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April 11, 2025

ROUND ENGINEERING INC
10 SEGWUN RD
WATERDOWN ON L8B 0K6

Workorder Type: Registration - Fitting(Conventional)
Workorder No: 14516921
Your Reference No.: R-2121
Registered to: AFLEX HOSE LTD.

Dear SCOTT ISLIP,

Technical Standards and Safety Authority (TSSA) is pleased to inform you that your submission has been reviewed and registered as follows:

CRN : 0D25821.5
Main Design No.: FLEXIBLE HOSE ASSEMBLIES – SEE SCOPE OF CRN REGISTRATION & WORLDWIDE LOCATIONS APPENDIX
Expiry Date: Apr 11, 2035

Please be advised that a valid quality control system must be maintained for the fitting registration to remain valid until the expiry date.

The stamped copy of the approved registration and the invoice are mailed separately (There will be no hard copies for electronic submissions). Should you have any questions or require further assistance, please contact a Customer Service Advisor at 1.877.682.TSSA (8772) or e-mail customerservices@tssa.org. We will be happy to assist you. When contacting TSSA regarding this file, please refer to the Service Request number provided above.

Yours truly,

Wendy Du
Engineer, BPV
Tel. : +1 416-734-3566
Email : wdu@tssa.org



Technical Standards and Safety Authority
345 Carlingview Drive
Toronto, Ontario M9W 6N9
www.tssa.org

Show facsimile of manufacturer's logo or trademark, as it will appear on the fitting, in the space below



AFLEX HOSE or "AFLEX"

STATUTORY DECLARATION Registration of Fittings

I, Dr. Leigh Mulvaney-Johnson PHD CENG (MIMECHE), Technical Manager
(Name and Position, e.g. President, Plant Manager, Chief Engineer)

of AFLEX Hose Ltd.

(Name of Manufacturer)

Located at Bradley Business Park, Dyson Wood Way, Bradley, Huddersfield, HD2 1GZ, United Kingdom

(Plant Address)

(Telephone No.)

(Fax No.)

☒ do solemnly declare that the fittings listed hereunder, which are subject to the **Technical Standards and Safety Act**, Boilers and Pressure Vessels Regulation, comply with all of the requirements of
ASME B31.3, ASME BPE, ARPM IP-2

(Title of recognized North American Standard)

which specifies the dimensions, materials of construction, pressure/temperature ratings, identification marking the fittings and service;

☐ or are not covered by the provisions of a recognized North American standard and are therefore manufactured to comply with _____ as supported by the attached data which identifies the dimensions, material of construction, pressure/temperature ratings and the basis for such ratings, the marking of the fitting for identification and service.

I further declare that the manufacture of these fittings is controlled by a quality system meeting the requirements of ISO 9001:2015 which has been verified by the following authority, bsi, TUV

The items covered by this declaration, for which I seek registration, are category D - Flexible Hose Assemblies type fittings. In support of this application, the following information and/or test data are attached as follows:

SCOPE OF CRN REGISTRATION, REPORTS, DRAWINGS, CALCULATIONS

(drawings, calculations, test reports, etc.)

Declared before me at Hebden Bridge in the West Yorkshire (UK)

the 2nd day of October AD 2024

Commissioner for Oaths:

MARY MAHON

(Printed name)

[Signature]

(Signature)

mary mahon
SOLICITOR

tel: 01422 844997 fax: 01422 844797

email: mary@marymahonsolicitor.co.uk

8 Wragley House, Valley Road
Hebden Bridge West Yorkshire, HX2 7BN

[Signature]

(Signature of Declarer)

FOR OFFICE USE ONLY

To the best of my knowledge and belief, the application meets the requirements of the **Technical Standards and Safety Act**, Boilers and Pressure Vessels Regulation, and CSA Standard B51 and is accepted for registration in Category _____

CRN: _____

Registered by: _____

Dated: _____

NOTE: This registration expires on: Apr. 11, 2035

Technical
Standards
and Safety
Authority

Boilers and
Pressure Vessels
Safety Program

REGISTERED

C.R.N.: 0D25821.5

Signed: WJ

Date: April 11, 2025.

FLEXIBLE HOSE ASSEMBLIES - SEE SCOPE OF CRN
REGISTRATION & WORLDWIDE LOCATIONS APPENDIX

*Information provided in this application is releasable under the Freedom of Information and Privacy Protection Act and may be disclosed upon request.

PV 09553 (04/17)



SCOPE OF CRN REGISTRATION

Hose Type(s)

Bioflex Ultra, stainless steel braid, PTFE lined fittings
Bioflex Ultra, stainless steel braid, EPDM or silicone cover, PTFE lined fittings
Fabline, stainless steel braid, EPDM or silicone cover, PTFE lined fittings
Corroline+, stainless steel braid, EPDM with or without helix, PTFE lined fittings

Important: The CRN Pressure-Temperature Ratings listed in this document are the hose maximum CRN ratings. Consult hose product literature for recommended hose maximum operating conditions.

The maximum CRN ratings are applicable to the following Service Types:

Service Type **Group 1**: Water and all other liquids, solid materials suspended in liquids or air, compressed air and other gases.

Service Type **Group 2**: Liquid media that immediately changes into gas under standard atmospheric conditions.

Service Type **Group 3**: Steam

Product Description	Design Code	Material Specifications	MDMT	Report Number
Flexible Hose Assemblies	ASME B31.3, ASME BPE, ARPM IP-2	ASTM A479-304/304L, ASTM A479-316/316L ASTM A240-304/304L, ASTM A240-316/316L Stainless Steel meeting the requirements of ASTM A478 and ASTM A580, PTFE Hose and lined fittings.	- 73°C / -100°F	R-2121 Rev. 0

PRESSURE - TEMPERATURE RATINGS

Process Connections		DIN 11851 Female Process Connections				
Service Type	Group 1		Group 2		Group 3 (Note 2 - Important)	
Process Connection Size x Hose Size	MAWP at 300°F (psig)	MAWP at 150°C (barg)	MAWP at 300°F (psig)	MAWP at 150°C (barg)	MAWP at 300°F (psig)	MAWP at 150°C (barg)
1/2" DIN 11851 x 1/2" Hose	580.2	40.0	464.1	32.0	232.1	16.0
3/4" DIN 11851 x 3/4" Hose	580.2	40.0	464.1	32.0	232.1	16.0
1" DIN 11851 x 1" Hose	580.2	40.0	464.1	32.0	232.1	16.0
1-1/4" DIN 11851 x 1-1/4" Hose	580.2	40.0	464.1	32.0	232.1	16.0
1-1/2" DIN 11851 x 1-1/2" Hose	507.6	35.0	406.1	28.0	203.1	14.0
2" DIN 11851 x 2" Hose	362.6	25.0	290.1	20.0	145.0	10.0
2-1/2" DIN 11851 x 2-1/2" Hose	290.1	20.0	232.1	16.0	87.0	6.0
3" DIN 11851 x 3" Hose	217.6	15.0	174.0	12.0	87.0	6.0

SCOPE OF CRN REGISTRATION

PRESSURE - TEMPERATURE RATINGS

Process Connections						
DIN 11851 Female Process Connections						
Service Type	Group 1		Group 2		Group 3 (Note 2 - Important)	
Process Connection Size x Hose Size	MAWP at 400°F (psig)	MAWP at 204°C (barg)	MAWP at 400°F (psig)	MAWP at 204°C (barg)	MAWP at 400°F (psig)	MAWP at 204°C (barg)
1/2" DIN 11851 x 1/2" Hose	539.5	37.2	431.6	29.8	215.8	14.9
3/4" DIN 11851 x 3/4" Hose	539.5	37.2	431.6	29.8	215.8	14.9
1" DIN 11851 x 1" Hose	539.5	37.2	431.6	29.8	215.8	14.9
1-1/4" DIN 11851 x 1-1/4" Hose	539.5	37.2	431.6	29.8	215.8	14.9
1-1/2" DIN 11851 x 1-1/2" Hose	472.1	32.6	377.7	26.0	188.8	13.0
2" DIN 11851 x 2" Hose	337.2	23.3	269.8	18.6	134.9	9.3
Process Connection Size x Hose Size	MAWP at 400°F (psig)	MAWP at 204°C (barg)	MAWP at 400°F (psig)	MAWP at 204°C (barg)	MAWP at 327°F (psig)	MAWP at 164°C (barg)
2-1/2" DIN 11851 x 2-1/2" Hose	269.8	18.6	215.8	14.9	87.0	6.0
3" DIN 11851 x 3" Hose	202.3	14.0	161.9	11.2	87.0	6.0

Process Connections						
ASME BPE / DIN 32676 Process Connections						
Service Type	Group 1		Group 2		Group 3 (Note 2 - Important)	
Process Connection Size x Hose Size	MAWP at 300°F (psig)	MAWP at 150°C (barg)	MAWP at 300°F (psig)	MAWP at 150°C (barg)	MAWP at 300°F (psig)	MAWP at 150°C (barg)
1/2" Ferrule x 5/8" Hose	580.2	40.0	464.1	32.0	232.1	16.0
1" Ferrule x 7/8" Hose	232.1	16.0	185.7	12.8	92.8	6.4
1" Ferrule x 1" Hose	232.1	16.0	185.7	12.8	92.8	6.4
1-1/2" Ferrule x 1-3/8" Hose	232.1	16.0	185.7	12.8	92.8	6.4
1-1/2" Ferrule x 1-1/2" Hose	232.1	16.0	185.7	12.8	92.8	6.4
2" Ferrule x 1-7/8" Hose	232.1	16.0	185.7	12.8	92.8	6.4
2" Ferrule x 2" Hose	232.1	16.0	185.7	12.8	92.8	6.4
2-1/2" Ferrule x 2-1/2" Hose	232.1	16.0	185.7	12.8	87.0	6.0
3" Ferrule x 3" Hose	217.6	15.0	174.0	12.0	87.0	6.0

Process Connections						
ASME BPE / DIN 32676 Process Connections						
Service Type	Group 1		Group 2		Group 3 (Note 2 - Important)	
Process Connection Size x Hose Size	MAWP at 400°F (psig)	MAWP at 204°C (barg)	MAWP at 400°F (psig)	MAWP at 204°C (barg)	MAWP at 400°F (psig)	MAWP at 204°C (barg)
1/2" Ferrule x 5/8" Hose	539.5	37.2	431.6	29.8	215.8	14.9
1" Ferrule x 7/8" Hose	215.8	14.9	172.7	11.9	87.0	6.0
1" Ferrule x 1" Hose	215.8	14.9	172.7	11.9	87.0	6.0
1-1/2" Ferrule x 1-3/8" Hose	215.8	14.9	172.7	11.9	87.0	6.0
1-1/2" Ferrule x 1-1/2" Hose	215.8	14.9	172.7	11.9	87.0	6.0
2" Ferrule x 1-7/8" Hose	215.8	14.9	172.7	11.9	87.0	6.0
2" Ferrule x 2" Hose	215.8	14.9	172.7	11.9	87.0	6.0
Process Connection Size x Hose Size	MAWP at 400°F (psig)	MAWP at 204°C (barg)	MAWP at 400°F (psig)	MAWP at 204°C (barg)	MAWP at 327°F (psig)	MAWP at 164°C (barg)
2-1/2" Ferrule x 2-1/2" Hose	215.8	14.9	172.7	11.9	87.0	6.0
3" Ferrule x 3" Hose	202.3	14.0	161.9	11.2	87.0	6.0

SCOPE OF CRN REGISTRATION

PRESSURE - TEMPERATURE RATINGS						
Process Connections		CL150 ASME B16.5 Flanged Type 304SS				
Service Type	Group 1		Group 2		Group 3 (Note 2 - Important)	
Process Connection Size x Hose Size	MAWP at 100°F(psig)	MAWP at 38°C(barg)	MAWP at 100°F(psig)	MAWP at 38°C(barg)	MAWP at 100°F(psig)	MAWP at 38°C(barg)
1/2" Flange x 1/2" Hose	275.0	19.0	275.0	19.0	232.0	16.0
3/4" Flange x 3/4" Hose	275.0	19.0	275.0	19.0	232.0	16.0
1" Flange x 1" Hose	275.0	19.0	275.0	19.0	232.0	16.0
1-1/4" Flange x 1-1/4" Hose	275.0	19.0	275.0	19.0	232.0	16.0
1-1/2" Flange x 1-1/2" Hose	275.0	19.0	275.0	19.0	203.0	14.0
2" Flange x 2" Hose	275.0	19.0	275.0	19.0	145.0	10.0
2-1/2" Flange x 2-1/2" Hose	275.0	19.0	232.0	16.0	87.0	6.0
3" Flange x 3" Hose	218.0	15.0	174.0	12.0	87.0	6.0
Process Connection Size x Hose Size	MAWP at 200°F(psig)	MAWP at 93°C(barg)	MAWP at 200°F(psig)	MAWP at 93°C(barg)	MAWP at 200°F(psig)	MAWP at 93°C(barg)
1/2" Flange x 1/2" Hose	230.0	15.9	230.0	15.9	230.0	15.9
3/4" Flange x 3/4" Hose	230.0	15.9	230.0	15.9	230.0	15.9
1" Flange x 1" Hose	230.0	15.9	230.0	15.9	230.0	15.9
1-1/4" Flange x 1-1/4" Hose	230.0	15.9	230.0	15.9	230.0	15.9
1-1/2" Flange x 1-1/2" Hose	230.0	15.9	230.0	15.9	203.0	14.0
2" Flange x 2" Hose	230.0	15.9	230.0	15.9	145.0	10.0
2-1/2" Flange x 2-1/2" Hose	230.0	15.9	230.0	15.9	87.0	6.0
3" Flange x 3" Hose	218.0	15.0	174.0	12.0	87.0	6.0
Process Connection Size x Hose Size	MAWP at 300°F(psig)	MAWP at 149°C(barg)	MAWP at 300°F(psig)	MAWP at 149°C(barg)	MAWP at 300°F(psig)	MAWP at 149°C(barg)
1/2" Flange x 1/2" Hose	205.0	14.1	205.0	14.1	205.0	14.1
3/4" Flange x 3/4" Hose	205.0	14.1	205.0	14.1	205.0	14.1
1" Flange x 1" Hose	205.0	14.1	205.0	14.1	205.0	14.1
1-1/4" Flange x 1-1/4" Hose	205.0	14.1	205.0	14.1	205.0	14.1
1-1/2" Flange x 1-1/2" Hose	205.0	14.1	205.0	14.1	203.0	14.0
2" Flange x 2" Hose	205.0	14.1	205.0	14.1	145.0	10.0
2-1/2" Flange x 2-1/2" Hose	205.0	14.1	205.0	14.1	87.0	6.0
3" Flange x 3" Hose	205.0	14.1	174.0	12.0	87.0	6.0
Process Connection Size x Hose Size	MAWP at 400°F(psig)	MAWP at 204°C(barg)	MAWP at 400°F(psig)	MAWP at 204°C(barg)	MAWP at 400°F(psig)	MAWP at 204°C(barg)
1/2" Flange x 1/2" Hose	190.0	13.1	190.0	13.1	190.0	13.1
3/4" Flange x 3/4" Hose	190.0	13.1	190.0	13.1	190.0	13.1
1" Flange x 1" Hose	190.0	13.1	190.0	13.1	190.0	13.1
1-1/4" Flange x 1-1/4" Hose	190.0	13.1	190.0	13.1	190.0	13.1
1-1/2" Flange x 1-1/2" Hose	190.0	13.1	190.0	13.1	189.0	13.0
2" Flange x 2" Hose	190.0	13.1	190.0	13.1	135.0	9.3
Process Connection Size x Hose Size	MAWP at 400°F(psig)	MAWP at 204°C(barg)	MAWP at 400°F(psig)	MAWP at 204°C(barg)	MAWP at 327°F (psig)	MAWP at 164°C (barg)
2-1/2" Flange x 2-1/2" Hose	190.0	13.1	190.0	13.1	87.0	6.0
3" Flange x 3" Hose	190.0	13.1	162.0	11.2	87.0	6.0

SCOPE OF CRN REGISTRATION**PRESSURE - TEMPERATURE RATINGS**

Process Connections		CL150 ASME B16.5 Flanged Type 316SS				
Service Type	Group 1		Group 2		Group 3 (Note 2 - Important)	
Process Connection Size x Hose Size	MAWP at 100°F(psig)	MAWP at 38°C(barg)	MAWP at 100°F(psig)	MAWP at 38°C(barg)	MAWP at 100°F(psig)	MAWP at 38°C(barg)
1/2" Flange x 1/2" Hose	275.0	19.0	275.0	19.0	232.0	16.0
3/4" Flange x 3/4" Hose	275.0	19.0	275.0	19.0	232.0	16.0
1" Flange x 1" Hose	275.0	19.0	275.0	19.0	232.0	16.0
1-1/4" Flange x 1-1/4" Hose	275.0	19.0	275.0	19.0	232.0	16.0
1-1/2" Flange x 1-1/2" Hose	275.0	19.0	275.0	19.0	203.0	14.0
2" Flange x 2" Hose	275.0	19.0	275.0	19.0	145.0	10.0
2-1/2" Flange x 2-1/2" Hose	275.0	19.0	232.0	16.0	87.0	6.0
3" Flange x 3" Hose	218.0	15.0	174.0	12.0	87.0	6.0
Process Connection Size x Hose Size	MAWP at 200°F(psig)	MAWP at 93°C(barg)	MAWP at 200°F(psig)	MAWP at 93°C(barg)	MAWP at 200°F(psig)	MAWP at 93°C(barg)
1/2" Flange x 1/2" Hose	235.0	16.2	235.0	16.2	232.0	16.0
3/4" Flange x 3/4" Hose	235.0	16.2	235.0	16.2	232.0	16.0
1" Flange x 1" Hose	235.0	16.2	235.0	16.2	232.0	16.0
1-1/4" Flange x 1-1/4" Hose	235.0	16.2	235.0	16.2	232.0	16.0
1-1/2" Flange x 1-1/2" Hose	235.0	16.2	235.0	16.2	203.0	14.0
2" Flange x 2" Hose	235.0	16.2	235.0	16.2	145.0	10.0
2-1/2" Flange x 2-1/2" Hose	235.0	16.2	232.0	16.0	87.0	6.0
3" Flange x 3" Hose	218.0	15.0	174.0	12.0	87.0	6.0
Process Connection Size x Hose Size	MAWP at 300°F(psig)	MAWP at 149°C(barg)	MAWP at 300°F(psig)	MAWP at 149°C(barg)	MAWP at 300°F(psig)	MAWP at 149°C(barg)
1/2" Flange x 1/2" Hose	215.0	14.8	215.0	14.8	215.0	14.8
3/4" Flange x 3/4" Hose	215.0	14.8	215.0	14.8	215.0	14.8
1" Flange x 1" Hose	215.0	14.8	215.0	14.8	215.0	14.8
1-1/4" Flange x 1-1/4" Hose	215.0	14.8	215.0	14.8	215.0	14.8
1-1/2" Flange x 1-1/2" Hose	215.0	14.8	215.0	14.8	203.0	14.0
2" Flange x 2" Hose	215.0	14.8	215.0	14.8	145.0	10.0
2-1/2" Flange x 2-1/2" Hose	215.0	14.8	215.0	14.8	87.0	6.0
3" Flange x 3" Hose	215.0	14.8	174.0	12.0	87.0	6.0
Process Connection Size x Hose Size	MAWP at 400°F(psig)	MAWP at 204°C(barg)	MAWP at 400°F(psig)	MAWP at 204°C(barg)	MAWP at 400°F(psig)	MAWP at 204°C(barg)
1/2" Flange x 1/2" Hose	195.0	13.4	195.0	13.4	195.0	13.4
3/4" Flange x 3/4" Hose	195.0	13.4	195.0	13.4	195.0	13.4
1" Flange x 1" Hose	195.0	13.4	195.0	13.4	195.0	13.4
1-1/4" Flange x 1-1/4" Hose	195.0	13.4	195.0	13.4	195.0	13.4
1-1/2" Flange x 1-1/2" Hose	195.0	13.4	195.0	13.4	189.0	13.0
2" Flange x 2" Hose	195.0	13.4	195.0	13.4	135.0	9.3
Process Connection Size x Hose Size	MAWP at 400°F(psig)	MAWP at 204°C(barg)	MAWP at 400°F(psig)	MAWP at 204°C(barg)	MAWP at 327°F (psig)	MAWP at 164°C (barg)
2-1/2" Flange x 2-1/2" Hose	195.0	13.4	195.0	13.4	87.0	6.0
3" Flange x 3" Hose	195.0	13.4	162.0	11.2	87.0	6.0

SCOPE OF CRN REGISTRATION

Note 1: MAWP = Maximum Allowable Working Pressure, MAWT = Maximum Allowable Working Temperature, MDMT = Minimum Design Metal Temperature.

Note 2: In all cases the Group 3 Steam Service MAWP stated shall be further limited, where applicable, to the steam saturation pressure at temperature.

Note 3: Linear interpolation of pressure ratings between temperatures is allowed.

Note 4: The Maximum Allowable Working Pressure (MAWP) is the maximum allowed under this CRN. Aflex may limit certain hose applications to lower pressures than specified above. Please consult Aflex literature.

Note 5: For low temperature operation the products shall conform to the rules of the applicable codes under which they are used.

Note 6: The ASME BPE / DIN 32676 Ferrule connection shall be used with a clamp, however the assembly clamp is not part of this CRN. Pressure-Temperature ratings may be limited by the clamp type used in the joint assembly. The clamp used to complete the joint shall have its own CRN and shall have pressure-temperature ratings the same or higher than the product ratings.

Note 7: See attached Worldwide Locations Appendix for the manufacturing locations applicable to this CRN.

THIS IS PART OF CRN
0D25821.5
Technical Standards and Safety Authority
Boilers and Pressure Vessels Safety
Program



WORLDWIDE LOCATIONS APPENDIX

AFLEX HOSE MANUFACTURING LOCATIONS & CERTIFYING AUTHORITIES

(rev. November 19, 2024)

Aflex Hose Ltd.

Bradley Business Park
Dyson Wood Way
Bradley
Huddersfield
HD2 1GZ
United Kingdom

ISO 9001 Certified by bsi

In addition, in accordance with CSA B51 paragraph 4.2.5 Aflex Hose Ltd. is taking responsibility for the product covered under this CRN that is manufactured at:

Watson-Marlow, Inc.

37 Upton Technology Park
Wilmington, MA, 01887
USA

ISO 9001 Certified by TUV

Watson-Marlow America Manufacturing Inc.

16 Bulge Road
Devens MA 01434
USA

ISO 9001 Certified by TUV

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0D25821.5
Technical Standards and Safety Authority
Boilers and Pressure Vessels Safety
Program