

California Environmental Protection Agency



**Small Off-Road Engine Evaporative Emission Control System
Certification Procedures**

CP - 902

**Certification And Approval Procedures for
Evaporative Emission Control Systems**

Proposed: August 8, 2003

**CP-902
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**California Environmental Protection Agency
Air Resources Board**

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CP-902

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A set of definitions common to all Certification and Test Procedures are in Title 13, California Code of Regulations (CCR), Section 2752 et seq.

For the purpose of this procedure, the term "ARB" refers to the California Air Resources Board, and the term "Executive Officer" refers to the ARB Executive Officer, or his or her authorized representative or designate.

1. GENERAL INFORMATION AND APPLICABILITY

This document describes the procedures for evaluating and certifying evaporative emission control systems on small off-road engines or equipment that use small off-road engines. By definition, evaporative emission control systems are fuel system components that are designed to reduce evaporative and permeation emissions. Fuel system components may include fuel tanks, fuel lines and any or all associated fittings, mechanisms to control fuel tank venting, tethered fuel caps, and any other equipment, components, or technology necessary for the control of evaporative and permeation emissions.

These Certification Procedures, CP-902, are proposed pursuant to Section 43824 of the California Health and Safety Code (CH&SC) and describe the process required to certify evaporative emission control systems on small off-road engines (SORE) or equipment that use small off-road engines to evaporative emission performance standards. Small off-road engines are defined in Title 13, California Code of Regulations (CCR), Section 2401 et seq.

1.1 Requirement to Comply with Applicable Codes and Regulations

Certification of any evaporative emission control system by the Executive Officer does not exempt the same from compliance with other applicable codes and regulations such as state and federal safety codes and regulations.

2. PERFORMANCE STANDARDS AND SPECIFICATIONS

2.1 Performance Standards

A performance standard defines the minimum performance requirements for certification of an evaporative emission control system, including any or all associated components.

Compliance with all applicable performance standards must be demonstrated in order to obtain certification as described in these procedures. Title 13, CCR, Section 2754 identifies the performance standards and the affected model years.

2.2 Performance Specifications

A performance specification is an engineering requirement that relates to the proper operation of a specific system or component used in a small off-road engine evaporative emission control system. Performance specifications shall be identified in the application for certification. Compliance with the minimum level of performance specifications identified herein must be demonstrated in the application for certification and specified in the certification Executive Orders. The performance specification to which a system or component is certified shall be the minimum allowable level of performance the evaporative emission control system is required to meet throughout its useful life.

3. OPTIONAL PERFORMANCE STANDARDS

Optional performance standards are emission targets that are more stringent than the normal performance standards. Manufacturers that certify to these optional standards are allowed to affix a unique label to their engines or equipment that identifies them as low polluting. Title 13, CCR, Section 2757 identifies the optional performance standards.

4. CERTIFICATION OVERVIEW

For certification purposes, small off-road engines (SORE) are grouped into three categories. The first category includes all walk-behind mowers with displacements greater than 80 cc to less than 225 cc, which must be certified beginning with model year (MY) 2007 onward. The second includes all other SI engines with displacements greater than 80 cc to less than 225 cc, which must be certified by beginning with model year (MY) 2007 onward. The third and final category includes SI engines with displacements greater than or equal to 225 cc, which must be certified beginning with model year (MY) 2008 onward. Executive Orders certifying the evaporative emission control system on engines or equipment are valid for only one model-year of production. New Executive Orders in each subsequent model year must be obtained from ARB for any small off-road engine or equipment subject to any of the performance standards prescribed herein. Manufacturing for sale, selling, offering for sale, introducing or delivering or importing into California any engine or equipment subject to any of the performance standards before receiving an ARB certification will subject the manufacturer and the selling dealers to ARB enforcement actions as authorized by state laws.

Evaporative emission control systems may be grouped into evaporative families for certification and other implementation purposes (e.g., testing, recall). An evaporative family includes engine or equipment models that share similar fuel systems, engine designs, and emission control features such that the equipment can be expected to exhibit similar evaporative emission characteristics. Attachment 1 of these procedures defines the classification criteria and codes for determining evaporative families.

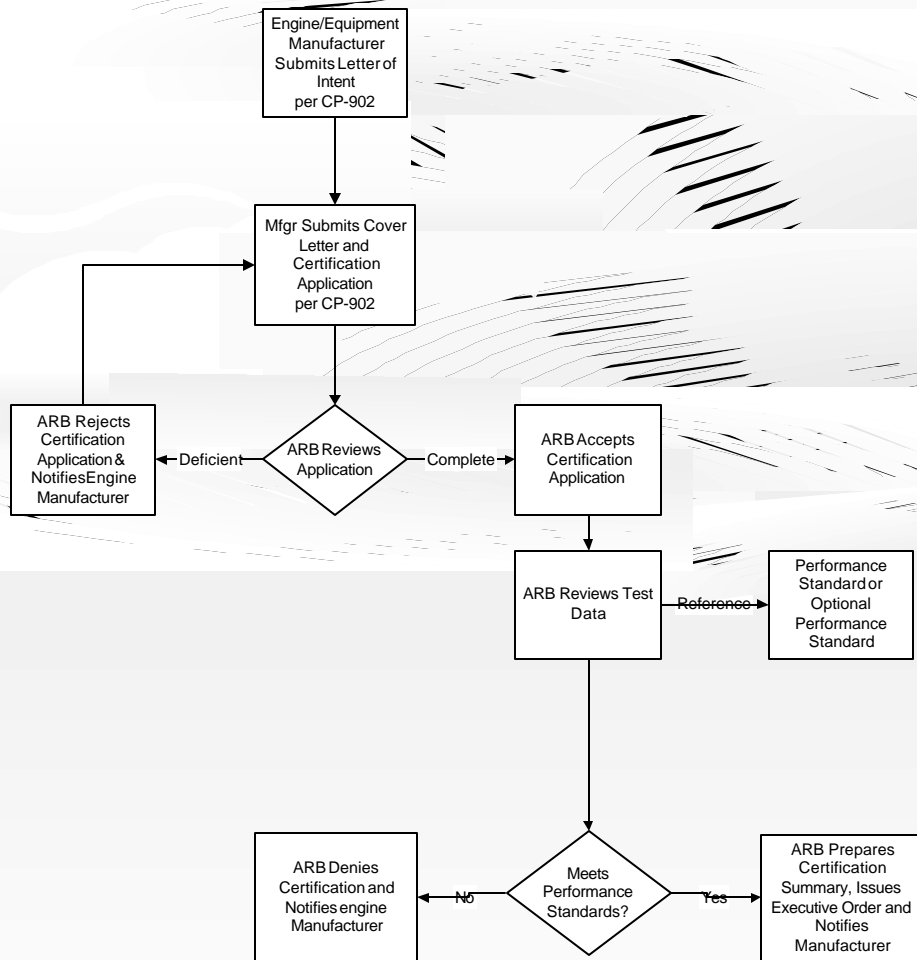
Manufacturers that certify evaporative emission control systems under these procedures are required to submit test data that documents compliance with the applicable diurnal evaporative emission standard. A manufacturer must test a minimum of one engine model or equipment for every evaporative family for which certification is requested. The engine or equipment selected for testing must be of a configuration that is expected to yield the highest evaporative emissions within

an evaporative family. The test procedures used to determine compliance with applicable diurnal evaporative emission standards are described in TP-902, "Test Procedure for Determining Diurnal Evaporative Emissions from Small Off-Road Engines".

Figure I provides a graphic overview of the certification process.

Figure I

Evaporative Emission Control System Certification Process



5. CERTIFICATION OF ENGINES AND EQUIPMENT

5.1 Certification Process

5.1.1 Emission-Compliant Engines: For each evaporative family, the manufacturer must select and test a certification engine or equipment. The certification engine or equipment must contain a complete and functional evaporative emission control system. The system shall include all emission control systems and components that are specified in the certification application. The official certification engine or equipment that is one that has been selected and stabilized as to show compliance with the appropriate diurnal evaporative emission performance standard. In addition, the evaporative family test engine or equipment shall be selected such that the evaporative emission control system is expected to exhibit worst-case emissions, (e.g., highest diurnal evaporative emissions) of all engines or equipment within the evaporative family. The ARB may direct the manufacturer to conduct a retest if the original test results indicate marginal (within 5% of the standard) compliance. Any anti-tampering devices that will be installed on production engines for protection against unauthorized adjustments of emission-related adjustable parameters must be approved by ARB. The manufacturer's format for the certification label and the location where the label is affixed to the production engine must be approved by the ARB. The manufacturer's emission warranty statement provided with each production engine must also be approved by ARB.

5.1.2 Application for Certification: For each evaporative family, the manufacturer must submit to ARB an application for certification containing all the required information and/or test data in the ARB-specified format. The ARB is required to approve or disapprove an application within **90 days** after receipt of the complete application. The normal processing time is about 4-6 weeks. To expedite the certification approval, requests for ARB approval of anti-tampering devices, labels, the emission warranty statement, and any modification to the test procedure should be submitted in advance of the application.

5.2 Certification Responsibilities

Under these procedures, manufacturers are required to obtain ARB certification for evaporative emission control systems on small off-road engines or equipment that use small off-road engines. Manufacturers applying for certification are held liable for complying with all of ARB's certification and emission warranty requirements.

5.3 Certification Testing

Prior to the time of production, an evaporative family test engine or equipment is durability tested and preconditioned as specified in TP-902 to stabilize the evaporative and permeation emissions. An emission test is then conducted using TP-902 and the results submitted to ARB as part of the certification application. If, after review of the application for certification including all test data submitted by the manufacturer, and any other pertinent data or information the Executive Officer determines is necessary, the Executive Officer determines that the application has satisfied the conditions set forth in these procedures, the Executive Officer may approve the application and issue an Executive Order.

5.4 Data Carryover and Carryacross

Subject to approval by the Executive Officer, certification test data of an evaporative family test engine or equipment may be carried over, in lieu of new tests, to subsequent evaporative families in following model years, provided there have been no changes to the evaporative emission control system or to any evaporative emission control system component(s). Also, subject to ARB approval, the certification test data of an evaporative family certification engine or equipment may be carried across, in lieu of new tests, to a different evaporative family in the same model year if the manufacturer adequately demonstrates to the satisfaction of the ARB that the emission data is representative of the new evaporative family.

6. CERTIFICATION OF EVAPORATIVE EMISSION CONTROL SYSTEMS

6.1 Certification Options

There are two options for certifying evaporative emission control systems. They are:

- Option one allows an engine manufacturer to certify a complete evaporative emission control system installed on a small off-road engine.
- Option two allows an equipment manufacturer to certify a complete evaporative emission control system installed on equipment that uses a small off-road engine.

Option one is intended for engine manufacturers that sell engines with complete evaporative emission control systems.

Option two is intended for equipment manufacturers that purchase engines without evaporative emission control systems. In this case, equipment manufacturers independently install and certify complete evaporative emission control systems on equipment they intend to sell.

6.2 Evaporative Emission Control System Modifications

The evaporative emission control system components used to certify the system are defined as nominal components. Modification to the evaporative emission control system's fuel tank and/or fuel line is allowed without affecting the original certification of the engine or equipment only in cases where the fuel tank and/or fuel line are equivalent to the nominal fuel tank and/or fuel line.

7. GENERAL INSTRUCTIONS – EVAPORATIVE EMISSION CERTIFICATION

These instructions provide guidance regarding the preparation, submission and revision of small off-road engine evaporative emission certification applications for 2007 and subsequent model year small off-road engines. Only information essential for certification is required in this format.

Other information required by the test procedures (e.g., test equipment build records, test and maintenance records, etc.) must be maintained by the manufacturer and made available to the ARB within **30 days** upon request. An application submitted in accordance with these instructions would enable an expedited review and approval by the ARB. Manufacturers must submit all revisions to the application to the ARB for approval. This Section covers the following subject matter:

- Where To Submit Applications for Certification
- Letter of Intent (LOI)

- Cover Letter
- Engine Labeling
- Certification Summary Sheet
- Certification Database Form (Paper and/or electronic copies)
- Emission Warranty
- Test Procedures
- Modified Test Procedures
- Nominal Fuel Tank and/or Fuel Line (if applicable)
- Adjustable Parameters and Anti-Tampering Devices
- Certification Test Fuels
- Amendments to the Application
- Running Changes and Field Fixes
- Confidentiality

7.1 Where To Submit Applications For Certification

All certification-related applications and correspondence should be forwarded to:

Mobile Source Operations Division
 Air Resources Board
 9480 Telstar Avenue, Suite 4
 El Monte, California 91731-2988
 Attn: Division Chief

7.2 Letter of Intent (LOI)

ARB staff uses the information provided in the LOI to plan ahead for the certification year and to resolve issues in advance so that manufacturers' anticipated certification schedules can be met. A LOI should be submitted to the ARB at least 90 days prior to the first application for certification for the model-year. The LOI should list planned evaporative families and the projected dates when the applications will be submitted. The manufacturer's phase-in compliance plan for the Model Year should also be included in the LOI. Any certification or testing issues that could delay the certification process of any evaporative family may be included in the LOI. Any updates to the manufacturer's certification plan should be submitted in a timely manner.

7.3 Cover Letter

A cover letter, signed by the manufacturer's authorized representative, must accompany each evaporative family application. The cover letter should recap highlights about the evaporative family, such as its new or carry-over test data status, the use of a new emission control technology, the use of a modified test procedure, or the anticipated start date of production. The following statements of compliance must be provided in the letter:

- Conformance with the general standards regarding an increase in emissions and unsafe conditions as required by Section 5 of the "California Exhaust Emission Standards and Test Procedures for 1995 and Later Small Off-Road Engines", adopted March 20, 1992, and amended March 26, 1998.
- Conformance with the specifications for the emission control label per 13 CCR, Article 8, Section 2759.

7.4 Equipment Labeling

The evaporative emission certification label is an important ARB requirement for identifying certified and legal equipment from those uncertified. The labels are used to assist enforcement activities. The evaporative emission certification label may be integrated with the exhaust emission label and must include an unconditional statement of conformance with applicable standards. Labeling requirements are specified in 13 CCR, Article 8, Section 2759.

Manufacturers are required to submit samples of the evaporative emission certification labels (or copies) for each evaporative family to ARB for review and approval of the format, content and placement location. The proposed location(s) must be shown by either a drawing or photograph. Detailed written explanations of the label locations are also acceptable. Label samples and proposed label locations may be submitted to ARB for approval in advance of the actual certification application to prevent any certification delay.

7.5 Certification Summary Sheet (A sample is provided as Attachment 2)

7.6 Certification Database Form (A sample is provided as Attachment 3)

7.7 Emission Warranty

A copy of the manufacturer's emission warranty statement for the small off-road engine evaporative emission control system and/or components must be submitted for ARB review and approval. The warranty requirements are specified in 13 CCR, Article 8, Section 2760.

7.8 Test Procedures

The test procedures used to determine compliance with the Performance Standards, including equipment provisions and emission test procedures, are specified in TP-902, Test Procedure for Determining Diurnal Evaporative Emissions from Small Off-Road Engines, adopted _____

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7.9 Modified Test Procedures

Any modifications to the prescribed test equipment and/or test procedures due to unique engine designs, laboratory equipment arrangements, facility limitations, etc. must be approved in advance by the Executive Officer and described in the certification application. The use of unapproved test equipment or procedures may result in rejection of generated test data by the Executive Officer.

7.10 Adjustable Parameters and Anti-Tampering Devices

A manufacturer shall utilize good engineering practice to prevent unauthorized or in-use adjustments of any adjustable parameter of an evaporative emission control system. These may include the use of anti-tampering devices. Samples of a manufacturer's proposed anti-tampering measure to prevent unauthorized or in-use adjustments or other such devices, should be submitted in advance of the application to ARB for approval. In-use adjustments of adjustable parameters of an evaporative emission control system are allowed if the adjustments do not invalidate a system's compliance. All adjustable parameters and the corresponding ARB approval number must be reported in the application. If the parameter or method of tamper-resistance is subsequently modified, a new ARB approval will be required.

7.11 Certification Test Fuels

The fuel for emission testing must meet the specifications in the test procedures to reduce emission variations. Testing with unauthorized fuel will result in rejection of the test results. The allowable test fuels are the same as the allowable test fuels for on-road cars and light-duty vehicles (Reference 3). The test fuel specifications are listed here for manufacturer's convenience.

Gasoline. Two test fuels are allowed:

- (i) Indolene Clear. This certification gasoline is specified in the Code of Federal Regulations, Title 40, Part 86, Section 113-94(a)(1). [40 CFR 86.113-94(a)(1)].
- (ii) California Phase 2 Gasoline (Cleaner Burning Gasoline). The specifications of this certification gasoline are provided in "California Exhaust Emission Standards and Test Procedures For 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles", (Reference #3, Part II, Section 100.3.1). This gasoline may be used as an option to Indolene Clear.

7.12 Amendments to the Application

Any revisions to an application due to typographical errors, corrections, running changes or field fixes, new test data, or additional information must be submitted to ARB. If the changes affect the Certification Summary, the entire application shall be resubmitted to ARB. For the other parts of the application, only the revised information on the affected application pages must be submitted, together with the following for identification purposes:

- Manufacturer Name
- Model Year
- Evaporative Family
- Engine Family
- Process Code (e.g., correction, running change)
- Engine Displacement
- Comments Field (describing the update or change)
- The fields that have been changed or corrected.

7.13 Running Changes and Field-Fixes

Any factory change to an evaporative family during the model-year production that could potentially affect the evaporative emissions must be approved by ARB via a manufacturer's submitted running change request. In addition, any post assembly line change to the evaporative family (e.g., at factory warehouses, distribution centers, dealers) must be approved by ARB via a manufacturer's submitted field fix request; a field fix request typically occurs after the model-year production has ended. Running changes and field fixes not approved by ARB will render an affected evaporative family uncertified and subject the manufacturer to ARB enforcement actions. If the change affects an emission-related part or results in a new evaporative family test engine, new test data and engineering evaluations will be required to demonstrate that the evaporative family will remain in compliance and a new certification application must be submitted. If the change does not result in a new evaporative family test engine, only the affected pages and information fields of the certification application need to be submitted.

7.14 Confidentiality

Any other information that is designated by the manufacturer as confidential may not receive

automatic treatment for confidentiality unless the manufacturer can justify that the information is truly privileged, confidential business information. California guidelines (Sections 91000-91002, Title 17, California Code of Regulations, and Health and Safety Code Section 39660(e)) will be followed in the handling of confidential information.

7.15 Summary of Certification Process

The applicant shall prepare a summary of the certification process for each certified evaporative family. It shall contain documentation of the successful completion of all applicable portions of the requirements contained in this Certification Procedure including but not limited to the following:

- All problems encountered throughout the certification process,
- The types of testing performed, and
- The frequency and/or duration of any testing, as appropriate.

Any other pertinent information about the evaluation process shall be contained in the summary.

8. APPLICATION FORMAT INSTRUCTIONS

For information regarding the format of the certification application please see Attachment 2.

9. DOCUMENTATION OF CERTIFICATION

Documentation of certification shall be in the form of an Executive Order.

The certification Executive Order shall include, at a minimum, the following items.

- A list of approved engines/model(s) under the evaporative family.
- A list of components certified for use with the evaporative family including component specifications.
- Applicable Performance Standards, Performance Specifications and Test Procedures.
- Applicable Operating Parameters and Limitations.
- Warranty period(s).
- Factory testing requirements, if applicable.

10. CONDITIONS OF CERTIFICATION

Evaporative family certifications shall specify the duration and conditions by which the certification is issued and include a list of all engine models covered by the certification.

10.1 Duration of System Certification

Evaporative families shall be certified for a period of one model-year.

10.2 Performance Monitoring

During the certification period, any deficiencies identified through complaint investigations, certification or compliance tests, etc., shall be noted in the performance section of the certification file and brought to the attention of the engine manufacturer. If the deficiencies result in emissions in excess of the applicable standard, the manufacturer may be subject to remedial actions that are accepted and approved by ARB.

11. APPROVAL OF APPLICATION FOR CERTIFICATION

The Executive Officer shall certify only those evaporative families that can be expected to comply with the performance standards.

After a review of the complete application for certification and any other information that the Executive Officer requires, the Executive Officer will approve the application for certification if all the foregoing conditions are satisfied.

REFERENCES

1. Title 13, California Code of Regulations, (13 CCR) Section 2400.
2. 13 CCR, Sections 2401 and 2467.1.
3. California Exhaust Emission Standards and Test Procedures For 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, California Environmental Protection Agency, Air Resources Board, El Monte CA, 2000.
4. California Exhaust Emission Standards and Test Procedures for 1995 and Later Small Off-Road Engines, California Environmental Protection Agency, Air Resources Board, El Monte CA, 1998.
5. Test Procedure for Determining Permeation Emissions from Small Off-Road Engine Equipment Fuel Tanks, TP-901, California Environmental Protection Agency, Air Resources Board, Sacramento, CA, 2003.
6. Test Procedure for Determining Diurnal Evaporative Emissions from Small Off-Road Engines, TP-902, California Environmental Protection Agency, Air Resources Board, Sacramento, CA, 2003.
7. Test Procedure for Determining Fuel Line, Fitting, Component, and Assembly Emissions, TP-903, California Environmental Protection Agency, Air Resources Board, Sacramento, CA, 2003.
8. Title 40, Code of Federal Regulations, Part 86

**Attachment 1
SORE Evaporative Family Classification Criteria**

Engine Displacement		Venting Control		Fuel Line Length	
<u>Displacement</u>	<u>Code</u>	<u>Type</u>	<u>Code</u>	<u>Length</u>	<u>Code</u>
≤ 80 cc	1	Canister	C	≤ 12 inches	1
> 80 cc - < 225 cc	2	Sealed Tank	S	> 12 inches	2
≥ 225 cc	3				

Tank Material		Tank Volume	
<u>Type</u>	<u>Code</u>	<u>Nominal Vol.</u>	<u>Code</u>
Metal	M	≤ 1.0 gal.	1
HDPE or PE	P	> 1.0 gal. - ≤5.0 gal.	2
Nylon	N	> 5.0 gal.	3
Acetal	A		

Manufacturers must group their equipment into evaporative families based on the above criteria and coding.

For example:

A 2006 model year mower with the following characteristics:

- engine with 168 cc displacement
- sealed tank venting control system
- 10 inch fuel line
- 0.38 gallon HDPE fuel tank

The evaporative family code would be “2S1P1”.

An equipment manufacturer must list all the models of equipment they produce into distinct evaporative families. Equipment models falling under a particular evaporative family code may be certified or approved with one application.

**Attachment 2
SMALL OFF-ROAD EQUIPMENT CERTIFICATION
Certification Summary Sheet**

Model Year:
Manufacturer:
Evaporative Family Name:

Application Type:
Executive Order:

Engine families within the evaporative family above:

Certification for Diurnal Emissions:

- a) New Testing?: _____ if carry over/carry across, from evaporative family: _____
 b) Test Equipment Model: _____ Test Equipment ID: _____
 c) Test Fuel: _____
 d) Test Procedure: _____

Special Test Equipment

Test No. And Type, Fuel	Official Test Results, g/day	
	WBM <225cc Or Sore Equipment >80cc to <225cc	Sore Equipment ≥225cc

WBM <225cc Or Sore Equipment >80cc to <225cc		Sore Equipment ≥225cc	
Certification (g/test)	Standard (g/test)	Certification (g/test)	Standard (g/test)

Remarks:

Equipment Models:

Processed By: Date Processed: Reviewed By: Date Reviewed:

S11. LABELING:

Evaporative emission label format approved? No ___ Yes ___ If yes, reference approval: _____
Sample label attached? No ___ Yes (put label in #S13) ___

S12. WARRANTY: Evaporative emission warranty approved? No ___ (Provide full warranty statement in #S15)
Yes ___ (Reference approval: _____)

Have any changes been made since the last approval? No ___ Yes ___ If yes, provide an explanation of the changes:

S13. EVAPORATIVE EMISSION LABEL INFORMATION

S14. ADJUSTABLE PARAMETERS AND ANTI-TAMPERING MEASURES

Parameter	Adjustable Range (or N/A)	Tamper Resistance Method (or N/A)	Approval Reference

S15. EVAPORATIVE EMISSION WARRANTY STATEMENT

A large, empty rectangular box with a thin black border, occupying most of the page. It is intended for the user to provide the required warranty statement.

S16. ADDITIONAL INFORMATION AND COMMENTS