

**RULES
FOR THE CLASSIFICATION OF
SHIPS**

*Part 26 – WELDING
July 2021*

*Amendments No. 1
January 2022*

CROATIAN REGISTER OF SHIPPING

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By the decision of the General Committee of Croatian Register of Shipping,

Amendments No. 1 to the
RULES FOR THE CLASSIFICATION OF SHIPS
Part 26 – WELDING

have been adopted on 20th December 2021 and shall enter into force on 1st January 2022

INTRODUCTORY NOTES

These amendments shall be read together with the requirements in the Rules for the Classification of Ships, Part 26 – Welding, edition July 2021.

Table 1 contains review of amendments, where items changed or added in relating to previous edition are given, with short description of each modification or addition. All major changes throughout the text are shaded.

This Part of the Rules includes the requirements of the following international Organisations:

International Association of Classification Societies (IACS)

Unified Requirements (UR): W17 (rev. 5, 2018), W23 (rev. 2, Apr 2018, Corr. 1, June 2019), W26 (rev. 1, 2005), W28 (Rev. 2, 2012), W32 (2016) (rev.1 Sep 2020), W33 (rev. 1, May 2020) (corr.1 Aug 2021), W34 (Dec 2019), W35 (June 2019)

Recommendations (Rec.): No. 17 (rev.1, Mar 2020), No. 20 (rev.1, 2007), No. 70 (rev.2, Sep 2021); No.105 (rev.1, Sep 2021)

International Standard Organization (ISO): -

European Norm (EN): -

European Norm (with the status of Croatian Norm):

HRN EN ISO 9606 series, HRN EN ISO 15614-1: 2017; HRN EN ISO 15614-2: 2007, HRN EN ISO 14731: 2008, HRN EN ISO 3834-1: 2007, HRN EN ISO 3834-2: 2007, HRN EN ISO 3834-3: 2007, HRN EN ISO 3834-4: 2007, HRN EN ISO 3834-5: 2007/corr.1:2008, HRI CEN ISO/TR 3834-6:2008, HRN EN ISO 5817: 2014, HRN EN ISO 6520-1: 2008, HRN EN ISO 10042: 2008/+corr. 1: 2008; HRN EN ISO 17652-2:2004 HRN EN ISO 17636-1: 2014, HRN EN ISO 19232-1: 2013, HRN EN ISO 7963: 2010, HRN EN ISO 17640: 2012, HRN EN ISO 7963: 2010, HRN EN ISO 16811: 2014, HRN EN ISO 17638: 2016; HRN EN ISO 23278: 2015, HRN EN ISO 17635: 2017; HRN EN ISO 23277: 2015

TABLE 1 – REVIEW OF AMENDMENTS

This review comprises amendments in relation to the Rules for the Classification of Ships, Part 26 – Welding, edition July 2021.

<i>ITEM</i>	<i>DESCRIPTION OF THE AMENDMENTS</i>
SECTION 1 GENERAL REQUIREMENTS, PROOF OF QUALIFICATIONS, APPROVALS	
item 1.3	is partly changed
title 1.4.5	text of the title is changed
item 1.4.5.1.3	is partly changed
item 1.4.5.5.7	is partly changed
item 1.4.5.5.7	is partly changed
SECTION 2 FABRICATION AND INSPECTION OF WELDED JOINTS	
item 2.5.5.8	is partly changed
item 2.5.6.5.2	is partly changed
item 2.5.9.2	is partly changed

1 GENERAL REQUIREMENTS, PROOF OF QUALIFICATIONS, APPROVALS

■ **Head 1.3 QUALIFICATION TESTING AND CERTIFICATION OF WELDERS**, is partly changed, and should be read as:

1.3 QUALIFICATION TESTING AND CERTIFICATION OF WELDERS

1.3.1 General

1.3.1.1 Welders intended to be engaged in welding of hull structural steels shall be qualified in accordance with 1.3.2.

Welders intended to be engaged in welding on structures other than referred to in 1.1.1 shall be certified to a standard recognised by the *Register*, e.g. HRN EN ISO 9606 series, ASME Section IX, ANSI/AWS D1.1.

Welders intended to be engaged in welding of aluminium alloys shall be certified to a standard recognised by the *Register*. IACS Recommendation No. 105 is regarded as an example of an acceptable standard.

1.3.1.1 Recognition of other standards is subject to acceptance by the *Register*.

1.3.1.2 Qualification tests shall be carried out under supervision of the *Register* and in compliance with the requirements of this Section.

1.3.2 Qualification scheme for welders of hull structural steels

1.3.2.1 Scope

1.3.2.1.1 This section gives requirements for a qualification scheme for welders intended to be engaged in the fusion welding of steels as specified in the *Rules for the classification of ships, Part 25 - Metallic Materials*, Sections 3.2, 3.11, 3.12 and 3.4.2 for hull structures.

1.3.2.1.2 This qualification scheme does not cover welders engaged in oxy-acetylene welding.

1.3.2.1.3 This qualification scheme does not cover welding of pipes and pressure vessels.

1.3.2.1.4 Alternative welding Standards or Codes are to be applied in full, cross-mixing requirements of Standards and Codes is not permitted.

1.3.2.2 General

1.3.2.2.1 Those welders intended to be engaged in welding of hull structures in shipyards and manufacturers shall be tested and qualified in accordance with this scheme and issued with a qualification certificate endorsed by the *Register*.

1.3.2.2.2 The welding operator responsible for setting up and/or adjustment of fully mechanized and automatic equipment, such as submerged arc welding, gravity welding, electro-gas welding and MAG welding with auto-carriage, etc., must be qualified whether he operates the equipment or not.

However a welding operator, who solely operates the equipment without responsibility for setting up and/or adjustment, does not need qualification provided that he has experience of the specific welding work concerned and the production welds made by the operators are of the required quality.

The qualification test and approval range of the welding operator are left to the discretion of the *Register* with reference to HRN EN ISO 14732:2013.

1.3.2.2.3 These requirements are applicable to welding of hull structures both during new construction and the repair of ships.

1.3.2.2.4 The training of welders, control of their qualification and maintenance of their skills are the responsibility of shipyards and manufacturers. The Surveyor is to verify and be satisfied that the welders are appropriately qualified.

1.3.2.2.5 Equivalence of national or international standards to these requirements.

1.3.2.2.5.1 Welders or welding operators qualified in accordance with national or international welder qualification standards may also be engaged in welding of hull structures at the discretion of the *Register* provided that standard is considered equivalent to these requirements from technical perspective covering examination, testing and range approval.

1.3.2.2.5.2 Even if the requirements stipulated in the standards are applied, the requirement for revalidation of welders' qualification shall be in accordance with 1.3.2.6.2.1.

1.3.2.3 Range of qualification of welders

1.3.2.3.1 A welder is to be qualified in relation to the following variables of welding:

- a) base metal
- b) welding consumables type
- c) welding process
- d) type of welded joint
- e) plate thickness
- f) welding position

1.3.2.3.2 Base metals for qualification of welders or welding operators are combined into one group with a specified minimum yield strength $R_{eH} \leq 460 \text{ N/mm}^2$.

The welding of any one metal in this group covers qualification of the welder or welding operator for the welding of all other metals within this group.

1.3.2.3.3 For manual metal arc welding, qualification tests are required using basic, acid or rutile covered electrodes. The type of covered electrodes (basic, acid or rutile) included in the range of approval is left at the discretion of the *Register*.

Welding with filler material qualifies for welding without filler material, but not vice versa.

1.3.2.3.4 The welding processes for welder's qualification are to be classified in Table 1.3.2.3.1 as,

- M - Manual welding
- S - Semi-automatic welding / Partly mechanized welding
- T - TIG welding

Each testing normally qualifies only for one welding process. A change of welding process requires a new qualification test.

1.3.2.3.5 The types of welded joint for welder's qualification are to be classified as shown in Table 1.3.2.3.2 in accordance with the qualification test.

Welders engaged in full/partial penetration T welds shall be qualified for butt welds for the welding process and the position corresponding to the joints to be welded.

Table 1.3.2.3.1
Welding processes for welder's qualification

Symbol	Welding process in actual welding works		HRN EN ISO 4063
M	Manual welding	Manual metal arc welding (metal arc welding with covered electrode)	111
S	Partly mechanized welding	Metal inert gas (MIG) welding	131
		Metal active gas (MAG) welding Flux cored arc (FCA) welding	135, 138 ⁽¹⁾ , 136 ⁽²⁾
T	TIG welding	Tungsten inert gas (TIG) welding	141
Note: The <i>Register</i> may require separate qualification for solid wires, metal-cored wires and flux cored wires as follows: ⁽¹⁾ A change from MAG welding with solid wires (135) to that with metal cored wires (138), or vice versa is permitted. ⁽²⁾ A change from a solid or metal cored wire (135/138) to a flux cored wire (136) or vice versa requires a new welder qualification test.			

PART 26

AMENDMENTS No. 1

Table 1.3.2.3.2
Types of welded joint for welder's qualification

Type of welded joint used in the test assembly for the qualification test			Type of welded joint qualified	
Butt weld	Single sided weld	With backing	A	A, C, F
		Without backing	B	A, B, C, D, F
	Double sided weld	With gouging	C	A, C, F
		Without gouging	D	A, C, D, F
Fillet weld	-	-	F	F

1.3.2.3.6 For fillet welding, welders who passed the qualification tests for multi-layer technique welding can be deemed as qualified for single layer technique, but not vice versa.

1.3.2.3.7 The qualified plate thickness range arising from the welder qualification test plate thickness is shown in Table 1.3.2.3.3.

Table 1.3.2.3.3
Plate thicknesses for welder's qualification

Thickness of test assembly T (mm)	Qualified plate thickness range t (mm)
$T < 3$	$T \leq t \leq 2T$
$3 \leq T < 12$	$3 \leq t \leq 2T$
$12 \leq T$	$3 \leq t$

1.3.2.3.8 The welding positions qualified as a result of the actual welding position used in a satisfactory welder's qualification test, are shown in Table 1.3.2.3.4 and Table 1.3.2.3.5. Diagrams showing the definitions of weld position used in Table 1.3.2.3.4 and Table 1.3.2.3.5 are shown in Figure 1.3.2.3.1.

The *Register* may require a qualification test with fillet welding for welders who are employed to perform fillet welding only. Welders engaged in welding of T joints with partial or full penetration are to be qualified for butt welding.

1.3.2.3.9 A welder qualified for butt or fillet welding can be engaged in tack welding for the welding process and position corresponding to those permitted in his certificate.

Alternatively, welders engaged in tack welding only can be qualified on the test assemblies shown in Figure 1.3.2.4.4 or Figure 1.3.2.4.5.

Table 1.3.2.3.4
Qualified welding positions when testing with butt welding

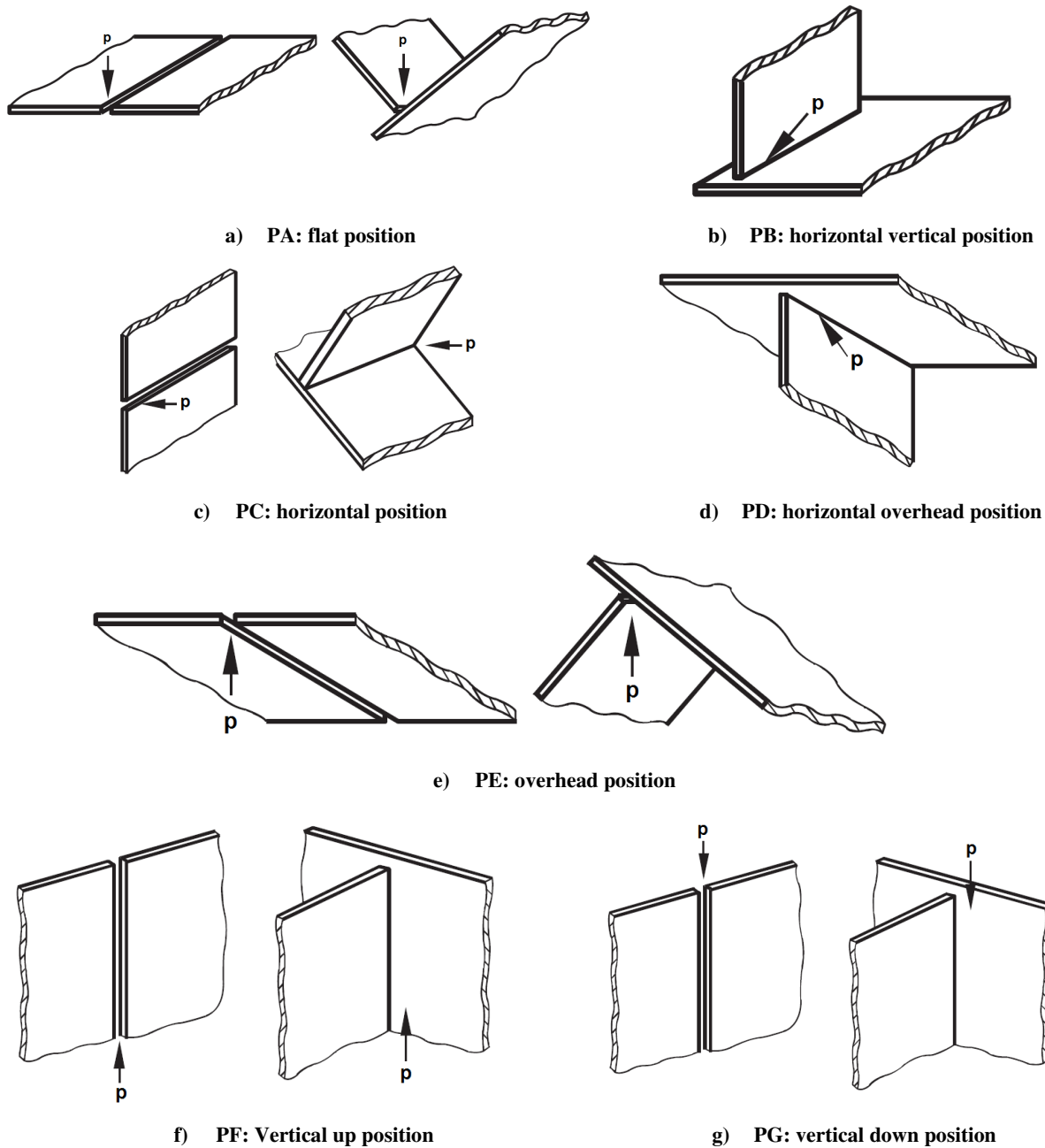
Qualification test position with butt weld	Qualified welding positions in actual welding works	
	Butt welds	Fillet welds
PA	PA	PA, PB
PC	PA, PC	PA, PB, PC
PE	PA, PC, PE	PA, PB, PC, PD, PE
PF	PA, PF	PA, PB, PF
PG	PG	PG

Table 1.3.2.3.5
Qualified welding positions when testing with fillet welding

Qualification test position with fillet weld	Qualified welding positions in actual welding works
	Fillet welds
PA	PA
PB	PA, PB
PC	PA, PB, PC
PD	PA, PB, PC; PD, PE
PE	PA, PB, PC, PD, PE
PF	PA, PB, PF
PG	PG

PART 26

AMENDMENTS No. 1



Note:

- p is the welding position

Figure 1.3.2.3.1
Welding positions

1.3.2.4 Qualification test

1.3.2.4.1 General

1.3.2.4.1.1 Welding of the test assemblies and testing of test specimens shall be witnessed by the Surveyor.

1.3.2.4.2 Test assemblies

1.3.2.4.2.1 Test assemblies for butt welds and for fillet welds are to be prepared as shown in Figure 1.3.2.4.1, Figure 1.3.2.4.2 and Figure 1.3.2.4.3 in each qualification test.

1.3.2.4.2.2 Test assemblies for butt tack welds and for fillet tack welds are to be prepared as shown in Figure 1.3.2.4.4 and Figure 1.3.2.4.5.

1.3.2.4.2.3 Testing materials and welding consumables shall conform to one of the following requirements or to be of equivalent grade approved by the *Register*.

- a) Testing materials
 - Hull structural steels specified in the *Rules for the classification of ships, Part 25-Metallic materials, Section 3.2 Normal and higher strength structural steels*,
 - Hull structural forged steels specified in *Rules for the classification of ships, Part 25-Metallic materials, Section 3.11 Hull and machinery steel forgings*,
 - Hull structural cast steels specified in *Rules for the classification of ships, Part 25-Metallic materials, Section 3.12 Hull and machinery steel castings*,
 - Hull structural steels with specified minimum yield point 460 N/mm² specified in *Rules, Part 25-Metallic materials, Section 3.4.2 YP47 Steels and Brittle Crack Arrest Steels*,
- b) Welding consumables
 - Consumables for hull structural steels specified in 1.5.1.
 - Consumables for YP47 steels specified in *Rules for the classification of ships, Part 25-Metallic materials, Section 3.4.2 YP47 Steels and Brittle Crack Arrest Steels*.

1.3.2.4.2.4 The welder qualification test assembly is to be welded according to a welding procedure specification (WPS or pWPS) simulating the conditions in production, as far as practicable.

1.3.2.4.2.5 Root run and capping run need each to have a minimum of one stop and restart. The welders are allowed to remove minor imperfections only in the stop by grinding before restart welding.

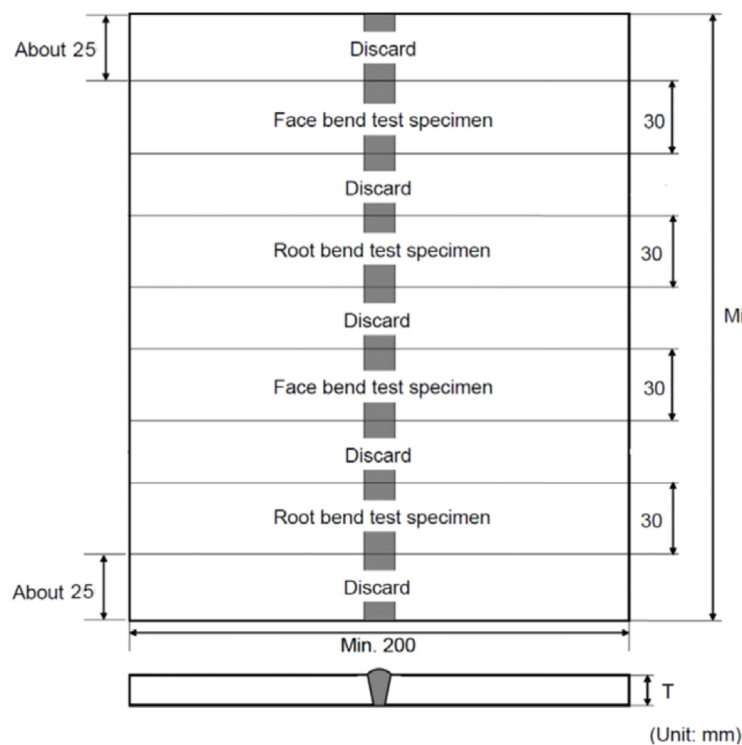


Figure 1.3.2.4.1
Dimensions and types of test assembly for butt welds (T < 12 mm)

PART 26

AMENDMENTS No. 1

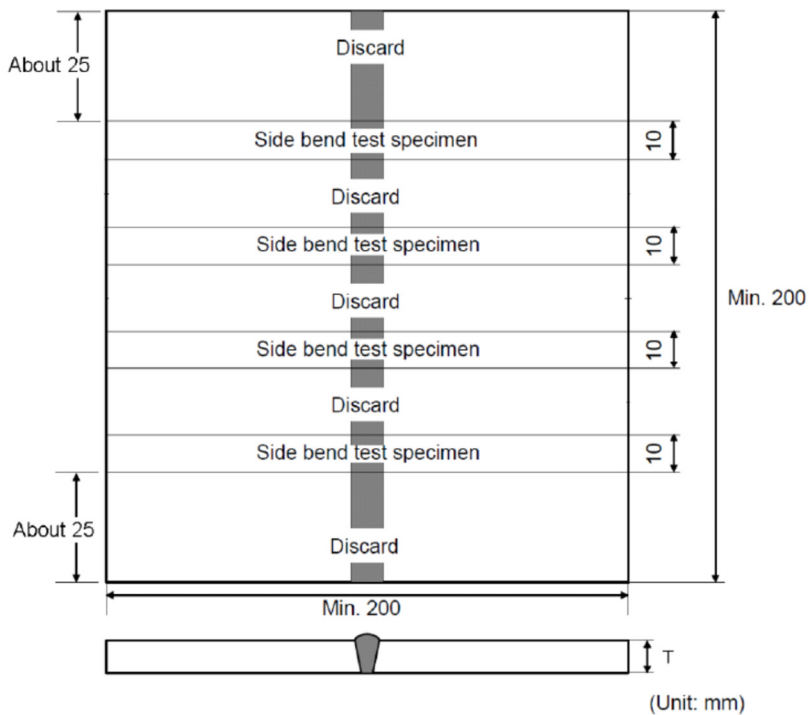


Figure 1.3.2.4.2

Dimensions and types of test assembly for butt welds ($T \geq 12$ mm)

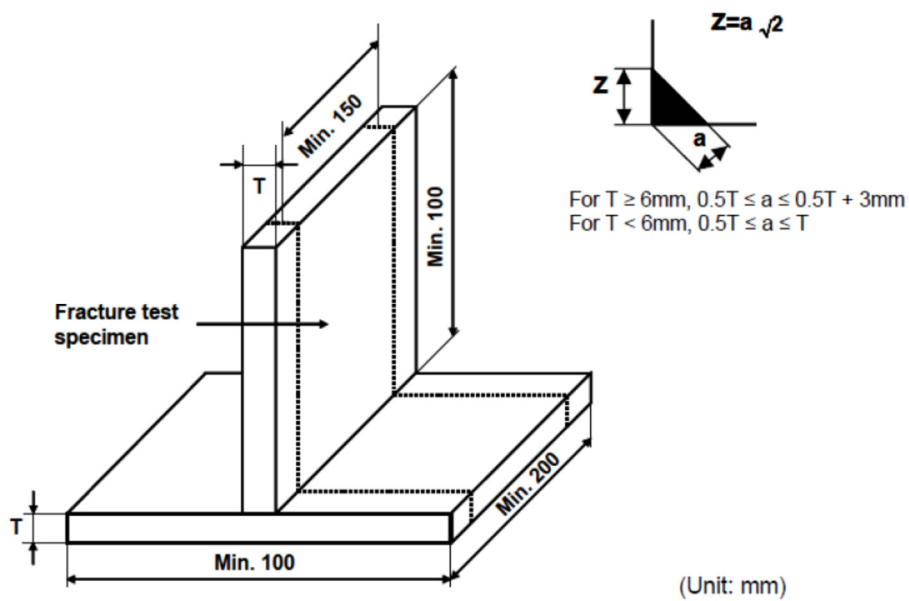


Figure 1.3.2.4.3

Dimensions and types of test assembly for fillet welds

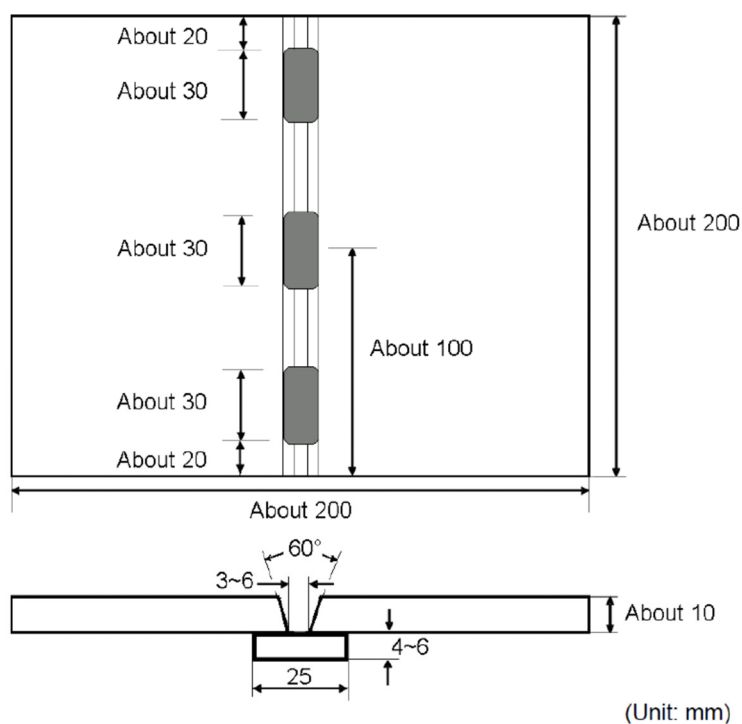


Figure 1.3.2.4.4
Dimensions and types of test assembly for tack butt welds

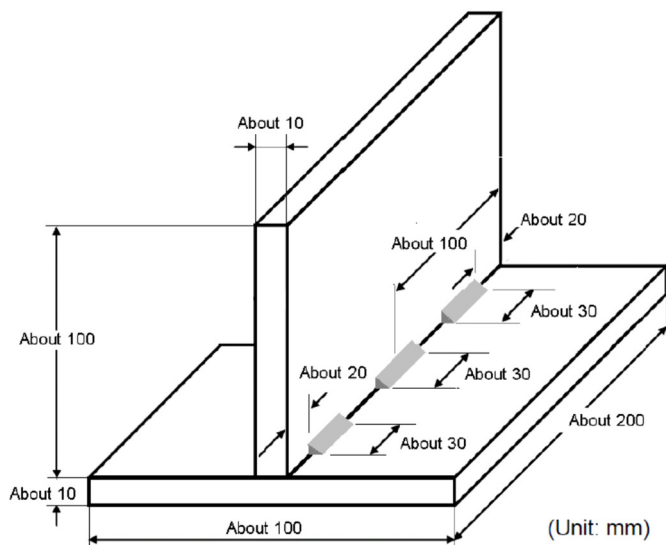


Figure 1.3.2.4.5
Dimensions and types of test assembly for tack fillet welds

1.3.2.4.3 Examination and test

1.3.2.4.3.1 The test assemblies specified in 1.3.2.4.2 shall be examined and tested as follows:

- a) For butt welds
 - Visual examination
 - Bend test

NOTE:

Radiographic test or fracture test may be carried out in lieu of bend test except the gasshielded welding processes with solid wire or metal cored wire.

PART 26

AMENDMENTS No. 1

- b) For fillet welds
 - Visual examination
 - Fracture test

NOTE:

Two macro sections may be taken in lieu of the fracture test.

- c) For tack welds
 - Visual examination
 - Fracture test

Additional tests may be required, at the discretion of the *Register*.

1.3.2.4.3.2 Visual examination

The welds shall be visually examined prior to the cutting of the test specimen for the bend test and fracture test. The result of the examination is to show the absence of cracks or other serious imperfections.

Imperfections detected are to be assessed in accordance with quality level B in ISO 5817:2014, except for the following imperfection types for which level C applies;

- Excess weld metal
- Excess penetration
- Excessive convexity
- Excessive throat thickness

1.3.2.4.3.3 Bend test

Transverse bend test specimens are to be in accordance with the *Rules for the classification of ships, Part 25 - Metallic materials*, Chapter 2 Test specimens and mechanical testing procedures for material.

The mandrel diameter to thickness ratio (i.e. D/T) is to be that specified for welding consumable (Chapter 1.5.1 and the *Rules for the classification of ships, Part 25 - Metallic materials*, Section 3.4.2 YP47 Steels and Brittle Crack Arrest Steels) approvals +1.

Two face bend test and two root bend test specimens are to be tested for initial qualification test, and one face and one root bend test specimens for extension of approval. For thickness 12 mm and over, four side specimens (two side specimens for extension of approval) with 10 mm in thickness may be tested as an alternative.

At least one bend test specimen shall include one stop and restart in the bending part, for root run or for cap run.

The test specimens are to be bent through 180 degrees. After the test, the test specimens shall not reveal any open defects in any direction greater than 3 mm. Defects appearing at the corners of a test specimen during testing should be investigated case by case.

1.3.2.4.3.4 Radiographic test

When radiographic testing is used for butt welds, imperfections detected shall be assessed in accordance with ISO 5817:2014, level B.

1.3.2.4.3.5 Fracture test (Butt welds)

When fracture test is used for butt welds, full test specimen in length is to be tested in accordance with ISO 9017:2017. Imperfections detected shall be assessed in accordance with ISO 5817:2014, level B.

1.3.2.4.3.6 Fracture test (Fillet welds)

The fracture test is to be performed by folding the upright plate onto the through plate.

Evaluation shall concentrate on cracks, porosity and pores, inclusions, lack of fusion and incomplete penetration. Imperfections that are detected shall be assessed in accordance with ISO 5817:2014, level B.

1.3.2.4.3.7 Macro examination

When macro examination is used for fillet welds, two test specimens are to be prepared from different cutting positions; at least one macro examination specimen shall be cut at the position of one stop and restart in either root run or cap run. These specimens are to be etched on one side to clearly reveal the weld metal, fusion line, root penetration and the heat affected zone.

Macro sections shall include at least 10 mm of unaffected base metal.

The examination is to reveal a regular weld profile, through fusion between adjacent layers of weld and base metal, sufficient root penetration and the absence of defects such as cracks, lack of fusion etc.

1.3.2.4.4 Retest

1.3.2.4.4.1 When a welder fails a qualification test, the following shall apply.

- a) In cases where the welder fails to meet the requirements in part of the tests, a retest may be welded immediately, consisting of another test assembly of each type of welded joint and position that the welder failed. In this case, the test is to be done for duplicate test specimens of each failed test.
All retest specimens shall meet all of the specified requirements.
- b) In cases where the welder fails to meet the requirements in all parts of the required tests or in the retest prescribed in 1.3.2.4.4.1 a), the welder shall undertake further training and practice.
- c) When there is specific reason to question the welder's ability or the period of effectiveness has lapsed, the welder shall be re-qualified in accordance with the tests specified in 1.3.2.4.2 and 1.3.2.4.3.

1.3.2.4.4.2 Where any test specimen does not comply with dimensional specifications due to poor machining, a replacement test assembly shall be welded and tested.

1.3.2.5 Certification

1.3.2.5.1 Qualification certificates are normally issued when the welder has passed the qualification test in accordance with the Register's Rules. Each Shipyard and Manufacturer shall be responsible for the control of the validity of the certificate and the range of the approval.

1.3.2.5.2 The following items shall be specified in the certificate:

- a) Range of qualification for base metal, welding processes, filler metal type, types of welded joint, plate thicknesses and welding positions.
- b) Expiry date of the validity of the qualification.
- c) Name, date of birth, identification and the photograph of the welder.
- d) Name of shipbuilder / manufacturer.

1.3.2.5.3 When a certificate is issued, the relative documents such as test reports and/or revalidation records shall be archived as annexes to the copy of certificate according to the Rules of the Register.

1.3.2.5.4 The status of approvals of each individual qualification is to be demonstrated to the Register when requested.

1.3.2.6 Period of Validity

1.3.2.6.1 Initial approval

1.3.2.6.1.1 Normally the validity of the welder's approval begins from the issue date of qualification certificate when all the required tests are satisfactorily completed.

1.3.2.6.1.2 The certificate is to be signed at six-month intervals by the shipyards/manufacturers personnel who is responsible for production weld quality provided that all the following conditions are fulfilled:

- a) The welder shall be engaged with reasonable continuity on welding work within the current range of approval. An interruption for a period no longer than six months is permitted.
- b) The welder's work shall in general be in accordance with the technical conditions under which the approval test is carried out.
- c) There shall be no specific reason to question the welder's skill and knowledge.

1.3.2.6.1.3 If any of these conditions are not fulfilled, the Register is to be informed and the certificate is to be cancelled.

1.3.2.6.1.4 The validity of the certificate may be maintained in agreement with the Register as specified in 1.3.2.6.2. The chosen maintenance option of qualification is in accordance with 1.3.2.6.2.1 a) or b) or c) shall be stated on the certificate at the time of issue.

1.3.2.6.2 Maintenance of the approval

1.3.2.6.2.1 Revalidation shall be carried out by the Register. The skill of the welder shall be periodically verified by one of the following options:

- a) The welder shall be re-tested every 3 years.
- b) Every 2 years, two welds made during the last 6 months of the 2 years validity period shall be tested by radiographic or ultrasonic testing or destructive testing and shall be recorded. The weld tested shall reproduce the initial test conditions except for the thickness. These tests revalidate the welder's qualifications for an additional 2 years.
- c) A welder's qualification for any certificate shall be valid as long as it is signed according to 1.3.2.6.1.2 subject that all the following conditions are fulfilled. In this option, the fulfilment of all the conditions is to be verified by the Register. The frequency of verification by the Register is to be no longer than 3 years and is to be agreed between the Register and the shipyards/manufacturers.
 - I. The welder is working for the same shipyard/manufacturer which is responsible for production weld quality as indicated on his or her qualification certificate.
 - II. The Register shall verify that the welder quality management system of the shipyard/manufacturer includes as minimum:

PART 26

AMENDMENTS No. 1

- A designated person responsible for the coordination of the welder quality management system
- List of welders and welding supervisors in shipyard/manufacturer
- If applicable, list of subcontracted welders
- Qualification certificate of welders and description of the associated management system
- Training requirements for welder qualification programme
- Identification system for welders and WPS used on welds
- Procedure describing the system in place to monitor each welder performance based on results of welds examination records (e.g. repair rate, etc.) including the criteria permitting the maintenance of the welder qualification without retesting.

III. The shipyards/manufacturers have to document at least once a year that the welder has produced acceptable welds in accordance with construction quality standards and *Register's* requirements in the welding positions, type of welds and backing conditions covered by its certificate. Which documents are required and how to document the evidences should be in agreement between the *Register* and the shipyards/manufacturers.

1.3.2.6.2.2 The *Register* has to verify compliance with the above conditions and sign the maintenance of the welder's qualification certificate.

■ **Head 1 WELDING PROCEDURE TESTING**, text of the title 1.4.5 is changed, and should be read as follows:

1.4.5. **Welding procedure qualification tests of aluminium alloys for hull construction and marine structures**

■ **Head 1 WELDING PROCEDURE TESTING**, title 1.4.5, paragraph 1.4.5.1.3 is partly changed, and should be read as follows:

1.4.5.1.3 The welding processes below indicated, together with their relevant numbering according to ISO 4063:2009, are in general used for welding aluminium alloys:

- 131 - metal-arc inert gas welding (MIG welding)
- 141 - tungsten inert gas arc welding (TIG welding)
- 15 - plasma arc welding

■ **Head 1 WELDING PROCEDURE TESTING**, title 1.4.5, paragraph 1.4.5.2.3 is partly changed, and should be read as follows:

1.4.5.2.3 **Non-destructive examination**

Non destructive examinations are to be carried out after any required post weld heat treatment, natural or artificial ageing, and prior to the cutting of the test specimens.

Welds are to be free from cracks. Imperfections detected by visual or non-destructive testing are to be assessed in accordance with HRN EN ISO 10042:2018, level B, except for excess weld metal or convexity, excess throat thickness and excess of penetration for which the level C applies.

■ **Head 1 WELDING PROCEDURE TESTING**, title 1.4.5, paragraph 1.4.5.5.7 is partly changed, and should be read as follows:

1.4.5.5.7 **Welding consumables**

The welding consumable used in the qualification tests qualifies:

- 1) Approved welding consumables of the same strength as the consumable used in the procedure qualification tests.
- 2) Approved welding consumables of higher strength than the consumable used in the procedure qualification tests.

The qualification given to shielding gas and backing gas is restricted to the gas/gas mixture used in the welding procedure test, see HRN EN ISO 14175:2008 or other recognised standards for gas designations.

2 FABRICATION AND INSPECTION OF WELDED JOINTS

■ **Head 2.5 NON-DESTRUCTIVE TESTING OF SHIP HULL STEEL WELDS**, paragraph 2.5.5.8 is partly changed, and should be read as follows:

2.5.5.8 In general start/stop points in welds made using automatic or fully mechanized welding processes are to be examined using RT or UT, except for internal members where the extent of testing is to be agreed with the attending surveyor.

■ **Head 2.5 NON-DESTRUCTIVE TESTING OF SHIP HULL STEEL WELDS**, paragraph 2.5.6.5.2 is partly changed, and should be read as follows:

2.5.6.5.2 The minimum inspected weld length for each checkpoint is to be specified in the approved NDT plan (see 2.5.5.2) and shall follow the requirements of the *Register*.

For hull welds the minimum length inspected by RT is typically 300mm. The extent of RT shall be in accordance to the approved plans and to the satisfaction of the surveyor.

Consideration may be given for reduction of inspection frequency for automated or fully mechanized welds where quality assurance techniques indicate consistent satisfactory quality. The number of checkpoints is to be increased if the proportion of non-conforming indications is abnormally high.

■ **Head 2.5 NON-DESTRUCTIVE TESTING OF SHIP HULL STEEL WELDS**, paragraph 2.5.9.2 is partly changed, and should be read as follows:

2.5.9.2 When unacceptable indications are found, additional areas of the same weld length shall be examined unless it is agreed with the surveyor and fabricator that the indication is isolated without any doubt. In case of automatic or fully mechanized welded joints, additional NDT shall be extended to all areas of the same weld length.

All radiographs exhibiting non-conforming indications are to be brought to the attention of the surveyor. Such welds are to be repaired and inspected as required by the surveyor. When non-conforming indications are observed at the end of a radiograph, additional RT is generally required to determine their extent. As an alternative, the extent of nonconforming welds may be ascertained by excavation, when approved by the surveyor.