SFI SPECIFICATION 14.4 EFFECTIVE: MARCH 23, 2004*

PRODUCT: Containment Valve Covers/Valve Cover Shields

1.0 GENERAL INFORMATION

1.1 This SFI Specification establishes uniform test procedures and minimum standards for evaluating and determining performance capabilities for Containment Valve Covers/Valve Cover Shields used by individuals engaged in competitive motorsports.

1.2 The procedures, test evaluations and standards contained herein, are intended only as minimum guidelines for construction and evaluation of products. Certification that products meet such minimum standards is made by the product manufacturer and products are not certified, endorsed or approved by SFI under this program.

1.3 Use of the "This Manufacturer Certifies That This Product Meets SFI Specification 14.4" logo/designation, the authorized artwork style, or conventional lettering by a manufacturer, on a subject product, is intended only to indicate that the manufacturer of the product has represented that they have submitted the product to the recommended tests, with positive results, in compliance with the standards established herein.

1.4 This SFI Specification requires a demonstration that the product of a manufacturer meets or exceeds the requirements when the manufacturer enters the program, and on a periodic basis thereafter. Any manufacturer may participate in the program by providing Containment Valve Covers/Valve Cover Shields that meet or exceed the SFI Specification 14.4 test standards, by complying with the requirements of the SFI Specification 14.4 program, and by signing a licensing agreement with the SFI Foundation, Inc.

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1.5 Compliance with this specification is entirely voluntary. However, when a manufacturer provides Containment Valve Covers/Valve Cover Shields in compliance with all requirements of the SFI Specification 14.4 and enters into the licensing agreement with the SFI Foundation, Inc., they may certify that compliance with such standards is in accordance with the guidelines established herein.

1.6 Manufacturers wishing to participate in the program, in addition to the other requirements of this specification, must label each of their products with the manufacturer's name, trademark or symbol as well as the date of manufacture of the product.

1.7 No manufacturer may display the SFI logo/designation on their product unless the manufacturer has signed a licensing agreement with SFI and has successfully complied with all the requirements of this specification and the self-certification program.

2.0 DEFINITIONS

2.1 Containment Valve Covers/Valve Cover Shields are devices, as may be required, to restrain engine components such as head studs, pushrods, valve springs and spark plugs from being ejected in such a way that they may be propelled beyond the vehicle. A Containment Valve Cover/Valve Cover Shield can either be the valve cover itself or a shield constructed of flexible or rigid material.

2.2 Containment Valve Covers/Valve Cover Shields shall be inspected every two years by the original manufacturer for recertification. After inspection, when the part(s) is determined to be acceptable for continued service, a new conformance label marked with the inspection date shall be used. Any attachment straps made from material that is sensitive to ultraviolet light shall be replaced at that time.

2.3 Containment Valve Covers/Valve Cover Shields pertaining to this specification shall remain as designed by the original manufacturer and not modified.

2.4 The useful life of the Flexible Type shall not exceed five years. It must be replaced at or before that time due to environmental factors.

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3.0 CONSTRUCTION

Containment Valve Covers/Valve Cover Shields shall incorporate a configuration to contain the engine parts defined in paragraph 2.1. Containment Valve Covers/Valve Cover Shields shall be attached in a manner to constrain the device and to prevent any forward and aft movement of the shield. All types must have a minimum of four points of attachment, one in/on each corner of the device. Also, the device may have provisions to allow the engine attachment straps from the SFI 14.3 device to pass through, but not attach to, the device. If used, the 14.3 Engine Attachment Straps must be tightly secured with no more than two (2) inches of slack.

3.1 ATTACHMENT STRAPS (Flexible Type)

Straps shall be made of material with a minimum elongation of 20 percent at the test load or an equivalent as stated by the webbing manufacturer.

3.2 CONTAINMENT VALVE COVER/VALVE COVER SHIELD COVERAGE

The Containment Valve Cover/Valve Cover Shield shall be constructed of ballistic material and cover the engine components defined in paragraph 2.1. The breather opening shall not be over any of the engine components defined in paragraph 2.1. **Any other opening, access port, spark plug holes, etc. in the main valve cover must be covered when in racing trim with a separate shield which must be tested as part of the sample in paragraph 5.2.** Any **Valve Cover/Valve Cover Shield** shall be secured to a minimum of one attachment point at each corner. The Flexible Type must have sides to cover the front and back of the valve cover, the Rigid Type does not.

4.0 MODEL CLASSIFICATION

Any variation of the original design, i.e. construction, ballistic material, straps or mounting method is considered a model change.

5.0 TESTING

5.1 ATTACHMENT STRENGTH

5.1.1 SAMPLES

Test samples shall be fully processed new Containment Valve Cover/Valve Cover Shields that are representative of devices currently being produced or to be produced. All necessary mounting hardware along with mounting instructions shall be supplied by the certifying manufacturer.

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5.1.2 APPARATUS

The test machine shall be capable of applying a minimum tensile load of 36,000 lbs (16,363 kg) with an excursion travel of **one** to five inches per minute (**2.5** - 12.7 cm/min) and have adequate instrumentation to verify the test load. The test machine shall also be in calibration and traceable to the National Bureau of Standards.

5.1.3 PROCEDURES

The Containment Valve Cover/Valve Cover Shield shall be mounted to the test fixture per the certifying manufacturer's instructions and supplied attachment hardware. The **Containment Valve Cover/Valve Cover Shield** shall be subjected to the test load of a minimum of 2,500 lbs (1,136 kg) for a minimum of 10 seconds **in a direction producing tension on the mounting system. The load shall be applied by a steel plunger at least 0.625 inches (15.8 mm) in diameter**.

5.2 PENETRATION RESISTANCE (ALL TYPES)

This test is based on Military Standard 662D, "Ballistic Test for Armor" (MIL-STD-662D).

5.2.1 SAMPLES

One sample of the ballistic material used in the valve cover enclosure segment, 11" x 14" ± 1" (27.9cm x 35.6cm ± 2.5cm) shall be supplied. The sample shall have the identical construction of the Containment Valve Cover/Valve Cover Shield that is being evaluated. **If separate auxiliary opening covers are employed, the test sample shall contain the opening covers.**

5.2.2 APPARATUS

The apparatus shall be as specified in MIL-STD-662D.

A. PROJECTILE

Caliber .22 - Type 2, fragment simulators conforming to MIL-P-46593A shall be used.

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5.2.3 PROCEDURES

The sample shall be tested in accordance with MIL-STD-662D for the Ballistic Limit, V_{50} BL(P). The maximum velocity span shall be 150 feet per second {fps} (46 meters per second {mps}).

5.2.4 INTERPRET RESULTS

The V_{50} BL(P) shall be calculated by taking the arithmetic mean of the two highest partial, and the two lowest complete, penetration impact velocities within the allowable velocity span.

6.0 PROOF OF COMPLIANCE

Containment Valve Cover/Valve Cover Shield certifying manufacturers are required to provide the following information to enroll in this program:

6.1 TEST RESULTS

Test results shall be documented in a test report.

6.1.1 ATTACHMENT STRENGTH (SHIELD TYPE ONLY)

The Containment Valve Cover/Valve Cover Shield must pass all applicable strength tests to be acceptable. Each model of Containment Valve Cover/Valve Cover Shield shall pass the attachment strength test if it is able to maintain the test load of 2,500 lbs (1,136 kg) for at least ten seconds.

6.2.1 PENETRATION RESISTANCE (ALL TYPES)

The Containment Valve Cover/Valve Cover Shield shall pass all applicable penetration resistance tests to be acceptable. The ballistic resistance of the sample shall be greater than or equal to a V_{50} BL(P) of 1385 fps (425 mps).

7.0 TEST REPORTS

A separate test report, or set of test reports if required, shall be submitted for each product model. If more than one test facility is required to complete all necessary tests, then a separate test report shall be submitted from each one. A test report shall be submitted for each component, if tested separately. The test facility shall assign a unique number to each test report. This number along with the report date and page number shall appear on each page. Each test report shall include:

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7.1 RELEVANT INFORMATION

7.1.1 Manufacturer's name, contact name, address and telephone number.

7.1.2 Name, address and telephone number of the test facility.

7.1.3 Name and signature of the responsible test supervisor.

7.1.4 Actual date of the test.

7.1.5 Specification number and effective date.

7.1.6 Product name, description and model designation.

7.1.7 Component name and description.

7.1.8 Photographs of the submitted assembly, pre and post-test photographs of submitted ballistic samples.

7.2 TESTS

Each test conducted shall be listed showing the test name, apparatus used, procedure used and test results obtained along with any other appropriate information.

7.3 AUTHENTICATION

Test reports shall be authenticated and stamped by a Professional Engineer who is registered in the state in which the testing is conducted. If necessary, SFI may allow an equivalent entity to provide authentication.

8.0 INITIAL DESIGN VALIDATION

To receive initial recognition from SFI as a participant in the SFI Specification 14.4 Program, the manufacturer must submit to SFI all information delineated in the Proof of Compliance section. This information shall be provided for each Containment Valve Cover/Valve Cover Shield model offered by the applicant that is to be included in the program. Any change in design, materials and/or methods of manufacturing not specifically excluded is considered a model change and, therefore, requires initial design validation.

9.0 PERIODIC REVALIDATION

Test reports with successful test results must be submitted to SFI at least once every **24** month period following the date of the initial design validation test for each model of Containment Valve Cover/Valve Cover Shield manufactured by the participant. If multiple

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test reports are required to obtain all test results, then the earliest test date shall be used to determine when the periodic revalidation reports are due.

10.0 CERTIFICATION OF COMPLIANCE

Upon demonstration of successful compliance with all the requirements of the specification and the self-certification program and upon entering the licensing agreement with SFI, the manufacturer may advertise, present and offer the Containment Valve Cover/Valve Cover Shield for sale with the representation that their product meets the SFI Specification 14.4. Continuing certification is contingent upon the following additional considerations: (1) the product shall be resubmitted for testing following any change in design, materials and/or methods of manufacturing not specifically excluded, and (2) periodic revalidation test reports are submitted when due to SFI.

11.0 CONFORMANCE LABELS

The conformance label is a “punch-out” patch for the Flexible Type Shield and a “punch-out” sticker for the Containment Valve Cover/Rigid Type Shield. On all types, the label shall be punched with the month and year of manufacture and be placed on the outside surface. The month and year of manufacture shall be punched in each label with a 1/8" hole punch. On either rigid type, besides placing the sticker on the part, the serial number of the sticker along with the date shall be permanently marked on the outside of the part. For a periodic inspection, the old label shall be removed and the foregoing procedure shall be followed using a new label. The serial number of should also appear on the customer invoice to aid in identification and tracking.

12.0 DECERTIFICATION

Participating manufacturers are subject to decertification when not in compliance with the requirements of this program or when their products are not in compliance with the requirements of this specification. Decertification will provide SFI the right to effect any and all remedies, which are available to SFI in the licensing agreement.

13.0 APPEAL PROCEDURE

In the event of decertification, the manufacturer is entitled to an appeal of the decision of SFI. Requests for appeal must be received by SFI no later than thirty days following receipt of the notice of decertification. Appeals of such decisions will be heard at the next meeting of the Board of Directors of SFI.

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14.0 STATEMENT OF LIMITATIONS

Testing procedures and/or standards contained in this specification are intended for use only as a guide in determining compliance with the minimum performance requirements as defined herein. The granting and assignment of the "This Manufacturer Certifies That This Product Meets SFI Specification 14.4" logo/designation is in no way an endorsement or certification of product performance or reliability by SFI. SFI, its officers, directors and/or members assume no responsibility, legal or otherwise, for failure or malfunctions of a product under this program.

15.0 COSTS

All costs involved in this program will be absorbed by the submitting manufacturer.

16.0 COMPLIANCE PERIOD

As this specification is revised to reflect changes in technology and/or field conditions, to remain current, participating manufacturers in the SFI Specification 14.4 Containment Valve Cover/Valve Cover Shield Program must demonstrate full compliance with the requirements of this specification within ninety (90) days of the latest effective date.

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