

**RULES
FOR THE CLASSIFICATION OF
SHIPS**

*Part 26 – WELDING
July 2019*

*Amendments No. 1
July 2020*

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 30th June 2020 and shall enter into force on 1st July 2020

INTRODUCTORY NOTES

These amendments shall be read together with the requirements in the Rules for the Classification of Ships, Part 26 – Welding, edition July 2019, including Corrigenda No. 1.

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), UR W23 (Rev.2, Apr 2018, Corr. 1, June 2019), W26 (rev.1, 2005), W28 (Rev.2, 2012)
W32 (2016), W35 (June 2019)

Unified Recommendations (Rec.):

No. 17 (rev.1, Mar 2019), No. 20 (rev.1, 2007), No. 70 (rev.1, 2006)

International Standard Organization (ISO):

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European Norm (EN):

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European Norm with 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 2019, including Corrigenda No. 1.

<i>ITEM</i>	<i>DESCRIPTION OF THE AMENDMENTS</i>
SECTION 1 - GENERAL REQUIREMENTS, PROOF OF QUALIFICATIONS, APPROVALS	
Head 1.5 WELDING CONSUMABLES	Sub-item 1.5.1.10 is added
SECTION 2 - FABRICATION AND INSPECTION OF WELDED JOINTS	
Head 2.4 REQUIREMENTS FOR NDT SUPPLIERS	is added

1 GENERAL REQUIREMENTS, PROOF OF QUALIFICATIONS, APPROVALS

■ HEAD 1.5 WELDING CONSUMABLES, sub-item 1.5.1.10 is added and should be read as follows:

1.5.1.10 As an alternative to the annual procedures for approval of welding consumables described in 1.5.2 and 1.5.3, a procedure for the acceptance of manufacturer's quality assurance systems for welding consumables in accordance with the provisions of *IACS Recommendation No.17* may be applied. Welding consumable grades Y89 and Y96 are excluded.

When, at the manufacturer's request, the *Register* decides to implement this scheme, all the clauses of *IACS Recommendation No.17* are to be fully complied with by the manufacturer, without exclusions.

By acceptance of the manufacturer's quality assurance system the *Register* delegates to the manufacturer the responsibility for checking that the necessary inspections and tests are carried out and obliges the manufacturer to comply with the applicable requirements of the Rules. The *Register* will check the effectiveness of the quality assurance system through verification of the Quality Management System (QMS).

2 FABRICATION AND INSPECTION OF WELDED JOINTS

■ HEAD 2.4 REQUIREMENTS FOR NDT SUPPLIERS is added and should be read as follows:

2.4 REQUIREMENTS FOR NDT SUPPLIERS

2.4.1 General

2.4.1.1 Scope

Firms providing NDT (Non-Destructive Testing) services on ship and offshore structures/components subject to classification, need to fulfil the requirements set below. In this section, such firms will be referred to as the Supplier.

2.4.1.2 Objective

The objective of this requirements is to ensure that the Supplier is using appropriate procedures, has qualified and certified personnel and has implemented written procedures for training, experience, education, examination, certification, performance, application, control, verification and reporting of NDT. In addition, the Supplier shall furnish appropriate equipment and facilities commensurate with providing a professional service.

2.4.1.3 Terms and definitions

The following terms and definitions apply for this document:

NDT	Non-destructive testing. Comprising, but not limited to the methods and techniques MT, PT, RT, RT-D, VT, UT, PAUT, TOFD, ET and/or ACFM.
Supplier	Independent NDT company or NDT department/section that forms a part of a company providing NDT services on ship and/or offshore components/structures.
MT	Magnetic Particle Testing
PT	Penetrant Testing
RT	Radiographic Testing
RT-D	Digital Radiography (Several techniques within the method RT, e.g. Computed Radiography or Direct Radiography)
UT	Ultrasonic Testing
PAUT	Phased Array Ultrasonic Testing (Technique within the method UT)
TOFD	Time of Flight Diffraction (Technique within the method UT)
ET	Electromagnetic Testing (i.e. Eddy Current Testing and/or Alternating Current Field Measurements [ACFM])
VT	Visual Testing
Industrial sector	Section of industry or technology where specialised NDT practices are used, requiring specific product-related knowledge, skill, equipment and/or training.

2.4.1.4 References

The following referenced documents are to be used for the application of this document as appropriate. For undated references, the latest edition of the referenced document (including any amendments) applies:

- ISO 9712:2012; Non-destructive testing - Qualification and certification of NDT personnel
- ISO/IEC 17020:2012; Conformity assessment – Requirements for the operation of various types of bodies performing inspection
- ISO/IEC 17024:2012; Conformity assessment – General requirements for bodies operating certification of persons
- ISO 9001:2015; Quality Management Systems – Requirements

Other national adoptions of the standards listed above are accepted as compliant and hence are accepted for use together with this document.

2.4.2 Requirements for Supplier

The Supplier shall document, as required in 2.4.2.2 to 2.4.2.9, that it has the competence and control needed to perform the specified services.

2.4.2.1 Requirements for documents

The following documents shall be available for the *Register* upon request:

- an outline of Supplier's organisation and management structure, including any subsidiaries;
- information on the structure of the Supplier's Quality Management System;
- quality manual and documented procedures covering the requirements given in item 2.4.2.2;
- for companies with in-house certification of persons scheme; a written practice developed in accordance with a recognised standard or recommended practice (i.e. ASNT's SNT-TC-1A, 2016, ANSI/ASNT CP-189, 2016 or similar);
- operational work procedures for each NDT method including selection of the NDT technique;
- training and follow-up programmes for NDT operators including practical training on various ship and offshore products;
- procedure for supervisor's authorisation of NDT operators;
- experience of the Supplier in the specific service area;
- a list of documented training and experience for NDT operators within the relevant service area, including qualifications and third party certification per ISO 9712:2012 based certification schemes;
- description of equipment(s) used for the services performed by the Supplier;
- a guide for NDT operators to use equipment mentioned above;
- record formats for recording results of the services referred to in item 2.4.2.9;
- information on other activities which may present a Conflict of interest;
- record of customer claims and corrective actions;
- any legal proceedings against the company in the past/currently in the courts of law.

2.4.2.2 Quality management system

The Supplier shall have a documented quality management system, covering at least:

- work procedures for all tasks and operations, including the various NDT methods and NDT techniques for which the Supplier is involved;
- preparation, issuance, maintenance and control of documents;
- maintenance and calibration of the equipment;
- training programs for the NDT operators and the supervisors;
- maintenance of records for NDT operators' and the supervisors' training, qualification and certification;
- certification of NDT operators including re-validation and recertification;
- procedure for test of operators' visual acuity;
- supervision and verification of operation to ensure compliance with the NDT procedures;
- quality management of subsidiaries;
- job preparation;
- order reference system where each engagement is traceable to when, who and where the test was carried out;
- recording and reporting of information, including retention time of records;
- code of conduct for the Supplier's activities; especially the NDT activities;
- periodic review of work process procedures;
- corrective and preventive action;
- feedback and continuous improvement;
- internal audits;
- the provision of accessibility to required codes, standards and procedures to assist NDT operators.

A documented quality system complying with the most current version of ISO/IEC 17020:2012 and including the above would be considered acceptable. The Supplier should satisfy the requirements of Type A or Type B inspection body, as described in ISO/IEC 17020:2012.

2.4.2.3 Qualification and certification of NDT personnel

The Supplier is responsible for the qualification and preferably 3rd party certification of its supervisors and operators to a recognised certification scheme based on ISO 9712:2012.

Personnel qualification to an employer based qualification scheme as e.g. SNT-TC-1A, 2016 or ANSI/ASNT CP-189, 2016 may be accepted if the Supplier's written practice is reviewed and found acceptable by the *Register*. The Supplier's written practice shall as a minimum, except for the impartiality requirements of a certification body and/or authorised body, comply with ISO 9712:2012.

The supervisors' and operators' certificates and competence shall comprise all industrial sectors and techniques being applied by the Supplier.

Level 3 personnel shall be certified by an accredited certification body.

2.4.2.4 Supervisor

The Supplier shall have a supervisor or supervisors, responsible for the appropriate execution of NDT operations and for the professional standard of the operators and their equipment, including the professional administration of the working proce-

dures. The supplier shall employ, on a full-time basis, at least one supervisor independently certified to Level 3 in the method(s) concerned as per the requirements of item 2.3. It is not permissible to appoint Level 3 personnel; they must be certified by an accredited certification body. It is recognised that a Supplier may not directly employ a Level 3 in all the stated methods practiced. In such cases, it is permissible to employ an external, independently certified, Level 3 in those methods not held by the full-time Level 3(s) of the Supplier.

The supervisor shall be directly involved in review and acceptance of NDT Procedures, NDT reports, calibration of NDT equipment and tools. The supervisor shall on behalf of the Supplier re-evaluate the qualification of the operators annually.

2.4.2.5 Operators

The operator carrying out the NDT and interpreting indications, shall as a minimum, be qualified and certified to Level 2 in the NDT method(s) concerned and as described in item 2.4.2.3.

However, operators only undertaking the gathering of data using any NDT method and not performing data interpretation or data analysis may be qualified and certified as appropriate, at level 1.

The operator shall have adequate knowledge of materials, weld, structures or components, NDT equipment and limitations that are sufficient to apply the relevant NDT method for each application appropriately.

2.4.2.6 Equipment

The Supplier shall maintain records of the NDT equipment used and detail information related to maintenance, calibration and verification activities. If the Supplier hires equipment, such equipment shall have updated calibration records, and the operators shall be familiar with the specific equipment type prior to using it. Under any circumstance, the Supplier shall possess sufficient equipment to carry out the services being a part of the NDT scope required by the *Register*.

Where the equipment is of unique nature, the NDT operators shall be trained by competent personnel in the operation and use of the equipment before carrying out NDT using this equipment.

2.4.2.7 Work instructions and procedures

The Supplier shall produce written procedures for the NDT being applied. These procedures are to be written, verified or approved by the Supplier's Level 3. Procedures shall define all relevant information relating to the inspection including defect evaluation against acceptance criteria in accordance with the Rules. All NDT procedures and instructions shall be properly documented in such a way that the performed testing can be easily retraced and/or repeated at a later stage. All NDT procedures are to be acceptable to the *Register*.

2.4.2.8 Sub-contractors

The Supplier shall give information of agreements and arrangements if any part(s) of the services provided are subcontracted. The Supplier, in the following-up of subcontracts shall give emphasis to the quality management system of the subcontractor.

Subcontractors shall meet the same requirements placed on Suppliers for any NDT performed.

2.4.2.9 Reporting

All NDT shall be properly documented in such a way that the performed testing and examination can be easily retraced and/or repeated at a later stage. The reports shall identify the defects present in the tested area, and a conclusive statement as to whether the material, weld, component or structure satisfies the acceptance criteria or not.

The report shall include a reference to the applicable standard, NDT procedure and acceptance criteria applied in the applicable NDT method/technique. In general, the acceptance criteria shall comply with the Rules.