

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED). This Certificate is issued by DNV GL SE based on the notification of the Federal Maritime and Hydrographic Agency of Germany.

This is to certify:

That the Materials other than steel for pipes conveying oil or fuel oil: flexible pipe assemblies and compensators

with type designation(s)
46, 49, 50, 55, 55 SO

Issued to

Willbrandt KG
Hamburg, Germany

is found to comply with the requirements in the following Regulations/Standards:

Regulation **(EU) 2020/1170,**

item No. MED/3.15c. SOLAS 74 as amended, Regulation II-2/4 & X/3 and 2000 HSC Code 7 & 10 and IMO MSC/Circ.1120

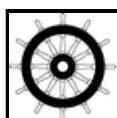
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2025-12-03.**

Issued at **Hamburg** on **2020-12-04**

DNV GL local station:
Hamburg CMC

Approval Engineer:
Hagen Markus



Notified Body
No.: **0098**

for **DNV GL SE**

Christine Mydlak-Roeder
Head of Notified Body

The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU. This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL SE of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled. Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Job Id: **344.1-010999-1**
Certificate No: **MEDB000071T**

Product description

Rubber expansion joints consisting of rubber bellows with fabric or steel reinforcement and end fittings made of steel / non-ferrous metal, ready for installation.

Design of bellow, flanges and expansion joint configurations according to drawing 180816.

Application/Limitation

Expansion joint 46, 50

Bellow type	Bellow design			Piping systems / Media
	Liner	Reinforcement	Cover	
red	IIR	PA	EPDM	Potable water, hot water, sea water, ballast water, at pumps of fire main, fresh water-cooling water with chemical additives, low concentrated acids, lyes and salt solutions
red Sp	EPDM	PEEK	EPDM	Same as type "Red" plus Heating systems. Not for potable water
yellow	NBR	PA	CR	Fuel oil (MDO, HFO), lubricating oil, hydraulic oil, sea water, ballast water, bilge water, DIN-EN fuels with max. aromatic content of max. 50%
black EPDM	IIR		EPDM	Potable water, hot water, sea water, ballast water, at pumps of fire main, fresh water-cooling water with chemical additives, low concentrated acids, lyes and salt solutions
black CR	CR		CR	Hot water, sea water, ballast water, at pumps of fire main, fresh water-cooling water with chemical additives, low concentrated acids, lyes and salt solutions, oily compressed air
yellow steel	NBR	Steel cord	CR	Fuel oil (MDO, HFO), lubricating oil, hydraulic oil, sea water, bilge water, ballast water, DIN-EN fuels with max. aromatic content of max. 50%
yellow HNBR	HNBR			
End fitting types		Type 46 Screwed connection acc. to DIN EN 10226		Carbon steel with galvanic zinc protection, Stainless steel
		Type 50 Swivel flanges drilled according to PN 6, 10, 16, 25, ASME, JIS, BS and other standards		Carbon steel with galvanic zinc protection, hot dip galvanized, stainless steel, bronze, gunmetal

Note

Expansion joint 46

- vacuum resistant without additional measures
- not approved in piping systems conveying flammable media

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Application/Limitation

Expansion joint 55³, 55SO²

Bellow type	Bellow design			Piping systems / Media
	Liner	Reinforcement	Cover	
red	IIR	PA	EPDM	Potable water, hot water, sea water, ballast water, at pumps of fire main, fresh water-cooling water with chemical additives, low concentrated acids, lyes and salt solutions
red Sp	EPDM	PEEK	EPDM	Same as type "Red" plus Heating systems. Not for potable water
yellow	NBR	PA	CR	Fuel oil (MDO, HFO), lubricating oil, hydraulic oil, sea water, bilge water, ballast water, DIN-EN fuels with max. aromatic content of max. 50%
yellow steel ¹		Steel cord		
End fitting types		Swivel flanges drilled according to PN 6, 10, 16, 25, ASME, JIS, BS and other standards		Carbon steel with galvanic zinc protection, hot dip galvanized, stainless steel, bronze, gunmetal

Note

¹ Not available for type 55SO

² 55SO Special bellow length, bellow design same as type 50

³ 55 Same bellow design as type 50 but different bellow length.

Expansion joint 49

Bellow type	Bellow design			Piping systems / Media
	Liner	Reinforcement	Cover	
blue	IIR	PA	EPDM	Potable water, hot water, sea water, ballast water, at pumps of fire main, fresh water-cooling water with chemical additives, low concentrated acids, lyes and salt solutions
A-red	EPDM	PEEK	EPDM	Same as type "Blue" plus Heating systems. Not for potable water
yellow	NBR	PA	CR	Fuel oil (MDO, HFO), lubricating oil, hydraulic oil, sea water, bilge water, ballast water, DIN-EN fuels with max. aromatic content of max. 50%
black EPDM	IIR		EPDM	Potable water, hot water, sea water, ballast water, at pumps of fire main, fresh water-cooling water with chemical additives, low concentrated acids, lyes and salt solutions
End fitting types		Swivel flanges drilled according to PN 6, 10, 16, 25, ASME, JIS, BS and other standards		Carbon steel with galvanic zinc protection, hot dip galvanized, stainless steel, bronze, gunmetal

Performance data¹

Bellow Type	Temperature range	46	49	50	55	55SO
Red Sp	0°C up to 130°C	x	A-red	x	x	n.a.
Red	0°C up to 100°C	x	blue	x	x	x
Yellow	0°C up to 90°C	x	x	x	x	x
Black EPDM	0°C up to 100°C	x	x	x	n.a. ¹	n.a.
Black CR	0°C up to 90°C	x	n.a.	x	n.a.	n.a.
Yellow steel	0°C up to 90°C	x	n.a.	x	x	n.a.
Yellow HNBR	0°C up to 100°C	x	n.a.	x	n.a.	n.a.

Note:

¹ x = Applicable bellow type, n.a.= not applicable

Expansion joint	Bellow types	M.A.W.P. ¹	BL	Sizes
46	All (steel wire cord)	16	130	20, 25, 32, 40, 50
49	All (textile cord)	25 ²	100	32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350
			110	400, 500
50	All	16 ²	130	20, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300
			200	350, 400
		10	200	450, 500, 600
	Black EPDM	10	130	20, 25, 32, 40, 50, 65, 80, 100, 125, 150
55	All	16 ²	125	20, 25, 32, 40, 50, 65
			150	80, 100, 125, 150,
			175	200, 250
			200	350, 400
		10	200	300
			250	450, 500, 600
55SO	All	16 ²	160	20, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200
		10	200	250, 300

Note:

¹ When selecting the expansion joints, the admissible M.A.W.P pressures in dependence on the media or ambient temperature as specified by Willbrandt product data sheets are to be observed.

² PN10 for fire resistant type, i.e. steel cord reinforcement or fire sleeve for textile cord reinforcement

Fire sleeve applications

Expansion joints with bellow reinforcement made of PEEK and PA, intended for application in piping systems conveying flammable media or sea water systems where failure may result in flooding shall be completely covered by a fire sleeve of type FSH 46, 49, 50, 55 (fire tested acc. to ISO 15540/41).



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Type Examination documentation

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Tests carried out

Fire resistance test acc. to ISO15540/41.

Marking of product

Bellow	
Scope	Example
Manufacturers name or trade mark	 or WILLBRANDT
Production date	Year/Quarter plus week
Nominal pressure PN	16
Nominal diameter DN / Bellow length BL in mm	250
Bellow type	Colour code according to Willbrandt data sheets
Mark of Conformity according to Article 10 of the Council Directive (MED) ¹	 0098 - 20

Note

¹ May only be affixed to the product in case the associated production surveillance module (D, E or F) is valid.

Fire sleeve	
Scope	Example
Manufacturers name or trademark	
Fire sleeve type	FSH-50-A
DN / LW / BL	DN400 / LW 585 / BL370
Reference number	A2150630240

End of certificate