

Practical Pressure Welder Testing Information

ELIGIBILITY

To qualify to take a practical high pressure welders test a candidate must:

- Hold a Journey Certificate of Welding proficiency issued by the Manitoba Apprenticeship Branch. provided that the qualification time (4,800 hours minimum) was spent on the manual arc process.

OR

- Hold a Journey Welder's Interprovincial Red Seal Certificate of Competency from another jurisdiction provided that the qualification time (4,800 hours minimum) was spent on the manual arc process.

OR

- Have 5000 hours of documented manual arc welding experience and a commissioner of oaths signed document of verification.

OR

- Have been previously certified by the Mechanical and Engineering Branch.

To pass a practical welder's test a candidate must pass the performance qualification test required by the Mechanical and Engineering Branch Director and conducted by the Welding Inspector as per Section IX of the ASME Boiler and Pressure Vessel Code.

LICENCES AND PREREQUISITES

[Licences and Prerequisites](#) - pdf file

Codes adopted under this legislation require that only those companies that hold a "[Certificate of Authorization](#)" issued by the Mechanical and Engineering Branch are permitted to weld on pressure vessels, boilers and pressure piping systems. The exception to this is for "[Repairs of a Routine Nature](#)" and these have been defined in a technical bulletin issued by the branch.

A welder who holds an unrestricted provincial High Pressure Welder's Licence does not need a "Certificate of Authorization" to perform welding processes on pressure equipment and systems when carrying out Repairs of a Routine Nature, providing the proper documentation procedures are followed.

The procedures to be followed for conducting a test and for re-testing are listed in ASME IX.

The Code requires a retest after 6 months of non welding in any welding process.

LICENCING POLICIES

A candidate will not be allowed to test to an F3/F4 unrestricted licence without having first held an unrestricted F4 licence welded to an open throat. (see chart)

Out of Province welding licences will be considered for transfer with respect to the Steam and Pressure Plants Act and regulations.

Consistent with other jurisdictions we will not exchange restricted licences for unrestricted or vice-versa.

All initial weld tests are evaluated by "bend test". Radiograph only is not acceptable for initial tests.

An annual retest of the basic Manitoba welders is required for all certified welders. The basic licence is normally an F3 but an F3/F4 is permitted to be the basic licence for all those welders who have held an F3 and an F4 singularly at least once.

APPLYING FOR A WELDING TEST:

- A. A candidate shall apply by telephone or in person for a mutually acceptable test date (at least 48 hours prior notification for a test is normally required).

Candidates should be aware that the test facilities are normally booked weeks in advance so the earlier the test is booked the better the chance of obtaining an acceptable date for test.

- B. Each person applying to take a test shall pay the fee specified in the regulation at the time of the test.
- C. The candidate must show photo identification at the time of the test. The Branch reserves the right to reject any candidate with outdated photo identification.
- D. Failure to pay any invoice or notice within 30 days of mailing date will result in the cancellation of licence, certificate or listed service.
- E. No licence, certificate or other service will be issued or conducted for any individual or company who have outstanding unpaid fees. Fees may not normally be deferred to a private company or contractor without prior written approval from that company or contractor.
- F. Any person who in the opinion of the Welding Inspector is incapable of performing a test or other safety function will be asked to leave the Test Site or Centre. Those under the influence of any inhibiting substance, those showing aggressive behavior and/or using slanderous or profane language will be asked to leave the test site or centre.

PERFORMANCE QUALIFICATION REQUIREMENTS FOR INITIAL AND RENEWAL TEST

Qualification requirements for the [initial test](#) are different from those for a [renewal test](#).

Initial Test

Test Coupon:

The test coupon will be a 4 inch diameter, Schedule 80 Carbon Steel Seamless pipe and prepared with a 37.5 degree bevel and land as needed. The maximum land is 1/8 inch and the maximum root opening is 1/8 inch.

Test Positions:

One third of the coupon circumference will be welded in the 2G position and the remaining portion in the 5G position.

Electrodes:

1. F3 - E-6010: 1/8" diameter for the root, fill and cap
2. F4 - E7018: 3/32" diameter for the root. 1/8" diameter fill and cap

Retest electrodes will be the same as those for initial tests.

Examination Time:

- Candidates will have 3.5 hours to prepare, weld and complete the test coupons for 4 inch diameter pipe.
- Candidates will have 2.5 hours to prepare, weld and complete coupons for 2 inch diameter pipe.
- Renewals will be conducted on 2 inch diameter Schedule 80 or heavier carbon steel pipe.

Preparation and Tracking:

When preparing coupons for tacking, the size of the root opening shall be a maximum of 1/8 inch. The land may be 1/8 inch maximum. Two or three weld tacks are to be made using the correct electrode and shall be approximately 1/2 inch in length. All tack welds shall be of good quality as they are considered part of the weld. After tacking the

coupon the candidate may feather the tacks prior to the coupon being present to the Welding Inspector.

Welding:

After the candidate completes tacking of the coupon, it will be presented to the Welding Inspector. The Welding Inspector will then mark the portion of the coupon that is to be welded in the Horizontal (2G) Position with the remainder of the coupon to be used for the Vertical (5G) Position weld.

The candidate will then weld the Horizontal (2G) root pass, using the correct electrode with the pipe axis in the vertical plane. When the candidate completes the 2G root pass, the coupon shall be examined by the Welding Inspector for acceptability to continue the test. Providing the 2G root pass is acceptable, the coupon shall then be placed in the 5G position with the top clearly marked and the pipe axis in the horizontal plane. Once the coupon is positioned for welding, the marked position shall not be moved. The candidate will then weld the 5G portion of the root pass with the correct electrode with the welding progression upward. The coupon will be evaluated by the Welding Inspector in position.

If the 5G root pass proves to be acceptable the candidate shall complete the fill and cap passes of the 5G weld using the correct electrode with an upward progression and weave pattern. The coupon will be examined in place by the Welding Inspector upon completion. The coupon will then be re-positioned (axis in Vertical Plane) to complete the 2G positional fill and cap using stringers. When completed, the coupon will be evaluated by the Welding Inspector in position.

Bend Specimens:

Three face and three root bend test specimens are required for this combined position. Test specimens will be marked on the coupon by the Examiner. The specimens will be approximately 1.5 inches in width and ground flush on both side with edges de-burred. Candidates may radius the corners of the specimens to 1/8 inch maximum.

Excessive grinding that reduces the thickness of the specimens below the nominal thickness shall result in the test being considered a failure.

Required Performance Standards:

- The root pass shall be of uniform width and penetration adequate up to 1/8 inch maximum.
- All welds shall be free of grapes, craters, porosity, undercut and lack of fusion.
- The finished weld shall be uniform and free from arc strikes. Excessive weld reinforcement is not permitted and the weld cap must not exceed 1/8 inch in height or be an excessive width.
- The guided bend tests shall have no open defects (cracks, porosity, etc) in et weld or heat affected zone exceeding 1/8 inch measured in any direction on the convex surface of the specimen. Open defects that occur on the corners of the specimen during bending shall not be considered unless there is evidence that they result from slag inclusions, lack of fusion or other internal defects.
- The failure of any bend test specimen shall be considered as a complete failure of the test.
- The performance test may be terminated at any stage of review if it becomes apparent that the candidate does not have the required skill to produce satisfactory results or is taking an excessive length of time to complete any phase of the test.

Renewal Test

Test Coupon:

The test coupon will be a 2 inch diameter, Schedule 80 or heavier seamless pipe and prepared with a 37.5 degree bevel and land as needed. The maximum land is 1/8 inch and the maximum root opening is 1/8 inch.

Test Positions:

The test position will be 6G.

Electrodes:

Electrodes used will be the same as those used on the initial qualification.

Examination Time:

The examination will be 2.5 hours.

Preparation and Tacking:

Preparation and tacking will be as per initial test as will welding except that the 6G position will be used in lieu of the 2G/5G position.

Bend Specimens:

Two face and two root bends will be taken from each test coupon for evaluation. The pipe will be cut into four sections for bend tests. The test specimens will be ground flush on both sides with edges de-burned to a maximum of 1/8 inch. Excessive grinding that reduces the thickness of the specimen below nominal shall result in the test being considered a failure.

Required Performance Standards:

The required performance standards shall be the same as those for the initial test.

PERFORMANCE RESULTS FOR THE EXAMINATION

Candidates successful in passing this examination will be issued a Provincial High Pressure Welders Licence for the positions, electrodes, thickness ranges, base metal and progression direction that was performed during the test. The licence is valid for one year from the date of issuance or six months on non-welding in the qualified process, whichever comes first.

A candidate failing to pass any performance qualification test shall not be permitted to take a re-test for a period of thirty days from the date of the test.

This also includes procedure qualification tests.

The candidate failing to pass two consecutive performance tests conducted by the Welding Inspector shall not be permitted to take a further re-rest for a period of three months from the date of his/her last test unless the candidate provides proof of having successfully completed an upgrading course in pressure welding satisfactory to the Director of the Mechanical and Engineering Branch.