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

Guide for Manufacturers, Fabricators, Installers, Repairers, Alterers, and Audit Teams

For the Certification of:

On-Line Leak Seal Organizations (Mechanical Installations) in accordance with:

- CSA B51 – Boiler, pressure vessel and pressure piping code
- Ontario Regulation 220/01: Boilers and Pressure Vessel Regulation

NOTE:

When the on-line leak sealing organization is also responsible for the design and manufacture of on-line leak sealing devices, the organization shall also have a TSSA Certificate of Authorization for the manufacture of Category H type fittings or have another acceptable program per TSSA Engineering Guideline *"Guideline for Registration on Non-Nuclear Fittings in the province of Ontario".*

When applying for the TSSA Certificate of Authorization for the manufacture of fittings, the *"Quality Program Checklist"* shall also be completed, and all elements addressed in the Quality Program Manual.

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Introduction

This guide is prepared for the use of manufacturers, fabricators, installers, repairers, alterers, and non-nuclear audit team leaders, members, observers, and applicants for a TSSA Certificate of Authorization (C of A). It is not intended to replace or interpret the requirements of CSA and the Ontario Regulation. The checklist does not list all of the detailed requirements of CSA and the Ontario Regulation, but rather lists the highlights that the applicant is required to include in the written Quality Program Manual.

In addition, to assist the TSSA Audit Team, this guide is provided to applicants for their use in identifying and verifying the paragraphs where the Quality Program Manual addresses all applicable control requirements of CSA and the Ontario Regulation. The Quality Program Manual must contain the description of the controls necessary for implementing the Quality Program Manual, but it is not required to contain all of the programmatic requirements which may be found in the Quality Program Manual, such as written procedures.

The guide is based upon the CSA and Ontario regulation requirements. The guide is subject to revision by TSSA based on changes made to CSA and the Ontario regulation from time to time or based on feedback received from users.

An audit must cover a Quality Program Manual and its implementation. It is recognized that the scope of work, Quality Program Manual, and implementation will vary from one applicant to another, therefore only those activities to be performed under the scope of an applicant's TSSA C of A are required to be addressed in the Quality Program Manual. TSSA audit teams are advised that this guide may not outline all possible aspects of each audit. The Quality Program Manual need not follow the format of this guide but shall describe the applicable requirements.

Questions of possible need for interpretation raised by the audit team members or the applicant shall be submitted to the TSSA Boiler and Pressure Vessel Chief Inspector for resolution.

How to use this guide

Review each element in the checklist against the Quality Program Manual. Select the appropriate response of "Yes", "No", or "N/A" (Not Applicable). Note the specific Quality Program Reference number in the column provided (For example, please do not state "Section 3", state "Section 3.1.2").

Submit one copy of this completed checklist with one uncontrolled copy of the current signed (or unsigned for new applicants) Quality Program Manual to TSSA for review at least one week prior to the scheduled audit.

Demonstration of the Quality Program

The purpose of the demonstration item is to evaluate the applicant's Quality Program and implementation. For evaluation of the Quality Program, the applicant must demonstrate to the current Code rules sufficient administrative and construction of the Quality Program to show that they have the knowledge and ability to produce the Code items typical of those covered by the Quality Program.

Please reach out to bpvqa@tssa.org or your assigned auditor for additional information, questions, or concerns.

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Quality Program Manual Checklist

Company Name:	Reviewed By:	Date:

No.	Quality Program Elements	Yes	No	N/A	Quality Program Manual Reference
1	**General Quality Control System Requirements**				
	(a) The Quality Control System (QCS) is documented in detail in a Quality Program Manual that addresses all the requirements of the applicable Code and includes: (i) A cover sheet that contains the company name, physical address, and a description of the program scope(s) as it will appear on the requested Certificate(s) of Authorization. NOTE: The cover sheet may also contain the effective date of the manual, mailing address, phone number, or other information desired by the certificate holder or applicant.	☐	☐	☐	(Indicate Section number and paragraph number for all references)
	(b) A brief description of the products being fabricated and/or work being accomplished under the Code or the work the Company wishes to accomplish under the Code, including the applicability of the QCS to shop activities, field activities, or both.	☐	☐	☐	
	(c) Table of Contents page which includes each section by subject, number, and revision number (as applicable)	☐	☐	☐	
2	**Statement of Authority and Responsibility**				
	The Statement of Authority and Responsibility shall include the following: (a) A statement that all work carried out by the applicant meets all applicable Code and Jurisdictional requirements.	☐	☐	☐	
	(b) The authority and responsibility of those in charge of the QCS are clearly established and documented.	☐	☐	☐	
	(c) Persons performing quality control functions have sufficient and well-defined responsibility, the authority, and the organizational freedom to identify quality problems, and to initiate, recommend, and provide solutions, including stop work orders if further processing would result in a non-conformance with the applicable Code section.	☐	☐	☐	
	(d) A statement that all disagreements in the implementation of the QCS is referred for resolution to a higher authority in the company.	☐	☐	☐	
	(e) The Statement of Authority and Responsibility is signed and dated by a senior company official responsible for Code activities (i.e., President, Vice-President, Plant Manager, etc.)	☐	☐	☐	
3	**Manual Control** Note: A glossary of terms is desirable from the standpoint of clarity and if abbreviated titles of personnel and control documents are used throughout the Manual.				
	(a) Manual revision controls are clearly described (i.e., the Manual is revised by page, by section, etc.).	☐	☐	☐	
	(b) The title of the individual responsible for revising the Manual.	☐	☐	☐	

	(c) The title of the individual responsible for reviewing the current TSSA Code Adoption Document, new editions of the CSA Code, and making any required changes to the Manual within six months from the new edition issue date.	☐	☐	☐	
	(d) Provision for review and approval of the Manual to maintain it is current.	☐	☐	☐	
	(e) Provision for submittal of the Manual revisions to the TSSA Representative for acceptance prior to implementation, including timely update of all copies to reflect the approved revisions.	☐	☐	☐	
	(f) In the case where the Manual exists in more than one language, at least one version is in English and identified as the authoritative version.	☐	☐	☐	
	(g) In the case where the Manual exists in languages other than English, a statement shall be provided by the C of A holder that the translation is correct.	☐	☐	☐	
	(h) Provision for distribution of the revised Manual (controlled or uncontrolled), including hard copy and/or electronic copy controls.	☐	☐	☐	
4	**Organization**				
	(a) An organization chart showing the relationship between management, engineering, purchasing, manufacturing, production, field assembly, field construction, inspection, and quality control (as applicable) exists and reflects the actual organization. Note: The purpose of this chart is to identify and associate the various organizational groups with the specific function for which they are responsible. The Code does not intend to encroach on the right to establish or alter whatever form of organization considered to be appropriate for Code work.	☐	☐	☐	
5	**Drawings, Design Calculations, and Specification Control**				
	The title of the individual responsible for reviewing and verifying the following:				
	(a) Flange clamps/bands and leak seal boxes are of a purpose-built design, in accordance with a recognized piping Code or other acceptable Code with good engineering practice.	☐	☐	☐	
	(b) The design addresses the system design parameters and the injection pressure of the sealing compound.	☐	☐	☐	
	(c) All seal clamp designs are registered with TSSA.	☐	☐	☐	
	(d) Measures are established to ensure the following controls are prepared, obtained, and interpreted in accordance with the Code of Construction: • Design information • Applicable drawings • Design calculations • Specifications • Instructions	☐	☐	☐	

6	**Material Control**				
	(a) Procedures for material control exist to ensure that the material received is properly identified and includes the correct documentation (i.e. material certifications, Statutory Declarations, material test reports, etc.) to satisfy Code requirements.	☐	☐	☐	
	(b) The material control system ensures that only accepted material is issued for Code construction.	☐	☐	☐	
	(c) Provisions exist for how the identification of existing materials are identified (clamps, boxes, etc.).	☐	☐	☐	
	(d) The title of the individual responsible for identifying the need for material test reports, Statutory Declarations, certificates of compliance, etc., and obtaining the correct documentation.	☐	☐	☐	
	(e) The title of the individual responsible for performing the receiving inspection of Code materials, including the review of required material characteristics to be checked.	☐	☐	☐	
	(f) Controls exist for the handling of material that are found to be non-conforming at receiving inspection.	☐	☐	☐	
	(g) Measure are established and documented to ensure the proper marking, handling, and storage of materials, including welding or brazing material (where applicable).	☐	☐	☐	
7	**Examinations and Inspections**				
	(a) Procedures exist for the examinations and tests required for on-like leak sealing operations. The procedure shall include:				
	(i) Risk assessment: Stating whether this function is to be completed by the certificate holder or the owner or user.	☐	☐	☐	
	(ii) Nature and cause of leak: Shall be assessed and documented to ensure that the leak seal operation will not result in failure of the equipment.	☐	☐	☐	
	(iii) Extent of damage: To be determined to ensure the proposed leak seal operation is suitable to seal the leak. Adjacent material thickness, observations of cracking, corrosion of bolting, gasket deterioration, etc., shall also be examined for damage.	☐	☐	☐	
	(iv) Operating conditions: Normal operating pressure and temperature, cyclic conditions and shutdown or upset conditions are taken into account, including the possibility of pressure and temperature reductions during the leak seal operations.	☐	☐	☐	
	(v) History, leak records, bolt re-tightening and/or previous leak sealing: The title of the individual responsible for reviewing previous history, and if re-injection is required, consideration shall be given to shutting down the equipment and completing a proper repair.	☐	☐	☐	
	(vi) Condition of pressure equipment and gaskets: To ensure consideration is given to the possibility of corroded and eroded material, including plate, piping, flanges, and bolts, particularly where re-injection at a previous leak seal is contemplated. Type of gasket, age, and service conditions shall be considered.	☐	☐	☐	

	(vii) Pressure system contents: The title of the individual responsible for considering the chemical compatibility of the clamp, band, box and sealing compound. When the internal fluid may be toxic, the need for protective clothing, air breathing equipment, nitrogen purge, and the use of special or non-spark tools shall also be considered.	☐	☐	☐	
	(b) The title of the individual responsible for establishing on-line leak seal activities, including: • Selection of the welding procedure(s) • Material selection • Non-destructive examination methods • Preheat requirements • Post weld heat treatment requirements • All other safety concerns, including proper personal protective equipment	☐	☐	☐	
	(c) Measures are established for documenting on-line leak seal operations and are described in sufficient detail to determine at what stages specific inspections are to be performed.	☐	☐	☐	
	(d) Provisions shall be made to ensure the TSSA Representative has access to all documentation when necessary.	☐	☐	☐	
	(e) A controlled copy of the QC Manual is available at the shop or field site where the work is being performed.	☐	☐	☐	
8	**Non-Conformances** Note: A non-conformance is any condition which does not comply with the applicable rules of the Code, Manual, or other specified requirements. Non-conformances must be corrected before the completed item can be considered acceptable to the Code.				
	Controls exist for the correction of non-conformances. The procedure shall include: (a) Identification of the person(s) responsible for the resolution of the non-conformances.	☐	☐	☐	
	(b) Identifying and controlling further processing of non-conforming items until final disposition.	☐	☐	☐	
	(c) Documenting the non-conformance, the disposition, and informing the Inspector of the non-conforming condition (when applicable).	☐	☐	☐	
	(d) Addressing the non-conformance on the checklist with a hold point added.	☐	☐	☐	
	(e) The title of the individual responsible for the final inspection and disposition.	☐	☐	☐	
	(f) When the disposition is “Use-As-Is”, the disposition shall involve an engineer to ensure an engineering evaluation has been carried out.	☐	☐	☐	
9	**Calibration of Measuring and Test Equipment**				
	(a) A procedure exists for the calibration of examination, measuring, and test equipment used in fulfillment of applicable Code requirements.	☐	☐	☐	
	(b) Measures are established to ensure that:	☐	☐	☐	
	(i) Calibration records are maintained and that status indicators are used to indicate the current calibration status of the equipment.	☐	☐	☐	

	(ii) Calibration equipment is maintained in good condition, checked for signs of damage, and removed from service if found defective.	☐	☐	☐	
	(iii) A calibration frequency is established and maintained, and results are traceable to National Standards.	☐	☐	☐	
	(iv) When calibrations are performed in-house, the title of the individual responsible is identified and procedures are established.	☐	☐	☐	
10	**Records Retention**				
	(a) All documentation associated with on-line leak sealing shall be maintained for a period as required by the Code of Construction: (i) Registered drawings (ii) Design calculations (iii) Checklists, process sheets, travelers, etc. (iv) Material test reports, material certifications, Statutory Declarations, etc. (v) Welding Procedure Specifications and Procedure Qualification Records (vi) Welder/Welding Operator Qualification Records (vii) NDE interpretation reports (viii) Repair procedures and records (ix) Heat treatment records and test results (x) Postweld heat treatment records (xi) Non-conformances and dispositions (xii) Pressure test records (xiii) Any other applicable documentation	☐	☐	☐	
11	**The Inspector**				
	(a) A provision is established to involve the TSSA Inspector upon request of any on-line leak sealing device when so requested.	☐	☐	☐	
	(b) A controlled copy of the Manual shall be made available to the Inspector at the shop or field site where Code activities are being carried out.	☐	☐	☐	
	(c) The Inspector has access to all drawings, calculations, specifications, procedures, process sheets, repair procedures, records, test results, and any other documents necessary for the Inspector to perform their duties.	☐	☐	☐	
12	**Sample Forms**				
	(a) Forms used to control functions relative to quality are included within the Manual, and their use explained in the text of the Manual.	☐	☐	☐	