Amendments of the Guidance

(External review)

Pt. 7 Ships of Special Services

2023. 01.

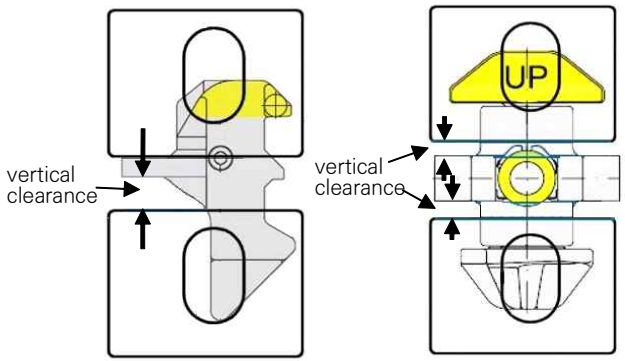
Background and main contents of the amendments

1. Background of amendments

(1) Add. Special Feature Notations : LS / LS(CL) / LS(CL, RS) / LS(CL, RS+) / LS(HHS or HHT)
(2) Correction of some sentences, add fictures

2. Main Contents: Refer to the amendments

Current	Amendment	Notes
〈Guidance〉 Pt. 7 **Annex 7-2 Guidance for the Container Securing Arrangement** **1. General** (1) Application 〈omit〉 (2) Special Features Notation (A) Where container securing arrangements are fitted, and the design and construction of the system are in accordance with this Annex, the ship will be eligible to be assigned the special features notation **LS**. The container securing arrangements in the Cargo Securing Manual are submitted to the Society for formal approval. (B) In addition to (A), if the program for lashing calculations is approved by the Society and installed and maintained, the ship will be eligible to be assigned the special features notation **LS(CL)**. The approval procedure of lashing calculation instrument are to be in accordance with **Par 9.** (C) Where apply the specific route reduction factors, the contents related to the application of the specific route reduction factors to be included in Cargo Securing Manual and the specific route reduction factors are applicable to onboard lashing program, the ship to be assigned the special features notation **LS(CL, RS).** (D) In relation to (C), if a program capable of calculating the reduction coefficient for an arbitrary route is installed in addition to the above, a special matter **LS(CL, RS+)** should be assigned to the ship concerned. (*2019*) (E) For the existing ship has not the above Special Feature Notation, this Annex can be applied if owner requests. (3), (4) 〈omit〉 **2. ~ 7. 〈omit〉**	**〈Guidance〉 Pt. 7** **Annex 7-2 Guidance for the Container Securing Arrangement** **1. General** (1) Application 〈same as current〉 (2) Special Features Notation (A) Same as current (B) Same as current (C) Same as current (D) In relation to (C), if a program capable of calculating the reduction coefficient for an arbitrary route is installed in addition to the above, a special features notation **LS(CL, RS+)** should be assigned to the ship concerned. (*2019*) (E) The ships using container securing arrangements designed and manufactured in accordance with Ch.3, Sec.25, 2504. or 2505. of the Guidance for Approval of Manufacturing Process and Type Approval, etc. will be eligible to be assigned the special feature notation LS (HHS or HHT) *(2023)* (F) For the existing ship has not the above Special Feature Notation, this Annex can be applied if owner requests. (3), (4) 〈same as current〉 **2. ~ 7. 〈same as current〉**	- refer to amendment for Guidance Pt 1 Annex 1-1 11. Container (Special Feature Notations) 특기사항 LS(20-1) LS(CL)(20-2) LS(CL, RS)(20-3) LS(CL, RS+)(20-4) LS(HHS 또는 HHT)(20-5) *(2023)*

Current	Amendment	Notes
8. Determination and application of forces (1) ~ (4) 〈omit〉 (5) Resultant forces in an lashed condition (A) The transverse forces in the containers ~ 〈omit〉 (B) The resultant forces in the containers are not to exceed the allowable values given in (6). ~ 〈omit〉 $\delta v_{act} = F_{NL\_Trigger} / K_{v\_upper\_eff}$ $F_{NL\_Trigger} = Lt_{i+1} - T_i \sin\theta_i$ $K_{v\_upper\_eff} = C_k \frac{E_i A_i \sin^2\theta_i}{l_i}$ C_k : nonlinear correction coefficient, is to be as specified by the Society $\delta v_{\max}$: vertical clearance of twistlock between corner castings, generally 20 mm. For a ship with **HHS**(High Holding Securing) or **HHT**(High Holding Twistlock) of additional special feature notation, it should be satisfied with the require-ments($\delta v_{\max}$=15mm) of **Ch 3, 2504** or **2505** of 「**Guidance for Approval of Manufacturing Process and Type Approval, etc.**」 Also this can be applied to calculation. *(2022)* Note 1 In case of fully automatic twistlocks, a functional test report should be submitted to the Society. Where the vertical clearance on the test report exceeds 20 mm, the actual value should be applied. Note 2 If smaller value is to be used, the value may be used in consultation with the Society based on the functional test report.	**8. Determination and application of forces** (1) ~ (4) 〈same as current〉 (5) Resultant forces in an lashed condition (A) The transverse forces in the containers ~ 〈same as current〉 (B) 〈same as current〉 C_k : nonlinear correction coefficient, is to be as specified by the Society $\delta v_{\max}$: vertical clearance between the twistlock inter-mediate plate and the end of corner casting of container, generally 20 mm. For a ship with **HHS**(High Holding Securing) or **HHT**(High Holding Twistlock) of additional special feature notation, it should be satisfied with the require-ments($\delta v_{\max}$ =15mm) of **Ch 3, 2504** or **2505** of 「**Guidance for Approval of Manufacturing Process and Type Approval, etc.**」 Also this can be applied to calculation. *(2023)*  Note 1 , 2 〈same as current〉	- Clearification

Amendments of the Guidance

(External review)

Guidance for Approval of Manufacturing Process and Type Approval, Etc.

2023. 01.

Background and main contents of the amendments

1. Background of amendments

■ 개정요청서(HUC4100-2387-2022) (effective date 2023. 7. 1.)

(1) During operation of the container ship, the lever of the twist lock installed on the floor was released several times. If the floor twist lock lever is released, a large container loss accident may occur.

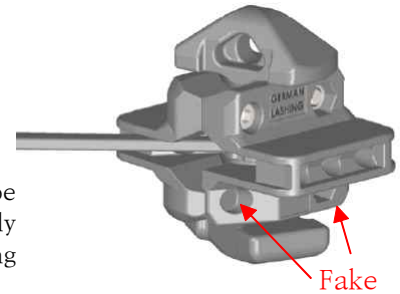
(2) In terms of strengthening the safety of Twistlocks, it is necessary to review the need for improvement of relavent Rules.(limited to HHS/HHT notation in consideration of equity with other Class)

1) the number of twist lock boltings

- If the bolting is not fastened to the lower part of the twist lock housing, the housing may be opened by the compressive force acting on the bottom, which may have the effect of lowering the spring strength.
- It is necessary to estabilish the new requirement to provide bolting on the upper/lower part of the housing of the twist lock to which the reinforced notation (HHS/HHT) is applied

2) Twistlock neck area

- If the neck area is small, in large container ships, larger movement occurs between the corner casting and the container socket, which may adversely affect the retention of securing.
- In terms of safety reinforcement, it is necessary to add a requirement equivalent to the neck area requirement specified in ISO 3874 for twist locks to which the reinforced classification notation (HHS/HHT) is applied.



3) regarding the spring strength

- It is judged that spring strength is directly related to lever operation.(If the stiffness is weak, the twist lock can be easily released, but if it is strong, it is difficult for the operator to operate) Although spring strength is not currently a mandatory test requirement, some companies report that twist lock loosening often occurs due to low spring strength. (Cargo Ship Team)

It is a measure to prevent accidents caused by insufficient spring strength, We would like to add the contents of spring strength of 250N or more to the requirements of twist locks with HHS, HHT (not compulsory) codes. (Currently, 150N twist-lock spring strength is mainly used, and there are no cases of HHT or HHS application so far.) (Spring strength is the maximum compressive force applied to minimize the length of the spring)

Compression springs D-254A

Material	Spring ends	d [mm]	De [mm]	L0 [mm]	Fn [N]	sn [mm]	n [pc.]	R [N/mm]
EN 10270-1	Closed and ground	2	14.5	39	250.368	19.5	6.5	12.839

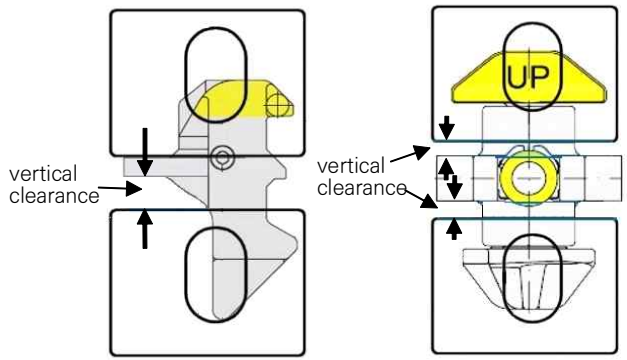
Compression springs D-255

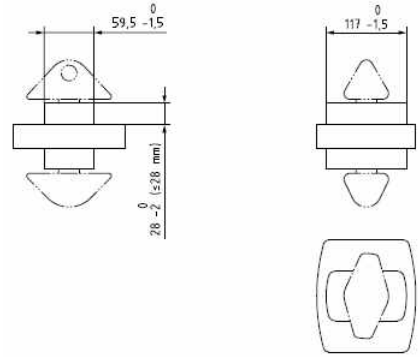
Material	Spring ends	d [mm]	De [mm]	L0 [mm]	Fn [N]	sn [mm]	n [pc.]	R [N/mm]
EN 10270-1	Closed and ground	2	14.5	49.5	250.368	25.5	8.5	9.818

Compression springs D-256

Material	Spring ends	d [mm]	De [mm]	L0 [mm]	Fn [N]	sn [mm]	n [pc.]	R [N/mm]
EN 10270-1	Closed and ground	2	14.5	71	250.368	37.5	12.5	6.676

2. Main Contents: Refer to the amendments

Current	Amendment	Notes
〈Guidance for ~ Type Approval, Etc.〉 **Ch. 3 TYPE APPROVAL** **Section 25 Securing Device** **2503. Function test of fully automatic twistlock *(2019)*** **1. ~ 2. 〈omit〉** **3.** The function test report of the fully automatic twistlock shall state: (1) Function test equipment layout and step test load (2) Corner casting specifications (ISO hole width and flange thickness) used in function test (3) Vertical clearance of the tensile corner casting measured after the stepwise load test **4. ~ 5. 〈omit〉** **2504. Test requirements of additional special feature notation HHS(High Holding Securing)*(2021)*** **HHS(High Holding Securing)*(2021)*** **1. ~ 2. 〈omit〉** 3. In the 2nd step of the function test, the vertical clearance (δv_{max}) between the twistlock and the corners of the container is not be more than 15mm, and the value of the vertical clearance measured in the function test can be applied to the evaluation of securing strength.	**〈Guidance for ~ Type Approval, Etc.〉** **Ch. 3 TYPE APPROVAL** **Section 25 Securing Device** **2503. Function test of fully automatic twistlock *(2019)*** **1. ~ 2. 〈sama as current〉** **3.** In the 2nd step of the function test, the vertical clearance (δv_{max}) between the twistlock intermediate plate and the end of corner casting of container is not be more than 20mm generally. *(2023)* **4. ~ 5. 〈sama as current〉** **2504. Test requirements of additional special feature notation HHS(High Holding Securing)*(2021)*** **1. ~ 2. 〈same as current〉** 3. In the 2nd step of the function test, the vertical clearance (δv_{max}) between the twistlock intermediate plate and the end of corner casting of container **(Fig. 3.25.4)** between the twistlock and the corners of the container is not be more than 15mm, and the value of the vertical clearance measured in the function test can be applied to the evaluation of securing strength. *(2023)*  Fig. 3.25.4	- refer Guidance Pt7 Annex 7-2 8.(5) - re number 3, 4 → 4, 5

Current	Amendment	Notes
4. ~ 5. 〈omit〉	**4. ~ 5.. 〈same as current〉**	
〈newly added〉	6. The twistlock housing must be fastened with at least one bolt each at the top and bottom. Also, the dimension of the neck of the twist lock shall be equal to or greater than the value according to Fig. 3.25.5. *(2023)*  Fig. 3.25.5	Accept ISO 3874 (A 4.3 Collars)
〈newly added〉	7. The spring maximum force in static use of the bottom manual twistlock shall be more than 250 N. (Confirm the Spring specification, Test report etc.) *(2023)*	
2505. Test requirements of additional special feature notation HHT(High Holding Twistlock) *(2021)*	**2505. Test requirements of additional special feature notation HHT(High Holding Twistlock) *(2021)***	
1. 〈omit〉 ⚓	1. 〈same as current〉 ⚓	

Amendments of the Guidance

(External review)

Pt. 7 Ships of Special Services

2023. 01.

Background and main contents of the amendments

1. Background of amendments

(1) EMSA Inspection report

- Modify the referenced document No. : Annex 7-2 Guidance for the Container Securing Arrangement 8. (6) Allowable forces on containers ISO 1496-1 : 1990 → ISO 1496-1

- Modify the referenced document No. : Annex 7-3 Guidance for Car Ferries 13. (2) (F) Unsymmetrical flooding IMO Res. A266(VIII) → Res. MSC 362(92)

- Modify the Allowable stress for ultimate and accidental design conditions Annex 7A-8 Ch2 101.: Deleted due to unclear basis for stated stress

2. Main Contents: Refer to the amendments

Current	Amendment	Notes
〈Guidance〉 Pt. 7 **Annex 7-2 Guidance for the Container Securing Arrangement** **1. ~ 7. 〈omit〉** **8. Determination and application of forces** (1) ~ (5) 〈omit〉 (6) Allowable forces on containers (A) For ISO containers, the securing arrangements are to be designed so that the forces on the containers do not exceed the values shown in **Table 11**. The maximum forces for ISO 1496-1: 1990 including Amendment Nos. 1, 2 and 3 containers are illustrated in **Fig 12**. Proposals to carry out the lashing calculations for containers manufactured in accordance with ISO 1496-1:1990/Amendment No. 4, 2006 will be specially considered. (B) Where 45 ft containers in accordance with ISO 1496-1:1990/Amd.4, 2006 are stowed on top of a 40 ft container, the corner post load of the top castings of the 45 ft container are not to exceed a compression force of 404 kN. Consideration should be given to the strength of the container bottom structure to withstand the forces transmitted. No lashings are to be applied to the ends of the 45 ft container if stowed on top of a 40 ft unit. **9. 〈omit〉**	**〈Guidance〉 Pt. 7** **Annex 7-2 Guidance for the Container Securing Arrangement** **1. ~ 7. 〈same as current〉** **8. Determination and application of forces** (1) ~ (5) **〈same as current〉** (6) Allowable forces on containers (A) For ISO containers, the securing arrangements are to be designed so that the forces on the containers do not exceed the values shown in **Table 11**. The maximum forces for ISO 1496-1 including Amendment Nos. 1, 2 and 3 containers are illustrated in **Fig 12**. Proposals to carry out the lashing calculations for containers manufactured in accordance with ISO 1496-1 will be specially considered. (B) Where 45 ft containers in accordance with ISO 1496-1 are stowed on top of a 40 ft container, the corner post load of the top castings of the 45 ft container are not to exceed a compression force of 404 kN. Consideration should be given to the strength of the container bottom structure to withstand the forces transmitted. No lashings are to be applied to the ends of the 45 ft container if stowed on top of a 40 ft unit. **9. 〈same as current〉**	

Current	Amendment	Notes
〈Guidance〉 Pt. 7 **Annex 7-3 Guidance for Car Ferries** **1. ~ 12. 〈omit〉** **13. Subdivision of passenger ferry and damage stability requirements** (1) 〈omit〉 (2) Damage stability requirements (A) ~ (E) 〈omit〉 (F) Unsymmetrical flooding (a) Unsymmetrical flooding is to be avoided as possible. (b) The equipments for correction of large angle of inclination due to unsymmetrical flooding is to be automatical as possible, and it is approved by the Society. (c) When the equipments specified in above (b) is cross flooding equipment, they are to be complied with the followings. (i) When the control devices are provided, they may be controlled upper of bulkhead deck. (ii) Equilibrium is to be completed in 15 min. and scantlings are to be complied with IMO Res.A266(Ⅷ) (including revision). (G) 〈omit〉	**〈Guidance〉 Pt. 7** **Annex 7-3 Guidance for Car Ferries** **1. ~ 12. 〈same as current〉** **13. Subdivision of passenger ferry and damage stability requirements** (1) **〈same as current〉** (2) Damage stability requirements (A) ~ (E) **〈same as current〉** (F) Unsymmetrical flooding (a) Unsymmetrical flooding is to be avoided as possible. (b) The equipments for correction of large angle of inclination due to unsymmetrical flooding is to be automatical as possible, and it is approved by the Society. (c) When the equipments specified in above (b) is cross flooding equipment, they are to be complied with the followings. (i) When the control devices are provided, they may be controlled upper of bulkhead deck. (ii) Equilibrium is to be completed in 15 min. and scantlings are to be complied with Res. MSC362(92). (G) **〈same as current〉**	

Current	Amendment	Notes
〈Guidance〉 Pt. 7 **Ch.5 Ships Carrying Liquefied Gases in Bulk** **Section 4 Cargo Containment**	**〈Guidance〉 Pt. 7** **Ch.5 Ships Carrying Liquefied Gases in Bulk** **Section 4 Cargo Containment**	
420. Construction processes 〈omit〉	**420. Construction processes** 〈same as current〉	
421. Type A independent tanks 【See Rule】 **1. ~ 2.** <omit〉 **3. Allowable stresses** (1) The "classical analysis procedures" referred to in the requirements in **421. 3** (1) of the Rules means the beam theory where the type of stress to be assessed is the combined stress of bending stress and axial stress. ~~(2) For the purpose of the requirements in **421. 3** (1) of the Rules, the allowable stress for the equivalent stress σ_e when detailed stress calculations are made on primary members is to be as given in **Table 7.5.7** of the Guidance.~~	**421. Type A independent tanks** 【See Rule】 **1. ~ 2.** <same as current 〉 **3. Allowable stresses** (1) 〈same as current〉 〈delete〉	
~~**Table 7.5.7 Allowable Stresses for the Primary Equivalent Stress**~~ ~~Ferrite steels~~ | ~~Austenitic steels~~ | ~~Aluminium alloys~~ ~~0.79 R_e~~ | ~~0.84 R_e~~ | ~~0.79 R_e~~ ~~0.53 R_m~~ | ~~0.42 R_m~~ | ~~0.42 R_m~~ ~~(Note)~~ ~~For each member, the smaller of the above values is to be used with R_e and R_m as specified in **418. 1** (3) of the Rules~~	〈delete〉	
4. ~ 5. <omit 〉 **422.~ 428.** 〈omit〉	**4. ~ 5.** <same as current 〉 **422.~ 428.** 〈same as current〉	

Current	Amendment	Notes
〈Guidance〉 Pt. 7 **Ch.5 Ships Carrying Liquefied Gases in Bulk** **Annex 7A-8 Guidelines for Safety Margin of Cargo Containment System** Ch. 2 SAFETY MARGIN Section 1 Type A Independent Tanks **101. Allowable stress for ultimate and accidental design conditions** The allowable nominal membrane stress for primary(web frames, stringers and girders) and secondary members(stiffeners) shall not exceed a lesser of 0.75R_e or 0.37R_m for nickel steels, carbon-manganese steels, austenitic steels and aluminium alloys. ~~The allowable primary equivalent stresses, σ_c defined in **418. 1.** (4) **Sec 4, Ch 5 Rules**, shall not exceed a lesser of 0.79R_e or 0.53R_m for nickel steels and carbon-manganese steels, a lesser of 0.84R_e or 0.42R_m for austenitic steels and a lesser of 0.79R_e or 0.42R_m for aluminium alloys.~~ **102. ~ 103. 〈omit〉** Section 2 ~Section 6 〈omit〉	〈Guidance〉 Pt. 7 **Ch.5 Ships Carrying Liquefied Gases in Bulk** **Annex 7A-8 Guidelines for Safety Margin of Cargo Containment System** Ch. 2 SAFETY MARGIN Section 1 Type A Independent Tanks **101. Allowable stress for ultimate and accidental design conditions** The allowable nominal membrane stress for primary(web frames, stringers and girders) and secondary members(stiffeners) shall not exceed a lesser of 0.75 R_e (= 1/1.33 R_e) or 0.37 R_m (=1/2.66 R_m) for nickel steels, carbon-manganese steels, austenitic steels and aluminium alloys. The allowable equivalent stresses, σ_c for plating (refer to **418. 1.** (4) **Sec 4, Ch 5 Rules)** shall not exceed a 0.83R_e (= 1/1.2 R_e). 〈delete〉 **102. ~ 103. 〈omit〉** Section 2 ~Section 6 〈omit〉	- 0.83 R_e (1/1.2 R_e) The equivalent stress σ_c shall be determined by: $\sigma_c = \sqrt{\sigma_x^2+\sigma_y^2+\sigma_z^2-\sigma_x\sigma_y-\sigma_x\sigma_z-\sigma_y}$