	FEDERATION EUROPEENNE DE LA MANUTENTION Product Group Industrial Trucks	**FEM** **4.004**
	Periodic Inspection of Industrial Trucks	1st Edition 12.2004 (E)

Index

Fédération Européenne de la Manutention (Product Group Industrial Trucks)

 Available in German (D), English (E), and French (F)

0 Foreword: Important notice for the inspector

a) The recommendations and advice contained in this Guidance Note are based on specifications, procedures and other information that have been collected by the FEM from its members. They represent what is, so far as FEM is aware, the best available data at the time of publication on the construction and use of industrial trucks in the general conditions described, and are intended to provide guidance for such use.

b) However, there is a wide variety of applications in which industrial trucks may be used, consequently in all cases the suitability of this Guidance Note must be determined by the judgement of the person applying it in accordance with the conditions in which use is envisaged and subject to all relevant statutory requirements.

c) FEM accepts no responsibility for the recommendations, advice, statements and conclusions expressed or implied and give no warranty, representation of assurance in respect of the accuracy or validity of the same.

1 Introduction

An inspection of working equipment at periodic intervals is prescribed in the amending Directive 95/63/EC to the Operating Equipment Utilisation Directive 89/655/EC. This guideline applies as a supplement to the maintenance instructions issued by the manufacturer of the industrial truck.

2 Scope

This guideline applies to powered industrial trucks according to ISO 3691 and pedestrian propelled industrial trucks both with and without lifting function.

3 Normative References

ISO 3691: Powered industrial trucks – Safety code

ISO 6292:1996: Powered Industrial trucks and tractors – Brake performance and component strength

ISO 5057:1993: Industrial trucks – inspection and repair of fork arms in service on fork-lift trucks

ISO 2330:2002: Fork-lift trucks – Fork arms – Technical characteristics and testing

EN 45004:1995: General criteria for the operation of various types of bodies performing inspection

EN 1175-1:1998: Safety of Industrial trucks – Part 1 – General requirements for battery powered trucks

4 Definitions

Expert

Expert is a person performing periodic inspections of industrial trucks who must have sufficient knowledge and experience to evaluate the condition of an industrial truck and establish, that the industrial truck can continue to operate in safe condition. Such persons are specially trained for example by the manufacturer and authorised supervisors or mechanics of the manufacturing company. Which person will be assigned as an expert to inspect industrial trucks is at the discretion of the company as long as the person chosen satisfies the requirements specified.

Experts must be objective in their evaluation from a standpoint of safety (for reference see EN 45004).

Fork-load and standard load centre distance

According to specifications on the fork (see ISO 2330) or according to manufacturer's specifications.

5 Performing inspections

The inspections are to be performed by an expert. A record of the inspection results must be provided. (See check list on page 8 and 9 of this guideline).

The inspections shall be carried out at intervals of not more than one year, ore specified hereafter in the requirements.

The individual inspection items are listed in this document's check lists and are explained as follows:

5.1 Lifting devices

Fork arms, latches and stops shall be inspected in accordance with ISO 5057 and with special attention to:

5.1.1 Forks, thickness at heel

The minimum thickness at the heel permissible resulting from wear shall be specified by the manufacturer or, if not specified, in accordance with ISO 5057.

5.1.2 Permanent deformation

Each fork arm shall be checked for permanent deformation and misalignment in accordance of ISO 5057.

5.1.3 Cracks at heel and mountings

Visually check the arms for cracks.

5.1.4 Chains

Length over at least 6 pitches on each chain, wear max. specified by the manufacturer, or if not specified, 3%.

In area of maximum wear, which as a rule, is the chain section running over the pulleys when the fork carrier is lifted for travel.

Examine the chain(s) and/or associated components for:

(a) Cracked or missing link plates.

(b) Loose or worn pins with damaged heads.

(c) Evidence of pittings due to rust or corrosion.

(d) Pins rotating in the outer plate.

(e) Loss of free movement (stiff chain)

(f) Wear of the link plate edges – i.e. that caused by running over the pulleys.

(g) Anchor pin locking device damage.

(h) Wear and corrosion of the anchor pin and anchor (including integral anchors)

(i) Wear between the pin and the plate and /or associated components or elongation.

(j) Integrity of the anchor pin locking mechanism.

If any of the above defects are found, the chain (s) must be replaced.

5.2 Drive unit and brakes

5.2.1 Exhaust test on Diesel engines

Measure soot emission at partial load by loading the engine against hydraulic pressure, for example full back tilt. Measure the soot index in accordance with the manufacturer's specifications or national regulation.

5.2.2 Service brakes, braking performance

The braking performance shall be tested according to the specifications of the industrial truck manufacturer. (minimum braking values, see ISO 6292).

5.2.3 Parking brakes, braking performance

The braking performance shall be tested according to the specifications of the industrial truck manufacturer, e.g. confirm parking brake efficiency by driving against the parking brake.

5.2.4 Braking system by tiller of industrial truck

When the tiller is released to the upright position or pressed down to the lower position, the industrial truck shall brake.

5.2.5 Brake system

Check brake system components for damage, excessive wear, corrosion, mounting security and correct adjustment.

5.2.6 Wheels and tyres

Visually check the tyres for wear, damage and bonding failure. Visually inspect the wheels and their assembly for condition, security, fixing and if applicable tyre pressure.

5.3 Operator seat and controls

5.3.1 Operator restraint system

Visually inspect and check safety function of restraint system e.g. lap belt, when duo-sensitive belt is fitted, check whether it is arrested with seat when seat is at an angle.

Check other restraint equipment for proper function and damage.

5.3.2 Seat mounting

Check the seat mounting and adjustment function.

5.3.3 Steering system

Check for allowable play and damage.

5.3.4 Controls and marking

Check all control functions and their marking.

5.4 Electrical equipment

5.4.1 Battery condition

Visually inspect the condition of the battery and cell connections, also check that associated cables and connections are sound and have good insulation.

5.4.2 Battery restraint

Visually inspect the battery restraint according to specifications of industrial truck manufacturer.

5.4.3 Battery data

Check battery voltage and weight (on the battery data plate) against truck manufacturer's data plate on the truck.

5.4.4 Seat switch or other switch-off device (electric trucks only)

When the driver leaves the truck, check that the power to the drive motor is switched off.

5.4.5 Emergency shut-off

Control function of the emergency shut-off (separate switch or battery connector).

5.4.6 Safety disconnect

If the manufacturer specifies that the safety disconnect is to checked periodically this should be carried out in accordance with clause 5.9.4 of EN 1175-1.

5.4.7 Electrical wiring and fuses

Visually check electrical wiring for damage (insulation damage, connections) and fuses.

5.4.8 Safety switches on tiller

When the tiller is released on pedestrian controlled trucks, the power to the drive unit must be switched off.

Check emergency reverse switch for correct function.

5.5 Hydraulic system

5.5.1 Lift system creep test

Check creep at rated load (max 100 mm within 10 min on trucks with ratings up to 10 t or max 200 mm in 10 min for trucks with ratings higher than 10 t), see ISO 3691 or manufacturer's specification. This test shall be carried out with the hydraulic oil at operating temperature and with all lift cylinders pressurised.

5.5.2 Tilt system creep test

Check creep forward at rated load at a lift height of 2,5 m (max 5° within 10 min), see ISO 3691 or manufacturer's specification. This test shall be carried out with the hydraulic oil at operating temperature.

5.5.3 Leakage and damage

Visually check hoses, pipes and connections for damage, leakage, wear, bulges and kinks.

5.6 Vehicle frame and safety equipment

5.6.1 Mounting points

Visually check the mounting points for the mast, counterweight, steering axle, overhead guard, tilt cylinder, etc.

5.6.2 Frame and safety equipment

Visually check frame and safety equipment for example overhead guard, for cracks, damage, distortion that will effect safety.

5.6.3 Trailer coupling

Visually check trailer coupling for safe operation.

5.6.4 Bottom opening on propulsion gas forklifts

Visually check free openings at lowest point on propulsion gas engine chamber (against ISO 3691).

5.6.5 Hood lock

Check for function and security.

5.7 Miscellaneous and special equipment

5.7.1 Labelling

Check that safety labels are present and legible.

Check that capacity–data plates are securely attached, legible and have the capacity rating for the truck and any attachment used with the truck.

5.7.2 Operating instructions

Check that instruction handbook including associated documents are available to the operator. (e.g. attachment instruction handbook).

5.7.3 Attachments

Check attachments for damage, excessive wear, leaks, security of mounting and safe function according to specifications.

5.7.4 Optional equipment

Check optional equipment such as lighting, mirrors, windshield wipers etc. for correct function.

5.8 Trucks with elevating operator position

Check safety functions specific to trucks with elevating operator position not already covered according to manufacturer's specification.

5.9 Other inspections

The expert shall record the inspection of specific items not detailed in this document but present on the truck being inspected. These items are to be detailed by the expert on the check list

6. Checklist, 2 pages

Periodic inspection of industrial trucks according to Section 5

Page 1

User/Renter	Type of industrial truck
	Manufacturer/Model
	Rated capacity t
	Serial No./Year of manufacture
	Hours of operation

	No.	Visual	Test	Measurement	Remarks/Comments
5.1 Lifting device					
Forks:					
Thickness at heel	5.1.1				
Permanent deformation	5.1.2				
Cracks at heel and mountings	5.1.3				
Chains:					
Length over at least 6 pitches	5.1.4				
5.2 Drive unit and brakes					
Exhaust test on Diesel engines	5.2.1				
Service brakes, braking performance	5.2.2				
Parking brakes, braking performance	5.2.3				
Brake system by tiller	5.2.4				
Brake system	5.2.5				
Wheels and tyres	5.2.6				
5.3 Operator seat and controls					
Operator restraint system	5.3.1				
Seat mounting	5.3.2				
Steering system	5.3.3				
Controls and marking	5.3.4				
5.4 Electrical equipment					
Battery condition	5.4.1				
Battery restraint	5.4.2				
Battery data	5.4.3				
Seat switch or other switch-off device	5.4.4				
Emergency shut off	5.4.5				
Safety disconnect	5.4.6				
Electrical wiring and fuses	5.4.7				
Safety switches on tiller	5.4.8				

Organisation:	**Checked:**	**Date:**	**Name:**

Periodic inspection of industrial trucks according to Section 5

Page 2

User/Renter	Type of industrial truck
	Manufacturer/Model
	Rated capacity/t
	Serial No./Year of manufacture
	Hours of operation

	No.	Visual	Test	Measurement	Remarks/Comments
5.5 Hydraulic system					
Lift system creep test	5.5.1				
Tilt system creep test	5.5.2				
Leakage and damage	5.5.3				
5.6 Vehicle frame and safety equipment					
Mounting points	5.6.1				
Frame and safety equipment	5.6.2				
Trailer coupling	5.6.3				
Bottom opening on propulsion gas forklifts	5.6.4				
Hood lock	5.6.5				
5.7 Miscellaneous and special equipment					
Labelling	5.7.1				
Operating instructions	5.7.2				
Attachments	5.7.3				
Optional equipment	5.7.4				
5.8 Trucks with elevating operator position					
Safety functions according to					
Manufacturer's inspection list					
5.9 Other inspections					