg/Cm<sup>2</sup>.



#### 2.11. Pickling.

Surface of material stainless steel shall clean and shine and free from rust, paint mark and other foreign material. Process pickling shall refer to document procedure.

#### 2.12. Bolt Tightening & Bolt Up.

##### 2.12.1. Tighten up using a minimum of 5 passes as follows:

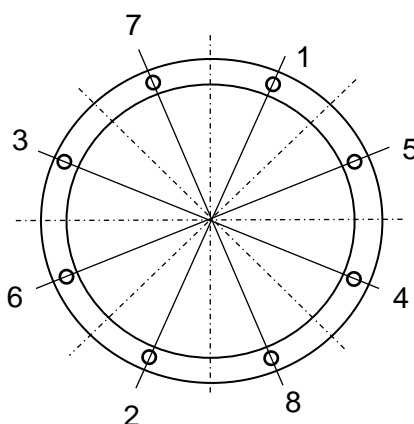
- Pass 1 – Tighten bolts loosely by hand in the first instance, according to the cross-bolting pattern, then hand tighten evenly.
- Pass 2 – Using a torque wrench, torque a maximum of 30% of the full torque first time around, according to the cross-bolting pattern.

	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
		Rev. No: 0	Page 19 of 27

Check that the flanges is bearing uniformly on the gasket.

- Pass 3 – Torque to a maximum of 60% of the full torque, according the cross-bolting pattern.
- Pass 4 – Torque to the full torque, according to the cross-bolting pattern.
- Pass 5 – Final pass at full torque, in a clockwise direction on adjacent **fasteners.**

2.12.2 Examples of bolt tightening sequences are shown as below :



2.12.2 Bolt T tightening & Up shall be carried out in appropriate with client specification requirements of Bolt Tightening and Bolt Up.



### 2.13 Packing & Shipping

Packing & Shipping shall be carried out in accordance with Packing & Shipping Document.

## 3. INSPECTION AND TEST RECORDS

The results of inspection and test shall be properly recorded just after the inspection and test, the following inspection and test records shall be submitted to the purchaser after final inspection and test, in accordance with requisition and Approval MDR Index.

- 1) Receipt Inspection Checklist Report
- 2) Material Traceability Report
- 3) Dimensional Inspection Report
- 4) Visual Inspection Report
- 5) Welding Traceability & NDE Clearance Report
- 6) Bubble Test Report
- 7) Packing & Shipping Inspection Report

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<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
	Rev. No: 0	Page 20 of 27	

- 8) Pressure Test Report
- 9) Bolt Tightening Report
- 10) Painting Report

Page 21 of 27

PT. HANAZONO ENGINEERING INDONESIA

COMPANY

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ADDRESS/TEL/PRESIDENT

REQUESTER/TEL

PA/TEL

REQUISITION

USING DEPT/NO

REQUIRE DATE

CONTRACT DELV

DESCRIPTION/MATERIAL/SPECIFICATION

ITEM NO.

Inspection condition certification

MPR No/Rev

Flow

Contract

Back charge

Terms of Delv/Terms of payment

FILE NO.

PL NO/INVOICE

MPR. NO

Received date

Appr No/Order

L / P

MATERIAL GROUP  
STEEL PLATE

RGR No.

MO NO / P / F NAME

E-200 (ROMP) RU V-SALURAN PAN FLUID GAS LINE P / F (Equipment 2)

ITEM NO.	DESCRIPTION/MATERIAL/SPECIFICATION	REV.	DWG NO PART NO	MATERIAL	USING DEPT/NO	REQUIRE DATE	CONTRACT DELV	ORIGINAL MARKING	HEAT / LOT NO	MILL. CERTIFICATE NO	INS. METHOD RESULT	BAD CONTENT CAUSE OF BAD	SIGN. DATE		REMARK	
													UNIT	RECEIPT QTY ACC. QTY		

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	<b>LNH3 TESTING FACILITY</b>		
<b>INSPECTION &amp; TEST PROCEDURE</b>		Vendor Doc No: LNH3-HEI-ITP-QC-002	
		Rev. No: 0	Page 23 of 27



Attachment-3 Dimensional Inspection Report.

	<b>Dimensional Inspection Report</b>		<b>TORISHIMA PUMP MFG.CO.,LTD</b>
Project Name :	Report No. :		
Owner :	Date :		
Client :	Item No. :		
Drawing No. :	Item Name :		
<b>Sketch of Dimensional Report</b> Result of Inspection : * Dimensional Inspection :			
Company	Inspected by	Witnessed/ Reviewed by	Witnessed/ Approved by
	PT. Hanazono Engineering Indonesia		PT. INTI KARYA PERSADA TEKNIK
Signature & Name			
	Bayu Setrio Utomo	Rusnandi	
Date			

### REFERENCES



[illegible]



	<b>LNH3 TESTING FACILITY</b>	
<b>INSPECTION &amp; TEST PROCEDURE</b>	Vendor Doc No: LNH3-HEI-ITP-QC-002 Rev. No: 0	Page 26 of 27

Attachment-6 Certification of Leak Test.




**TORISHIMA PUMP  
MFG.CO.,LTD**

<b>CERTIFICATION OF LEAK TEST</b>									
								<b>REPORT NO.</b>	
<b>JOB NO.</b>				<b>CLIENT</b>					
<b>ITEM NO.</b>				<b>DWG. NO.</b>					
<b>■ AIR-SOAP BUBBLE TESTING</b>									
<b>TEST PRESSURE</b>			<b>HOLDING TIME</b>			<b>PROCEDURE NO</b>			
<b>NOZZLE NO. OR PART NAME</b>		<b>SIZE</b>	<b>NOZZLE NO. OR PART NAME</b>		<b>SIZE</b>	<b>NOZZLE NO. OR PART NAME</b>		<b>SIZE</b>	
<b>RESULT</b>						<b>DATE</b>			
<b>□ LEAK TESTING</b>									
		<b>SHELL SIDE</b>			<b>TUBE SIDE</b>				
<b>TYPE OF TEST</b>		<input type="checkbox"/> A <input type="checkbox"/> B			<input type="checkbox"/> A <input type="checkbox"/> B				
<b>DESIGN PRESSURE</b>		Kg/cm <sup>2</sup> .g			Kpa(g)				
<b>TEST PRESSURE</b>		Kg/cm <sup>2</sup> .g			Kpa(g)				
<b>TRACER GASES</b>		<b>NAME</b>	<b>APPRO. VOLUME</b>		<b>NAME</b>	<b>APPRO. VOLUME</b>			
		<input type="checkbox"/> AIR			<input type="checkbox"/> AIR				
		<input type="checkbox"/> FREON	_____(%)		<input type="checkbox"/> FREON	_____(%)			
<b>HOLDING TIME</b>		(MIN.)			(MIN.)				
<b>RESULT</b>			<b>DATE</b>		<b>RESULT</b>			<b>DATE</b>	
<b>NOTE</b> A <input type="checkbox"/> HALOGEN DIODE DETECTOR PROBE TEST B <input type="checkbox"/> AIR-SOAP BUBBLE TEST FOR TUBE TO TUBE SHEET JOINT						<b>REMARKS</b>			
<b>Company</b>		Inspected by PT. Hanazono Engineering Indonesia			Witnessed/ Reviewed by PT. Inti Karya Parasada Teknik				
<b>Signature &amp; Name</b>									
		Bayu Setrio Utomo			Rusnandi				
<b>Date</b>									

	<b>LNH3 TESTING FACILITY</b>	
<b>INSPECTION &amp; TEST PROCEDURE</b>	Vendor Doc No: LNH3-HEI-ITP-QC-002	
	Rev. No: 0	Page 27 of 27

Attachment-7 Packing Inspection Report.

 <b>PT. HANAZONO Engineering Indonesia</b> <i>We are always partner with you</i>		<b>TORISHIMA PUMP MFG.CO.,LTD</b>	
<b>PACKING INSPECTION REPORT</b>		Item Name : : Report No. : :	
		Item No. : : Date : :	
		Part No. : : Page No. : :	
<b>SKETCH / PHOTOGRAPH :</b>			
Remarks : See photograph page 2 of 2			
<b>RESULT OF VISUAL INSPECTION</b>			
<b>ACCEPTED</b> <input type="checkbox"/>		<b>REJECTED</b> <input type="checkbox"/>	
Inspected by  	Witnessed/ Reviewed by PT. Hanazono Engineering Indonesia  	Witnessed/ Approved by PT. Inti Karya Persada Teknik  	
Signature & Name  	Bayu Satrio Utomo  	Rusnandi  	
Date  			