Comments about No.47 Shipbuilding and Repair Quality Standard

by
Shipbuilder's Association Japan (SAJ)

and
Germanischer Lloyd (GL) & Verband für Schiffbau und Meerestechnik (VSM)

Comments about IACS Rec. 47 from SAJ, GL and VSM are summarized in the tables

- General Comments
- Typographical Errors
- Comments on Individual Standards

GL / VSM comments have to be considered in association with

- Production Standard of German Shipbuilding Industry
- Comparison of the different standards
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I General Comments

No.	Comments
SAJ-I-1	Design detail standards such as following are to be excluded from "quality standards" for new construction. (1) Table 6.4: Snipe ends (2) Table 7.3: Position of scallop (3) Tables 8.1-8.4: Typical weld edge preparations (See comment SAJ-III-13) (4) Table 8.6: Typical lap, plug and slop welding
SAJ-I-2	Limitations are to be specified for all quality standards in principle.
SAJ-I-3	As far as practicable, technical background for each standard and limit is to be clarified. It is to be noted that JSQS has been adopted extensively for about 40 years.
GL/VSM-I-1	Under 1.4 (Scope) it is stated that Rec. 47 should "provide guidance where established shipbuilding standards or national standards approved by the Classification Society do not exist". We do not see a compelling need to change this policy. Therefore this wording should be used when Rec. 47 is referenced in mandatory IACS documents.
GL/VSM-I-2	In the tables of sections 6 to 9 it is distinguished between "Standard" and "Limit". Those two classes are not defined. From a shipbuilding industry point of view these expressions have the connotation of an "average quality standard of the national industry production" and "limit values that can be guaranteed in all cases = exceedence justifies rejection". For classification societies operating world-wide only the latter meaning make sense. In addition the two columns are not used consistently throughout the document.
GL/VSM-I-3	Rec.47 should only contain limits for safety relevant assumptions, which are necessary to control the boundary conditions of simple formulas used scantling

	calculations. But Rec.47 also contains requirements, which can clearly be identified as pure design options that have to stay in the responsibility of the newbuilding or repair yard (see comment SAJ-I-1).
GL/VSM-I-4	As long as the distinction between design options and safety related requirements has not been successfully implemented Rec.47 should maintain its recommendatory character. Alternatively it should be considered to recognize the equivalence of national ship production standards, such as the Fertigungsstandard des deutschen Schiffbaus (FS) and Japanese Shipbuilding Quality Standard (JSQS), within CSR or in general. Comments of the JTP to that effect have indicated a confirmation of the JSQS as a recognized fabrication standard, without revealing the procedural foundations of this approval. In this context VSM would like to inquire, whether the German FS or other national production standards enjoy the same recognition and which steps have to be taken in order to achieve and formally documents this status.
GL/VSM-I-5	Formulas for limit values should be mathematically correct, e.g. instead of d < +/- 3 mm per 100 mm of a it should read: d < +/- 3 a / 100, incorporation the relative character of value, instead of specifying it in a remark column or somewhere else; the formulas should work with all SI units (avoid strange formulas such as R > 3t mm, Table 6.3 Mechanical bending).

II Typographical Errors

No.	Item		Corrections
SAJ-II-1	Table 6.7	Breadth and length of top plate of engine bed	Limit: +/- 6mm
GL/VSM-II-1	Table 6.7	Length between perpendiculars	Standard: +/- 50 **mm** per 100 m
SAJ-II-2	Table 6.11	All standards and limits	Numerators in the formulas should include “l” (span), e.g., 2 x “l” /1000
GL/VSM-II-2	Table 8.5	Butt weld toe angle…	…and weld overfill (check also distribution to Standard / Limit column)
GL/VSM-II-3	Table 8.5	Fillet weld leg length	Definitions should not be placed in the Detail or Remarks and not in the Standard column
SAJ-II-3	Table 8.6	Fillet weld in lap joint	b >= $2t_2$+25
SAJ-II-4	Table 9.3	Position of scallop	A starting point of the distance “d” is to be the right end of the scallop.
SAJ-II-5	Table 9.6	Tee fillet	“5mm<G<16mm” may be “5mm<G<16mm or 1.5t”.

III Comments on Individual Standards

No.	Item		Comments
SAJ-III-1	4.3.6.2	Weld spatters	(1) Not only by grinder, but also other methods are to be accepted, e.g. scraping, chipping. (2) As spatters do not relate to structural strength but coating, applicable areas are not necessary to be defined.
SAJ-III-2	5.1 & 5.2	Gas cutting	(1) It is not reasonable to change the standard of roughness of gas cut surfaces depending on cutting method/facility?

			(2) Why the standard is changed at 20mm in thickness?
GL/VSM-III-1	Table 6.1	Breadth of flange	Are Rec.47 and JSQS limiting the absolute or relative breadth?
SAJ-III-3	Table 6.2	Distortion of face plate	The standard is to be related with the span of stiffeners.
SAJ-III-4	Table 6.3	Each size of corrugation	(1) The standard is to be applied at the end and mid span parts of the corrugation only.
		Breadth of corrugation web	(2) To be deleted because dimensional error can be controlled by total breadth and depth practically.
GL/VSM-III-2	Table 6.3	Breadth of corrugation web	GL/VSM agrees to SAJ-III-4(2), if breadth is specified the limit value should be the double value of for the breath of corrugation tolerance
SAJ-III-5	Table 6.4	Tripping brackets	(1) The standard background is to be clarified. (2) The limit is to be related with the thickness (Ref to JSQS).
GL/VSM-III-3	Table 6.4	Tripping brackets	VSM agrees to SAJ-III-5(2)
GL/VSM-III-4	Table 6.4	Snipe end	This is just a design option and safety related
SAJ-III-6	Table 6.6	Block assembly	(1) The standards of L and B are too severe compared with JSQS. (2) Technical background is to be clarified.
SAJ-III-7	Table 6.7	Special sub assembly	To be illustrated to avoid misunderstanding.
SAJ-III-8	Table 6.10	Fairness of plating between frames	(1) The second illustration to be deleted because the deflection can be measured for only single amplitude practically. (2) Technical background is to be clarified.
SAJ-III-9	Table 6.11	Fairness of plating with frames	Technical background is to be clarified.
SAJ-III-10	Table 7.1	Alignment of butt weld	The second illustration is to be deleted because when the upper surfaces of two plates are in line with base line, no misalignment exists.
		Alignment of fillet welds	(1) Different standards are to be provided for significant structural members and other structural members following JSQS. (2) Use of the centerline of plate thickness to determine the misalignment value is not practical at site and to be limited only to critical area from fatigue strength aspect.
SAJ-III-11	Table 7.2	Alignment of lap welds	Limit is necessary. (Ref to JSQS)
SAJ-III-12	Table 7.3	Gap between beams and frames	The standard is unrealistically severe and limit is necessary. (Ref to JSQS)
		Gap around stiffener cut-off	Limit is necessary. (Ref to JSQS)

SAJ-III-13	Tables 8.1-8.4	Weld edge preparation	1) General comments: (1) These standards are part of design detail standards. (2) These are to be general recommendation and to be modified by the individual shipyards under the approval of the classification society before construction as part of standard welding procedures, because edge configuration cannot be separated from the combination of welding facility, composition of welding wire, shield, electric current, etc. (3) Although Note 1 states some explanation, much more clear explanation is necessary to define the nature of these standards. (4) Subject tables contain unreasonable quantitative figures which can not conform to the modern fabrication facilities/technologies. In the case there is no strength problem, such figures should be updated even though subject tables are to be changed into general recommendation purposes.
GL/VSM-III-5	Tables 8.1-8.4	Weld edge preparation	GL/VSM agrees to SAJ-III-13, the weld edge preparations are design option which should be chosen in accordance with manufacturing process chosen; not safety related
SAJ-III-13	Tables 8.1-8.4	Weld edge preparation	2) Detail comments (Ref to JSQS): (1) Bevel angle are to be deleted from all standards. (2) Limits are to be provided for root gaps 3) Miscellaneous comments Does manual welding include semi-auto CO_2 welding?
SAJ-III-14	Table 8.5	Butt weld toe angle	(1) The standard of the angle is to be 90 degrees. (See Table 9.9) (2) The standard of the height of weld metal is to be deleted.
		Butt weld undercut Fillet weld undercut	(1) The standard D=0 mm and the limit 0.5mm are not realistic and are to follow JSQS. (2) This table and Table 9.9 (repair standards) may be combined in one table.
SAJ-III-15	Table 8.6	Fillet weld in lap joint	A note “not applicable to collar plates” is to be provided in Remarks column.
SAJ-III-16	Table 8.7	Distance between welds	Different standards for significant and other structural members are necessary. (Ref to JSQS).
GL/VSM-III-6	Table 8.8	Weld edge preparation	The weld edge preparations are design option which should be chosen in accordance with manufacturing process chosen; not safety related
SAJ-III-17	Table 9.1	Alignment of butt joints	A note “t1 is lesser plate thickness” is added in Remark column.
SAJ-III-18	Table 9.1	Alignment of fillet weld	(1) Use of the centerline of plate thickness to determine the misalignment value is not

			practicable at site and to be limited only to critical area from fatigue strength aspect. (2) The meaning of “release and adjust over a minimum of 50a” is not clear.
SAJ-III-19	Tables 9.4 & 9.5	Weld edge preparation	(1) As the standards are severer than JSQS, the values are to follow JSQS (2) When the gap is more than 25mm, the condition of “1.5 x t” is provided. These double limitations are not necessary.
SAJ-III-20	Table 9.9	Fillet weld toe angle	Standards of short beads are to be specified for different strength and grades of steel.
SAJ-III-21	Table 9.11	Holes made erroneously D<200mm	(1) The minimum diameter 300mm that allows using an insert plate is to be changed to 200mm following JSQS.
SAJ-III-22	Table 9.13	Weld spatters	(1) A note stating that the standard is not applicable to spaces in which coating is not required is to be provided.
		Arc strike	(1) In addition to grinding, other methods are to be allowed, such as overlapped weld bead or a tag piece that are struck by the first arc and cut off after completion of welding. (2) The standard is to be applied only for high tensile steels.

2005-10-25 by Shipbuilder’s Association Japan
2005-02-15 by Germanischer Lloyd / Verband für Schiffbau und Meerestechnik