

Test Report

Test Report 2.2 in accordance with EN 10204

We certify that the listed items comply with the stated requirements:

Item 1 Pipes

D20 - D158

Raw material: Aluminium EN 755-2 AW-6060 T6

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 2,7 g/cm ³	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
Linear expansion coefficient at 20°C: 23,4 µm/m°C	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	> 64
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	> 64
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	> 3x10 ⁶ > 3x10 ⁶ > 3x10 ⁶

Item 2

Plastic bodies, nuts and inner parts

PF Series D20 - D50

Raw material: PA6-GF30

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 1,35 g/cm ³ (ISO1183-A dry conditions)	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
Melting temperature: 220 °C (ISO11357-1/-3 dry conditions)	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
Thermo test 1 hr at 150°C to determine material quality (ISO580)	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	> 64
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	> 64
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	> 3x10 ⁶ > 3x10 ⁶ > 3x10 ⁶

Item 3
Aluminium nipple sockets die casting

PF Series D20 - D50

Raw material: Aluminium EN 1706 AC-46100

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 2,65 g/cm ³	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
Yield strength: 140 Mpa	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	> 64
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	> 64
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	> 3x10 ⁶ > 3x10 ⁶ > 3x10 ⁶

Item 4
Aluminium adapter unions

PF Series D20 - D50

Raw material: Aluminium EN755-2 AW-6082

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 2,7 g/cm ³	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	> 64
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	> 64
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	N/A

Item 5
Aluminium bodies and nuts die casting

PM Series D63 - D80

Raw material: Aluminium EN 1706 AC-43400

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 2,65 g/cm ³	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
Yield strength: 140 Mpa	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	114 - 200
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	72 - 80
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	> 3x10 ⁶ > 3x10 ⁶ > 3x10 ⁶

Item 6
Plastic inner parts

PM Series D63 - D80

Raw material: PA6-GF30

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 1,35 g/cm ³ (ISO1183-A dry conditions)	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
Melting temperature: 220 °C (ISO11357-1/-3 dry conditions)	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
Thermo test 1 hr at 150°C to determine material quality (ISO580)	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	> 64
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	72-80
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	> 3x10 ⁶ > 3x10 ⁶ > 3x10 ⁶

Item 7
Aluminium adapter unions

PM Series D63 - D80

Raw material: Aluminium EN755-2 AW-6082

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 2,7 g/cm ³	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	89-194
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	N/A
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	N/A
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	N/A

Item 8
Aluminium pipe end adaptors

PM Series D63 - D80

Raw material: Aluminium EN755-2 AW-6026

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 2,7 g/cm ³	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	> 64
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	> 64
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	N/A

Item 9
Aluminium bodies permanent mould casting

Bigger Diameters D100 - D158

Raw material: Aluminium EN 1706 AC-43100

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 2,68 g/cm ³	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
Yield strength: > 80 MPa	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	> 64
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	> 64
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	N/A

Item 10
Equal Socket D100 – D158

Bigger Diameters D100 - D158

Raw material: Stainless Steel EN 10088 1.4301

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Yield strength: > 200 MPa	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	> 64
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	EN ISO1167	48 bar(g) (3 x MAWP)	bar(g)	> 48
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	> 3x10 ⁶ > 3x10 ⁶ > 3x10 ⁶

Item 11
Aluminium adapter unions

Quickdrops D100 - D158

Raw material: Aluminium EN755-2 AW-6082

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 2,7 g/cm ³	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	> 64
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	> 64
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	N/A

Item 12

Aluminium bodies die casting

Quickdrops D100 - D158

Raw material: Aluminium EN 1706 AC-44500

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 2,65 g/cm ³	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
Yield strength: 140 Mpa	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	123 - 153
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	64 - 68
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	> 3x10 ⁶ > 3x10 ⁶ > 3x10 ⁶

Item 13

Plastic nuts and inner parts

Quickdrops D100 - D158

Raw material: PA6 - GF30

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Density: 1,35 g/cm ³ (ISO1183-A dry conditions)	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
Melting temperature: 220 °C (ISO11357-1/-3 dry conditions)	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
Thermo test 1 hr at 150°C to determine material quality (ISO580)	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	> 64
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	> 64
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	> 3x10 ⁶ > 3x10 ⁶ > 3x10 ⁶

Item 14

Ball valves, wall mounted nipples sockets & manifolds

PF Series D20 - D50

Raw material: Hot forged brass CW617N (EN 12165)

Material properties	Test (AC name)	Test standard	Conditions	Unit	Results
Body Tensile strength: 454 N/mm ² @20°C (EN 10204)	Vacuum test logging	IACS Req 2021	13 mbar(a) (MAWP)	hr	48
Body Yield strength: 331 N/mm ² @20°C (EN 10204)	Leak tightness test logging	ASME B31.3	17,6 bar(g) (1,1 x MAWP)	hr	48
	Burst test	IACS Req 2021	64 bar(g) (4 x MAWP - max 200 bar(g))	bar(g)	> 64
	Pulsation test	NF T-54-094	24 bar(g) (1,5 x MAWP) 16 bar(g) (1 x MAWP)	cycles cycles	> 5000 > 500 000
	Disconnection test	IACS Req 2021	64 bar(g) (4 x MAWP)	bar(g)	> 64
	Vibration test	IACS Req 2021	frequency 100 Hz - amplitude +/- 0,06 mm (MAWP) frequency 45 Hz - amplitude +/- 0,5 mm (MAWP) frequency 10 Hz - amplitude +/- 1,5 mm (MAWP)	cycles cycles cycles	> 3x10 ⁶ > 3x10 ⁶ > 3x10 ⁶