Transport Canada | Transports Canada

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Transport Dangerous Goods Directorate | Direction générale du transport des marchandises dangereuses

Canada Building
344 Slater Street
Ottawa, Ontario
K1A 0N5

Édifice Canada
344, rue Slater
Ottawa (Ontario)
K1A 0N5

Your file *Votre référence*
-

Our file *Notre référence*
ASD 4067-26-2-76

April 25, 1990

Mr. Shawn C. Hogan
Vice-President of Engineering
EFI Corporation
751 Charcot Avenue
San Jose
California 95131

Dear Sir:

Please refer to recent exchange of correspondence with regards to renewing Special Permits 1471 and 3153 and the inclusion of new designs and revised drawings to our list of authorized part numbers.

After a review of your applications, as well as our file and in accordance with the new procedures in place at Transport Canada, a Certificate of Registration has been issued to your company. This certificate covers all previously authorized cylinders and all pending applications on hand up to January 10, 1990 and is deemed to supersede any previous letters or Orders issued by Transport Canada, the National Transportation Agency or the Canadian Transport Commission.

Please confirm your understanding and concurrence with the terms of the certificate by return letter.

Should you have any further questions on this matter, please do not hesitate to write or call the undersigned at 613-998-5267.

Yours Truly

J.P. Gagnon
Senior Advisor, Cylinders
Regulatory Affairs Branch

Attachment

JPG/cjm

Canada

May 02-90
c/c To:-
Rick Wilson
Authorized Testing

Transports Canada / Transport Canada
Marchandises dangereuses / Dangerous Goods

Certificate of Registration

This is to certify that: EFI Corporation, 751 Charcot Avenue, San Jose, California, pursuant to its application on file with Transport Canada has been granted the registration No. M76 in accordance with the provisions of Special Permit No. 3263 and section 25 of CAN/CSA B339-88 for the purpose of manufacturing compressed gas cylinders under the following limitations:

Provided:

1) The cylinders shall be manufactured and maintained in complete accordance with the requirements set out in Appendices A or B to this certificate and the applicable sections of the "Regulations for the Transportation of Dangerous Commodities by Rail". All cylinders must also conform with the additional information provided with the application on file with this Directorate.

2) The manufacturing must be supervised by a duly authorized Independent Inspection Agency under an inspection procedure conforming to the requirements set out in Appendices A or B to this certificate and filed with this Directorate.

3) Within two years after the Registration date of this certificate, a quality assurance manual shall be submitted to the Director. The manual shall indicate that the operations in the plant are in accordance with CAN3-Z299.3-85 standard or equivalent.

Not later than 20 days after any changes occur in the information submitted in support of the application, the holder shall advise this Directorate of any such changes.

Failure to comply with the above mentioned requirements or any applicable regulations may result in the suspension or revocation of this certificate of registration.

This Certificate of Registration shall expire on: April 30, 1995 or on such previous date as this Directorate may decide.

Registration Date: 27 April 1990 Signed: J L Martin

Director, Regulatory Requirements
Transport Dangerous Goods Directorate

Canada

APPENDIX A TO CERTIFICATE OF REGISTRATION M76

The following requirements apply to cylinders made in accordance with EFI Corporation applications and drawings 6246-001, 6293-001 Rev. G, 6391-001 Rev. C, 6410-001 Rev. E, 6410-002 Rev. C, 6463-001 Rev. H, 6704-001 Rev B, 6802-007, 6977-001 Rev. J, 6977-002 Rev B, 6988-001 Rev. M, and 7020-001 and additional design and performance data on file with this Directorate.

The cylinders shall be of the fibre reinforced plastic (FRP) full composite type manufactured in full compliance with DOT FRP-1 Standard Revision 1 dated March 15, 1982 (178.AA) except as specifically modified hereunder:

i) 178-AA-3 Inspection by whom and where

Inspections and verifications shall be performed by an Independent Inspection Agency authorized in writing for such purposes by this Directorate or by a valid order issued by the Canadian Transport Commission.

ii) 178.AA-4 Duties of Inspector

(g) Furnish complete inspector's report (178-AA.16) to the maker of the cylinder, to Transport Canada and upon request, to the purchaser.

iii) 178.AA-6 Manufacture

(b) This paragraph applies, except that certain designs specifically identified to, and on file with this Directorate may be autofrettaged by pressurizing to not less than 103 percent of the prescribed minimum test pressure.

iv) 178.AA-13 Acceptable results of test

(a) Applies except that for cylinders with 2.5 pounds (70 cubic inches) or less water capacity, the permanent expansion must not exceed 10 percent of total expansion at test pressure.

v) 178.AA-15 Marking

(b) Required markings are as follows:

(1) "TC SP 3263-M76A-YYYY"
(where Y = Service pressure in psig)

(2) A serial number and an identifying symbol (letters); location of number to be just below or immediately following the TC mark; location of symbol to be just

below or immediately following the number. The symbol and numbers must be those of the maker. The symbol must be registered with the Director, Regulatory Requirements.

vi) 178.AA-18 Design qualification tests

(a) General - except as authorized in 178.AA-10(a), qualification tests as prescribed in this paragraph shall have been performed on representative cylinders of each specific design prior to the initial shipment. All cylinders used for design qualification tests must be fabricated on the same equipment and subjected to the same processes as is used to produce cylinders intended for charging and shipment. All tests must be witnessed by an independent inspector. Test reports must be kept on file by the cylinder maker and made available to the independent inspector and Transport Canada upon request.

(h) Qualification test results - A report of all tests for each design describing test setup, procedure and results must be submitted to Transport Canada. This report must include at least the following basic information on each cylinder tested:***

SPECIAL REQUIREMENTS

(a) The cylinders shall be maintained and used in accordance with applicable sections of the "Regulations for the Transportation of Dangerous Commodities by Rail" and filled only with the following gases:

Commodity	Identification Number
Air, compressed	1002
Oxygen, compressed	1072
Compressed gas, n.o.s. (air compressed enriched with up to 39% by volume oxygen content)	1956
Argon, compressed	1006

(b) Cylinder service life must not exceed 15 years.

(c) Use of these cylinders for underwater breathing is not authorized.

(d) Cylinders used in oxygen service must be in compliance with section 73.302 (a)(5)(i) through (a)(5)(iv).

(e) Cylinder must be packaged in accordance with 73.301 (k).

f) Each cylinder must be reinspected and hydrostatically retested at least once every three years in accordance with the Compressed Gas Association Pamphlet C-6.2 - 1982 except that permanent volumetric expansion must not exceed 10 percent of total volumetric expansion at test pressure for cylinders with 2.5 pounds or less (70 cubic inches) water capacity. Retest dates may be applied on the epoxy coating in a permanent manner other than by stamping. As an alternate retest dates may be stamped on the outer exposed metallic surface of the cylinder neck. Reheat treatment or repair of rejected cylinders not authorized, except that only cylinders made under P/N 6410-001 having 3000 psig service pressure and a nominal volume of 50 cubic inches may be repaired under the following conditions:

(1) Repairs must be performed by EFI Corporation or a cylinder requalification facility registered with Transport Canada.

(2) Repair must be limited to a maximum of 2 damage sites per cylinder on a one time only basis.

(3) Each repaired cylinder must be stamped with a small R in the neck adjacent to the serial number.

(4) Maximum allowable defect is 1 inch long (no width restriction) by 0.016 inch deep in the sidewall or 0.008 inch deep in the heads. Any cylinder with damage exceeding these limits must be removed from service.

(5) A report identifying the repaired cylinder by serial number must be submitted to the Director at least once every six months from the date of this certificate.

(g) A cylinder which has been subjected to the action of fire must not be returned to service.

(h) The Director, Regulatory Requirements shall be advised of any change in design of the cylinder.

(i) The Director, Regulatory Requirements shall be advised of any incident involving loss of contents and shall be provided with a summary of experience on a yearly basis.

APPENDIX B TO CERTIFICATE OF REGISTRATION M76

The following requirements apply to cylinders made in accordance with EFI Corporation applications and drawings 6385-001, 6468-001, and 7005-001 and additional design and performance data on file with this Directorate.

The cylinders shall be of the fibre reinforced plastic (FRP) full composite type manufactured in full compliance with DOT FRP-1 Standard Revision 1 dated March 15, 1982 (178.AA) except as specifically modified hereunder.

i) 178.AA-3 Inspection by whom and where

Inspections and verifications shall be performed by an Independent Inspection Agency authorized in writing for such purposes by this Directorate or by a valid order issued by the Canadian Transport Commission.

ii) 178.AA-4 Duties of Inspector

(g) Furnish complete inspector's report (178.AA-16) to the maker of the cylinder, to Transport Canada and upon request to the purchaser.

iii) 178.AA-5 Authorized Material and Identification of Material

(a) ***

(b) Filament material must be Kevlar 49 in compliance with proposed aerospace materials specification (AMS) 3901. Filament must be tested in accordance with ASTM D 2343-67 for strand strength, and ASTM D 3317-74 for denier. The strength and denier must be as follows:

(1) Strand strength - 400,000 PSI minimum.

(2) Denier must be at least 90 percent of the nominal value specified in AMS 3901. Denier of roving may be certified by the filament manufacturer.

iv) 178.AA-6 Manufacture

(a) Liner (Add to end of paragraph). Each cylinder liner must be of seamless construction with integrally formed heads and bottoms. Manufacture is by backward extruded shell with threaded end formed by spinning.

v) 178.AA-10 Pressure relief devices and protection for valves, relief devices, and other connections.

(a) Pressure relief devices and protection for valves and other connections must be in compliance with section 73.34(d), and 73.301(g), except that the adequacy of the pressure relieving devices for each design must be verified in accordance with 178.AA-18(g) notwithstanding the requirement in CGA Pamphlet C-14.

vi) 178.AA-15 Marking

(b) Required markings are as follows:

(1) "TC SP 3263-M76B-YYYY"
(where Y = service pressure in psig)

(2) A serial number and an identifying symbol (letters); location of number to be just below or immediately following the TC mark; location of symbol to be just below or immediately following the number. The symbol and numbers must be those of the maker. The symbol must be registered with the Director, Regulatory Requirements.

vii) 178.AA-18 Design qualification tests

(a) General - except as authorized in 178.AA-10(a), qualification tests as prescribed in this paragraph shall have been performed on representative cylinders of each specific design prior to the initial shipment. All cylinders used for design qualification tests must be fabricated on the same equipment and subjected to the same processes as is used to produce cylinders intended for charging and shipment. All tests must be witnessed by an independent inspector. Test reports must be kept on file by the cylinder maker and made available to the independent inspector and Transport Canada upon request.

(h) Qualification test results - a report of all tests for each design describing test setup, procedure and results must be submitted to Transport Canada. This report must include at least the following basic information on each cylinder tested:***

SPECIAL REQUIREMENTS

a) The cylinders shall be maintained and used in accordance with applicable sections of the "Regulations for the Transportation of Dangerous Commodities by Rail" and filled only with the following gasses:

Commodity	Identification Number
Bromotrifluoromethane	1009
Air, compressed	1002
Carbon dioxide, liquified	2187
Nitrogen	1066
Oxygen	1072
Helium	1046
Compressed gas n.o.s. (air compressed, enriched with up to 39% by volume oxygen content)	1956

b) Cylinder service life must not exceed 15 years.

c) Use of these cylinders for underwater breathing is not authorized.

d) Cylinders used in oxygen service must be in compliance with section 73.302(a)(5)(i) through (a)(5)(iv).

e) Cylinder must be packaged in accordance with section 73.301(k).

f) Each cylinder must be re-inspected and hydrostatically retested every three years in accordance with section 73.34(e) as prescribed for CTC 3HT cylinders, except that the rejection elastic expansion criteria does not apply, and permanent volumetric expansion must not exceed 5 percent of total volumetric expansion at test pressure. Retest dates must be applied on the epoxy coating in a permanent manner other than by stamping. Retest dates may be steel stamped on the outer exposed metallic surface of the cylinder neck as an alternate method. Reheat treatment or repair of rejected cylinders not authorized.

g) A cylinder which has been subjected to the action of fire must not be returned to service.

h) The Director, Regulatory Requirements shall be advised of any change in design of the cylinder.

i) The Director, Regulatory Requirements shall be advised of any incident involving loss of contents and shall be provided with a summary or experience on a yearly basis.