NATIONAL FORKLIFT SAFETY DAY

NATIONAL FORKLIFT SAFETY DAY

SEGREGATING PEOPLE FROM MATERIALS HANDLING EQUIPMENT

BITA
Lifting Industry Standards

SEGREGATION SAVES LIVES!

NATIONAL FORKLIFT SAFETY DAY

DON'T BE THE BARRIER TO FORKLIFT SAFETY IN YOUR WORKPLACE!

The vast majority of fatalities and serious injuries caused by impact with pedestrians are wholly avoidable by traffic route demarcation, physical barriers and other simple measures.

- Assess the risks and manage worksite traffic
- Keep pedestrians and vehicles apart
- Physical barriers are better than safety distances
- Utilise assistance systems

FOR MORE INFORMATION VISIT
www.nationalforkliftsafetyday.co.uk

NATIONAL FORKLIFT SAFETY DAY (NFSD)

CONTENTS

"MANAGEMENT IS RESPONSIBLE FOR SEGREGATING PEDESTRIANS FROM MATERIALS HANDLING EQUIPMENT"

INTRODUCTION

As part of its commitment to raise safety standards across the material handling sector, the British Industrial Truck Association (BITA) - the UK trade association for manufacturers and suppliers of forklift truck and associated components and services – champions the cause of National Forklift Safety Day.

Each year, the campaign highlights a different issue, the topic covered in this book is the Segregation of People from Materials Handling Equipment and the responsibility of management to ensure this happens.

REPORTABLE FORKLIFT TRUCK INCIDENTS BETWEEN 2016-2019 SHOW

43% of incidents involved impacts with a third person

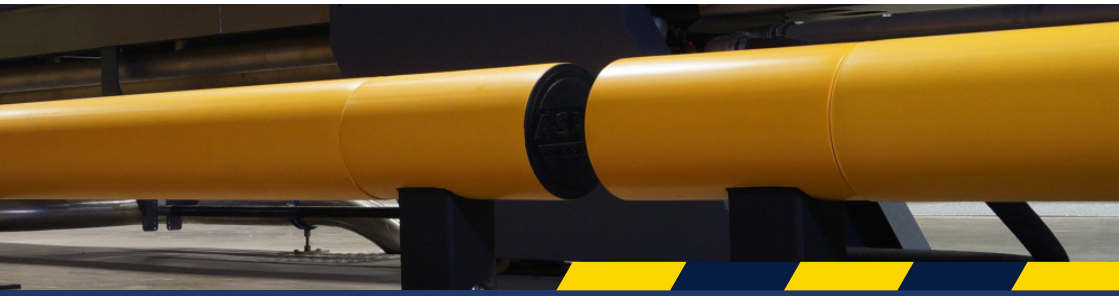
65% of these involved pedestrians engaged in activities unrelated to the immediate truck operation

20% of the victims were co-workers or supervisors

15% were delivery drivers watching, or assisting, with the loading or unloading their vehicle

The Health and Safety Executive (HSE) has shown a willingness to prosecute negligent companies and penalties can be severe.

In February 2020, postal carrier UK Mail was fined £400,000 after it admitted breaching the Health and Safety at Work Act 1974 following an incident in which two employees were injured in separate incidents. In the first, an operations administrator sorting returned parcels was struck by a forklift truck, resulting in them sustaining a fractured skull and bleed between the skull and brain.



In the second incident, a warehouse operative was inspecting a parcel when a forklift truck hit the left side of her body. She suffered nerve damage to her left arm and superficial leg and hip injuries.

The HSE found the company failed to ensure there was effective segregation of pedestrians and vehicles in the workplace. There were no pedestrian walkways for employees to navigate across the warehouse safely.

EFFECTIVE SEGREGATION WAS NOT IN PLACE

"The company failed to properly manage workplace transport in the warehouse area. The systems of work in place were not safe. Adequate control measures were not identified or implemented, and effective segregation was not in place," said an HSE Inspector following the court hearing. [1]

KEY CAMPAIGN MESSAGE

ALL SITES MUST HAVE SYSTEMS IN PLACE TO KEEP PEDESTRIANS AND CO-WORKERS SAFE FROM WORKPLACE TRANSPORT AND THE BEST WAY OF DOING THIS IS BY PHYSICAL SEPARATION.

[1] Health & Safety Executive – 19th February 2020: Company fined after workers injured by fork lift trucks

IMPLEMENTING THE KEY MESSAGE

"TO PROVIDE A SAFE AND EFFICIENT WORKING ENVIRONMENT, WITH UP TO THREE HUNDRED FORKLIFTS MOVING AROUND OUR SHOP FLOOR AND TWELVE THOUSAND PALLET LOCATIONS, WE CARRIED OUT A THOROUGH RISK ASSESSMENT AND MAPPED OUT PEDESTRIAN ROUTES, WALKWAYS, WORK AREA ZONES, VEHICLE ROUTES AND CROSSING POINTS."

Martin McVicar, Combilift

RISK ASSESSMENT

The Importance of a Suitable and Sufficient Risk Assessment

The Management of Health and Safety at Work Regulations 1999 require employers to carry out a proper risk assessment to protect employees and others.

A Risk Assessment can be broken down into the following stages:

- **Identification of hazards**
- **Determining who might be harmed and how**
- **An evaluation of the risks and what precautions are necessary**
- **Ensuring all findings are recorded and implemented**
- **Regular reviews to ensure the assessment remains relevant and to update where necessary**

FOR THE PURPOSES OF THE RISK ASSESSMENT, A HAZARD IS DEFINED AS 'ANYTHING THAT MAY CAUSE HARM'

Examples might be:

- **Where pedestrians could be at risk of impacts with MHE?**
- **Which vehicles or structures pose a risk to safety?**
- **Where could a truck lose stability?**
- **Where in the workplace could objects fall on pedestrians?**
- **Are there any potentially unsafe loads or loading areas?**
- **Are pedestrians at risk of falling from a truck if being lifted?**
- **Could workers be crushed by moving trucks?**

THE RISK IS DETERMINED AS THE CHANCE - HIGH OR LOW - THAT SOMEBODY COULD BE HARMED BY THESE AND/OR OTHER HAZARDS, TOGETHER WITH AN INDICATION OF HOW SERIOUS THE HARM COULD BE.

OTHER RISK CONSIDERATIONS

- **The Risk Assessment must be site-specific and must consider equipment and loads being handled.**
- **There must be evidence that significant risks have been adequately addressed.**
- **Consideration must be given to potential impediments to the truck operator's vision[2] e.g. oversized loads or load handling enhancements such as roll clamps.**

PHYSICAL BARRIERS

Physical indicators such as barriers are considered far more effective than simply issuing instructions to transport operators or erecting signage.

The Risk Assessment should also include a requirement for monitoring site conditions and working practices.

[2] Annex A of BS EN 16842-2:2018 describes two alternative methods to evaluate the visibility on counterbalance trucks when laden.

TRAFFIC MANAGEMENT SYSTEMS

Assessing Risk

Just as with lifting operations, it is vital to assess the risk involved to pedestrians from the movement of Materials Handling equipment around the warehouse or factory site.

A full Traffic Management system should be in place for all sites where MHE is operating in the vicinity of pedestrians and co-workers. This will regulate the safe movement of vehicles and pedestrians through and around the workplace.

The Importance of a Good Floorplan

To ensure an effective and robust strategy is in place, a floorplan of the workplace should firstly be drawn up. This should include all:

- **pedestrian routes and walkways on-site**
- **pedestrian zones and work areas**
- **vehicle routes**
- **pedestrian crossing points**
- **critical structures and equipment**
- **vehicle parking areas; and**
- **loading and unloading zones**

The floorplan allows site operators to better evaluate:

- **The severity of risk**
- **Whether existing control measures are effective**
- **What action could be required to control any risks; and**
- **Which are the most urgent control measures**

REVIEW OF PROCEDURES

Remember

It is important to regularly review any Risk Assessment, Traffic Management System, and associated Control Measures to ensure they are:

- Effective
- Up to date
- Being applied, and
- Not introducing any new problems

Reviews should include lessons learned from any accident, incident and near miss reports.

SAFETY BARRIERS IN TRAFFIC MANAGEMENT SYSTEMS

Choosing the right safety barrier for your workplace is critical.

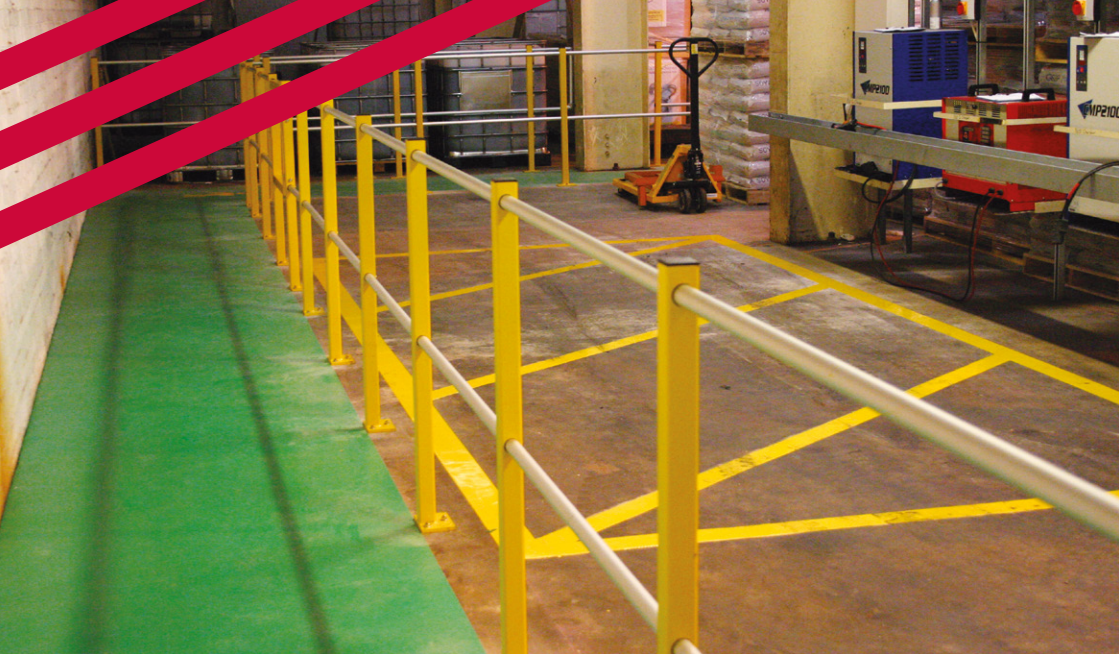
So, when assessing the various options, always refer to British Standards Institution publication **PAS 13:2016**. This is the code of practice for safety barriers used in traffic management within workplace environments. It also contains test methods for safety barrier impact resilience.

Outlined within it are details of:

- **How safety barriers are used in the safe management of workplace traffic**
- **Principles of safety barrier design for individual applications and environments**
- **How to calculate the impact kinetic energy of vehicles in a workplace. Once this potential energy is determined, safety barriers that withstand the impacts of specific vehicles can be selected**
- **The energy transferred to a barrier in the event of an impact will be assessed, based on laden mass, maximum velocity and maximum impact angle**
- **How to test, measure and rate a safety barrier for use within a workplace environment, with clear pass or fail criteria**

As a general guide, where there is no raised kerb and vehicles may pass within 1m of pedestrians then safety barriers are required.

Also, barriers should be used at entrances and across possible short-cuts to prevent pedestrians unintentionally stepping out in front of vehicles.



DESIGN OF SAFETY BARRIERS

The design of the safety barrier is of critical importance to your workplace. Requirements may vary depending on workplace environment.

Generally:

- **Handrails should be approximately 1,100 mm high**
- **Barriers and their fixings should be strong enough to absorb the energy of dynamic impact**
- **Vehicle barriers should be high enough to prevent vehicles from riding over them**
- **They should be positioned and sized so they are always visible to operators**
- **When required, ground level protection should be at least 150 mm high to prevent truck forks from intruding into the safe zone**
- **Colour should be used to designate levels of awareness:**
  - **Danger: Red and White**
  - **Caution: Yellow or Yellow and Black**
  - **Pedestrian Safe Routes, gates, etc.: Green**

THE IMPORTANCE OF GOOD SITE LAYOUT

Excellence in site layout will be repaid with low accident rates. So, when drawing up a site layout, there are several priorities to consider. Principal amongst these should be the safety of pedestrians and co-workers.

There are, therefore, certain considerations to take into account. These include:

Pedestrian routes and work areas – these should be clearly defined and based on the movement of traffic and personnel around the site.

Floormarkings, signs and coloured walkways – these should be used to identify the pedestrian routes.

Minimum width – this should be 600 mm; 1,200 mm for wheelchairs; and between 750 to 1,050 mm at emergency exits[3].

Lighting – there should be adequate lighting in all locations, especially at the transition points, e.g. where trucks are moving from bright sunlight into a building.

Vehicle-free areas – these should be clearly defined.

Space – when considering vehicle routes through the workplace, there should be enough space for the largest vehicle to load and unload.

Traffic controls – these may be required in certain locations e.g. blind bends or pedestrian crossing points.

One-way traffic system – this is the preferred option, with proper consideration given to reversing and packing areas.

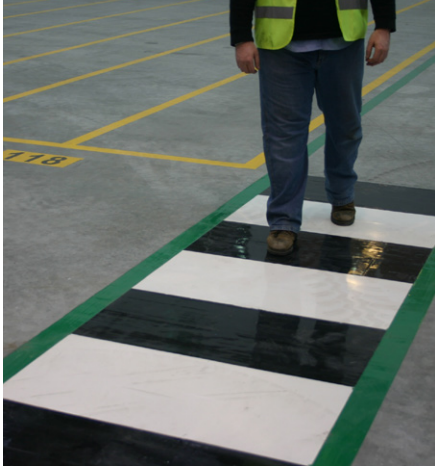
Signage and physical barriers – these should be used to indicate where pedestrians are excluded.

[3] Depending on the number of people using the exit, refer to PAS 13 for further information

Pedestrian crossing points – these should be kept to a minimum, but where they are in place, they must be clearly visible to both pedestrians and MHE operators.

Except for emergency exits, **crossing points** should not be aligned with entrances.

Special Controls - where pedestrians and vehicles operate together at the same time, special controls will be required, e.g. the ability to disable a vehicle when close to a pedestrian. Systems which inhibit truck functionality when in proximity to a hazard are more effective than systems which only provide warnings. Such controls must be subject to a specific **Risk Assessment** by a suitably competent person and will require strict supervision and enforcement.



Loading and Unloading Zones – these should be segregated from parking areas and where necessary, a segregated pedestrian safe zone should be created.

Delivery drivers – visitors to the site should not stand on their truck's trailer or be able to approach MHE during unloading operations. They must be notified on arrival of all on-site safety requirements.

Pedestrians and moving vehicles – must never be in the loading and unloading zone at the same time.

Loads shifted in transit – in this instance, a competent person should determine how best to unload the vehicle, ensuring the safety of all personnel.

Markings, signage, and physical barriers – these should be used to protect critical structures and equipment from impact by vehicles.

Barriers – these should be of sufficient strength and positioned such that even a maximum impact does not intrude into the pedestrian zone.

Assistance systems – these should work in conjunction with – but should not replace - all other control measures. The effectiveness of such systems should be considered as part of the Risk Assessment.

All MHE operators must be trained on the proper use, range, and limitations of assistance systems, especially regarding blind spots.

"ASSISTANCE SYSTEMS MITIGATE RISK. THE OPERATOR REMAINS IN CONTROL, AND IT IS ESSENTIAL THAT THEY DO NOT REGARD THESE SOLUTIONS AS INFALLIBLE SAFETY SYSTEMS."

Mark Metcalfe, Senior Manager
– Technical Operations, Toyota Materials Handling UK

SMART SYSTEMS

Smart fencing systems work in conjunction with physical barriers and will be effective in limiting truck functionality when predetermined virtual boundaries are approached.

Such systems reduce the maximum speed of a truck at predetermined areas, such as junctions and crossing points, restrict truck access into pedestrian zones and ensure a mast is lowered when approaching doorways.

These systems require expert knowledge of the site layout and the likely position of trucks.

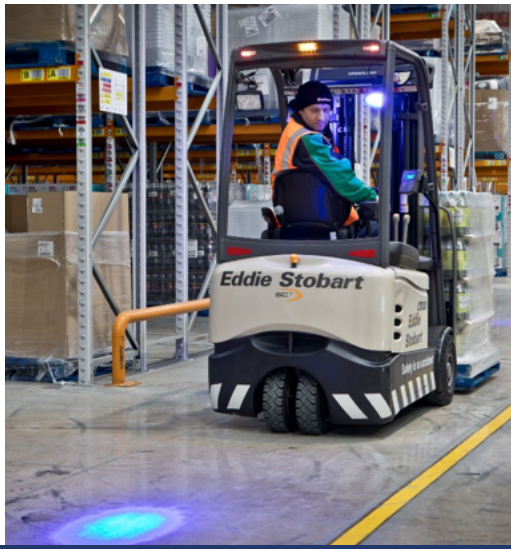
Object-Detection Systems – these provide a proximity warning to the truck operator, pedestrian, or both. Advanced systems warn of potential hazards and can be integrated into truck controls to stop the truck before an impact occurs. Object detection can be combined with vision aids such as a reversing camera.

Fixed Collision Warning Systems – these can be mounted at critical locations across the site and provide an audible and/or visual warning if two targets are simultaneously in or approaching the hazard area.

Vision, Infrared, Ultrasound or Radar – usage of such features is growing but will quire trucks and pedestrians to be equipped with transponders.

Safety Lamps – these project warning symbols or mark a specified distance from the vehicle and are widely available and can be easily retrofitted.

How effective visual and audible warnings will be will depend on the environment in which they operate and will be impacted by levels of background noise and other factors.



PLANNING AND ORGANISING LIFTING OPERATIONS

When planning lifting operations, supervisors must plan for all contingencies. Therefore, consideration should be given to:

- **What loads are being lifted.**
- **In the case of more straightforward lifting operations, such as a forklift truck moving palletised loads in and around a factory or warehouse, a single initial generic plan may be all that is required.**
- **Regularly reviewing and updating the plan where required.**

Remember

As loads vary significantly, more complex lifting operations may need to be planned on an individual basis.

PEDESTRIANS AND CO-WORKERS

Where it is unavoidable that pedestrians and co-workers will be in proximity to Materials Handling equipment, then written plans are required in advance.

Typically, this would be where:

- **Co-workers are likely to be in the vicinity**
- **Loads being handled are non-standard, e.g. suspended, liquid or damaged**
- **Lift operations are considered complex, e.g. tandem lifts**

The plan must be prepared by a suitably qualified person, skilled with the necessary knowledge, training, skills, and expertise.

The plan should address all foreseeable risks likely to be involved in the work and identify any appropriate assets (including people) which are necessary for the job to be completed safely.

There will be many factors to include in the plan. Questions to be addressed may include any or all of the following:

- **Will anyone be working under suspended loads?**
- **Is there sufficient visibility for the work to be carried out safely?**
- **Is there enough room for safely attaching/detaching and securing loads?**
- **What is the immediate environment like?**
- **What will be the location of the lift?**
- **Is there any chance of the truck overturning?**
- **What are the likely proximity hazards?**
- **Has consideration been given to derating loads?**
- **Will the operation involve lifting people?**
- **How likely is the lift to be overloaded?**
- **Is pre-use checking in place?**
- **Has the integrity of the equipment been adequately reviewed?**

POINTS TO CONSIDER

The plan must clearly define the actions involved at each step of the lift operation and identify who will be responsible for ensuring each task is completed safely.

The degree of planning and complexity of the plan will vary and must be proportionate to the foreseeable risks involved in the work.

Suspended loads must only be handled where this is permitted by the truck manufacturer[4].

(More detailed advice on the planning, organising, and undertaking of lifting operations is provided in HSE publication **L113, LOLER Approved Code of Practice and guidance.**)

[4] Refer to BITA GN40 for further advice

SERVICE & MAINTENANCE ACTIVITIES

The site operator has a responsibility to provide a safe working environment for all servicing and maintenance activities, including those carried out by visiting service engineers.

Servicing and maintenance should be carried out in a designated area, free from vehicle traffic. Where this is not possible, a physical barrier should be erected. (Refer to BSI publication PAS 90 - **"Specification for safe working practice for on-site maintenance and repair of industrial trucks"**).

TRAINING

There is no such thing as a forklift license so before authorising any employee to operate a truck, the employe must ensure proper training has been completed to guarantee competency.

Training requirement

Basic training – such as that provided by a third-party training provider. This will include an explanation of safety systems and trauck stability.

Specific job training – identifies on-site hazards and rules; relates to specific truck loads.

Familiarisation training – supervised practical experiance of specific work activities.

Refresher training – ensures experienced operators continue to adopt safe working protocaols

Supervisors – legislation stipulates supervisors have proper training to recognise safe and unsafe working practices, and intervene where necessary to miantain protocols

Training should be extended to co-workers and pedestrians; while all site visitors should be made aware of safety guidelines, such as PPE requirements.

Supervisors must have appropriate levels of training to recognise safe and unsafe practices.

"TRAINING FOR OPERATORS IS PROVEN TO REDUCE ACCIDENTS, BUT MANAGERS AND SUPERVISORS OVERSEEING MATERIAL HANDLING EQUIPMENT OPERATION ALSO REQUIRE TRAINING TO UNDERSTAND THEIR RESPONSIBILITIES AND RECOGNISE BEST PRACTICE."

Laura Nelson, RTITB: Training

Further information on operator training and safe use is provided in HSE publication **L117, Rider operated lift trucks Approved Code of Practice and guidance**, while the Health and Safety at Work Act 1974 requires employers to provide whatever information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of their employees, including contractors.

Remember

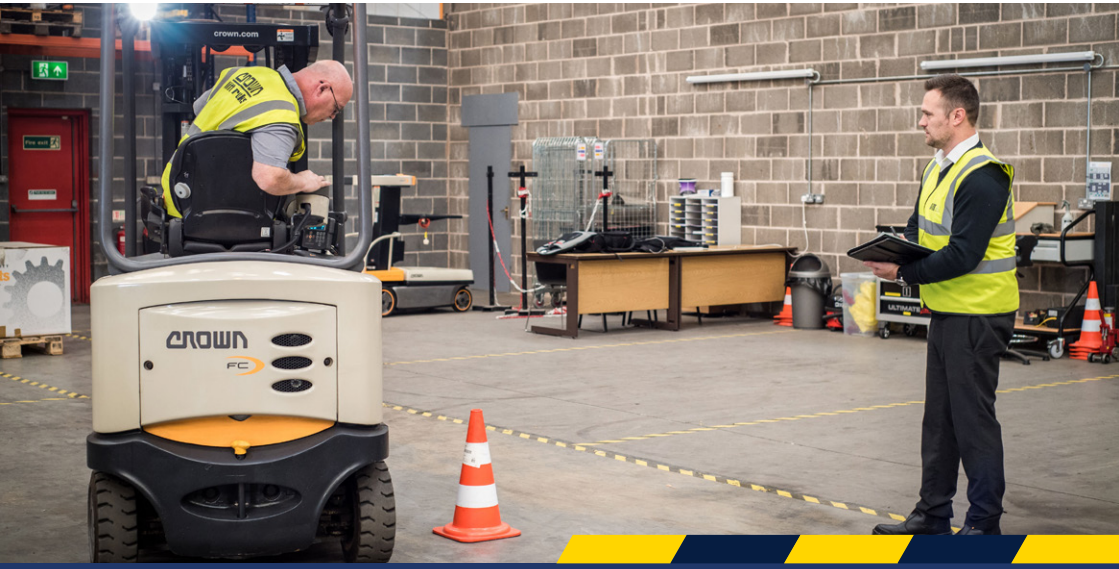
The use of new technology in the workplace is having a dramatic effect on safety – but it is not infallible and should not be relied upon in isolation. Pedestrians, co-workers and MHE operators should all be trained to use their aural, visual, and oral senses to increase their awareness when in the vicinity of MHE.

[3] Depending on the number of people using the exit, refer to PAS 13 for further information

“ALL SITES MUST HAVE SYSTEMS IN PLACE TO KEEP PEDESTRIANS AND CO-WORKERS SAFE FROM WORKPLACE TRANSPORT AND THE BEST WAY OF DOING THIS IS BY PHYSICAL SEPARATION.”

Simon Barkworth, Managing Director, Crown Lift Trucks UK & BITA President

MAKE EVERY DAY NATIONAL FORKLIFT SAFETY DAY!



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- PAS 13:2017 - Code of practice for safety barriers used in traffic management within workplace environments with test methods for safety barrier impact resilience
- PAS 90:2006 - Specification for safe working practice for on-site maintenance and repair of industrial trucks
- BS EN 16842-2:2018 - Powered industrial trucks – Visibility - Test methods and verification Part 2: Sit-on counterbalance trucks and rough terrain masted trucks up to and including 10,000 kg capacity
- BS ISO 21262:XXXX Industrial trucks - Safety rules for application, operation and maintenance

For ordering information visit www.shop.bsigroup.com

Health and Safety Executive [HSE]

- Approved Code of Practice (ACOP) L113, Safe use of lifting equipment Lifting: Operations and Lifting Equipment Regulations 1998
- Approved Code of Practice (ACOP) L117, Rider-operated lift trucks: Operator training and safe use
- HSG76, Warehousing and storage: A guide to health and safety • HSG136, A guide to workplace transport safety
- INDG163, Risk assessment: A brief guide to controlling risks in the workplace
- INDG199, Workplace transport safety: A brief guide
- INDG345, Health and safety training: A brief guide
- INDG457, Use lift trucks safely: A brief guide for operators

Available for free download from www.hse.gov.uk/pubns/books/index.htm

Fork Lift Truck Association [FLTA]

- FS25 Speed and Fork Lift Trucks
- Safety4Most guide

For details visit www.fork-truck.org.uk

British Industrial Truck Association [BITA]

- B.0.1 Operator's safety code for powered industrial trucks
- GN40 Handling of single suspended loads by rider controlled counterbalanced and reach trucks
- GN52 Industrial trucks - Floor surfaces & gradients
- GN53 Double deep stacking operations
- GN56 Drive-In and drive-through racking
- GN57 Industrial trucks on public roads
- GN61 Planning & Management of Construction Sites for the Safe Use of Rough Terrain Telescopic Handlers
- GN68 Lead Acid Traction Battery Applications
- GN69 Lithium-Ion Traction Battery Applications

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