INTERNATIONAL STANDARD

ISO 5057

Second edition
2022-08

Industrial trucks — Inspection and repair of fork arms in service on fork-lift trucks

Chariots de manutention — Contrôle et réparation des bras de fourche en service sur les chariots élévateurs à fourche

Reference number
ISO 5057:2022(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 110, *Industrial trucks*, Subcommittee SC 2, *Safety of industrial trucks*.

This second edition cancels and replaces the first edition (ISO 5057:1993), which has been technically revised.

The main changes are as follows:

— additional inspection requirements;

— testing requirements aligned with ISO 2330;

— informative guidance on maximum inspection intervals.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Industrial trucks — Inspection and repair of fork arms in service on fork-lift trucks

1 Scope

This document specifies methods for inspection and repair of solid-section fork arms in use on all types of fork-lift trucks.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2330, *Fork-lift trucks — Fork arms — Technical characteristics and testing*

ISO 2331, *Fork lift trucks — Hook-on type fork arms — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2331 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
competent person
person who has acquired, through training, qualification, experience or a combination of these, the knowledge and skill enabling that person to correctly perform the required tasks

4 Inspection intervals

Fork arms in service shall be inspected in accordance with Clause 5 at intervals of not more than 12 months and whenever any defect or permanent deformation is detected. The maximum interval between inspections shall be decreased due to intensity of use, or the use environment, as determined by the competent person.

The competent person is empowered and required to determine a re-inspection interval.

NOTE Guidance on the maximum inspection interval dependent on use is given in Annex A. It does not enforce reduced intervals.

5 Inspection

5.1 General

The inspection of a fork arm shall be carried out by a competent person with the aim of detecting any damage, failure, impending failure or deformation, etc. Any fork arm which shows such a defect, which may impair safe use, shall be withdrawn from service, and not be returned to service unless it has been satisfactorily repaired and tested in accordance with 6.2 if applicable.

5.2 Surface cracks

The fork arm shall be thoroughly examined visually for cracks and if in the opinion of the competent person there is sufficient evidence of damage and / or overloading, the fork arm shall be subjected to a non-destructive crack detection process. Special attention shall be paid to the heel and the top and bottom hooks including their attachment to the shank. The fork arm shall be withdrawn from service if surface cracks are detected.

When required, an appropriate non-destructive crack detection test, e.g., magnetic particle inspection (MPI), shall be carried out by a suitably competent person, as an example, qualified and certified in accordance with ISO 9712.

5.3 Difference in height of fork tips

A set of fork arms shall be checked for any difference in height when mounted on the fork carrier. If the difference in tip heights exceeds 3 % of the blade length or that recommended by the truck manufacturer, the set of fork arms shall be withdrawn from service.

The set of fork arms shall not be returned to service until they have been re-set as necessary (see 6.1) and tested in accordance with 6.2.

5.4 Straightness

The straightness of the upper face of the blade and the front face of the shank shall be checked. Where the deviation from straightness exceeds 0,5 % of the length of the blade, the fork arm shall be withdrawn from service.

5.5 Positioning lock

It shall be confirmed that the positioning lock, where originally provided, is in good repair and correct working order. If any fault is found, the fork arm shall be withdrawn from service until satisfactory repairs have been or carried out.

5.6 Legibility of marking

If the fork arm marking in accordance with ISO 2330 is not clearly legible, the fork arm shall be removed from service until satisfactory repairs have been carried out.

NOTE ISO 2330 specifies; “manufacturing, testing and marking requirements for solid-section fork arms, for quantity production and with all types of mounting.”

5.7 Wear

5.7.1 Fork arm blade and shank

The fork arm blade and shank shall be thoroughly checked for wear, with special attention being paid to the vicinity of the heel.

If the thickness of the blade or shank is reduced to 90 % of the original thickness, or to the minimum thickness specified by the fork arm or truck manufacturer; the fork arm shall be withdrawn from service.

5.7.2 Fork arm mountings

The support face of the top hook and the retaining faces of both hooks shall be checked for wear, crushing and other local deformations. If these defects are apparent to such an extent that the fork arm could become disengaged or the load could become unstable, the fork arm shall be withdrawn from service.

For other types of mounting, similar checks shall be carried out.

5.7.3 Fork arm tip damage

The fork arm tip shall be checked for damage, wear, uneven tip profile and deflection from the plane of the fork arm blade.

If in the opinion of the competent person there is sufficient damage evident at the tip, the fork arm shall be inspected for surface cracks as detailed in 5.2.

If in the opinion of the competent person the fork arm tip has sufficient deformation to impair safe use, the fork arm shall be repaired or withdrawn from service.

6 Repair and testing

6.1 Repair

Only the manufacturer of the fork arm or a competent person shall decide if a fork arm may be repaired for return to service. Any repairs shall only be carried out in accordance with the recommendations of the fork arm manufacturer.

Surface cracks and wear shall not be repaired by welding.

When repairs necessitating re-setting are required, any heat treatment, including localized heating, shall be in accordance with the manufacturer's recommendations.

6.2 Yield test

A fork arm that has undergone repairs other than:

a) repair or replacement of the positioning lock and/or the marking,

b) a reduction in tip length, resulting from abrasive wear,

shall be returned to service only after being submitted to, and passing, the yield test described in ISO 2330.

Annex A
(informative)

Maximum inspection intervals dependent on use

The recommended maximum interval between inspections where intensity of use or the use environment require an interval of less than 12 months is:

a) 6 months for equipment used for elevating persons, no matter how infrequent;

b) 6 months or 600 h, whichever comes first, for forks which are not permanently attached to the truck;

c) 6 months or 1 800 h, whichever comes first, for equipment operating more than 40 h per week, but less than 80 h per week;

d) 4 months or 1 200 h, whichever comes first, for equipment working 80 h, or more, per week;

e) 4 months or 1 200 h, whichever comes first, when used in arduous environments such as:

- marine,
- corrosive chemical,
- metals manufacture or processing,
- mining, cement/aggregate processing, or where abrasive particles are present,
- brine processes,
- timber/lumber applications,
- surface conditions terrain causing high cyclic loading or vibration.

NOTE Hours stated above means hours with the truck operating.

The inspection intervals suggested in this annex may be increased or reduced by the competent person to suit each individual application within the constraints of Clause 4.

Bibliography

[1] ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel*

ICS 53.060
Price based on 5 pages