TÜRK LOYDU

TYPE APPROVAL CERTIFICATE

Certificate No: TO.DEB.15-0631

This Certificate consist of 2 Pages

This is to certify that the

METAL EXPANSION JOINT with FLOATING FLANGES

With type designations

PN 2.5, PN 6, PN 10, PN 16

Manufactured by

HACI AYVAZ ENDÜSTRİYEL MAMÜLLER SAN. ve TİC. A.Ş.
Hadımköy/İSTANBUL

Is found to comply with

Türk Loydu Materials Rules for Classification of Ship.

Application : Metal axial expansion joint with floating flanges intended for pipes of ship. It may be used pipe of ships and marine industry according to Türk Loydu rules.

Design : HACI AYVAZ ENDÜSTRİEL MAMÜLLER SAN. ve TİC. A.Ş.

Sizes : See Appendix 1, 2 and 3

Address of Manufacturer : Atatürk San. Bölgesi İstasyon Mah. Mustafa İnan Cad. No:36 34 860 Hadımköy/İSTANBUL

92542

Place and date : İstanbul, 01.09.2015

Subject to the conditions referred to in the following pages, this certificate is valid until 31.08.2020.

Okan ÇETİN
Deputy Head of Marine Industry Division

Akif Bülent HOLOSORLU
Surveyor for

Product description :
Type designation : PN 2.5, PN 6, PN 10, PN 16
Materials used : To be referred to the approved drawing dated 16.03.2010 and 06.05.2010

Application/Limitation(Approval conditions):
1-The expansion joints may be used for the following service on board,
-Steam pressure line.
-Exhaust gas lines.
-Water line.
2-The use of floating flanges is only permitted for Class III water pipes and open – ended lines.
3-The used of stainless steel is to be restricted as per the requirements of the Türk Loydu Rules.
4-The calculated maximum values of axial and/or lateral movements at 1000 full cycles are to be exceeded.
5-The expansion joints are to be installed according to manufacturer's instructions and Türk Loydu Rules.
6-The expansion joints must only be fitted in areas where they are always accessible.

Documentation:
The design and construction drawings approved by Türk Loydu dated 16.03.2010 and 06.05.2010.

Test carried out(and results):
Following tests (Material test (Chemical and Mechanical), Visual inspection, Working pressure test , Pressure test, Burst test, Cyclic expansion test, Fire resist, Leakage test carried out, found satisfactory.

Place of test carried out:
HACI AYVAZ ENDÜSTRİEL MAMÜLLER SAN. ve TİC.
Atatürk San. Bölgesi İstasyon Mah. Mustafa İnan Cad. No:36 34 860 Hadımköy/İSTANBUL
YILDIZ TEKNİK ÜNİVERSİTESİ
Davut Paşa Kampüsü 34210 Esenler/İSTANBUL

Marking of product:
For traceability to this type approval each product is at least to be marked with
- Manufacturer name and trade mark, order no, drawing no, pressure and size.

Akif Bülent HOLOSORLU
Surveyor for

This certificate is valid if retention/renewal surveys carried out to the satisfaction of TL surveyor and following entries made:

Surveyor	Surveyor	Surveyor	Surveyor
Survey Date	Survey Date	Survey Date	Survey Date

This certificate is subject to terms and conditions described below.
Any significant change in design or construction may render this Certificate invalid. Type Approval Certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. This certificate is not valid for products without marking above mentioned. The manufacturer should notify TÜRK LOYDU of any modifications or changes to the equipment in order to obtain valid certificate. This certificate shows that tested specimens as representative of the product complies of the TÜRK LOYDU rules, and relevant international instruments that apply to it.

TÜRK LOYDU

İKTİSADİ İŞLETMESİ

TYPE OF METAL EXPANSION JOINT with FLOATING FLANAGE	No OF NODE	WORKING TEMP. °C	DESIGN PRESS. (Bar)	TEST PRESS. (Bar)	BRUST PRESS. (Bar)	MIN. DESIGN CYCLE	AXIAL EXPANSION
DN65 PN2,5	11	540	2,5	3,75	10	1000	+10mm-20mm
DN80 PN2,5	8	540	2,5	3,75	10	1000	+10mm-20mm
DN100 PN2,5	8	540	2,5	3,75	10	1000	+10mm-20mm
DN100 PN2,5	6	540	2,5	3,75	10	1000	+10mm-20mm
DN150 PN2,5	6	540	2,5	3,75	10	1000	+10mm-20mm
DN200 PN2,5	6	540	2,5	3,75	10	1000	+10mm-20mm
DN250 PN2,5	4	540	2,5	3,75	10	1000	+10mm-20mm
DN300 PN2,5	4	540	2,5	3,75	10	1000	+10mm-20mm
DN350 PN2,5	4	540	2,5	3,75	10	1000	+10mm-20mm
DN400 PN2,5	3	540	2,5	3,75	10	1000	+10mm-20mm
DN450 PN2,5	3	540	2,5	3,75	10	1000	+10mm-20mm
DN500 PN2,5	3	540	2,5	3,75	10	1000	+10mm-20mm
DN600 PN2,5	3	540	2,5	3,75	10	1000	+10mm-20mm
DN700 PN2,5	3	540	2,5	3,75	10	1000	+10mm-20mm
DN800 PN2,5	3	540	2,5	3,75	10	1000	+10mm-20mm
DN900 PN2,5	3	540	2,5	3,75	10	1000	+10mm-20mm
DN1000 PN2,5	3	540	2,5	3,75	10	1000	+10mm-20mm
DN1200 PN2,5	2	540	2,5	3,75	10	1000	+10mm-20mm
DN100 PN6	10	540	6	9	24	1000	+10mm-20mm
DN200 PN6	8	540	6	6	24	1000	+10mm-20mm
DN250 PN6	6	540	6	9	24	1000	+10mm-20mm
DN300 PN6	5	540	6	9	24	1000	+10mm-20mm
DN350 PN6	5	540	6	6	24	1000	+10mm-20mm
DN400 PN6	5	540	6	9	24	1000	+10mm-20mm
DN450 PN6	5	540	6	6	24	1000	+10mm-20mm
DN500 PN6	4	540	6	9	24	1000	+10mm-20mm
DN600 PN6	4	540	6	9	24	1000	+10mm-20mm
DN700 PN6	4	540	6	9	24	1000	+10mm-20mm
DN800 PN6	4	540	6	9	24	1000	+10mm-20mm

Okan ÇETİN
Deputy Head Of Marine Division

Akif Bülent HOLOSORLU
Surveyor for

Appendix 1

Form No: CE 191-03

TÜRK LOYDU

İKTİSADİ İŞLETMESİ

TYPE OF METAL EXPANSION JOINT with FLOATING FLANAGE	No OF NODE	WORKING TEMP. °C	DESIGN PRESS. (Bar)	TEST PRESS. (Bar)	BRUST PRESS. (Bar)	MIN. DESIGN CYCLE	AXIAL EXPANSION
DN100 PN10	10	540	10	15	40	1000	+10mm-20mm
DN125 PN10	10	540	10	15	40	1000	+10mm-20mm
DN150 PN10	7	540	10	15	40	1000	+10mm-20mm
DN200 PN10	8	540	10	15	40	1000	+10mm-20mm
DN250 PN10	5	540	10	15	40	1000	+10mm-20mm
DN300 PN10	5	540	10	15	40	1000	+10mm-20mm
DN350 PN10	5	540	10	15	40	1000	+10mm-20mm
DN400 PN10	5	540	10	15	40	1000	+10mm-20mm
DN450 PN10	4	540	10	15	40	1000	+10mm-20mm
DN500 PN10	4	540	10	15	40	1000	+10mm-20mm
DN600 PN10	4	540	10	15	40	1000	+10mm-20mm
DN700 PN10	4	540	10	15	40	1000	+10mm-20mm
DN800 PN10	4	540	10	15	40	1000	+10mm-20mm
DN80 PN16	8	540	16	24	64	1000	+10mm-20mm
DN100 PN16	12	540	16	24	64	1000	+10mm-20mm
DN125 PN16	12	540	16	24	64	1000	+10mm-20mm
DN150 PN16	9	540	16	24	64	1000	+10mm-20mm
DN200 PN16	10	540	16	24	64	1000	+10mm-20mm
DN250 PN16	6	540	16	24	64	1000	+10mm-20mm
DN300 PN16	6	540	16	24	64	1000	+10mm-20mm
DN350 PN16	5	540	16	24	64	1000	+10mm-20mm
DN65 PN2,5	20	540	2,5	3,75	10	1000	+20mm-40mm
DN80 PN2,5	17	540	2,5	3,75	10	1000	+20mm-40mm
DN100 PN2,5	19	540	2,5	3,75	10	1000	+20mm-40mm
DN125 PN2,5	20	540	2,5	3,75	10	1000	+20mm-40mm
DN150 PN2,5	13	540	2,5	3,75	10	1000	+20mm-40mm
DN200 PN2,5	13	540	2,5	3,75	10	1000	+20mm-40mm
DN250 PN2,5	7	540	2,5	3,75	10	1000	+20mm-40mm
DN300 PN2,5	7	540	2,5	3,75	10	1000	+20mm-40mm
DN350 PN2,5	7	540	2,5	3,75	10	1000	+20mm-40mm
DN400 PN2,5	6	540	2,5	3,75	10	1000	+20mm-40mm
DN450 PN2,5	6	540	2,5	3,75	10	1000	+20mm-40mm
DN500 PN2,5	6	540	2,5	3,75	10	1000	+20mm-40mm

Okan ÇETİN
Deputy Head Of Marine Division

Akif Bülent HOLOSORLU
Surveyor

Appendix 2

Form No: CE 191-03

TÜRK LOYDU

İKTİSADİ İŞLETMESİ

TYPE OF METAL EXPANSION JOINT with FLOATING FLANAGE	No OF NODE	WORKING TEMP. °C	DESIGN PRESS. (Bar)	TEST PRESS. (Bar)	BRUST PRESS. (Bar)	MIN. DESIGN CYCLE	AXIAL EXPANSION
DN600 PN2,5	5	540	2,5	3,75	10	1000	+20mm-40mm
DN700 PN2,5	5	540	2,5	3,75	10	1000	+20mm-40mm
DN800 PN2,5	5	540	2,5	3,75	10	1000	+20mm-40mm
DN900 PN2,5	5	540	2,5	3,75	10	1000	+20mm-40mm
DN1000 PN2,5	5	540	2,5	3,75	10	1000	+20mm-40mm
DN1200 PN2,5	4	540	2,5	3,75	10	1000	+20mm-40mm
DN100 PN6	18	540	6	9	24	1000	+20mm-40mm
DN125 PN6	19	540	6	9	24	1000	+20mm-40mm
DN150 PN6	13	540	6	9	24	1000	+20mm-40mm
DN200 PN6	13	540	6	6	24	1000	+20mm-40mm
DN250 PN6	11	540	6	9	24	1000	+20mm-40mm
DN300 PN6	9	540	6	9	24	1000	+20mm-40mm
DN350 PN6	9	540	6	6	24	1000	+20mm-40mm
DN400 PN6	9	540	6	9	24	1000	+20mm-40mm
DN450 PN6	9	540	6	6	24	1000	+20mm-40mm
DN500 PN6	8	540	6	9	24	1000	+20mm-40mm
DN600 PN6	8	540	6	9	24	1000	+20mm-40mm
DN700 PN6	8	540	6	9	24	1000	+20mm-40mm
DN800 PN6	8	540	6	9	24	1000	+20mm-40mm
DN150 PN10	13	540	10	15	40	1000	+20mm-40mm
DN200 PN10	14	540	10	15	40	1000	+20mm-40mm
DN250 PN10	10	540	10	15	40	1000	+20mm-40mm
DN300 PN10	10	540	10	15	40	1000	+20mm-40mm
DN350 PN10	9	540	10	15	40	1000	+20mm-40mm
DN400 PN10	9	540	10	15	40	1000	+20mm-40mm
DN450 PN10	8	540	10	15	40	1000	+20mm-40mm
DN500 PN10	8	540	10	15	40	1000	+20mm-40mm
DN600 PN10	8	540	10	15	40	1000	+20mm-40mm
DN700 PN10	8	540	10	15	40	1000	+20mm-40mm
DN800 PN10	8	540	10	158	40	1000	+20mm-40mm
DN250 PN16	12	540	16	24	64	1000	+20mm-40mm
DN300 PN16	10	540	16	24	64	1000	+20mm-40mm
DN350 PN16	10	540	16	24	64	1000	+20mm-40mm

Okan ÇETİN
Deputy Head Of Marine Division

Akif Bülent HOLOSORLU
Surveyor

for