

Subject :

SOLAS 1994 Amendment :
Emergency Towing Arrangements
on Tankers

NKTECHNICAL INFORMATION

No. : 173

Date : 25 December, 1995

To: Shipowners and Shipbuilders

It should be noted that the new regulation V/15-1 of the SOLAS 1974 as adopted as SOLAS 1994 Amendments, requires that all tankers of not less than 20,000 DWT shall be fitted with an Emergency Towing Arrangement at bow and stern by the respective due date as specified by the regulation.

Requirements on the Emergency Towing Arrangements are determined supposing that the arrangements should be used in the following emergency situations;

- When explosion accident took place during loading/unloading operations, the tanker shall be moved away from the quay rapidly.
- When tanker became a dead-ship, the tanker shall be towed to a safe place or a repair yard.
- When tanker was stranded, the tanker shall be refloated by being towed.

The design and construction of the Emergency Towing Arrangements are indicated in the "Guidelines for Emergency Towing Arrangements on Tankers" annexed to the IMO Resolution MSC.35(63).

The texts of the new SOLAS regulations and the Resolution MSC.35(63) are enclosed herewith for your reference. (Annex 1,2)

The requirements of the SOLAS new regulations were adopted to the Society's rules and regulations as a class requirement.

Outlines of the requirements, deadlines for installation, and the Society's procedures are indicated in the attached "Guidance for Emergency Towing Arrangement on Tankers".

Shipowners concerned are, therefore, kindly requested to make necessary arrangement for individual ships by the date of deadline specified by the regulation.

We would like to ask your kind understanding our situation that we could not inform you of necessary informations and our guidance until today, since the international interpretations on technical requirements in the IMO Guidelines could not be established until recent days.

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For your reference, we enclosed herewith a list of the NK-approved Emergency Towing Arrangements (hereinafter called ETA) as of 25th December, 1995. (Annex 3)

A text of the IMO Res.A.535(13) referred to in the attached "Guidance for ETA on Tankers" by NK is also enclosed for your reference. (Annex 4)

You will understand the design and construction of ETA from the enclosed drawings of ETA which were type-approved or prototype-tested by the Society. (Annex 5)

Should you have any inquiries on the ETA, please do not hesitate to contact with Equipment and Material Department of Head Quarter.

..... THE END

Appendix : "Guidance for Emergency Towing Arrangements on Tankers" by NK
(Annex) "Appraisal on the Forward Emergency Towing Arrangements
for Compliance with Res.A.535(13)"

Attachments : -

Annex 1 : SOLAS 1994 Amendment, Reg.V/15-1

Annex 2 : IMO Resolution MSC.35(63)

Annex 3 : Current Status of ETA Type Approval (as of 25 Dec.1995)

Annex 4 : IMO Resolution A.535(13)

Annex 5 : Drawings of ETA (General Arrangement)

Guidance for Emergency Towing Arrangements on Tankers

25 December 1995

Nippon Kaiji Kyokai

This guidance for Emergency Towing Arrangements (hereinafter called ETA) was prepared for the purpose of giving the Society's detailed guidelines for installing ETA and for initial surveys and periodical surveys.

In order to facilitate a good understanding of the requirements concerning the ETA and related guidance, certain basic requirements in the SOLAS Regulations, IMO Res.MSC.35(63) and relevant NK Rule were unavoidably repeated in this Guidance.

1. Ships for which new Regulations are applied

The new regulations are applied to the following ships engaged in international voyages and of 20,000 DWT or over;

- (1) Oil tankers as defined in SOLAS II-1/2.12
- (2) Chemical tankers as defined in SOLAS VII/8.2
- (3) Gas Carriers as defined in SOLAS VII/11.2

2. Deadlines for Installation**(1) Newbuilding Tankers:-**

For Tankers constructed on or after 1 January 1996, the ETA shall be fitted by the date of the ship's completion (or delivery).

[Note] "Constructed" is defined as "keel-layed" or "similar stage".

(2) Existing Tankers:-

For tankers constructed before 1 January 1996, the ETA shall be fitted at the first scheduled dry-docking after 1 January 1996, but not later than 1 January 1999.

[Note](1) Even in case of newbuilding tankers, if their keels have been laid before 1 January 1996, those tankers are regarded as existing tankers under the new regulations.

- (2) In case where the first day of drydocking is before 1 January 1996, the ETA need not be fitted at that drydocking.

3. Type of ETA

Types of ETA in strength are classified as follows;

20,000 DWT $\leq$ ship < 50,000 DWT 1,000 KN Type
50,000 DWT $\leq$ ship 2,000 KN Type

4. Components of ETA

As indicated in the IMO Guidelines MSC.35(63), the major components of the ETA consist of the followings;

	<u>Forward ETA</u>	<u>Aft ETA</u>	<u>Strength requirement</u>
(1) Pick-up gear	Option	Yes	—
(2) Towing pennant	Option	Yes	Yes
(3) Chafing gear	Yes	Depending on design	Yes
(4) Fairlead	Yes	Yes	Yes
(5) Strongpoint	Yes	Yes	Yes
(6) Roller pedestal	Yes	Depending on design	—

5. ETA for Newbuilding Tankers

Newbuilding tankers as defined in the foregoing para.2 are required to install “ETA approved by the Society” on aft and forward.

Where “ETA approved by the Society” are those type-approved by the Society as explained in sub-para.(1) below, and also are those accepted by the Society as a result of our appraisals as explained in sub-para.(2) below.

(1) Where a manufacturer requests a Type Approval Certificate for a complete packaged ETA, the Society carries out a prototype test consisting of a strength test and a deployment test (refer to para.8(3) below).

Upon satisfactory results of those tests, the Society issues a Type Approval Certificate to the manufacturer.

For those ETA type-approved by the Society, a deployment test on board the individual ship is not required to be carried out provided that a general arrangement of the ETA on board the ship is similar to those in the original deployment test as a part of prototype test.

For further details of the Type Approval by the Society, refer to para 8. below.

(2) For ETA not type-approved by the Society, we may accept to install them on board on ship-by-ship basis provided that sufficient engineering analysis or calculations which demonstrate the ETA's

design and construction fulfill the requirements of the MSC.35(63), are submitted to our satisfaction.

If such analysis or calculations are deemed not sufficient enough or not appropriate, the Society will require to carry out necessary test(s). These appraisals will be carried out by the Equipment and Material Department.

By the way, as for the roller pedestal in the foregoing para.4(6), the Society will accept a non-approval type one provided that the Society is satisfied with the design and construction. For example, JIS F2048 type will be accepted.

6. ETA for Existing Tankers

Existing tankers defined in the foregoing para.2 are required to install, on the ship's aft, ETA approved by the Society on the basis of the Resolution MSC.35(63).

As for the ETA to be fitted on forward, if those ETA is newly fitted, those are to be of ETA which was approved by the Society on the basis of MSC.35(63).

However, if ETA is already installed on forward, and the ETA was appraised by the Society to comply with the requirements of the IMO Resolution A.535(13), the existing ETA may be retained. [Refer to MSC.35(63), 1.3]

Appraisal on the existing ETA for compliance with the Res.A.535(13) should be made on the basis of both Documentations and On-board Survey. If shipowners want to retain the existing ETA, the Society recommends shipowners to make application for appraisal based on Documentations prior to the On-board Survey (probably at the time of next dry-docking). When requested, the Society will issue a "Certificate of Compliance with IMO Res.A.535(13)" upon appraisal on the basis of Documentations.

For further details, refer to the annexd "Appraisal on the Forward Emergency Towing Arrangements for Compliance with Res.A.535(13)".

7. Equipment corresponding to OCIMF Single Point Mooring

Currently, a large number of existing tankers are equipped with bow chain stopper(s), fairlead(s) and roller pedestal(s) on bow in accordance with "OCIMF Recommendations for Equipment Employed in Mooring of Ships at Single Point Mooring".

Where these existing equipment is recognized to comply with the requirements of Res.A.535(13), these equipment may be retained as Emergency Towing Arrangements.

If shipowners wish to have the existing equipment recognized as ETA,

shipowners are requested to submit necessary documents to Hull Department of the Head Office in accordance with the procedures indicated in para.6 above.

By the way, since installation of the chafing chain and the standard bow shackle is not compulsory under the OCIMF Recommendations, those equipment are normally not installed on board. Therefore, it is necessary to newly supply a chafing chain and a standard bow shackle for compliance with the SOLAS new requirements.

8. Type Approval of ETA

Type approval of ETA by the Society is based on the Guidelines of MSC.35(63).

The Society's basic guidance on the type approval are as follows;

- (1) Type approval is not made to the individual components (e.g. strongpoint, fairlead), but made to a complete packaged towing arrangement.
- (2) For obtaining a type approval by the Society, certain company needs to become an applicant or coordinator, then make all of the necessary preparations including the design, compiling documents, and execution of prototype tests.
- (3) As a prototype test, the Society requires to carry out a strength test and a deployment test.
In the deployment test, the time needed for deploying ETA will be measured to confirm that the deployment time is less than 15 min. for aft ETA, and less than 1 hour for forward ETA.
In this deployment test, ETA shall be fitted on a real ship, and the test shall be carried out using a tug.

For further details, please contact with Equipment and Material Department of the Head Office.

9. Documents Approval before Installation of ETA

When installing ETA on board a tanker, shipowner or shipbuilder is requested to submit to NK Head Office, Hull Department the following documents (in triplicate) for approval; (For strength calculations, one copy is enough)

- (1) Specifications of ETA
(For those type-approved by the Society, manufacturer's name and type name are enough)
- (2) General arrangement of ETA
- (3) Drawings of hull structures in way of the strongpoint, fairlead, and

the towing pennant storage drum, together with associated strength calculations

- (4) Operation manual on ETA (for both Forward and Aft)

In the operation manual, action process in deploying forward ETA shall be clearly indicated, supposing the following two(2) cases; [Refer to MSC.35(63), 2.1]

- (a) in case where ship's main power is lost.
- (b) in case where ship's main power is available.

In the case (a) above, the operation manual may be prepared taking account of the availability of the winch power of the towing ship.

[Note] In case where "Certificate of Compliance with IMO Res.A.535(13)" was already issued to the ship, the shipowner needs not submit drawings, etc. again, but is requested to submit an operation manual for the Forward ETA.

10. Initial Survey on board when ETA is fitted

When ETA is fitted on board, our surveyor will carry out a survey to confirm the followings;

- (1) Components are those type-approved or approved by the Society.
- (2) Production tests have been carried out under attendance of the Society's surveyor or NK-recognized Classification Society's surveyor for the following components;
 - (a) Strongpoint made of cast steel or forged steel
 - (b) Fairlead made of cast steel
 - (c) Towing pennant
 - (d) Chafing chain, and standard bow shackle

[Note](1): Confirmation will be made by checking the production test certificates and inspection mark on the products.

(2): Installation of a standard bow shackle is compulsory under the IACS/UR (International Association of Classification Societies/Uniform Requirements)

- (3) Hull structures in way of the ETA have been reinforced in accordance with the approved drawings.
- (4) Arrangements of ETA including components' positions are correctly made in accordance with the approved drawings.
- (5) Markings on the components and storage box (or container) are properly made.

- (6) Operation manual is provided on board.
- (7) Proper function of the self-igniting light of pick-up gear marker buoy
- (8) Others for which attending surveyor deemed necessary

Where arrangements of a certain ship's ETA is significantly different from those of the deployment test at the time of the prototype test, the Society may require to carry out a deployment test on board the ship. This requirement will be shown in the "approval drawing" as our comment.

11. Periodical Surveys on ETA

11.1 Annual Survey and Intermediate Survey :-

At the annual survey and intermediate survey, the following surveys will be carried out;

- (1) General condition survey on the ETA as far as practicable
- (2) To confirm that the aft ETA is pre-rigged and maintained ready for rapid use
- (3) Confirmation on proper function of the self-igniting light fitted to the pick-up gear marker buoy
- (4) Others as deemed necessary by the attending surveyor

11.2 Special Survey :-

At the special survey, in addition to the surveys in 11.1 above, the pick-up gear, towing pennant, and chafing chain will be examined for deterioration. Where significant deteriorations were found, our surveyor may require to examine over full length of those components.

..... THE END

Annex : Appraisal on the Forward Emergency Towing Arrangements for Compliance with Res.A.535(13)

Appraisal on the Forward Emergency Towing Arrangements
for Compliance with Res.A.535(13)

1. Applicable ship

Oil tankers, chemical tankers and gas carriers of 50,000 tonnes deadweight and above constructed before 1 January, 1996.

2. Application

The applicant is requested to submit an application together with the necessary drawings/documents as indicated in 3. below to Hull Department of Head Office.

Application form is attached hereto.

3. Necessary drawings/documents

The following drawings/documents should be submitted for appraisal at least in triplicate. (As for calculation sheets, one copy for each is enough)

- 1) General arrangement of the forward ETA
(Positions of each component shall be exactly and clearly indicated)
- 2) Detailed drawings of the following components ;
(Material of each part, and dimensions shall be clearly indicated)
 - (a) Strongpoint
(For example : Tongue Type Chain Stopper, Hinged Bar Type Chain Stopper, Towing Bracket)
 - (b) Fairlead
 - (c) Roller Pedestal
- 3) Copy of "Production Test Certificate" of the following components ;
 - (a) Chafing Chain (with a Pear-shaped open Link)
 - (b) Standard Bow Shackle
- 4) Hull structures (reinforcement) in way of the strongpoint and the fairlead
[Note] Materials shall be clearly indicated.
- 5) Strength calculations of strongpoint
- 6) Strength calculations of hull structures

4. Strength standards

1) Strongpoint

- (a) Hinged bar type chain stopper ... JIS F2015 or equivalent
- (b) Tongue type chain stopper ... JIS F2031 or equivalent
- (c) Towing bracket ... JIS F2029 or equivalent

2) Hull Structures

- Allowable stress ... ultimate stress of material
- Load ... 4,000 KN

[Note] Supporting structure in the vicinity of fairlead is to be adequate against compressive buckling when the tensile force is applied on the fairlead in a direction of 90° sideway and 30° downward.

5. Compliance Certificate

As a result of the appraisal based on the documentations, if satisfied, the Society will issue "Certificate of Compliance with IMO Res.A.535(13)".

[Note] Since we will write down the reviewed drawing Nos. in the Compliance Certificate for identifying purpose, please put the drawing No. on each drawing.

6. On-board Survey (Class Survey)

Appraisal for Compliance with Res.A.535(13) will be completed when our surveyor confirmed the compliance with the Res.A.535(13) on board the ship after the "Appraisal based on the documentations".

In this on-board survey (class survey), our surveyor will confirm the followings ;

- (1) Arrangements of the ETA on board are identical with those in the drawing.
- (2) Each component fitted on board is identical with those in the drawings.
- (3) Hull reinforcement works in way of the ETA were done as same as the drawings.
- (4) Operation manual of the ETA is provided on board.

[Note] At the time of "Appraisal based on documentations", submission of the operation manual is not required.

However, at the time of class surveys (initial survey of ETA), it is compulsory to provide the operation manual on board.

Therefore, shipowners are kindly requested to prepare the operation manual by the date of initial survey.

—The End—

Attach : Application Form

**Application for Appraisal on the Forward Emergency Towing
Arrangements for Compliance with Res.A.535(13)**

To : Class NK
Hull Department

Date:

Applicant :
(address)

(Tel) (Fax)
Contact person :
(with signature)

We hereby request your appraisal on the Forward Emergency Towing Arrangements for compliance with Res.A.535(13) for below mentioned ship;

Name of ship / Class No.	/
Deadweight (DWT)	
Port of registry/Flag state	/
Date of keel laid	
Type of ship (delete as appropriate)	Oil tanker / Chemical tanker / Gas carrier
Attached Documents	1. General arrangement of the forward ETA* 2. Assembly drawing of strongpoint* 3. Assembly drawing of fairlead* 4. Assembly drawing of roller pedestal* 5. Copy of production test certificate of ;* ☐ chafing shain (with a pear-shaped open link) ☐ Standard bow shackle 6. Hull structures (reinforcement) in way of ETA* 7. Strength calculations of strongpoint 8. Strength calculations of hull structures in way of ETA 9. (Others, if any)

[Note] Drawings marked with * to be submitted in triplicate.

For other documents (i.e. calculations), one copy for each is enough

Regulation V/15-1 - Emergency towing arrangements on tankers

2 The following new regulation V/15-1 is added:

"Regulation 15-1

Emergency towing arrangements on tankers

(a) For the purpose of this regulation, tankers include oil tankers as defined in regulation II-1/2.12, chemical tankers as defined in regulation VII/8.2 and gas carriers as defined in regulation VII/11.2.

(b) An emergency towing arrangement shall be fitted at both ends on board all tankers of not less than 20,000 tonnes deadweight as defined in regulation II-1/3.21 constructed on or after 1 January 1996. For tankers constructed before 1 January 1996, such an arrangement shall be fitted at the first scheduled dry-docking after 1 January 1996, but not later than 1 January 1999. The design and construction of the towing arrangement shall be approved by the Administration, based on the guidelines developed by the Organization*."

* Refer to the Guidelines on emergency towing arrangements for tankers adopted by the Maritime Safety Committee of the Organization by resolution MSC.35(63).

ANNEX 7

Annex 2

RESOLUTION MSC.35(63)
(adopted on 20 May 1994)ADOPTION OF GUIDELINES FOR EMERGENCY
TOWING ARRANGEMENTS ON TANKERS

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO that the Assembly, at its thirteenth session, when adopting resolution A.535(13) concerning Recommendation on emergency towing requirements for tankers, requested the Committee to keep the Recommendation under review, in particular in respect to new towing concepts which may be introduced and to report as necessary to the Assembly,

NOTING that tankers, including oil tankers, gas carriers and chemical tankers, in emergencies such as complete mechanical breakdowns, may need to be towed out of danger, and that technologically advanced towing arrangements have been developed since the adoption of resolution A.535(13), whose provisions need revision to incorporate new towing concepts,

NOTING ALSO that the new regulation V/15-1 of the International Convention for the Safety of Life at Sea, 1974, as adopted by the Committee in May 1994, requires that all tankers of not less than 20,000 tonnes deadweight shall be fitted with an emergency towing arrangement, the design and construction of which shall be approved by the Administration based on the Guidelines developed by the Organization,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Ship Design and Equipment at its thirty-seventh session,

1. ADOPTS the Guidelines for Emergency Towing Arrangements on Tankers, the text of which is set out in the Annex to the present resolution and which supersedes resolution A.535(13);
2. RECOMMENDS that all Governments concerned take appropriate steps to implement the Guidelines.

ANNEX

GUIDELINES FOR EMERGENCY TOWING
ARRANGEMENTS ON TANKERS

1 PURPOSE

1.1 Under regulation V/15-1 of the 1974 SOLAS Convention, as amended by resolution MSC.31(63) in 1994, new and existing tankers of 20,000 tonnes deadweight and above shall be fitted with an emergency towing arrangement, the design and construction of which shall be approved by the Administration, based on the Guidelines developed by the Organization.

1.2 The present Guidelines are intended to provide standards for the design and construction of emergency towing arrangements which Administrations are recommended to implement.

1.3 For existing tankers fitted with the emergency towing arrangements in accordance with resolution A.535(13), the existing towing arrangements forward of the ship may be retained, but the towing arrangements aft of the ship should be upgraded to comply with the requirements of the present Guidelines.

2 REQUIREMENTS FOR THE ARRANGEMENTS AND COMPONENTS

2.1 General

The emergency towing arrangements should be so designed as to facilitate salvage and emergency towing operations on tankers primarily to reduce the risk of pollution. The arrangements should at all times be capable of rapid deployment in the absence of main power on the ship to be towed and easy connection to the towing vessel. Figure 1 shows arrangements which may be used as reference.

2.2 Towing components

The major components of the towing arrangements should consist of the following:

	<u>Forward of ship*</u>	<u>Aft of ship</u>	<u>Strength requirements</u>
Pick-up gear	optional	Yes	---
Towing pennant	optional	Yes	Yes
Chafing gear	Yes	Depending on design	Yes
Fairlead	Yes	Yes	Yes
Strongpoint	Yes	Yes	Yes
Roller pedestal	Yes	Depending on design	---

* See paragraph 3.1.4.

2.3 Strength of the towing components

- 2.3.1 Towing components as specified in 2.2 for strength should have a working strength of at least 1,000 kN for tankers of 20,000 tonnes deadweight and over but less than 50,000 tonnes deadweight, and at least 2,000 kN for tankers of 50,000 tonnes deadweight and over (working strength is defined as one half ultimate strength). The strength should be sufficient for all relevant angles of towline, i.e. up to 90° from the ship's centreline to port and starboard and 30° vertical downwards.
- 2.3.2 Other components should have a working strength sufficient to withstand the load to which such components may be subjected during the towing operation.

2.4 Length of towing pennant

The towing pennant should have a length of at least twice the lightest seagoing ballast freeboard at the fairlead plus 50 m.

2.5 Location of strongpoint and fairlead

The bow and stern strongpoint and fairleads should be located so as to facilitate towing from either side of the bow or stern and minimize the stress on the towing system.

2.6 Strongpoint

The inboard end fastening should be a stopper or bracket or other fitting of equivalent strength. The strongpoint can be designed integral with the fairlead.

2.7 Fairleads

2.7.1 Size

Fairleads should have an opening large enough to pass the largest portion of the chafing gear, towing pennant or towing line.

2.7.2 Geometry

The fairlead should give adequate support for the towing pennant during towing operation which means bending 90° to port and to starboard side and 30° vertical downwards. The bending ratio (towing pennant bearing surface diameter to towing pennant diameter) should be not less than 7 to 1.

2.7.3 Vertical location

The fairlead should be located as close as possible to the deck and, in any case, in such a position that the chafing chain is approximately parallel to the deck when it is under strain between the strongpoint and the fairlead.

2.8 Chafing chain

Different solutions on design of chafing gear can be used. If a chafing chain is to be used, it should have the following characteristics:

2.8.1 Type

The chafing chain should be stud link chain.

2.8.2 Length

The chafing chain should be long enough to ensure that the towing pennant remains outside the fairlead during the towing operation. A chain extending from the strongpoint to a point at least 3 m beyond the fairlead should meet this criterion.

2.8.3 Connecting limits

One end of the chafing chain should be suitable for connection to the strongpoint. The other end should be fitted with a standard pear-shaped open link allowing connection to a standard bow shackle.

2.8.4 Stowage

The chafing chain should be stowed in such a way that it can be rapidly connected to the strongpoint.

2.9 Towing connection

The towing pennant should have a hard eye-formed termination allowing connection to a standard bow shackle.

2.10 Prototype test

Designs of emergency towing arrangements in accordance with these Guidelines should be prototype tested to the satisfaction of the Administration.

3 READY AVAILABILITY OF TOWING ARRANGEMENTS

3.1 To facilitate approval of such equipment and to ensure rapid deployment, emergency towing arrangements should comply with the following criteria:

- .1 The aft emergency towing arrangement should be pre-rigged and be capable of being deployed in a controlled manner in harbour conditions in not more than 15 min.
- .2 The pick-up gear for the aft towing pennant should be designed at least for manual operation by one person taking into account the absence of power and the potential for adverse environmental conditions that may prevail during such emergency towing operations. The pick-up gear should be protected against the weather and other adverse conditions that may prevail.
- .3 The forward emergency towing arrangement should be capable of being deployed in harbour conditions in not more than 1 h.

- .4 The forward emergency towing arrangement should be designed at least with a means of securing a towline to the chafing gear using a suitably positioned pedestal roller to facilitate connection of the towing pennant.
 - .5 Forward emergency towing arrangements which comply with the requirements for aft emergency towing arrangements may be accepted.
 - .6 All emergency towing arrangements should be clearly marked to facilitate safe and effective use even in darkness and poor visibility.
- 3.2 All emergency towing components should be inspected by ship personnel at regular intervals and maintained in good working order.

VOID

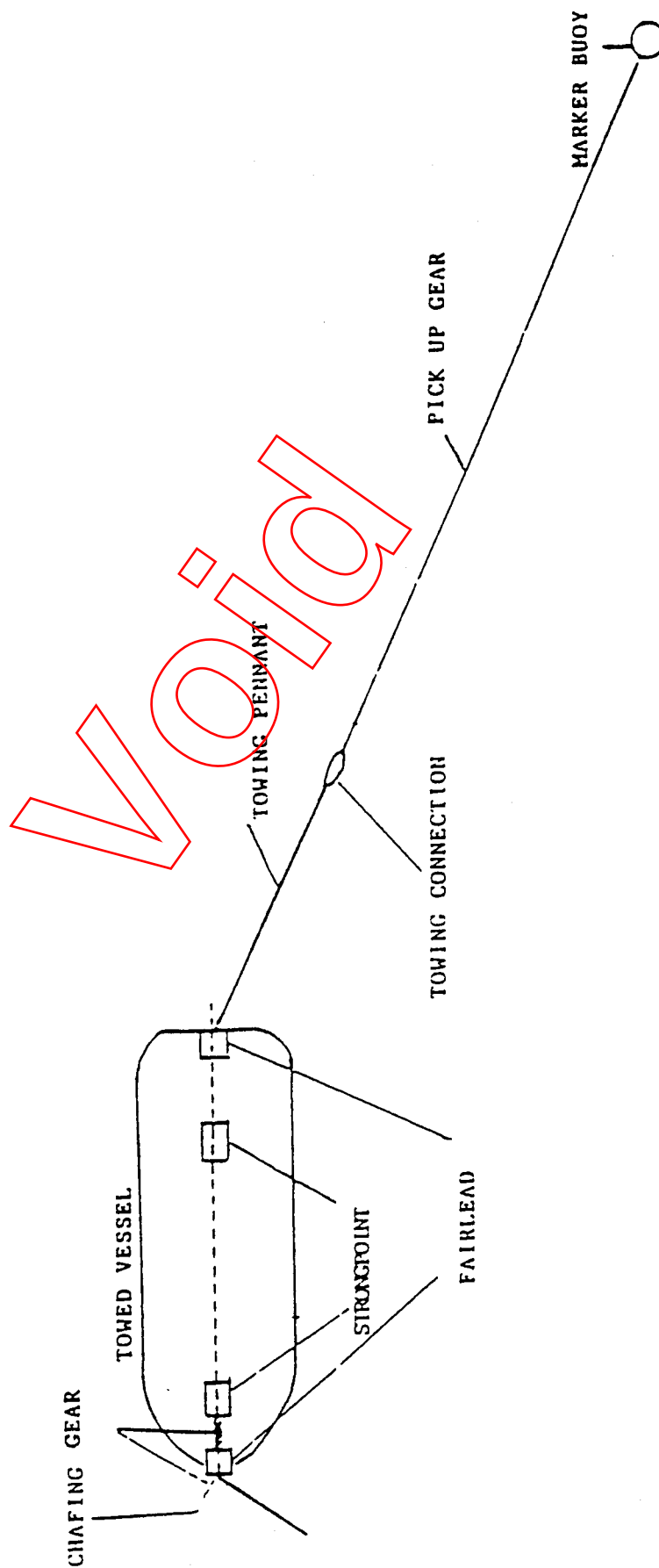


FIGURE 1 TYPICAL EMERGENCY TOWING ARRANGEMENTS

Current Status of Type Approval (as of 25 December 1995)

Nippon Kaiji Kyokai

Current status of the ETA type approval by the Society as of 25th December, 1995 are indicated in the Table-1 and Table-2 below;

1,000 KN Type ETA (20,000 DWT ≤ Ship < 50,000 DWT)

[Table-1]

Applicant	Type (Model)	Fitting Position	Prototype Test		Approval Status
			Strength T.	Deployment T.	
Kashiwa Co., Ltd.	TK20F	Forward	Passed	Passed	Type-Approved
	TK20A	Aft	Passed	Passed	Type-Approved
Mitsui Zosen Chiba Kiko Engineering Inc.	MMF-100	Forward	Passed	Preparing	waiting for deployment test
	MMA-100	Aft	Passed	Preparing	
Maritime Pusnes AS	ETS100-D	Aft	Passed	Preparing	waiting for deployment test

2,000 KN Type ETA (50,000 DWT ≤ Ship)

[Table-2]

Applicant	Type (Model)	Fitting Position	Prototype Test		Approval Status
			Strength T.	Deployment T.	
Kashiwa Co., Ltd.	TK40F	Forward	Passed	Passed	Type-Approved
	TK40A	Aft	Passed	Passed	Type-Approved
Fukushima Ltd.	FH20F	Forward	Passed	Preparing	waiting for deployment test
	FH20A	Aft	Passed	Prepaeing	
Mitsui Zosen Chiba Kiko Engineering Inc.	MMF-200	Forward	Passed	Preparing	waiting for deployment test
	MMA-200	Aft	Passed	Preparing	
Maritime Pusnes AS	ETS200-D	Aft	Continuing the test	Preparing	

Full style of each applicant and their contact offices are as follows;

- (1) Kashiwa Co., Ltd.
5-4, Takanawa 4-chome, Minato-ku, Tokyo, Japan 108
(Tel) +81-3-5449-2431 (Fax) +81-3-5449-2430

Contact Office : Same as above

- (2) Fukushima Ltd.
9-80, Mikawakitamachi, Fukushima, Fukushima Pref., Japan 960
(Tel) +81-245-34-3149 (Fax) +81-245-33-8318

Contact Office : Fukushima Ltd., Tokyo Office, Sales Division
Sales Division, Marine Sales Dept.
4, Yonban-cho, Chiyoda-ku, Tokyo, Japan 102
(Tel) +81-3-3265-3161 (Fax) +81-3-3264-5764

- (3) Mitsui Zosen Chiba Kiko Engineering Inc.
1, Yahata-Kaigandori, Ichihara, Chiba Pref., Japan 290
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Agent : Mitsui O.S.K. Kogyo Kaisha, Ltd.
Mitsui-Bekkan Bldg.,
1-20, Nihonbashi-Muromachi 3-chome,
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RESOLUTION A.535(13)

*Adopted on 17 November 1983
Agenda item 10(b)*

RECOMMENDATION ON EMERGENCY TOWING
REQUIREMENTS FOR TANKERS

THE ASSEMBLY,

RECALLING Article 16(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations concerning maritime safety,

NOTING that ships carrying oil, liquefied gases or other hazardous liquids in bulk (referred to hereinafter as tankers), in emergencies such as complete mechanical breakdowns, may need to be towed out of danger,

RECOGNIZING that some existing tankers are equipped with special fittings for use at single-point moorings which may be suitable for emergency towing,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its forty-eighth session,

1. ADOPTS the Recommendation on Emergency Towing Requirements for Tankers, the text of which is set out in the Annex to this resolution;
2. RECOMMENDS that all Governments concerned take appropriate steps to give effect to the Recommendation as soon as possible;
3. REQUESTS the Maritime Safety Committee to keep the Recommendation under review, in particular in respect to new towing concepts which may be introduced and to report as necessary to the Assembly.

ANNEX

RECOMMENDATION ON EMERGENCY TOWING
REQUIREMENTS FOR TANKERS

1. PURPOSE

The purpose of this Recommendation is to facilitate salvage and emergency towing operations on new and existing tankers primarily to reduce the risk of pollution. The Recommendation recognizes the need for harmonization of components in the towing system and uses as a reference the system shown in figure 1. The major components of the system are the tug or towing vessel; the towline; the pennant; the chafing chain; the fairlead and the towing gear connection or strongpoint on the vessel to be towed. The system should facilitate ease of connection and should be capable of being connected and released on board the towed vessel in the absence of main power. The system should be standardized at the point of connection of the towline to the chafing chain.

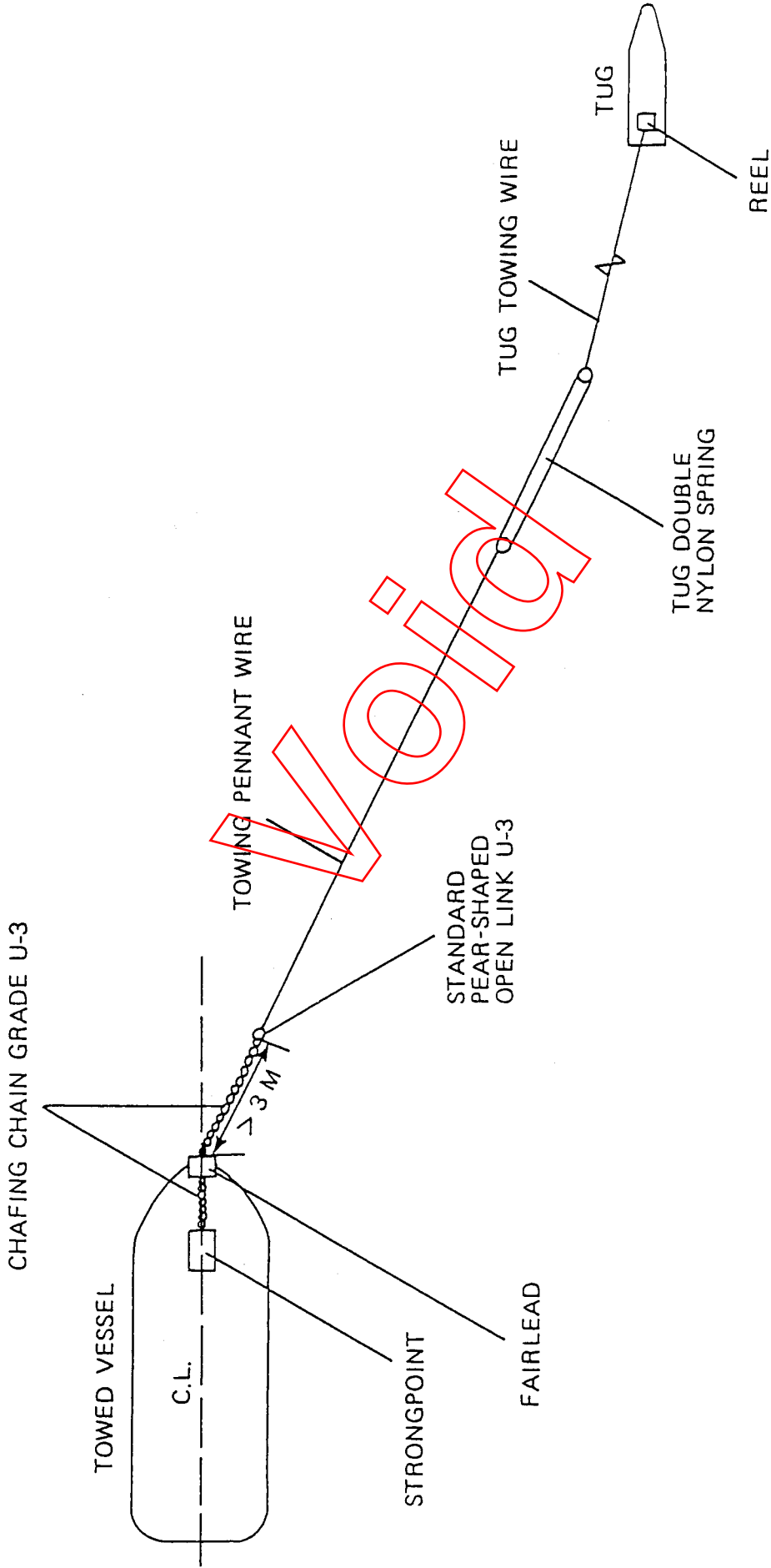


Figure 1 Example of tanker towed from the bow

2 REQUIREMENTS

2.1 Application

All tankers greater than 50,000 tonnes deadweight built after adoption of this resolution should be fitted with emergency towing arrangements at the bow and stern. All tankers greater than 100,000 tonnes deadweight built before adoption, should be fitted with emergency towing positions at the bow and stern at the first scheduled drydocking following adoption but not later than five years after adoption. Each towing position should be fitted with a strongpoint, chafing chain and fairlead.

2.2 Strength of towing system components

Towing system components (strongpoint, chafing chain, fairlead and supporting structure) should have a working strength of at least 2000 kN (working strength is defined as one half ultimate strength). The strength should be sufficient for all angles of towline up to 90° from the ship's centreline.

2.3 Location of strongpoint and fairlead

The bow and stern strongpoint and fairleads should be located so as to facilitate towing from either side of the bow or stern and minimize the stress on the towing system. The axis of the towing gear should, as far as practicable, be parallel to and not more than 1.5 m from either side of the centreline. The distance between the strongpoint and the fairlead should be not less than 2.7 m and not more than 5 m.

2.4 Strongpoint

The towing connection should be a stopper or bracket or other fitting of equivalent strength and ease of connection to the satisfaction of the Administration.

2.5 Fairleads

- .1 *Size* Fairleads should have an opening large enough to pass the largest portion of the chafing chain, towing pennant or their connections. The minimum opening should be an oval with horizontal axis of at least 600 mm and vertical axis of 450 mm.
- .2 *Type* Fairleads should be constructed so that the chafing chain will be constrained within the fairlead during the towing operation.
- .3 *Geometry* Fairleads should be configured to avoid the risk of fouling when a strain is taken on the chain and to minimize the reduction in strength of the chafing chain when the chain is at a 90° angle to the fairlead. The ratio of the fairlead chain bearing surface diameter to chain diameter should be at least 7:1. The outboard lips of the fairleads should as far as practicable be flush with the bulwarks. The inboard end of the fairlead should be fitted to avoid fouling of any part of the towing system when under load or being handled.
- .4 *Vertical location* The fairleads should be located as close as possible to the deck and, in any case, in such a position that the chafing chain is approximately parallel to the deck when it is under strain between the strongpoint and the fairlead.

2.6 Chafing chain

- .1 *Stowage* The chafing chain should be stowed in such a way as to be rapidly connected to the strongpoint.

- .2 *Length* The chafing chain should be long enough to ensure that the towing pennant remains outside the fairlead during the towing operation. A chain extending from the strongpoint to a point at least 3 m beyond the fairlead should meet this criterion.
- .3 *Construction* The chafing chain should be 76 mm in diameter, grade U-3, stud link chain.
- .4 *Connecting links* One end of the chafing chain should be suitable for connection to the strongpoint. The other end should be fitted with a standardized pear-shaped open link with the dimensions shown in figure 2. Connecting links should be constructed of grade U-3 steel.

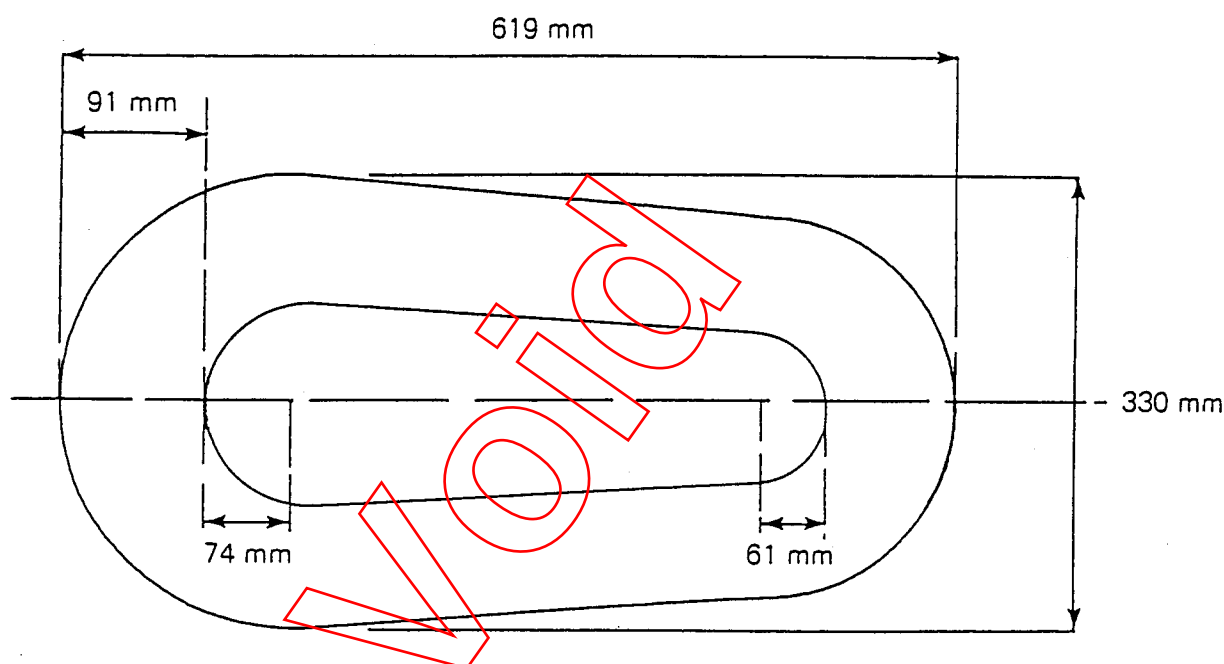


Figure 2 — Standardized pear-shaped link

2.7 Fittings for connection

Tankers should be fitted in the bow and stern with suitable fittings which facilitate passing the towing pennant from the rescue vessel using the rescue vessel's power.

3 INFORMATION TO BE AVAILABLE FOR A TOWING VESSEL

3.1 Any ship requiring towing assistance should have available on board information concerning emergency towing arrangements at the bow and stern. A standard list of such information is given in the appendix to this Recommendation.

3.2 This information should be displayed permanently on the navigating bridge or be otherwise readily available for immediate transmission to the towing vessel.

4 EXISTING TANKERS

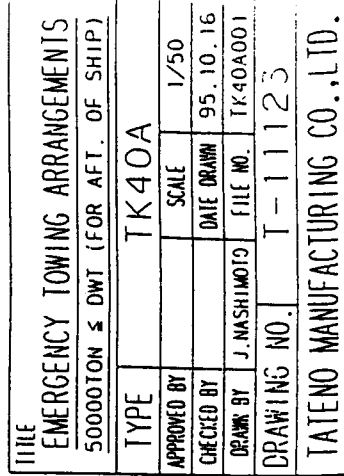
When considering the requirements in paragraph 2 for tankers greater than 100,000 tonnes deadweight built before adoption of this Recommendation, the Administration should take into account existing fittings and arrangements and permit their use wherever reasonable and practicable. Notwithstanding the above, the requirements in paragraph 2.6.4 should be maintained.

APPENDIX

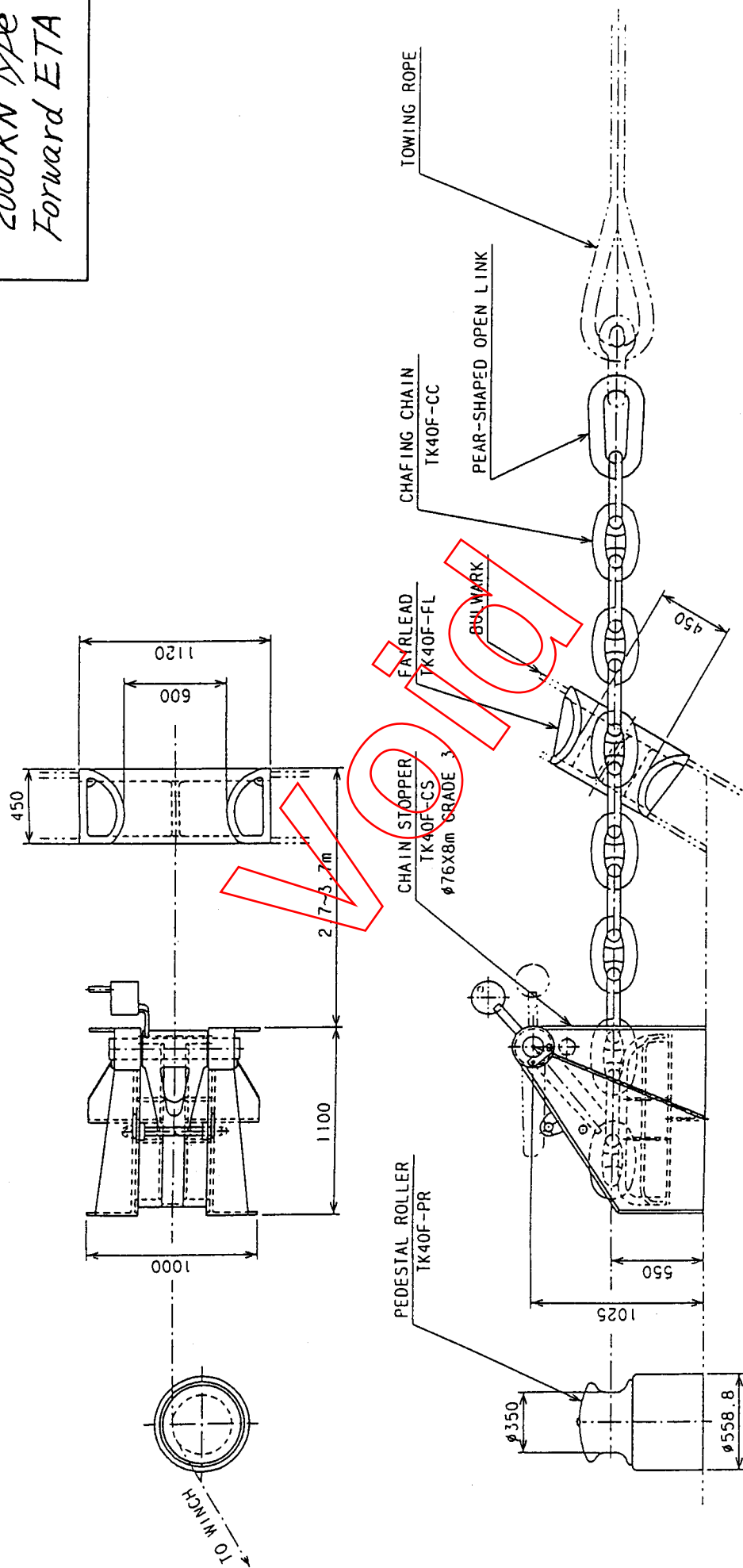
LIST OF INFORMATION TO BE TRANSMITTED
TO THE TOWING SHIP

- 1 Usable strongpoints
 - Type
 - Dimensions
 - Working strength in tonnes (one half ultimate strength)
 - 1.1 For a stopper
 - Maximum and minimum size of chain accepted.
 - 1.2 For a towing bracket
 - Clearance width between side plates
 - Length and thickness of towing bracket pin
 - Clear distance between pin and base plate
 - Distance between back of pin and front of side plates
 - 1.3 For bitts (ships not fitted with special strongpoint)
 - Diameter of bitts
 - Possibility of using two pairs of bitts simultaneously
 - Working strength in tonnes (one half ultimate strength)
- 2 Fairleads
 - Type
 - Internal dimensions (dimensions of horizontal and vertical axes)
 - Distance between fairlead and strongpoint
 - Position in relation to ship's centreline and deck
- 3 Other components available on board
 - 3.1 Existence of a chafing chain
 - Diameter
 - Grade
 - Length beyond fairlead
 - Dimensions of open link
 - 3.2 Existence of a towing pennant wire
 - Diameter
 - Length
 - Strength
 - 3.3 Other components, if any
 - Possibility of using ship's winches in order to haul a towing wire on board.

2000 kN Type
Aft ETA

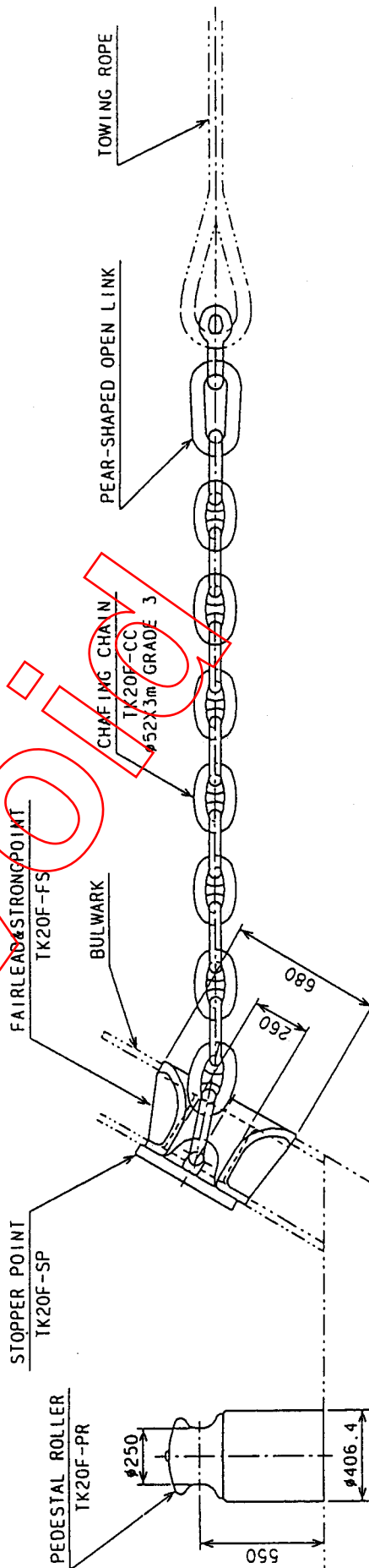
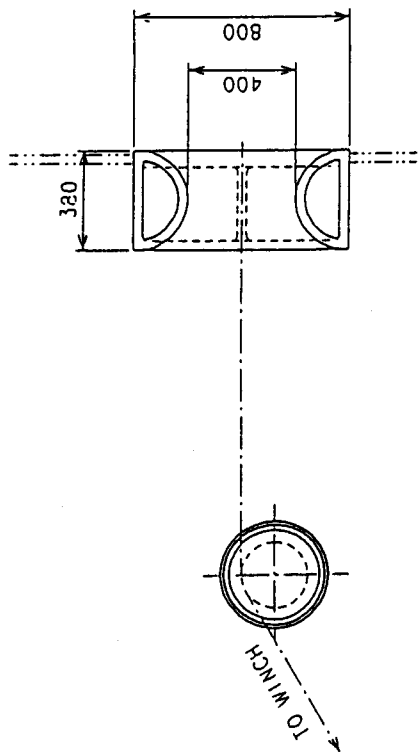


2000 kN Type
Forward ETA



FILE		EMERGENCY TOWING ARRANGEMENTS		(FOR FWD. OF SHIP)	
TYPE		TK40F			
APPROVED BY		SCALE		1/25	
CHECKED BY		DATE DRAWN		95. 9. 22	
DRAWN BY	J. NASHIIHOTO	FILE NO.		TK40F001	
DRAWING NO.		T-11198			
TATENO MANUFACTURING CO., LTD.					

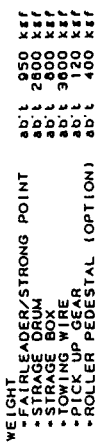
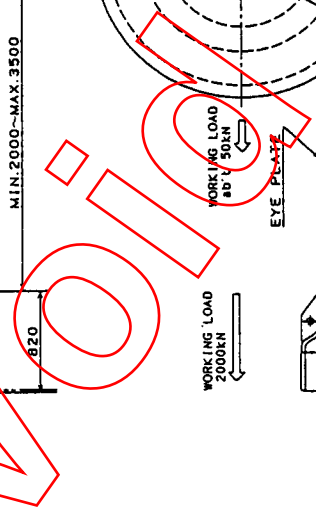
ANNEX-5(3)
1000kN Type
Forward ETA



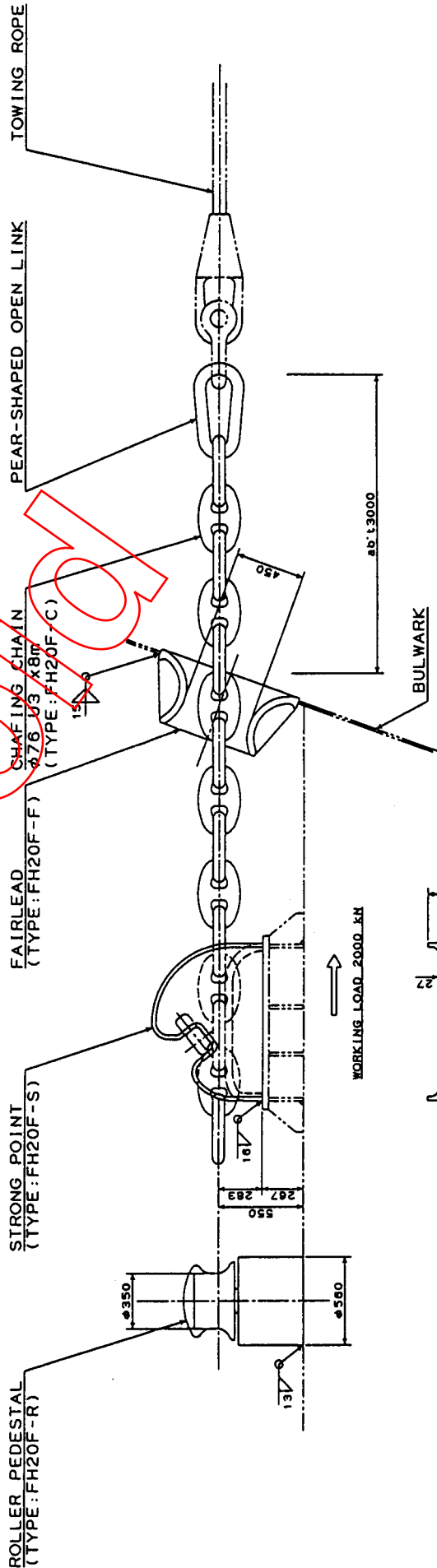
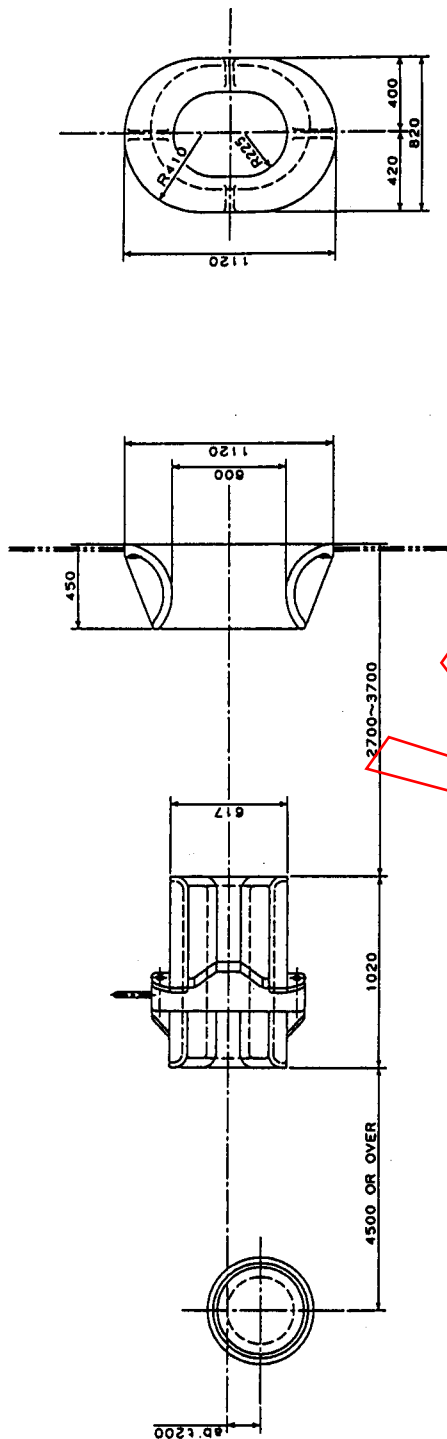
TITLE
EMERGENCY TOWING ARRANGEMENTS
20000DWT<50000TON (FOR FWD. OF SHIP)

TYPE	TK20F		
APPROVED BY		SCALE	1/20
CHECKED BY		DATE DRAWN	95.9.2
DRAWN BY	J. NASHIMOTO	FILE NO.	TK20F001
DRAWING NO.	T-11139		
TATENO MANUFACTURING CO., LTD.			

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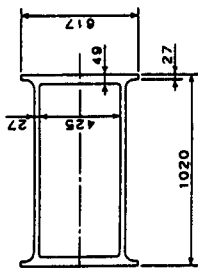
[illegible]

ANNEX-5(5)
2000kN Type
Forward ETA



ORDER NO.	SCALE	DATE OF DRAWING	DESIGNER	ASSEMBLY NO.	PROJECTION
1: 20	1: 20	SEP. 25. 1995	TYPE FH20F	LIST NO.	FH20F 型
APPROVED	APPROVED	SEP. 25. 1995	EMERGENCY TOWING ARRANGEMENT FOR FORWARD		船首用非常曳航設備
CHECKED	CHECKED		GENERAL ARRANGEMENT		全体配置図
IN CHARGE	IN CHARGE				
DRAWN	DRAWN				

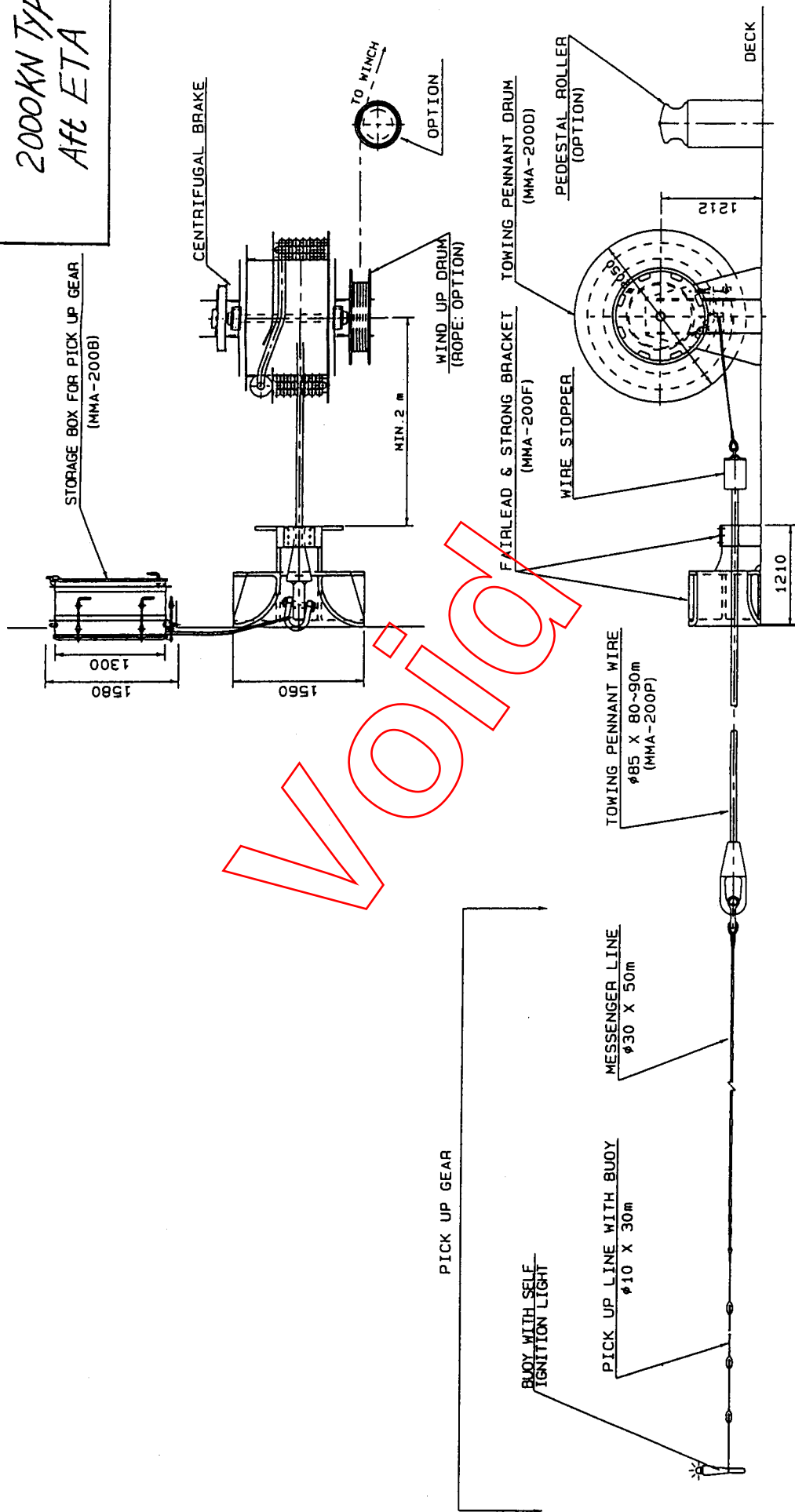
WEIGHT
*CHAIN STOPPER 600 kgf
*FAIRLEAD 380 kgf
*PEDESTAL ROLLER 380 kgf
*CHAFING CHAIN 1100 kgf



FUKUSHIMA LTD. 2H35124
FUKUSHIMA JAPAN

ANNEX-5(6)

2000kN Type
Aft ETA



SHIP NO.

OWNER

DRAWING NAME

GENERAL ARRANGEMENT
(FOR AFT SIDE)

TYPE NO.

MMA-200

DRAWING NO.

M-A2001

JOB NO.

SCALE

1/50

DATE

95.09.01

DESIGN ENGINEERING DIV.

APPROVED BY

CHECKED BY

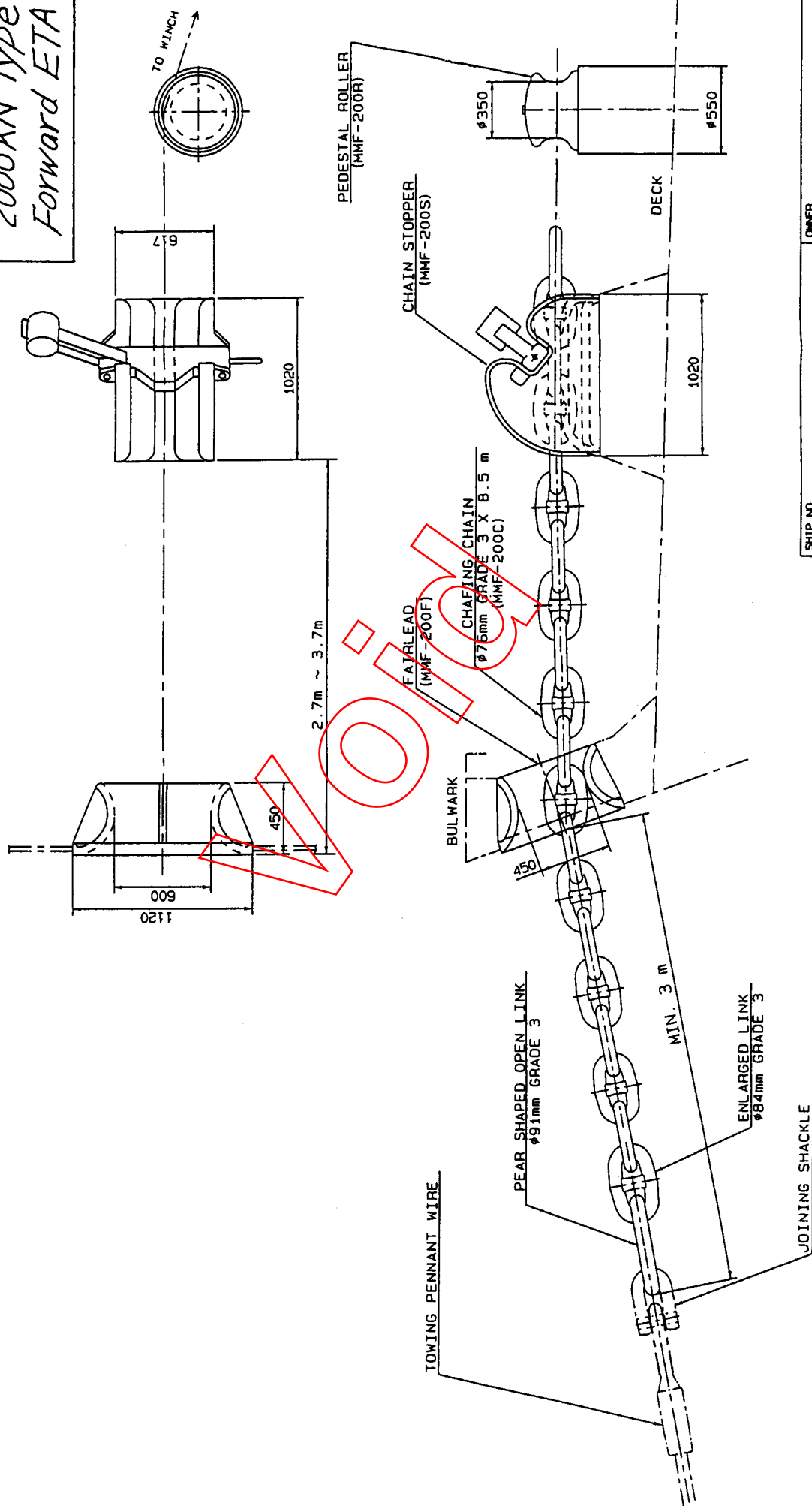
DRAWN BY

Y. Suzuki

MIITSUI ZOSEN CHIBA KIKO ENGINEERING INC.

ANNEX - 5(7)

2000kN Type
Forward ETA



SHIP NO.

OWNER

DRAWING NAME

GENERAL ARRANGEMENT
(FOR BOW SIDE)

TYPE NO.

MMF-200A

DRAWING NO.

M-F2001

JOB NO.

SCALE

DATE

95.09.01

DESIGN ENGINEERING DIV.

APPROVED BY

CHECKED BY

DRAWN BY



SHIBATA MITSUI ZOSSEN CHIBA KIKO ENGINEERING INC.