

Offshore containers and associated lifting sets —

Part 3: Periodic inspection, examination and testing

The European Standard EN 12079-3:2006 has the status of a
British Standard

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National foreword

This British Standard is the official English language version of EN 12079-3:2006. Together with BS EN 12079-1:2006 it supersedes BS EN 12079:1999 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee TW/1, Freight containers and swap bodies, which has the responsibility to:

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Foreword

This document (EN 12079-3:2006) has been prepared by Technical Committee CEN/TC 280 "Offshore containers and associated lifting sets", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2006, and conflicting national standards shall be withdrawn at the latest by October 2006.

This document, together with EN 12079-1:2006, supersedes EN 12079:1999.

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1 Scope

This part of EN 12079 specifies requirements for the periodic inspection, examination and testing of offshore freight and service containers, built in accordance with EN 12079-1, with maximum gross mass not exceeding 25000 kg and their associated lifting sets, intended for repeated use to, from and between offshore installations and ships. Inspection requirements following damage and repair of offshore containers are also included.

Other parts of the standard are:

EN 12079-1, *Offshore containers and associated lifting sets - Part 1: Offshore container – Design, manufacture and marking*

EN 12079-2, *Offshore containers and associated lifting sets - Part 2: Lifting sets – Design, manufacture and marking*

Guidance as to the knowledge and experience required by those responsible for carrying out periodic inspection and testing is given in Annex A 'Recommended knowledge and experience of staff responsible for inspection of offshore containers'.

Guidance on pre-trip inspections is given in Annex B 'Recommended knowledge and experience of staff responsible for inspection of lifting sets intended for use with offshore containers'.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12079-1:2006, *Offshore containers and associated lifting sets — Part 1: Offshore containers — Design, manufacture and marking*

EN 12079-2:2006, *Offshore containers and associated lifting sets — Part 2: Lifting sets — Design, manufacture and marking*

EN 473, *Non-destructive testing - Qualification and certification of NDT personnel - General principles*

EN 571-1, *Non-destructive testing - Penetrant testing - General principles*

EN 818-4:1996, *Short link chain for lifting purposes - Safety - Part 4:Chain slings - Grade 8*

EN 818-6, *Short link chain for lifting purposes - Safety - Part 6:Chain slings - Specification for information for use and maintenance to be provided by the manufacturer*

EN 970, *Non-destructive examination of fusion welds - Visual examination*

EN 1289, *Non-destructive examination of welds - Penetrant testing of welds - Acceptance levels*

EN 1290, *Non-destructive examination of welds - Magnetic particle examination of welds*

EN 1291, *Non-destructive testing of welds - Magnetic particle testing of welds - Acceptance levels*

EN 1435, *Non-destructive examination of welds - Radiographic examination of welded joints*

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EN 1712, *Non-destructive examination of welds - Ultrasonic examination of welded joints - Acceptance levels*

EN 1714, *Non destructive examination of welds - Ultrasonic examination of welded joints*

EN 12517-1, *Non-destructive testing of welds - Part 1: Evaluation of welded joints in steel, nickel, titanium and their alloys by radiography - Acceptance levels*

EN 13414-2, *Steel wire rope slings - Safety - Part 2: Specification for information for use and maintenance to be provided by the manufacturer*

EN 30042, *Arc-welded joints in aluminium and its weldable alloys - Guidance on quality levels for imperfections (ISO 10042:1992)*

EN ISO 3834-2, *Quality requirements for fusion welding of metallic materials - Part 2: Comprehensive quality requirements (ISO 3834-2:2005)*

EN ISO 5817, *Welding - Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) - Quality levels for imperfections (ISO 5817:2003)*

EN ISO/IEC 17020, *General criteria for the operation of various types of bodies performing inspection (ISO/IEC 17020:1998)*

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in EN 12079-1:2006 and the following apply.

3.1

owner

legal owner of the offshore container or the delegated nominee of that body

3.2

visual inspection

inspection of the characteristics of a product and determination of its conformity with specified requirements where applicable, and based on professional judgement where general requirements apply

3.3

visual examination

examination in accordance with EN 970

4 Symbols

R The rating i.e. the maximum gross mass of the container including permanent equipment and cargo but excluding the lifting set, in kg;

T The tare mass, i.e. the mass of an empty container including any permanent equipment excluding cargo and lifting set, in kg;

P The payload, i.e. the maximum permissible mass of cargo which may be safely transported by the container, in kg.

NOTE 1 $P = R - T$

NOTE 2 R , T and P are, by definition, in units of mass, kilograms (kg). Where design requirements are based on the gravitational forces derived from these values, those forces are indicated thus: Rg , Tg and Pg the units of which are in newtons or multiples thereof.

5 Container inspection plate

5.1 General

Containers shall be fitted with a plate carrying the information specified in 5.2.

The plate shall be made of corrosion resistant material securely attached externally in a manner designed to avoid unauthorized or accidental removal. The plates shall be fitted to a door, or, on containers with no doors, in a prominent position.

Aluminium rivets have been found to be unsuitable as a fixing method in the offshore environment and shall not be used. The information on the plate shall be in the English language (see Note).

The text shall be permanently and legibly marked on the plates in characters not less than 4 mm high.

NOTE Provision for an additional language may be made.

5.2 Contents of inspection plate

The plate shall be headed "OFFSHORE CONTAINER INSPECTION PLATE - EN 12079-3: 2006"

The plate shall contain the following information:

- a) owner's container number;
- b) owner's name;
- c) date of last inspection.

The date of last inspection shall be the date on which the most recent inspection was carried out to the satisfaction of the competent person.

To avoid confusion, the plate shall not carry the date of the next inspection. Provision shall be made on the plate to facilitate permanent marking to record a minimum of nine inspections.

NOTE 1 For marking of the inspection plate see Clause 10.

NOTE 2 A recommended format for the plate is shown in Figure 1.

OFFSHORE CONTAINER INSPECTION DATA		
Container no.:		
Owner:		
Inspections:		
1		
2		
3		
4		
10		

NOTE The information required for the inspection plate may be combined with the Offshore Container Data Plate (see EN 12079 - 1).

Figure 1 — Example of Inspection Plate

6 Schedule of periodic inspection/ examination and test — containers

Containers and lifting sets shall be periodically inspected, examined and if necessary tested in accordance with the schedule listed in Table 1, by an inspection body meeting the requirements of EN ISO/IEC 17020.

NOTE 1 Guidance as to the recommended knowledge and experience of staff responsible for inspections for the purposes of EN ISO/IEC 17020 is given in Annex A.

When the schedule includes a lifting test, the non-destructive examination and visual inspection shall both be carried out after the lifting test.

NOTE 2 The inspection body may require other or additional inspections, examinations and or tests.

Table 1 — Schedule of periodic inspection, examination and testing of containers

Time or interval	Inspection/ examination/ test			
	Lifting test	Non-destructive examination (NDE)	Visual inspection	Suffix to be marked on plate See Clause 10
Initial certification	As required by EN 12079-1			
At intervals not exceeding 12 months	Not applicable ^b	Not applicable ^b	Yes	V
At intervals not exceeding 48 months	Not applicable ^b	Yes	Yes	VN
After substantial repair or alteration ^a	Yes	Yes	Yes	T
^a A substantial repair or alteration means any repair and/or alteration carried out, which may, in the opinion of an inspection body, affect the primary elements of the offshore container, or elements which contribute directly to its structural integrity. ^b The inspection body may require other or additional inspections, examinations and or tests.				

7 Container lifting test

7.1 General

The container shall be loaded to give a total mass of $2,5 R$ and lifted using all the pad eyes.

NOTE This total mass may be obtained by putting in an internal test mass of $2,5 R-T$.

The test masses/test load shall normally be evenly distributed inside the container. If it is not possible to place the entire test mass inside the container, some of it may be placed outside or under the container, provided that this gives a loading on the structure similar to the distribution of the container loading in operating condition.

If the container has an additional cargo deck, the test mass/ test load shall be evenly divided between the floor and the additional deck. If the additional deck is removable, it will be necessary to carry out the test with the test mass/ test load divided between the additional deck and the floor, as well as with the whole test mass/ test load on the floor.

The container shall be lifted by a lifting set with an angle to the vertical equal to the design angle and shall be held, clear of the ground, throughout the test.

Where the lifting set, intended for use with the container, is used for the lifting test, care should be taken to ensure that no overloading, deformation or distortion is induced in the lifting set. Should the lifting set normally fitted to the container be used for the lifting test it shall be visually inspected after the load test by an inspection body as per the requirements of this standard.

The container shall be carefully lifted in such a way that no significant acceleration forces occur. It shall be held for 5 minutes before measurements are taken.

No deflections during testing shall be greater than 1/300 of the span of the member. The offshore container shall show no permanent deformation or other damage after testing.

7.2 Test equipment and calibration

The force shall be applied using calibrated weights and lifting the container by a lifting appliance or by means of a suitable test rig (see EN 12079-1:2006, 7.3.2).

8 Non-destructive examination of welds

8.1 General

The NDE of welds on pad eyes and adjoining structures shall be carried out in accordance with the schedule of examination and tests specified in Table 1.

NOTE Alternative or additional examination may be required by the inspection body.

8.2 Non-destructive examination (NDE) methods

NDE methods, see Table 2, shall be chosen with due regard to the conditions influencing the sensitivity of the methods. Structural welds shall be examined as stipulated in columns I to IV of Table 7 in EN 12079-1 with the method in columns III or IV being employed in the event that such is relevant.

Table 2 — Standards relevant to NDE methods

Visual	Magnetic particle	Dye Penetrant	Ultrasonic	Radiography
EN 970	EN 1290	EN 571-1	EN 1714	EN 1435

Table 3 - NDE acceptance criteria

Visual	Magnetic Particle	Dye Penetrant	Ultrasonic	Radiography
EN ISO 5817 ^a	EN 1291	EN 1289	EN 1712	EN 12517-1
Level B	Level 1	Level 1	Level 2	Level 1
^a for aluminium EN 30042				

8.3 Non-Destructive Examination (NDE) Operators

NDE Operators shall be qualified, in accordance with EN 473, to a minimum of level 2.

NDE operators shall undertake non-destructive examination in accordance with Table 2 and issue reports describing quality, containing the following information as a minimum:

- number of repairs carried out to meet the specified acceptance standard;
- NDE methods and procedures used;
- NDE-parameters necessary for a proper assessment;
- confirmation of acceptance or rejection.

9 Visual inspection

9.1 General

The visual inspection shall be of the exterior and the interior of the container without cargo to ensure that the container is fit for its intended use. All load bearing parts, especially the base structure, shall be inspected. For containers with fixed equipment, the inspection body shall determine whether access to load bearing parts is adequate.

The inspection shall be carried out in a situation providing sufficient lighting and other facilities necessary to allow it to be carried out safely and effectively. The facility shall include suitable means of lifting and supporting the container for the purposes of inspecting the under-side.

9.2 Markings

The markings and plates shall be checked to ensure that they meet the requirements of EN 12079-1 and Clause 5 of this standard.

9.3 Welds

Welds in the primary structure shall be visually inspected to ensure freedom from visible defects.

9.4 Pad eyes and lashing points

All pad eyes and lashing points shall be visually inspected for distortion, mechanical damage or any other sign of distress or overload.

9.5 Structure

The structure shall be visually inspected for corrosion, mechanical damage or injurious deformation.

9.6 Door closures

Doors, frames, seals, hinges, locks, etc shall be visually inspected and functionally checked to ensure that they operate in a satisfactory manner without undue force being required.

9.7 Floor

The floor shall be visually inspected to check that it is not deformed and that it shows no signs of distress or overload. Drainage facilities, where fitted, shall be inspected, e.g. drain holes shall be clear of debris.

10 Marking of the inspection plate

On satisfactory completion of the inspection, examination and when applicable, test(s), the plate shall be permanently marked, in accordance with Table 1, as follows:

- The date (YYYY-MM-DD) of the inspection, examination and when applicable, test(s) together with the unique identification mark of the competent person together with either:
 - suffix T; indicating proof load test, non-destructive examination, and visual inspection; or
 - suffix VN; indicating non-destructive examination and visual inspection; or
 - suffix V; indicating visual inspection only.

11 Inspection report

When, in the opinion of the inspector, a container is suitable for service a report shall be issued to the owner. This report shall contain the following information (as a minimum):

- container identification (including owner's container number);
- name of owner or delegated nominee;
- report number;
- statement that the container is suitable for service;
- total gross mass in kg, applicable to the all points lifting test and the method of test (where relevant);
- details of NDE carried out (where relevant);
- statement that the container described was inspected/ examined and or tested and that the particulars are correct;
- reference, where appropriate, to any report issued to the owner arising from the process;
- confirmation that the Inspection Plate was marked; date of examination (date of signature or report also to be shown if different from date of examination);
- name of organization, name of the person and authentication by the person carrying out the inspection/ examination or test either by signature or other secure means;
- comments on any limits to the scope of inspection.

NOTE 1 Details of the examination of the lifting set may also be given on the Inspection Report for the container.

NOTE 2 This report may be combined with the initial Certificate of Conformity.

12 Pre-trip inspections

Immediately before transporting a container offshore and before its return trip, the container shall be inspected by a person, appointed by the user. The user shall ensure that the person appointed is competent for this purpose.

The appointed person shall check the validity of the certification by reference to the inspection plate, and verify that the container, including its lifting set, is free from obvious defects rendering it unfit for use.

The appointed person shall confirm, by signature and date, that the inspection has been carried out in accordance with the minimum requirements given in Table 4 and that the container and lifting set comply with all elements before being released for shipment. This confirmation of inspection shall be retained at least until the end of the trip, or, in the event that the container has been involved in an incident, until the completion of any related investigation.

Table 4 — Pre-trip inspection — Required checks	
a)	inspection plate(s) to ensure that inspection dates are current;
b)	container for obvious signs of excessive corrosion or damage;
c)	lifting set for obvious signs of damage;
d)	lifting set to establish that all parts are present, correct, properly connected and secure;
e)	container roof, forklift pockets (and frames on open frame containers) for loose items;
f)	container door(s) are closed and the locking mechanism secured.

13 Record keeping

The owner shall retain the current certification for each container, record substantial repairs, modifications or changes in identification etc., and maintain adequate records to ensure traceability.

14 Damage and repair procedures

The owner shall ensure that:

- containers are maintained in accordance with this standard;
- if a container is damaged such that it does not comply with this standard, it is not used until it is repaired and inspected by an inspection body;
- repairs are carried out in accordance with the requirements for design and manufacture of containers set out in EN 12079-1;
- repair facilities used are able to ensure the quality of the procedures and facilities by a quality assurance system at least in accordance with EN ISO 9001 or EN ISO 3834-2;
- following repair, the container is inspected and where relevant tested by the inspection body in accordance with Table 1. To this end, the owner shall provide the inspection body with full details of the repairs that have been carried out;
- following modification, the container is submitted for re-certification.

NOTE 1 If the user or any of his agents detects any structural damage or corrosion which may affect the load bearing integrity of the container, it is strongly recommended that they advise the owner as soon as practicable.

NOTE 2 Where a need for repair is identified, it will be necessary to make adequate arrangements for the safe transportation of the damaged container, to the location specified by the owner.

15 Schedule of inspection/examination and test — Lifting sets

15.1 Lifting sets shall be periodically inspected, examined and tested, by an inspection body in accordance with the schedule detailed in Table 5.

15.2 When the schedule requires a load test, any non-destructive examination and visual inspection shall both be carried out after the load test.

NOTE 1 The inspection body may require other or additional inspections, examinations and or tests.

NOTE 2 Guidance as to the recommended knowledge and experience of staff responsible for inspections is given in Annex B.

Table 5 — Schedule of periodic inspection, examination and testing of lifting sets

Time or interval	Applicable to	Inspection/examination/test			
		Load test	Non-destructive examination	Visual inspection	Suffix marked on sling tag
Initial certification	Complete lifting set	As required by EN 12079-2			
Interval not exceeding 12 months	Complete lifting set	N/A	N/A	Yes	V
Interval not exceeding 48 months	Sling components and joining links excluding legs	Either load test or NDE		Yes	T or VN ^a
	Chain sling legs	Either load test or NDE		Yes	T or VN ^a
	Shackles	N/A	N/A	Yes	N/A
After substantial repair or alteration	Complete lifting set	Yes	Yes	Yes	T
^a Dependent upon whether tested or examined					

15.3 Load testing of chain sling legs

A test load equal to 2.5 x WLL of a single leg rated in accordance with EN 818-4:1996 (Table 3) +/- 2 %, shall be applied to each leg without shock. The load shall be applied for a minimum of 5 minutes before measurements are taken.

15.4 Non-destructive examination of sling components except wire rope legs

Magnetic particle examination shall be undertaken as specified in Clause 8.

15.5 Visual inspection of the lifting set

15.5.1 General

The inspection shall be carried out with normally corrected vision, in a situation providing sufficient lighting and other facilities necessary to allow it to be carried out safely and effectively.

15.5.2 Chain and wire rope slings and components.

Inspection of chain and wire rope slings and components shall be carried out in accordance with EN 818-6 and 13414-2 as applicable.

15.5.3 Shackles

Shackles shall be visually inspected.

15.6 Marking of the lifting set identification tag

On satisfactory completion of inspection/examination/test, as applicable, the sling identification tag shall be permanently marked, in accordance with Table 5 as follows:

- the date YY-MM-DD of the inspection/examination/test as applicable, together with the unique identification mark of the inspection body together with either;
- suffix T: indicating load test; non-destructive examination, and visual inspection; or
- suffix V: indicating visual inspection only; or
- suffix VN: indicating NDE and visual inspection.

15.7 Inspection report

When, in the opinion of the inspector, a lifting set is suitable for service, a report shall be issued to the owner, containing the following information (as a minimum):

- sling and shackle identification numbers;
- owner's name;
- report number;
- statement that the lifting equipment described was thoroughly inspected, examined and tested, is safe to operate and that the particulars are correct;
- details of any NDE carried out;
- confirmation that the sling identification tag was marked; date of inspection (date of signature or report also to be shown if different from date of inspection);
- name of organization, name of the person and authentication by the person carrying out the inspection/ examination or test either by signature or other secure means.

NOTE Details of the inspection of the container may also be given on the Inspection Report for the lifting set.

15.8 Record keeping

The owner shall retain the current certification for each lifting set and maintain adequate records to ensure traceability.

15.9 Damage and repair procedures

The owner shall ensure that:

- lifting set is maintained in accordance with this standard;
- if the lifting set is damaged it shall not be used until it is repaired or replaced, and inspected by an inspection body;
- lifting set repairs shall be carried out in accordance with the requirements of EN 12079-2;

- repair facilities used are able to ensure the quality of the procedures and facilities by a quality assurance system at least in accordance with EN ISO 9001;
- following repair, the lifting set is inspected and where relevant tested, by an inspection body in accordance with Table 5. The repairer shall provide the inspection body with full details of the repairs that have been carried out. Any modifications will require re-certification of the lifting set by an inspection body.

NOTE If the user or any of his agents detects any damage or corrosion which may affect the integrity of the lifting set, it is strongly recommended that they advise the owner as soon as practicable.

16 Inspection of attachment of lifting set to an offshore container

16.1 Attachment

The attachment of the lifting set to the container, shall be inspected by a competent person, to ensure that:

- minimum WLL of the lifting set attached to an offshore container is as specified in EN 12079-2:2006, Table 5;
- legs of multi-leg slings are attached to the container pad eyes without twisting of the legs at the master link.

16.2 Inspection report

When, in the opinion of the inspector, the correct lifting set has been properly attached to the container, a report shall be issued containing the following information (as a minimum):

- container identification (including owner's container number);
- sling and shackle identification numbers;
- name of owner;
- report number;
- rating (*R*) of the container;
- WLL of the lifting set;
- SWL of the shackles;
- statement that the lifting set has been selected in accordance with the standard, and is installed correctly;
- name of organization, name of the person and authentication by the person carrying out the inspection/ examination or test either by signature or other secure means;
- date of report.

NOTE This report may be combined with the container inspection report and/or the lifting set examination report.

16.3 Record keeping

The owner shall retain the report until such time as the lifting set is removed or replaced.

Annex A

(informative)

Recommended knowledge and experience of staff responsible for inspection of offshore containers

With respect to containers, the inspector should have, as a minimum, a knowledge and adequate practical experience of:

- a) the statutory requirements relating to offshore containers;
- b) the provisions of this standard;
- c) the various types of offshore containers in service;
- d) the correct methods of slinging and handling offshore containers;
- e) the loads, stresses and strains affecting containers when handled under adverse offshore conditions, particularly those affecting lifting points;
- f) methods of testing containers;
- g) defects likely to be found in containers and acceptable levels of wear, distortion and deterioration in relation to safety in use;
- h) welding methods and procedures and qualifications of welders;
- i) the various methods of non-destructive examination (NDE) and a good understanding of how they work and their limitations;
- j) the visual inspection as required by this standard and the signs of weakness and defects to look for.

Annex B (informative)

Recommended knowledge and experience of staff responsible for inspection of lifting sets intended for use with offshore containers

With respect to lifting sets, the inspector should have, as a minimum, a knowledge and adequate practical experience of:

- a) statutory requirements relating to lifting sets;
- b) provisions of this standard;
- c) various types of offshore containers in service;
- d) correct methods of slinging and handling offshore containers;
- e) loads, stresses and strains affecting the lifting sets when used for lifting offshore containers in adverse offshore conditions;
- f) methods of testing lifting sets;
- g) defects likely to be found in lifting sets and acceptable levels of wear, distortion and deterioration in relation to safety in use;
- h) various methods of NDE and a good understanding of how they work and their limitations;
- i) visual examination as required by this standard and the signs of weakness and defects to look for.

Bibliography

- [1] EN ISO 9001:2000, *Quality management systems - Requirements*

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