



345 Carlingview Drive  
Toronto, Ontario M9W 6N9  
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[www.tssa.org](http://www.tssa.org)

March 17, 2021

ROUND ENGINEERING INC  
10 SEGWUN RD  
WATERDOWN ON L8B 0K6

**Workorder Type:** Registration - Fitting(Conventional)  
**Workorder No:** 8003501  
**Your Reference No.:** R-1232-2  
**Registered to:** DETROIT FLEX DEFENSE

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 : 0D22733.5ADD1  
Main Design No.: "Part of CRN" Scope  
Expiry Date: Oct 09, 2030

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

CRN expires Oct.9,2030, "Part of CRN" for the Scope

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](mailto: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,

Charley Dong  
Engineer, BPV  
Tel. : +1 416-734-3436  
Email : [cdong@tssa.org](mailto:cdong@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



DFD

## STATUTORY DECLARATION Registration of Fittings

I, BRYAN M. MOOSEKIAN, CHIEF OF OPERATIONS

(Name and Position, e.g. President, Plant Manager, Chief Engineer)

of DETROIT FLEX DEFENSE

(Name of Manufacturer)

Located at 2921 INDUSTRIAL ROW, TROY, MI, 48084

(Plant Address)

248-280-0030

(Telephone No.)

248-280-0038

(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

(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 which has been verified by the following authority, ASR

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

SCOPE OF CRN REGISTRATION, DRAWINGS, CALCULATIONS

(drawings, calculations, test reports, etc.)

Declared before me at 2921 INDUSTRIAL Row Dr, Troy MI in the STATE of Michigan

the 22 day of February AD 2021

Commissioner for Oaths:

Cari M. Powell

(Printed name)

Cari M Powell

(Signature)

CARI M POWELL  
Notary Public, State of Michigan  
County Of Oakland  
My Commission Expires 8-11-2021  
Acting in the County of Oakland

(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 D

CRN: 0D22733.5ADD1

Registered by: Charley Dong

See attached "Part of CRN" for the scope

Dated: Mar.17,2031

NOTE: This registration expires on: Oct.9,2030

Technical  
Standards  
and Safety  
Authority

Boilers and  
Pressure Vessels  
Safety Program

REGISTERED

C.R.N.: 0D22733.5ADD1

Signed: Charley Dong

Date: March 17, 2021.

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



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DFD

## STATUTORY DECLARATION Registration of Fittings

I, BRYAN M. MOOSEKIAN, CHIEF OF OPERATIONS

(Name and Position, e.g. President, Plant Manager, Chief Engineer)

of DETROIT FLEX DEFENSE

(Name of Manufacturer)

Located at 2921 INDUSTRIAL ROW, TROY, MI, 48084

(Plant Address)

248-280-0030

(Telephone No.)

248-280-0038

(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

(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 which has been verified by the following authority, ASR

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

SCOPE OF CRN REGISTRATION, DRAWINGS, CALCULATIONS

(drawings, calculations, test reports, etc.)

Declared before me at 2921 INDUSTRIAL Row Dr, Troy MI in the STATE of Michigan

the 22 day of February AD 2021

Commissioner for Oaths:

CARI M POWELL

Notary Public, State of Michigan

County Of Oakland

My Commission Expires 8-11-2021

Acting in the County of OAKLAND

Cari M. Powell

(Printed name)

Cari M Powell

(Signature)

[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: \_\_\_\_\_

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

# DETROIT FLEX DEFENSE

2921 INDUSTRIAL ROW,  
TROY, MICHIGAN,  
48084



THIS IS PART OF CRN

0D22733.5ADD1

Technical Standards and Safety Authority  
Boilers and Pressure Vessels Safety  
Program

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## SCOPE OF CRN REGISTRATION

PRODUCT DESCRIPTION			
Design Report:	R-1232A		
Product Description	Process Connections	Design Code	Material Specification (Note 2)
H9011, H9011NC H9016, H9016HY, H9016SP, H9016TP Hose Assemblies	Size 04: 7/16-20 thread Size 05: 1/2-20 thread Size 06: 9/16-18 thread Size 08: 3/4-16 thread Size 12: 1-1/16"-12 thread Size 04: 0.250" Tube OD Size 05: 0.313" Tube OD Size 06: 0.375" Tube OD Size 08: 0.500" Tube OD Size 12: 0.750" Tube OD Straight, 45 Degree and 90 Degree end fittings	ARPM IP-2 Ninth Edition; 2015, ASME B31.3, 2018	<b>Braid:</b> Type 304 Stainless Steel (Tensile 270,000 psi min, 300,000 psi max.) <b>Collar, Fitting, Nuts:</b> ASTM A479-304 / AMS 5639 ASTM A479-304L / AMS 5647 ASTM A182-304 / AMS 5639 ASTM A182-304L / AMS 5647 <b>Retention Pin:</b> ASTM A580-302 / AMS 5637, ASTM A580-305
PRODUCT DESCRIPTION			
Hose Size	Group 1 Service MAWP AT 400°F (Note 1)	Group 2 Service MAWP AT 400°F (Note 1)	Group 3 Service MAWP AT 400°F (Note 1)
04	2600 psig	2080 psig	1040 psig
05	2000 psig	1600 psig	800 psig
06	1700 psig	1360 psig	680 psig
08	1600 psig	1280 psig	640 psig
12	1000 psig	800 psig	400 psig

# DETROIT FLEX DEFENSE

2921 INDUSTRIAL ROW,  
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## SCOPE OF CRN REGISTRATION

PRODUCT DESCRIPTION			
<b>Design Report:</b>	<b>R-1232B</b>		
<b>Product Description</b>	<b>Process Connections</b>	<b>Design Code</b>	<b>Material Specification (Note 2)</b>
H9012, H9012HS H9013, H9013HS Hose Assemblies	Size 04: 7/16-20 thread Size 06: 9/16-18 thread Size 08: 3/4-16 thread Size 12: 1-1/16"-12 thread Size 04: 0.250" Tube OD Size 06: 0.375" Tube OD Size 08: 0.500" Tube OD Size 12: 0.750" Tube OD Straight, 45 Degree and 90 Degree end fittings	ARPM IP-2 Ninth Edition; 2015, ASME B31.3, 2018	<b>Braid:</b> Type 304 Stainless Steel (Tensile 270,000 psi min, 300,000 psi max.) <b>Collar, Fitting, Nuts:</b> ASTM A479-304 / AMS 5639 ASTM A479-304L / AMS 5647 ASTM A182-304 / AMS 5639 ASTM A182-304L / AMS 5647 <b>Retention Pin:</b> ASTM A580-302 / AMS 5637, ASTM A580-305
PRODUCT DESCRIPTION			
<b>Hose Size</b>	<b>Group 1 Service MAWP AT 400°F (Note 1)</b>	<b>Group 2 Service MAWP AT 400°F (Note 1)</b>	<b>Group 3 Service MAWP AT 400°F (Note 1)</b>
04	2600 psig	2080 psig	1040 psig
06	1700 psig	1360 psig	680 psig
08	1700 psig	1360 psig	680 psig
12	1000 psig	800 psig	400 psig

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### SCOPE OF CRN REGISTRATION

PRODUCT DESCRIPTION			
<b>Design Report:</b>	<b>R-1232C</b>		
<b>Product Description</b>	<b>Process Connections</b>	<b>Design Code</b>	<b>Material Specification (Note 2)</b>
H9037, H9038 Hose Assemblies	Size 04: 7/16-20 thread Size 06: 9/16-18 thread Straight, 45 Degree and 90 Degree end fittings	ARPM IP-2 Ninth Edition; 2015, ASME B31.3, 2018	<b>Braid:</b> Type 304 Stainless Steel (Tensile 1900 N/MM <sup>2</sup> min, 2150 N/MM <sup>2</sup> max.) <b>Collar, Fitting, Nuts:</b> ASTM A479-304 / AMS 5639 ASTM A479-304L / AMS 5647 ASTM A182-304 / AMS 5639 ASTM A182-304L / AMS 5647 <b>Retention Pin:</b> ASTM A580-302 / AMS 5637, ASTM A580-305
PRODUCT DESCRIPTION			
<b>Hose Size</b>	<b>Group 1 Service MAWP AT 450°F (Note 1)</b>	<b>Group 2 Service MAWP AT 450°F (Note 1)</b>	<b>Group 3 Service MAWP AT 450°F (Note 1)</b>
04	1280 psig	1024 psig	512 psig
06	1160 psig	928 psig	464 psig

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### SCOPE OF CRN REGISTRATION

PRODUCT DESCRIPTION			
Design Report:	R-1232C		
Product Description	Process Connections	Design Code	Material Specification (Note 2)
H9037, H9038 Hose Assemblies	Size 08: 3/4-16 thread Size 12: 1-1/16"-12 thread Size 16: 1-5/16"-12 thread Straight, 45 Degree and 90 Degree end fittings	ARPM IP-2 Ninth Edition; 2015, ASME B31.3, 2018	<b>Braid:</b> Type 304 Stainless Steel (Tensile 1800 N/MM <sup>2</sup> min, 2050 N/MM <sup>2</sup> max.) <b>Collar, Fitting, Nuts:</b> ASTM A479-304 / AMS 5639 ASTM A479-304L / AMS 5647 ASTM A182-304 / AMS 5639 ASTM A182-304L / AMS 5647 <b>Retention Pin:</b> ASTM A580-302 / AMS 5637, ASTM A580-305
PRODUCT DESCRIPTION			
Hose Size	Group 1 Service MAWP AT 450°F (Note 1)	Group 2 Service MAWP AT 450°F (Note 1)	Group 3 Service MAWP AT 450°F (Note 1)
08	870 psig	696 psig	348 psig
12	610 psig	488 psig	244 psig
16	540 psig	432 psig	216 psig

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### SCOPE OF CRN REGISTRATION

PRODUCT DESCRIPTION			
<b>Design Report:</b>	<b>R-1232D</b>		
<b>Product Description</b>	<b>Process Connections</b>	<b>Design Code</b>	<b>Material Specification (Note 2)</b>
H9011, H9011NC H9016, H9016HY, H9016SP, H9016TP H9012, H9012HS H9013, H9013HS Hose Assemblies	Size 06 x 1/2" Type A ASME BPE Ferrule, Size 08 x 3/4" Type A ASME BPE Ferrule, Size 08 x 1" Type B ASME BPE Ferrule, Size 12 x 1" Type B ASME BPE Ferrule. (Note 4)	ARPM IP-2 Ninth Edition; 2015, ASME B31.3, 2018	<b>Braid:</b> Type 304 Stainless Steel (Tensile 270,000 psi min, 300,000 psi max.) <b>Collar, Fitting, Nuts, Ferrules:</b> ASTM A479-304 / AMS 5639 ASTM A479-304L / AMS 5647 ASTM A182-304 / AMS 5639 ASTM A182-304L / AMS 5647 <b>Retention Pin:</b> ASTM A580-302 / AMS 5637, ASTM A580-305
PRODUCT DESCRIPTION			
<b>Hose Size</b>	<b>Group 1 Service MAWP AT 302°F (Note 1)</b>	<b>Group 2 Service MAWP AT 302°F (Note 1)</b>	<b>Group 3 Service MAWP AT 302°F (Note 1)</b>
Size 06 x 1/2" Type A	363 psig	363 psig	363 psig
Size 08 x 3/4" Type A	363 psig	363 psig	363 psig
Size 08 x 1" Type B	363 psig	363 psig	363 psig
Size 12 x 1" Type B	363 psig	363 psig	363 psig



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### SCOPE OF CRN REGISTRATION

PRODUCT DESCRIPTION			
Design Report:	R-1232E		
Product Description	Process Connections	Design Code	Material Specification (Note 2)
H9037, H9038 Hose Assemblies	Size 04 x 1/4" Type A ASME BPE Ferrule, Size 06 x 3/8" Type A ASME BPE Ferrule, (Note 4)	ARPM IP-2 Ninth Edition; 2015, ASME B31.3, 2018	<b>Braid:</b> Type 304 Stainless Steel (Tensile 1900 N/MM <sup>2</sup> min, 2150 N/MM <sup>2</sup> max.) <b>Collar, Fitting, Nuts, Ferrules:</b> ASTM A479-304 / AMS 5639 ASTM A479-304L / AMS 5647 ASTM A182-304 / AMS 5639 ASTM A182-304L / AMS 5647 <b>Retention Pin:</b> ASTM A580-302 / AMS 5637, ASTM A580-305
PRODUCT DESCRIPTION			
Hose Size	Group 1 Service MAWP AT 302°F (Note 1)	Group 2 Service MAWP AT 302°F (Note 1)	Group 3 Service MAWP AT 302°F (Note 1)
04 x 1/4" Type A	363 psig	363 psig	363 psig
06 x 3/8" Type A	363 psig	363 psig	363 psig

# DETROIT FLEX DEFENSE

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## SCOPE OF CRN REGISTRATION

PRODUCT DESCRIPTION			
Design Report:	R-1232E		
Product Description	Process Connections	Design Code	Material Specification (Note 2)
H9037, H9038 Hose Assemblies	Size 08 x 1/2" Type A, Size 08 x 1" Type B, Size 08 x 1-1/2" Type B, Size 12 x 3/4" Type A, Size 12 x 1" Type B, Size 12 x 1-1/2" Type B, Size 16 x 1" Type B, Size 16 x 1-1/2" Type B, ASME BPE Ferrule. (Note 4)	ARPM IP-2 Ninth Edition; 2015, ASME B31.3, 2018	<b>Braid:</b> Type 304 Stainless Steel (Tensile 1800 N/MM <sup>2</sup> min, 2050 N/MM <sup>2</sup> max.) <b>Collar, Fitting, Nuts, Ferrules:</b> ASTM A479-304 / AMS 5639 ASTM A479-304L / AMS 5647 ASTM A182-304 / AMS 5639 ASTM A182-304L / AMS 5647 <b>Retention Pin:</b> ASTM A580-302 / AMS 5637, ASTM A580-305
PRODUCT DESCRIPTION			
Hose Size	Group 1 Service MAWP AT 302°F (Note 1)	Group 2 Service MAWP AT 302°F (Note 1)	Group 3 Service MAWP AT 302°F (Note 1)
08 x 1/2" Type A	363 psig	363 psig	348 psig
08 x 1" Type B	363 psig	363 psig	348 psig
08 x 1-1/2" Type B	363 psig	363 psig	348 psig
12 x 3/4" Type A	363 psig	363 psig	244 psig
12 x 1" Type B	363 psig	363 psig	244 psig
12 x 1-1/2" Type B	363 psig	363 psig	244 psig
16 x 1" Type B	363 psig	363 psig	216 psig
16 x 1-1/2" Type B	363 psig	363 psig	216 psig

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### **SCOPE OF CRN REGISTRATION**

#### **NOTES:**

1) The maximum allowable working pressures (MAWP) stated above are applicable to the following Service Groups:

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

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

**Group 3:** Steam

2) AMS = Aerospace Material Specification. Material meeting the requirements of the AMS specification specified must meet the requirements of the equivalent ASTM specification for the CRN to be valid.

3) For low temperature operation the products shall conform to the rules of the applicable codes under which they are used.

4) The ASME 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.