



**CONSTRUCTION
INDUSTRY
FEDERATION**

GUIDANCE ON THE LIFT AND SHIFT OF ELECTRICAL EQUIPMENT

Version 1, 10th June 2026



Disclaimer

The Construction Industry Federation (which shall include their servants and agents, and any policy committees of the Construction Industry Federation ("CIF")) has devised a working group, the intention of which is to provide an industry guidance for the lifting and shifting of electrical equipment on construction projects in the Republic of Ireland. Use of the guidance document is subject strictly to the following:

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7. This guidance does not detract from, or transfer responsibilities from, the role of Designers, Manufacturers, Contractors, Project Supervisor Design Process (PSDP) and the Project Supervisor Construction Stage (PSCS). This guidance is intended as a useful reference for all persons involved in the design, planning and implementation of lift and shift of electrical equipment, including the PSCS and the PSDP.
8. The images included are for illustrative purposes only and should not be interpreted as exact representations of required practice.

Foreword

A CIF working group was established to address concerns around the movement, lifting and installation of electrical equipment by consolidating best available industry guidance and protocols. Invitations for the working group were extended to manufacturers, designers, Project Supervisor Design Process (PSDP), Project Supervisor Construction Stage (PSCS), civil and electrical contractors, and specialist lifting companies. The CIF would like to extend gratitude to the following contributors:

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Executive Summary

Lifting, shifting, and loading/ unloading are recognised as high-risk activities in construction, particularly with large, heavy and awkward loads – such as electrical equipment. Risks include load movement during transportation, falling loads, failure of lifting eyes, improper selection of mechanical aids, damage, ground collapse, crush injuries, and musculoskeletal injuries from improper lifting/ manual handling techniques. Prior planning, training, and adherence to established safety protocols are crucial to mitigate these hazards. As for all construction-related activities, safe systems of work must be planned and followed.

This guidance endeavours to define and document an industry guide for the safe lift and shift of electrical equipment (and similar), mindful of building design, equipment design, site characteristics, load characteristics, administration, competency and compliance. Key considerations include the following:

- Compliance with manufacturer responsibilities (e.g. IEC EN 61439-1 for low voltage, LV equipment), including design verification and marking of lifting provisions, and all other applicable standards as per **Appendix 2 – Manufacturer/ Supplier Checklist**.
- Utilising a Permission to Ship (PTS) documentation to address exact site requirements for the safe offloading and final positioning of electrical equipment. Refer to **Appendix 1 – Permission to Ship Template**.
- For greenfield projects, locating the electrical equipment room close to the exterior of the building for easy access.
- Ensuring adequate access routes, ceiling heights, and floor load capacities.
- Managing top-heavy equipment by accurately identifying the centre of gravity (CoG).
- Designing for top cable entry to maintain a low CoG in busbar chambers, where appropriate.
- Minimising handling by using skid-mounted, factory-assembled equipment.
- Considering modular equipment buildings to reduce on-site lifting and installation risks.
- Providing lifting eyes or approved lifting points for safe handling.
- Designing plinths to be forklift compatible (to align with the Code of Practice: Safe Use of Industrial Trucks¹).
- Ensure floors are level and stable.
- Accounting for both floor-standing and wall-mounted equipment requirements.
- Applying a lift and shift check sheet across all project stages.
- Ensuring all site lifting operations comply with regulations, national and international standards, codes of practice and Health and Safety Authority (HSA) guidelines.

This guide focuses on the elimination of manual handling, use of engineering controls and improvements in safety by engaging design teams early in the project. The guidance does not equate to an exhaustive list but provides essential design recommendations. Some key considerations for safe lifting and loading of electrical equipment include the following:

- **Building Design** - at design stage, there is a need to design building layouts to receive large infrastructure and services such as electrical equipment, switch room or heating, ventilation and air conditioning (HVAC) systems. This includes consideration of ceiling heights, load bearing characteristics, access and egress routes and the type of lifting equipment required. Ideally, consider the use of Off-Site Manufacturing (OSM) or external, skid-mounting.
- **Equipment Design** – manufacturers are responsible for ensuring their products are designed/ manufactured with health and safety in mind, taking steps to eliminate (or minimise) the associated risks for handling and installation. Lifting and

¹ HSA (2025). *Code of Practice: Safe Use of Industrial Trucks*. Available at: https://www.hsa.ie/eng/publications_and_forms/publications/codes_of_practice/code_of_practice_safe_use_of_industrial_trucks/

loading considerations include the weight of equipment, its centre of gravity (e.g. top-heavy design?), existence/positioning/load-bearing characteristics of lifting eyes, the location of loadbar spreaders, plinths for lifting equipment, absence of sharp edges etc. Labelling should be clear and legible, with identification of means for lifting (the slinging technique) on at least two sides.

- **Site Characteristics** – prior to all lifting and loading, an inspection is required to identify the appropriate form of lifting equipment. The margin of safety for lift equipment must be taken into account. All potential hazards or conflicts should be identified, including but not limited to access and egress, site gradient, load bearing characteristics of the ground, excavations, underground structures, services, overhead services or structures and any other potential hazard specific to the work area. Consider the need for restricting access for other activities and personnel for the duration of the lift and loading.
- **Load Characteristics** – check the manufacturer's specifications or shipping documentation for safe lifting. A final transport split drawing should be compiled for the delivery of large infrastructure/ services. The transport plan should include the transporting trailer type (e.g. flat bed or curtain-sided trailer), layout of electrical switchgear in the transporting vehicle and space for safe access, fixation of lifting equipment, provision of additional supports (e.g. ratchet straps) and means for loading/ unloading. Selection of appropriate equipment at an early stage will negate potential issues with access, reach, transport and installation. Manual handling should be eliminated with a preference given to powered alternatives. If a situation arises where electrical equipment necessitates the use of manual handling aids (e.g. non-powered pallet trucks), then a full manual handling risk assessment would be required using evidence-based risk assessment tools such as the Mac² or Rapp³ tool. For example, if a load exceeds 1,000kg and a hand pallet is used, the risk would be high as per the HSE UK Rapp Tool.
- **Administration, Competency, Compliance** – all lifting, shifting and loading/unloading shall be undertaken by competent persons possessing appropriate training, knowledge and experience; this includes Appointed Persons (AP), Lifting Supervisors, Slinger/Signallers and others. Requirements generally include the provision of lift plans, a full Risk Assessment Method Statement (RAMS)⁴ or similar, inspections and completion of GA1 - Report of Thorough Examination, GA2 - Report of Weekly Examination, GA3 - Report of Results of Inspections of Work Equipment for Work at a Height forms, and AP's or Lifting Supervisor's checklist as appropriate. Supervision is an essential component of all lift, shift and loading activities and vigilance is required for adverse weather conditions. Maintain records of all lifts and share details in the safety file for handover by the Project Supervisor for Construction Stage (PSCS). Any damage to materials, even cosmetic, must be reported to responsible persons.

For illustrative purposes only, examples of specialist lifting equipment are provided in **Appendix 5 – Lift and Shift Presentation**. The images included are for illustrative purposes only and should not be interpreted as exact representations of required practice.

² HSE UK (2018). *Manual Handling Assessment Charts (the MAC tool)*. Available at: <https://www.hse.gov.uk/pubns/indg383.pdf>

³ HSE UK (2016). *Risk Assessment of Pushing and Pulling (RAPP) Tool*. Available at: <https://www.hse.gov.uk/pubns/indg478.pdf>

⁴ HSA (2022). *Risk Assessment Method Statement (RAMS) – Guidance and Template*. Available at: https://www.hsa.ie/eng/your_industry/construction/resources-for-contractors/risk_assessment_method_statement_rams_template_and_guidance/

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0.0 Definitions

0.1 Terms

Term	Definition
Appointed Person (AP) for Lifting	Refers to the competent individual responsible for the planning and execution of lifting operations involving cranes and other lifting equipment. This person maintains overall control of the lifting operation and acts on behalf of the management of the organisation requiring the load to be moved.
Centre of Gravity (CoG)	The center of gravity is a geometric property of any object. It is the theoretical point in an object where all of its weight can be considered to act as if it were concentrated at a single point (i.e., the average location of the weight of an object).
Competent Person	A competent person is deemed, in respect of the task that they are required to perform, to possess the skills, relevant experience and certifications considered necessary and appropriate to the nature of the work to be undertaken.
Crane Supervisor	A competent person who controls the lifting operation and ensures that it is carried out in accordance with the Appointed Person's (AP) safe system of work.
GA1 Form	Report of Thorough Investigation - this form may be used to record the thorough examination and testing of Lifting Equipment, as set out in the Safety, Health and Welfare at Work (General Application) Regulations, 2007, as amended.
GA2 Form	Report of Weekly Examination - this form may be used to record the weekly examination of Lifting Equipment used on construction sites, as set out in the Safety, Health and Welfare at Work (General Application) Regulations, 2007, as amended.
GA3 Form	Report of Results of Inspections of Work Equipment for Work at a Height - this form may be used to assist in compliance with the Safety Health and Welfare at Work (General Application) Regulations 2007 Regulation 119 – Inspection of Work Equipment in relation to scaffolds, guard-rails, toe-boards, barriers or similar means of protection, fixed and mobile working platforms, nets, airbags or other collective safeguards for arresting falls, personal fall protection systems, work positioning systems, rope access and positioning techniques, fall arrest systems, work restraint systems and ladders.
Guidance	A document intended to outline best practice. Guidelines/ guidance are not mandatory but endeavor to provide assistance to stakeholders in following established rules while allowing for flexibility and common sense in different scenarios.
Heating, Ventilation, and Air Conditioning (HVAC)	These systems use advanced technologies to regulate temperature, humidity, and indoor air quality in buildings and vehicles.
Loadbar Spreader	A loadbar spreader bar is a piece of lifting equipment designed to distribute the weight of a heavy or bulky load over a wider area, allowing for safer handling. In the realm of lifting by crane or similar equipment, a spreader bar serves the critical function of redirecting rigging from multiple lift points to a single collector point, typically from the load itself to the crane hook.

Term	Definition
Lifting Operations and Lifting Equipment Regulations (LOLER)	These UK regulations do not have jurisdiction in the Republic of Ireland but provide guidance on safe lifting by machines, the planning and organisation of lift operations, persons engaged in lifting, and examination of lifting equipment.
Lifting Accessories	The equipment or devices used to attach a load to a machine for the purpose of lifting and/or object handling. They are not the lifting machine itself; they are the tools used with it to secure and control the load (e.g. loadbar spreader)
Lift Plan	A lift plan is a critical document outlining the safe execution of lifting operations. Where mobile cranes are used, the lift plan must adhere to the guidelines and requirements set out in the National Standards Authority of Ireland (NSAI) Code of Practice I:S. 360:2019, which provides a framework for safe practices in lifting operations. The Lift Plan should be a live document, subject to updates approved by an Appointed Person (AP) if conditions or parameters change.
Low Voltage (LV)	LV systems generally handle up to 1000V AC or 1500V DC, the voltage encountered in homes and commercial buildings. Typical single-phase LV systems are 110 or 230 volts, whereas three-phase systems may operate at 400 volts.
Object Handling	As outlined in the Safety, Health and Welfare at Work (General Application)(Amendment) Regulations 2020 [S.I. No. 2 of 2020], “object handling” is a reference to lifting, lowering or transporting a load by the use of lifting accessories, whereby the assistance of a person or the operator of the machine is required for hooking or unhooking the load, or stabilising it while it is being transported.
Off-Site Manufacturing (OSM)	OSM is an example of a modern method of construction, where building components or modules are built in a factory before being transported to a construction site for final assembly/ installation.
Permission to Ship (PTS)	A Permission to Ship (PTS) checklist should be completed for each delivery of electrical equipment. This ensures that all appropriate checks and notifications are undertaken – to ensure site readiness and quality control.
Project Supervisor for Construction Stage (PSCS)	Where appointed, the role of the PSCS is to manage and co-ordinate health and safety matters during the construction stage. The PSCS is the person or company appointed by the client to manage and coordinate safety and health matters during the construction stage of a project. This role is required in defined circumstances as per the Safety, Health and Welfare at Work (Construction) Regulations 2013 [SI No. 291 of 2013].
Project Supervisor for Design Process (PSDP)	The duty of the PSDP is to ensure co-ordination of the work of designers throughout a project. The Regulations require that there be only one PSDP appointed per project. This role is required in defined circumstances as per the Safety, Health and Welfare at Work (Construction) Regulations 2013 [SI No. 291 of 2013].
The Provision and Use of Work Equipment Regulations (PUWER)	The Provision and Use of Work Equipment Regulations (PUWER) 1998 is a set of UK safety regulations designed to ensure all machinery and equipment in the workplace is safe to use. These UK regulations do not have jurisdiction in the Republic of Ireland but provide useful guidance.
Risk Assessment Method Statement (RAMS)	A RAMS can form part of a contractors/ self-employed persons’ safety management system. In accordance with the Safety, Health and Welfare at Work Act 2005, employers are required under Section 8 to provide “ <i>systems of work that are planned, organised, performed,</i>

Term	Definition
	<i>maintained and revised as appropriate so as to be, so far as is reasonably practicable, safe and without risk to health”.</i>
Slinger/Signaller	The role of a Slinger/Signaller in construction is crucial for ensuring the safe and efficient movement of loads using cranes, hoists, or other lifting equipment. It includes slinging (i.e. attaching loads) and signalling (i.e., directing lifting operations).
Working Load Limit (WLL)	WLL refers to the maximum load limit that a piece of lifting equipment is designed to lift safely under normal conditions, as specified by the manufacturer.

0.2 Abbreviations

Term	Definition
AC	Alternating Current
AP	Appointed Person (for Lifting)
CE	CE marking (for products covered by harmonised EU rules)
CoG	Centre of Gravity
DC	Direct Current
FAT	Factory Acceptance Testing
HSA	Health and Safety Authority
HVAC	Heating, Ventilation, and Air Conditioning
LOLER	UK' Lifting Operations and Lifting Equipment Regulations
LV	Low Voltage
WLL	Working Load Limit

0.3 References

Document Reference	Document Title	Document Link
I.S. 360:2019	I.S. 360:2019 Code of Practice: Safe use of cranes in the construction industry - Part 1: General	I.S. 360:2019 Code of Practice: Safe use of cranes in the construction industry - Part 1: General
S.I. No. 10 of 2005	Safety, Health and Welfare at Work Act 2005	Safety, Health and Welfare at Work Act 2005
IRU I-0323	International Guidelines on Safe Load Securing for Road Transport	IRU Guidelines
2025 CoP	HSA Code of Practice: Safe Use of Industrial Trucks (2025)	HSA Publications
IEC 61439-1	I.S. EN IEC 61439-1:2021 - Low-voltage equipment and control gear assemblies - Part 1: General rules (IEC 61439-1:2020)	NSAI Standards
S.I. No. 291 of 2013	Safety, Health & Welfare at Work (Construction) Regulations 2013	Safety, Health & Welfare at Work (Construction) Regulations 2013 (S.I. No. 291/2013)

1.0 Introduction

A CIF working group was established to address concerns around the movement, lifting and installation of electrical equipment by consolidating best available industry guidance and protocols. Invitations for the working group were extended to manufacturers, designers, Project Supervisor Design Process (PSDP), Project Supervisor Construction Stage (PSCS), civil and electrical contractors, and specialist lifting companies. This guidance endeavours to define and document an industry guide for the safe lift and shift of electrical equipment - mindful of building design, equipment design, site characteristics, load characteristics, administration, competency and compliance.

Lifting and shifting are recognised as high-risk activities in construction, particularly with large, heavy and awkward loads – such as electrical equipment. Risks include load movement during transportation, falling loads, failure of lifting eyes, damage, ground collapse, crush injuries, and musculoskeletal injuries from improper manual handling techniques. Prior planning, training, and adherence to established safety protocols are crucial to mitigate these hazards. The risk assessment process is central to effective ergonomic risk management and HSA guidelines for managing ergonomic risks ⁵ and for manual handling risk assessment in transport and storage⁶ should be followed.

As for all construction-related activities, safe systems of work must be planned and followed. The handling of electrical equipment can be extremely hazardous if safe work protocols are not suitably planned and executed. Some general hazards include:

- **Materials Handling Hazards:** the lift, shift and handling of electrical equipment may pose a risk of crush injury or entrapment. Components can fall, shift or fail during lifting or installation and cause severe injuries. These activities may also present pinch-point hazards (e.g. trapping fingers or hands) or cause back strain or musculoskeletal injuries from individuals attempting to influence the lift or movement of electrical equipment.
- **Room Readiness:** Room must be ready for receipt of electrical equipment. Floors, walls, doors etc. must be free of obstructions, debris and materials. **IMPORTANT:** This is a primary cause of incidents involving the lift and shift of electrical equipment, due to the double handling aspect.
- **Environmental Conditions:** wind limit values should be defined for lifts via lifting machines (e.g. crane, telehandler, forklift etc.); uneven ground may cause instability of load during movement; load-bearing characteristics of the ground may be inadequate to support the lifting activity; risk of moisture ingress/damage to the electrical equipment; and inadequate lighting may cause unsafe working.
- **Improper Selection/Use of Tools and Equipment:** Using incorrect lifting equipment or tools can lead to accidents.
- **Electrical Hazards:** the potential for electric shock resulting from contact with live parts during installation/ removal. Even when isolated, electrical equipment can retain dangerous voltages.

⁵ HSA (2019). *Risk Assessment for Managing Ergonomic Risks – to improve Musculoskeletal Health*. Available at: <https://www.hsa.ie/media/kfpltfh/103525-hsa-9-managing-ergonomic-risks-brochure.pdf>

⁶ HSA (2013). *Guide on Manual Handling Risk Management in Transport and Storage*. Available at: https://www.hsa.ie/media/tb5l23rr/guide_on_manual_handling_risk_management_in_transport_and_storage-copy.pdf

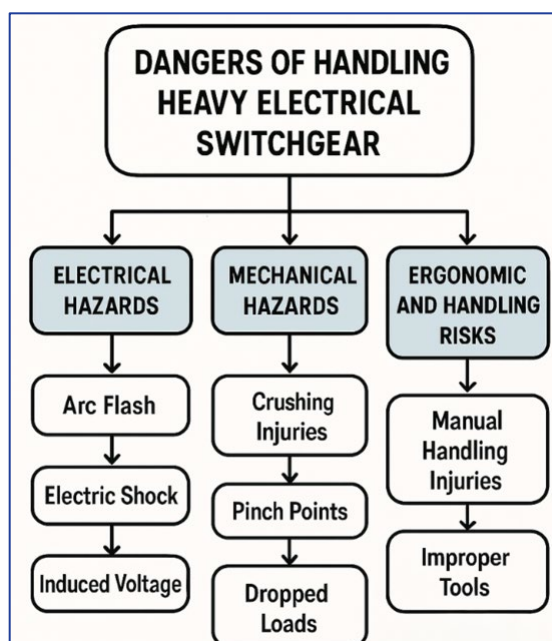


Figure 1 - Potential Safety Hazards for Lift & Shift of Electrical Equipment

This guide focuses on the elimination of manual handling, use of engineering controls and improvements in safety by engaging design teams early in the project. It is not an exhaustive list but provides essential design recommendations. Some key considerations for the safe lifting and shifting of electrical equipment include the following:

- Adequate and timely planning and coordination of lift and shift activities.
- Compliance with relevant standards (e.g. IEC EN 61439-1 for low-voltage, LV), and any manufacturer responsibilities, including design verification and marking of lifting provisions.
- Select lifting equipment (e.g. mobile crane, spider crane, telehandler, forklift, skoots etc.).
- For greenfield projects, locating the electrical equipment room close to the exterior of the building for easy access and ensuring adequate load-bearing capacity for transporting loads.
- Ensuring adequate access routes, ceiling heights, and floor load capacities.
- Managing top-heavy equipment by accurately identifying the centre of gravity (CoG) and the load weight.
- Designing for top cable entry to maintain a low CoG in busbar chambers.
- Minimising handling by using skid-mounted, factory-assembled equipment.
- Considering modular equipment buildings to reduce on-site lifting and installation risks.
- Providing lifting eyes or approved lifting points for safe handling.
- Designing plinths to be forklift compatible.
- Ensuring floors are level and stable.
- Accounting for both floor-standing and wall-mounted equipment requirements.
- Applying a lift and shift check sheet across all project stages.
- Ensuring all site lifting operations comply with regulations, national and international standards, codes of practice and Health and Safety Authority (HSA) guidelines.
- For brownfield sites, isolate and verify isolation of the power supply, before commencing any work involving the movement of installed electrical equipment. Utilise lockout/tagout (LOTO) protocols.
- Prior to installation/ removal of electrical equipment, inspect for potential damage, wear, corrosion and proper grounding/ earthing.
- Utilise competent personnel in all stages of lift and shift operations.

1.1 Purpose

The purpose of this guidance is to prevent injury during the lift and shift of electrical equipment by ensuring a risk-based approach is adopted throughout the associated life cycle.

The guidance is intended to provide a structured approach to align all parties involved in the conceptual design of the building, electrical equipment design, transport, offloading, installation and final positioning. The guidance should apply for both greenfield and brownfield facilities. It should be noted that this guidance does not replace the obligation to comply with any regulations, national or international standards or established codes of practice. This guidance does not address detailed lifting methodologies, which must be developed through project-specific lift planning and risk assessment.

1.2 Scope

The scope includes high voltage (HV), medium voltage (MV) and low voltage (LV) control and protection electrical equipment and associated movements indoors/outdoors. Activities covered include the design, loading/ unloading, lifting, skidding, rolling and placement of electrical equipment. This guidance focuses on eliminating manual handling and associated risks by engaging design and project teams early in the project stages to ensure adequate planning, risk assessment and use of appropriate tools and equipment. It is not exhaustive list but provides essential recommendations for the safe lifting and shifting of electrical equipment.

2.0 Regulatory Framework

This guidance is not intended as a legal interpretation of the Safety, Health and Welfare at Work Act, 2005, the Safety, Health and Welfare at Work (Construction) Regulations 2013 or any other Regulations, Standards or Codes of Practice. The following sections detail the primary Acts, Regulations, Standards and Codes of Practice applying to the lift and shift of electrical equipment albeit that this is not an exhaustive list and reflects those enacted at the time of issue.

IMPORTANT: “Work involving the assembly or dismantling of heavy prefabricated components” is listed as a ‘Particular Risk’ in Schedule 1 of the Safety, Health and Welfare at Work (Construction) Regulations 2013 (Number 291 of 2013) and necessitates the appointment of PSDP and PSCS and other legislated deliverables.

2.1 Safety, Health and Welfare at Work Act 2005 (Number 10 of 2005)

S.8 - General Duties of Employer:

- (1) Every employer shall ensure, so far as is reasonably practicable, the safety, health and welfare at work of his or her employees.
- (2) Without prejudice to the generality of subsection (1), the employer's duty extends, in particular, to the following:
 - (e) providing systems of work that are planned, organised, performed, maintained and revised as appropriate so as to be, so far as is reasonably practicable, safe and without risk to health;
 - (g) providing the **information, instruction, training and supervision** necessary to ensure, so far as is reasonably practicable, the safety, health, and welfare at work of his or her employees;

S.10 - Instruction, training and supervision of employees:

- (1) Without prejudice to the generality of section 8 and having regard to sections 25 and 26, every employer shall, when providing instruction, training and supervision to his or her employees in relation to their safety, health and welfare at work, ensure that
 - (a) **instruction, training and supervision** is provided in a form, manner and, as appropriate, language that is reasonably likely to be understood by the employee concerned,
- (2) **Training** under this section shall be adapted to take account of new or changed risks to safety, health and welfare at work and shall, as appropriate, be repeated periodically.
- (3) Training under this section shall be provided to employees—
 - (a) on **recruitment**,
 - (b) in the event of the **transfer of an employee or change of task** assigned to an employee,
 - (c) on **the introduction of new work equipment, systems of work or changes in existing work equipment** or systems of work, and
 - (d) on the introduction of **new technology**.

S.19 - Hazard identification and risk assessment:

- (1) Every employer shall **identify the hazards in the place of work under his or her control, assess the risks presented by those hazards and be in possession of a written assessment** (to be known and referred to in this Act as a “risk assessment”) of the risks to the safety, health and welfare at work of his or her employees, including the safety, health and welfare of any single employee or group or groups of employees who may be exposed to any unusual or other risks under the relevant statutory provisions.

S.20 - Safety statement

- (1) Every employer shall prepare, or cause to be prepared, a written statement (to be known and referred to in this Act as a “safety statement”), based on the identification of the hazards and the risk assessment carried out under section 19, specifying the manner in which the safety, health and welfare at work of his or her employees shall be secured and managed.

2.2 Safety, Health and Welfare at Work (General Application) Regulations 2007 [Number 299 of 2007], as amended by the Safety, Health and Welfare at Work (General Application Regulations) 2020 [Number 2 of 2020]

Chapter 2: Use of Work Equipment

Chapter 4: Manual Handling

Chapter 5: Lifting Equipment

S.51 - Lifting equipment— signalling and operation:

An employer shall ensure that—

- (a) lifting equipment is operated by a competent person or by a person who is under the direct supervision of a competent person for the purpose of training,
- (b) (no person under 18 years of age is employed to—
 - (i) give signals to the operator of lifting equipment driven by mechanical power or
 - (ii) to operate any such equipment,
- (c) every signal given for directing the movement of lifting equipment—
 - (i) is distinctive in character, and
 - (ii) such that the person to whom it is given is able to hear or see it easily, and
- (d) signalling devices are—
 - (i) properly maintained, and
 - (ii) the means of communication are adequately protected from accidental interference.

S.52 - Examination and testing of lifting equipment.

S.53 - Reports by competent persons.

S.54 - Keeping of records and registers of lifting equipment.

S.55 - Safe working loads for excavators, draglines, telehandlers, loaders or combined excavators and loaders when used as cranes:

55. F20[(1) In this Regulation, reference to—

- (a) “machine” is a reference to an excavator, a telehandler, or a backhoe loader when used for object handling, and
- (b) “object handling” is a reference to lifting, lowering or transporting a load by the use of lifting accessories, whereby the assistance of a person or the operator of the machine is required for hooking or unhooking the load, or stabilising it while it is being transported.]

(2) An employer shall ensure that—

- (a) before a machine to which this Regulation applies is first F20[used for object handling], a competent person—
 - (i) specifies the safe working load or loads which may be raised and lowered by the machine, or where its safe working load depends on the configuration of the machine, its safe working load for the different configurations are determined, and
 - (ii) provides a signed certificate specifying the safe working F20[load for the different configurations of the machine and] any necessary safety provisions,
- (b) the certificate referred to in subparagraph (a)(ii) is kept available for inspection with the machine,
- (c) a machine is not loaded beyond the relevant safe working load specified in the certificate required by subparagraph (a)(ii), or as specified by the manufacturer, whichever is the lower, except when Regulation 42(j) applies,
- (d) the specified safe working load or loads F20[and, where applicable, the outrigger or jack position] and the length of jib or boom to which the safe working loads relate is either plainly marked on the machine or F20[information] relating safe working loads to the distance worked is F20[displayed] in a clearly visible position in the driver's cab,

- (e) if, after the issue of the certificate required by subparagraph (a)(ii), a machine undergoes any substantial alteration or repair likely to affect the specified safe working loads, that certificate is cancelled and a new certificate is obtained,
- (f) machines with a maximum rated lift capacity at a minimum lift point radius as specified by the manufacturer of greater than or equal to 1,000kg or an overturning moment greater than or equal to 40,000 Nm are fitted with—
 - (i) check valves on the cylinders used for lifting or by another means to prevent a gravity fall of the load in the event of a hydraulic failure, and
 - (ii) an acoustic or visual warning device that indicates to the operator when the rated lift capacity or corresponding load moment is reached.]
- (g) F21[...]
- (h) F21[...]
- (i) means of identification are plainly marked on machines to which this Regulation applies, and
- (j) machines to which this Regulation applies are examined and tested periodically in accordance with Parts B and C of Schedule 1.

S.57 - Construction, testing, examination and safe working load of lifting accessories

S.69 – Duties of employer

An employer shall—

- (a) take appropriate organisational measures, or use the appropriate means, in particular mechanical equipment, to avoid the need for the manual handling of loads by the employer's employees,
- (b) where the need for the manual handling of loads by the employer's employees cannot be avoided, take appropriate organisational measures, use appropriate means or provide the employer's employees with such means in order to reduce the risk involved in the manual handling of such loads, having regard to the risk factors specified in Schedule 3,
- (c) wherever the need for manual handling of loads by the employer's employees cannot be avoided, organise workstations in such a way as to make such handling as safe and healthy as possible, and—
 - i. taking account of the risk factors for the manual handling of loads specified in Schedule 3, assess the health and safety conditions of the type of work involved and take appropriate measures to avoid or reduce the risk particularly of back injury, to the employer's employees,
 - ii. ensure that particularly sensitive risk groups of employees are protected against any dangers which specifically affect them in relation to the manual handling of loads and the individual risk factors, having regard to the risk factors set out in Schedule 3,
 - iii. ensure that where tasks are entrusted to an employee, his or her capabilities in relation to safety and health are taken into account, including, in relation to the manual handling of loads by employees, the individual risk factors set out in Schedule 3, and
 - iv. when carrying out health surveillance in relation to the manual handling of loads by employees, take account of the appropriate risk factors set out in Schedule 3, and
- (d) without prejudice to section 9 of the Act, ensure that those of the employer's employees who are involved in manual handling of loads receive general indications and, where possible, precise information on—
 - i. the weight of each load, and
 - ii. the centre of gravity of the heaviest side when a package is eccentrically loaded.

SCHEDULE 1 Requirements for Work Equipment

Part C - Circumstances requiring testing of lifting equipment as part of a thorough examination.

SCHEDULE 3 - Risk Factors for Manual Handling of Loads

1. Characteristics of the load

The manual handling of a load may present a risk particularly of back injury if it is:

- too heavy or too large,
- unwieldy or difficult to grasp,
- unstable or has contents likely to shift,

positioned in a manner requiring it to be held or manipulated at a distance from the trunk, or with a bending or twisting of the trunk, or likely, because of its contours or consistency (or both), to result in injury to employees, particularly in the event of a collision.

2. Physical effort required

A physical effort may present a risk particularly of back injury if it is:

too strenuous,
only achieved by a twisting movement of the trunk,
likely to result in a sudden movement of the load, or
made with the body in an unstable posture.

3. Characteristics of the working environment

The characteristics of the working environment may increase a risk particularly of back injury if:

there is not enough room, in particular vertically, to carry out the activity,
the floor is uneven, thus presenting tripping hazards, or is slippery in relation to the employee's footwear,
the place of work or the working environment prevents the handling of loads at a safe height or with good posture by the employee,
there are variations in the level of the floor or the working surface, requiring the load to be manipulated on different levels,
the floor or foot rest is unstable, or
the temperature, humidity or ventilation is unsuitable.

4. Requirements of the activity

The activity may present a risk particularly of back injury if it entails one or more of the following requirements:

over-frequent or over prolonged physical effort involving in particular the spine,
an insufficient bodily rest or recovery period,
excessive lifting, lowering or carrying distances, or
a rate of work imposed by a process which cannot be altered by the employee.

5. Individual Risk Factors

The employee may be at risk if he or she:

is physically unsuited to carry out the task in question,
is wearing unsuitable clothing, footwear or other personal effects, or
does not have adequate or appropriate knowledge or training.

2.3 Safety, Health and Welfare at Work (Construction) Regulations 2013 (Number 291 of 2013)

S.19 - Duties of the project supervisor for the construction stage, safety awareness and skills certification:

(1) The project supervisor for the construction stage shall—

- (a) coordinate arrangements to ensure that persons at work on the construction site to whom Regulation 4(2) applies are each in possession of a valid safety awareness registration card referred to in Schedule 4,
- (b) coordinate arrangements to ensure that those persons who engage in tasks specified in Schedule 5 are each in possession of an appropriate valid construction skills registration card referred to in that Schedule, and
- (c) monitor the implementation of the arrangements and take any necessary corrective action as set out in Regulation 20.

S.25 - Safety awareness and skills certification:

(1) Every contractor or other person under whose direct control persons work on a construction site shall ensure that each of those persons, in this Regulation called a “worker”-

- (a) is in possession of a valid safety awareness registration card referred to in Schedule 4 if Regulation 4(2) applies to the worker,
- (b) is in possession of an appropriate valid construction skills registration card referred to in Schedule 5 if the worker engages in any of the tasks specified in that Schedule, and
- (c) has received site-specific safety induction instruction if Regulation 4(3) applies to the worker.

Schedule 1: Non-exhaustive List of Work Involving Particular Risks to the Safety, Health and Welfare of Persons at Work (Regulations 12, 15 and 16):

1. Work which puts persons at work at risk of –
 - (a) falling from a height,
 - (b) burial under earthfalls, or
 - (c) engulfment in swampland, where the risk is particularly aggravated by the nature of the work or processes used or by the environment at the place of work or construction site.
2. Work which puts persons at work at risk from chemical or biological substances constituting a particular danger to the safety and health of such persons or involving a statutory requirement for health monitoring.
3. Work with ionising radiation requiring the designation of controlled or supervised areas as defined in Directive 96/29/Euratom.
4. Work near high voltage power lines.
5. Work exposing persons at work to the risk of drowning.
6. Work on wells, underground earthworks and tunnels.
7. Work carried out by divers at work having a system of air supply.
8. Work carried out in a caisson with a compressed-air atmosphere.
9. Work involving the use of explosives.
10. Work involving the assembly or dismantling of heavy prefabricated components.

Schedule 4: Safety Awareness Scheme

Schedule 5: Construction Skills Awareness

2.4 Irish Standards

- I.S. EN IEC 61439-1:2021 (Low-voltage equipment and control gear assemblies - Part 1: General rules (IEC 61439-1:2020)).
- I.S. 360: 2019 (Code of Practice: Safe use of cranes in the construction industry - Part 1: General).

2.5 UK Standards

- BS 7121 (Safe Use of Cranes)
- BS 5975 (Temporary Works)
- CPA Technical Information Notes (lifting, rigging, transport)

2.6 International Standards

- ISO 12480 (Cranes – Safe Use)
- EN 12100 (Safety of Machinery – Risk Assessment)
- EN 13155 (Non-fixed load lifting attachments)
- EN IEC 61439-1:2021 (Low-voltage equipment and control gear assemblies - Part 1: General rules (IEC 61439-1:2020))

2.7 Health and Safety Authority Codes of Practice

The Health and Safety Authority⁷ has published a range of pertinent Codes of Practice including the following:

- [Access and Working Scaffolds](#)
- [Safe Use of Industrial Trucks](#)
- [Avoiding Danger from Overhead Electricity Lines](#)
- [Avoiding Danger from Underground Services](#)
- [Design and Installation of Anchors](#)
- [Working in Confined Spaces](#)

⁷ HSA (2026). *Publications and Forms*. Available at: https://www.hsa.ie/eng/publications_and_forms/

Other HSA guidelines relevant to the lift and shift of electrical equipment include:

- Guidelines on the Procurement, Design and Management Requirements of the Safety Health and Welfare at Work (Construction) Regulations 2013: <https://www.hsa.ie/media/1t4ku0l3/guidelines-on-procurement-const-regs-2013.pdf>
- Summary of Key Duties under the Procurement, Design and Site Management Requirements of the Safety Health and Welfare at Work (Construction) Regulations, 2013: https://www.hsa.ie/eng/publications_and_forms/publications/construction/summary_of_key_duties_under_the_procurement_design_and_site_management_requirements_of_the_safety_health_and_welfare_at_work_construction_regulations_2013/
- Risk Assessment Method Statement (RAMS) Guidance and Template: https://www.hsa.ie/eng/your_industry/construction/besmart_ie_for_construction/risk_assessment_method_statement_rams_template_and_guidance/
- Load Securing: https://www.hsa.ie/eng/vehicles_at_work/load_securing/
- Load Security Information Series - The Basics of Vehicle Load Security: https://www.hsa.ie/eng/Publications_and_Forms/Publications/Work_Related_Vehicles/Load_Security_Information_Series.pdf
- Transport: https://www.hsa.ie/eng/your_industry/transport/
- Moving Goods: https://www.hsa.ie/eng/Publications_and_Forms/Publications/Work_Related_Vehicles/Moving_Goods.pdf
- International Guidelines on Safe Load Securing for Road Transport: https://www.hsa.ie/eng/Vehicles_at_Work/Load_Securing/Guidance_and_Publications/IRU_Guidelines.pdf
- Lifting: https://www.hsa.ie/eng/publications_and_forms/publications/general_application_regulations/gen_apps_work_equipment
- Vehicles at Work Guidance & Resources: https://www.hsa.ie/eng/vehicles_at_work/transport_safety_guidance_resources/
- Managing Ergonomic Risk in the Workplace to Improve Musculoskeletal Health: <https://www.hsa.ie/media/gcpfhxpg/103525-hsa-12-managing-ergonomic-brochure.pdf>

2.8 Industry Guidance

- CIF Lifting Operations Working Group Guidance Document, GN-25-01.⁸
- CIF Management of the Design of Temporary Works⁹.

⁸ CIF (2025). *Lifting Operations Working Group Guidance Document, GN-25-01*. Available at: <https://cif.ie/>

⁹ CIF (2021). *Management of the Design of Temporary Works*. Available at: <https://cif.ie/>

3.0 Competencies for Lift and Shift

All lifting and loading shall be undertaken by competent persons; this includes Appointed Persons (AP) and others. A competent person is deemed, in respect of the task that they are required to perform, to possess the skills, relevant experience and certifications considered necessary and appropriate to the nature of the work to be undertaken.

The CIF Safety and Health Subcommittee developed a Lifting Operations Working Group Guidance Document, GN-25-01¹⁰ to define industry standards for training of crane supervisors, appointed persons (for lifting) and slinger/signallers and to provide a standardised Lift Plan template. It remains an employer's responsibility to determine the appropriate training based on the risks presented. For an operative to be deemed competent to carry out lift and shift operations, they should undergo a training programme. The aim of this training programme is to ensure the learners acquire the knowledge, skills and practical competence required to safely plan, prepare and carry out jacking, skooting and moving of loads using approved equipment, in compliance with relevant health and safety legislation, industry standards and manufacturer's instructions.

3.1 Roles and Responsibilities for Lift and Shift

The HSA Guidelines on the Procurement, Design and Management Requirements of the Safety Health and Welfare at Work (Construction) Regulations 2013¹¹ outline the respective roles and responsibilities. An interpretative summary of the application for lift and shift activities is provided as follows:

- **Client:** where the work entails more than one contractor/ there is a particular risk/ the work will last more than 30 days (500 person days), the client shall appoint, in writing, a competent and adequately resourced Project Supervisor Design Process (PSDP) before design work starts. Similarly, a competent Project Supervisor for the Construction Stage (PSCS) shall be appointed in writing.
- **Designer:** design teams have a significant role when it comes to eliminating or reducing the risk associated with the movement of electrical equipment. At the design stage, there is a need to design building layouts to receive large infrastructure/services such as electrical equipment. This includes consideration of ceiling heights, load bearing characteristics, access and egress routes and the type of lifting equipment required. Ideally, consider the use of Off-Site Manufacturing (OSM) or external, skid-mounting. Early engagement between the electrical equipment manufacturer and the design team is essential to address any concerns related to the structural integrity of bracing, lifting points, and the overall panel design, including site-specific constraints.
- **Employer/ Duty Holder:** ensure compliance with legislation, provide safe systems of work, and adequate resources. Must be satisfied that each designer and contractor appointed has adequate training, knowledge, experience, and resources for the work to be performed.
- **Construction Management Team/ Project Manager:** responsible for planning and overall safety of the lift/ shift.
- **Procurement/ Logistics:** in conjunction with the construction management team/project manager, help to define the technical scope and requirements in-keeping with client specifications whilst managing the Permission to Ship documentation.
- **Appointed Person/ Lifting Supervisor:** competent person who has overall control of the plant equipment operation and acts on behalf of the management of the organisation requiring the load to be moved. The Appointed Person (AP) may delegate responsibilities for the lifting element to a Lifting Supervisor and is generally not

¹⁰ CIF (2025). *Lifting Operations Working Group Guidance Document, GN-25-01*. Available at: <https://cif.ie/>

¹¹ HSA (2017). *The HSA Guidelines on the Procurement, Design and Management Requirements of the Safety Health and Welfare at Work (Construction) Regulations 2013*. Available at: <https://www.hsa.ie/media/eq3dfjxk/103525-hsa-3-procurement-guideline-brochure.pdf>

responsible for the shift element. The Lifting Supervisor then directs the operation on site, ensuring safe execution. A Lifting Supervisor is required in the absence of an Appointed Person.

- **Slinger/ Signaller:** competent person responsible for attaching and detaching the load to and from the crane or lifting equipment, for correct selection and use of lifting accessories in accordance with the specifications of the Appointed Person, for initiating the movement of the load and for directing the plant operator to ensure safe movement of the plant equipment and the load.
- **Project Supervisor Construction Stage (PSCS):** where appointed, the PSCS will act as the overall coordinator for health and safety on the construction site, be accountable for the development and oversight of a construction stage safety and health plan and coordination of contractors and tasks, monitoring of compliance and management of risks to health and safety.
- **Project Supervisor Design Process (PSDP):** where appointed, the PSDP will coordinate design risk management and provide a preliminary safety and health plan to the PSCS, arrange for collation of relevant safety information, including design details, material info, operational and maintenance (O&M) manuals, and compliance documents. Handover of the safety file to the client upon project completion.
- **Manufacturers/ Suppliers:** factory production control, provision of product data, quality control and inspection/traceability records, labelling and packaging, guidance for loading/unloading and installation.
- **Temporary Works Coordinator:** where necessary, a temporary works co-ordinator (TWC) should be appointed with overall responsibility for managing and implementing the temporary works on a site (e.g. access routes, loading bays, etc.). Appointment of the TWC should be facilitated by the PSCS.
- **Contractors/ Subcontractors:** provide and manage safe systems of work, whilst allocating competent persons to defined tasks, ensuring adequate resourcing and coordination effort, and compliance with company and legal requirements.
- **Workers:** must follow safe systems of work and use personal protective equipment (PPE) as prescribed in site safety rules and as per the risk assessment/risk assessment method statement (RAMS), report hazards and unsafe working practices and adhere to training and instructions.

3.2 Planning & Risk Assessment

Risk Assessment Method Statements (RAMS) and Safe Plan of Action (SPA) are commonly used for assessing the risks and detailing safe working protocols in construction. Requirements for the moving, lifting and rigging of electrical equipment generally include the provision of lift plans, a full Risk Assessment Method Statement (RAMS), inspections and completion of GA1 - Report of Thorough Examination, GA2 - Report of Weekly Examination, GA3 - Report of Results of Inspections of Work Equipment for Work at a Height forms, and AP's checklist as appropriate. Supervision is an essential component of all safe lifting and loading activities and vigilance is required for adverse weather conditions. Maintain records of all lifts and share details in the safety file. Any damage to materials, even cosmetic, must be reported to responsible persons. Consider the following steps:

- Conduct a site survey and document hazards.
- Complete a risk assessment in line with Section 19 of the Safety, Health and Welfare at Work Act 2005¹².
- Prepare a Risk Assessment Method Statement (RAMS), or similar, detailing equipment, personnel, and steps.
- Consider ground conditions, obstructions, overhead services, access/egress.
- Integrate with the Safety, Health and Welfare at Work (Construction) Regulations 2013, and Temporary Works procedures (where applicable). Consider the need for temporary design works such as loading bays, temporary

¹² *Safety, Health and Welfare at Work Act 2005, S.I. No. 10 of 2005.* Available at: <https://www.irishstatutebook.ie/eli/2005/act/10/enacted/en/print>

bracing, propping, dewatering, weather protection etc. Where required, consult the [CIF Management of the Design of Temporary Works](#)¹³.

IMPORTANT: Regulation 69 and Schedule 3 of the Safety Health and Welfare at Work (General Application) Regulations 2007 outlines requirements for the undertaking of risk assessment for manual handling. HSA guidelines are provided for managing ergonomic risks¹⁴. An example on what to assess when conducting risk assessment is provided in Appendix 1 of the HSA guidance for manual handling risk assessment in transport and storage¹⁵.

3.3 Equipment Selection & Control

- **Lifting Equipment:** Cranes, spider cranes, hoists, gantries, forklifts/telehandlers - must be inspected prior to use and be subject to valid certificates of thorough examination (equivalent to UK LOLER).
- **Moving Equipment:** Skoots, robotic tug, hydraulic jacks, winches – must be fit for purpose and regularly inspected.
- **Marking & Certification:** All lifting accessories must be marked with WLL (Working Load Limit) and CE marked.
- **Maintenance:** All equipment maintained in line with the equivalent duties of the UK's Provision and Use of Work Equipment Regulations (PUWER) 1998¹⁶.

3.4 Training & Competence

- Operators and riggers must hold appropriate CSCS or equivalent training certification (e.g., CSCS for Slinger/Signaller, Crane Operator, Telehandler etc.).
- Specialist roles (Appointed Person, Lift Supervisors) must demonstrate competence through training and experience, as outlined in the CIF Lifting Operations Working Group Guidance Document, GN-25-01¹⁷.
- Competent in lift and shift operations - workers assigned to the installation/ removal of electrical equipment must be appropriately trained and experienced (e.g. in electrical safety, manual handling, task-specific RAMS etc.). Consideration may be given to other specialist training.
- Refresher training to be provided periodically.

3.5 Emergency Preparedness

- Prepare a rescue plan for each planned lift and shift operation.
- Ensure first aid provision is available on site.
- Nominate emergency contacts and communicate procedures before work starts.

¹³ CIF (2021). *Management of the Design of Temporary Works*. Available at: <https://cif.ie/>

¹⁴ HSA (2019). *Risk Assessment for Managing Ergonomic Risks – to improve Musculoskeletal Health*. Available at: <https://www.hsa.ie/media/kfpltfh/103525-hsa-9-managing-ergonomic-risks-brochure.pdf>

¹⁵ HSA (2013). *Guide on Manual Handling Risk Management in Transport and Storage*. Available at: https://www.hsa.ie/media/tb5l23rr/guide_on_manual_handling_risk_management_in_transport_and_storage-copy.pdf

¹⁶ *The Provision and Use of Work Equipment Regulations 1998*. (UK). Available at: <https://www.legislation.gov.uk/uksi/1998/2306/contents>

¹⁷ CIF (2025). *Lifting Operations Working Group Guidance Document, GN-25-01*. Available at: <https://cif.ie/>

4.0 Design & Manufacturing

Electrical equipment is critical infrastructure but is often heavy, bulky, and top-heavy, creating challenges during handling. Improper handling of equipment has led to serious accidents, including severe injuries and, in some cases, fatalities. Insufficient planning at the design stage can lead to safety hazards, delays, or damage. This guidance document outlines some best practice safety considerations for the lift and shift of electrical equipment, starting from design stage and extending through manufacturing, testing, and installation.

Design teams have a significant role when it comes to eliminating or reducing the risks associated with the movement of electrical equipment. This section includes some important design considerations that both building designers and electrical equipment designers can take account of which can greatly reduce the risk associated with the task. The PSDP should liaise closely with the Client and Design teams to ensure an appropriate design stage risk assessment is completed taking account of the general principles of prevention. At the design stage, there is a need to design building layouts to receive large infrastructure/ services such as electrical equipment/ Heating, Ventilation, and Air Conditioning (HVAC) systems. This includes consideration of ceiling heights, load bearing characteristics, access and egress routes and the type of lifting equipment required. Ideally, consider the use of Off-Site Manufacturing (OSM) or external, skid-mounting.

Early engagement between the electrical equipment manufacturer and the design team is essential to address any concerns related to the structural integrity of bracing, lifting points, and the overall panel design, including site-specific constraints. This proactive collaboration ensures that any potential issues are identified and resolved before fabrication begins.

4.1 Electrical Equipment Standards

There are numerous electrical equipment standards including, for example IEC and UL. The National Standards Authority of Ireland (NSAI) adopted the international standard IEC 61439-1, specifically the European Harmonised version I.S. EN 61439-1, which sets out the general rules and requirements for Low-Voltage Equipment and Control Gear Assemblies. As part of the EU, Ireland's national standards are largely derived from and align with these international standards, making IEC 61439-1 the authoritative standard for these assemblies in this country. This standard also covers the requirements for handling, installation, operation and maintenance of Low Voltage equipment.

Manufacturers are responsible for ensuring their products are designed/ manufactured with health and safety in mind, taking steps to eliminate (or minimise) the associated risks for handling and installation. Lifting and shifting considerations include the weight of equipment, its centre of gravity (e.g. top-heavy design?), existence/ positioning/ load-bearing characteristics of lifting eyes, the location of the loadbar spreader, plinths for lifting equipment, absence of sharp edges etc. Labelling should be clear and legible, with identification of means for lifting (the slinging technique).

4.2 Switch Room Location

Careful consideration shall be afforded to the location, positioning, layout and design of the switch rooms. The list of checks is non-exhaustive and should include the following:

- **Strategic Placement:** Locate electrical rooms for easy accessibility, efficient cable routing, and safety.
- **Greenfield Projects:** Position equipment rooms near exterior entrances to minimize internal handling.
- **Environmental Considerations:** Avoid flood-prone, high-vibration, or high-temperature areas.
- **Futureproofing:** Design switch rooms with clear replacement routes and space for future extensions of electrical equipment.
- **Floor Condition:** Ensure floors are level and structurally sound to support lifting operations and precise equipment alignment.

4.3 Modular Equipment Buildings

Where possible, consider modular equipment buildings, particularly for greenfield or restricted sites. Advantages include:

- Factory-assembled units reduce on-site handling.
- Controlled environments improve quality and alignment.
- Skid-mounted assemblies within modular rooms minimize lifting risks.
- Integrated plinths, lifting points, and forklift access included.
- Factory testing before delivery ensures reliable, fully functional systems on arrival.

4.4 Skid-mounted Equipment

Where possible, electrical equipment assemblies should be designed as skid-mounted units to minimise handling risks. Skid-mounted electrical equipment is pre-mounted on steel bases or skid frames with built-in lifting points, reducing the need for heavy lifting equipment or complicated rigging onsite. Benefits include the following:

- Factory alignment and full testing ensure predictable delivery without on-site reassembly.
- Reduced injury risk due to designated lifting points and minimized crane dependency.
- Easier handling in confined spaces.

The design requirements would include the following:

- Confirm dimensions, weight, and CoG.
- Verify slab capacity and anchorage.
- Provide lifting lugs, tie-down points, and transport bracing.
- Include forklift access points where necessary.
- Conduct Factory Acceptance Testing (FAT) on complete skid assemblies; remove braces only after final placement.

Once the design elements are set, it is crucial to focus on ensuring proper access routes and clearances for safe transportation and installation.

4.5 Pre-Delivery Checks

Prior to all lifting and shifting, an inspection is required to identify the appropriate form of lifting equipment. The margin of safety for lift equipment must be taken into account. All potential hazards or conflicts should be identified, including but not limited to access and egress, site gradient, load bearing characteristics of the ground, excavations, underground structures, services, overhead electricity or telephone cables and any other potential hazard specific to the work area. The list of checks is non-exhaustive and should include the following:

- **Access:** external access, internal routing, laydown / designated unloading area, located as close as possible to destination.
- **Ground condition:** sufficient space for delivery of vehicle and unloading plant, suitable ground conditions (flat, suitable surface, concrete, tarmacadam, rolled fine stone, steel plates etc. not open trenches / soft ground).
- **Inspection in advance of delivery:** managing organisation (Client, PSCS, Construction Management Team, etc.)
 - ground assessment to be completed and signed off in advance of delivery.
- **Security checks:** confirm that any delivery reflects that planned.
- **Room Readiness:** Room is ready for receipt; floors, walls doors etc including unobstructed access, free of debris and materials.

IMPORTANT: This is a primary cause of incidents involving the lift and shift of electrical equipment, due to the double handling aspect.

- **Characteristics of the Load:** details of load weight and final transport split drawings to be provided on delivery.
- **Lift and Shift:** consideration of movement of equipment in design for manufacturing, production, transport, destination transport, lift & shift. Also, consider the need for restricting access for other activities and personnel for the duration of the lift and loading.
- **Delivery transport:** the transport plan should include a layout of equipment on the truck trailer and ample spacing for safe offload. The delivery documentation shall also outline the pelleting and packaging information, and importantly, the weights, centre of gravity, lifting and slinging, top heavy, loadbar spreader location, labelling of the plant etc.
- **Factory Acceptance Tests (FAT):** where possible, the Construction Management Team/procurement/contractor (i.e. whoever is responsible for acceptance of the electrical equipment) should attend the FAT.

Permission to Ship (PTS): a permission to ship checklist should be completed. The vendor must advise the responsible Client/project team representative of the delivery date and approximate time of arrival (ETA) of the goods to jobsite, with a minimum notice time of 48 hrs. This should be in accordance with **Appendix 1 – Permission to Ship Template**.

- **Final Transport Drawings:** these shall be provided, detailing arrangements including the potential for split panels as per **Appendix 2 – Panel Manufacturer/ Supplier Checklist**.

The list of checks is non-exhaustive and should include the following to ensure the safe movement of equipment:

- Plan, manage and implement as though it were a shutdown.
- Prioritise equipment delivery.
- Ensure doorways along move-in routes exceed panel/skid dimensions plus clearance.
- Avoid bottlenecks in corridors.
- Ceiling heights must accommodate lifting devices.
- Floors must be assessed for point loads and slab capacity.
- Avoid floor openings, trenches, or gullies along move-in routes. Any floor plates or coverings must be flush and load-rated for heavy equipment movement. Floor gratings may impede movement if wheels get caught.
- Floors should be level to ensure proper joining of panel transport divisions.
- Temporary openings may be required.
- Inspect and agree access routes before delivery.
- Check SWL/ Lifting points/ Manufacturer Guidance/ Load Guidance:
 - o Manufacturer to provide guidance on load characteristics (e.g., top heavy equipment to be clearly labelled).
 - o Must be present before unloading commences onsite.
- Is specialist lifting equipment required (e.g. use of a spider crane)? Consider best practice measures such as those illustrated in **Appendix 5 – Lift and Shift Presentation**.

5.0 Transportation

The International Guidelines on Safe Load Securing for Road Transport¹⁸ and the HSA' Code of Practice for the Safe Use of Industrial Trucks should be understood and adhered to.

5.1 Load Positioning for Transportation

The following list of checks is non-exhaustive to ensure load securing and access/egress for transportation:

- Accessible for inspection.
- Walk space between pallets.
- Tie Off or rail required.
- Pallet width should equal the panel width.
- Pallet positioned in a staggered fashion, accessible for forklifts for side loaded electrical equipment, as illustrated in **Figure 2**.
Panel to be fixed to skids/ pallet (i.e. not free standing and dependent on ratchet straps).
- The panel may be bolted to the timber skid/pallet. De-crating activities must consider the stability of the panel during the de-crating process.

IMPORTANT: A shared ratchet strap for two or more panels of electrical equipment arrangement is not acceptable.

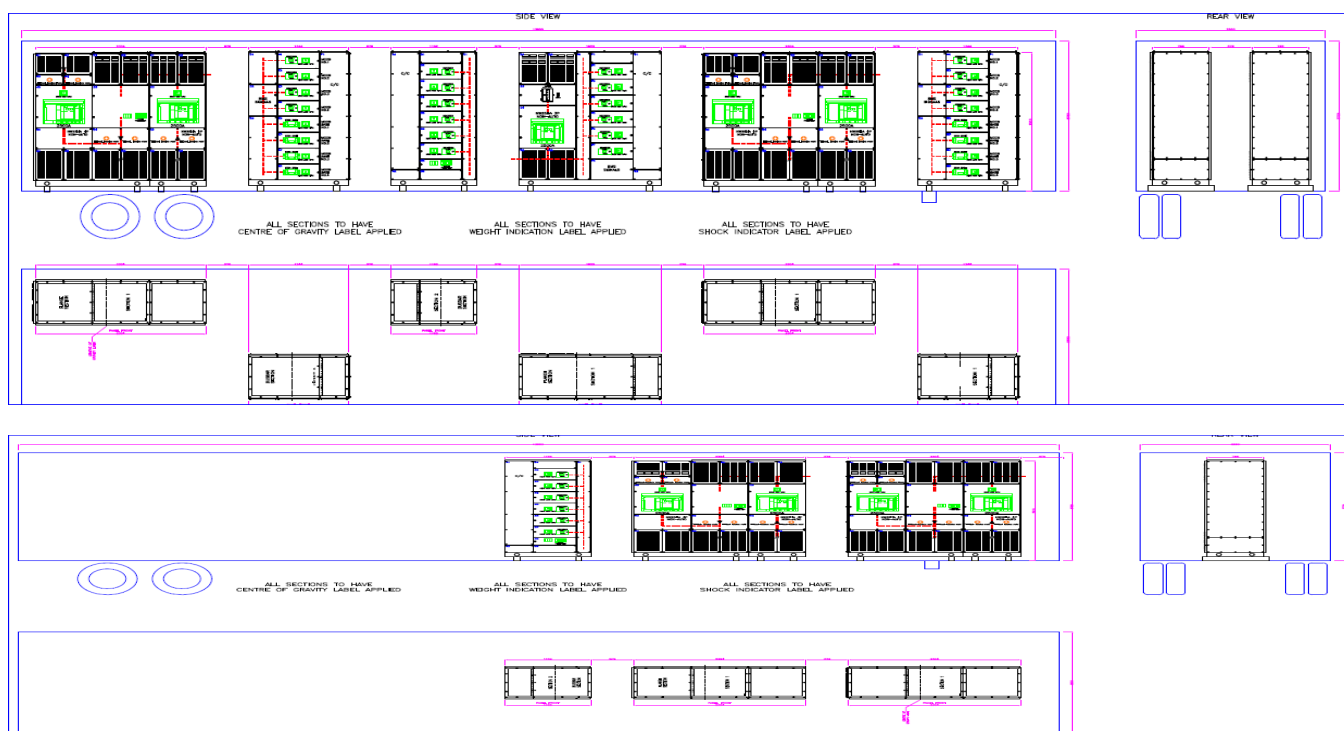


Figure 2 - Typical Load Positioning on a Curtain Side Trailer

¹⁸International Road Transport Union (2014). *International Guidelines on Safe Load Securing for Road Transport*. Available at: <https://www.iru.org/sites/default/files/2016-01/en-safe-load-securing-8th.pdf>



Figure 3 – Example of Strapping on a Curtain Side Trailer

5.2 Forklift-compatible Plinths

Safety considerations for forklift-compatible plinths include the following:

- **Design:** Plinths should allow forklift access with adequate clearance.
- **Strength:** Must support gross weight without deformation.
- **Access Points:** Clearly marked and unobstructed.
- **Handling:** Facilitates easy positioning without the need for lifting by crane (where feasible).
- **Integration:** Must remain compatible with skid-mounted assemblies.

As illustrated in **Figure 4** and **Figure 5**, front and rear plinth covers can be removed to facilitate forklift or panel truck access. The plinth design below allows for final positioning without the need to manually remove the panel off the forks/panel truck as the panel needs lowering only. The front cover is re-attached post installation.



Figure 4 - Front and Rear Plinth Covers Removed for Movement



Figure 5 - Front and Rear Plinth Covers Reinstated

5.3 Support Base

The support base will typically be made of wood that fits the package. This support structure shall support the package and be of a single construction. The panel should be bolted to the base so that if any strapping is damaged or removed during transport that the package is still secure. The panel should be strapped to the base using strapping suited to the application. Strapping should not interfere with the ability to lift the equipment safely.

5.4 Package Labelling/Marking

Electrical equipment shall be clearly marked. Centre of gravity marking is required on all electrical equipment panels taller than 500mm to ensure safe handling of the equipment. This marking shall adhere to ISO 7000-0627¹⁹. It is the responsibility of the packer to fit the labels in the correct position. **Figure 6** and **Figure 7** provide sample illustrations.

¹⁹ ISO. *ISO 7000 Graphical symbols for use on equipment*. Available at: <https://www.iso.org/obp/ui#iso:grs:7000:0627>



Figure 6 - Example of Package Marking



Figure 7 - Example of Centre of Gravity Indicator to ISO 7000-0627

5.5 Permission to Ship

A Permission to Ship template is provided in **Appendix 1 – Permission to Ship Template** of this document and should be tailored for the lift and shift of electrical equipment based on project and site-specific requirements. The electrical equipment shall be prepared and constructed to allow for the following:

- a) Ease of transportation and handling.
- b) Off-loading and place in position.
- c) Access to the designated destination
- d) Arrangement in the designated destination.
- e) Re-assembly in the designated destination.
- f) Suitable disconnection arrangements shall be allowed in the design and construction of all electrical equipment, where designated.

- g) After re-assembly at the designated destination, a complete re-test of all components, terminations, cables that were disconnected or removed for shipping, shall be carried out.

IMPORTANT: The Permission to Ship (PTS) documentation should address exact site requirements for the safe offloading and final positioning of electrical equipment.

5.6 Inspection

Upon delivery of the equipment, inspect the shipment for lost items and any damage that may have occurred during transit. If the package appears to be damaged, it may be necessary to unpack the equipment and inspect it for further damage. In case there is evidence of loss or damage, the buyer must follow this procedure:

- a) Note on the delivery receipt that the equipment being received is damaged.
- b) Contact the carrier that made the delivery and schedule an inspection.
- c) Inform the supplier representative that the equipment is damaged.
- d) Retain all product packaging for review by the carrier's inspector.

6.0 Loading/ Unloading

Loading of the equipment will typically be included in the supplier's scope and will be stipulated in the contract documents. Loading electrical equipment involves careful placement on a lift truck or forklift, ensuring proper balance, and considering factors like top and front weight distribution.

Typically, a specialist carrier will be contracted by the supplier to transport the equipment to the customer site address. It is the carrier's responsibility to secure the package and deliver safely without damage, to the customer. The carrier shall contact the site contact person to arrange a delivery day and time. The carrier will provide a packing list for the customer and request signoffs for the delivered package. Any visible damage shall be listed on the signed delivery docket. It is the carrier's responsibility to secure the signed docket before the package can be left at the customer's premises.

These guidelines are provided to help avoid personal injury and equipment damage during the lift and shift of electrical equipment at the job site. Due to varying panel configurations, a number of different shipping skids may be used. To help prevent distortion and minimize tipping of the electrical equipment during the moving process, keep the shipping skid bolted to the panel(s) until the equipment is delivered to its final installation area. Handle the equipment carefully to avoid damage to the components, enclosure, and finish. Keep the equipment in an upright position. Do not tip or lay flat the equipment unless intentionally done by the factory. Before moving the equipment, make sure that the route is clear of all obstructions and that fellow workers are a safe distance away.

IMPORTANT: All unloading and distribution will be by the Equipment Manufacturer/ Works Package Contractor/ Subcontractor using their own equipment labour and supervision unless otherwise agreed. These works will be covered by a Risk Assessment Method Statement (RAMS) specific for the task.

6.1 Use of a Forklift Truck

Electrical equipment may have shipping skids that facilitate the insertion of lift truck forks, with fork access from the narrow end. Refer to the HSA' Code of Practice: Safe Use of Industrial Trucks (2025)²⁰, which provides practical guidance on compliance with legislation related to the use of rider operated industrial trucks in all workplaces.

Some electrical equipment incorporate flat shipping skids. Forklift flat shipping skids from the front or broad side. When you use a forklift on a flat shipping skid:

- a) Verify that the forklift truck can handle the weight and size of the electrical equipment safely.
- b) Forklift only from underneath the shipping skid, by using the skid to support the load.
- c) Carefully position the electrical equipment on the forks for proper balance, noting that electrical equipment is often top and front-heavy.
- d) Make sure that the forks support the load.
- e) Keep the load against the carriage.
- f) Tilt the load backward toward the mast of the forklift truck.
- g) Use a belt to secure the electrical equipment to the forklift truck, as per Figure 8 - Use of a Forklift Truck.
- h) Consider the use of spotters along the route of travel.

²⁰ HSA (2025). *Code of Practice: Safe Use of Industrial Trucks*. Available at: https://www.hsa.ie/eng/publications_and_forms/publications/codes_of_practice/code_of_practice_safe_use_of_industrial_trucks/

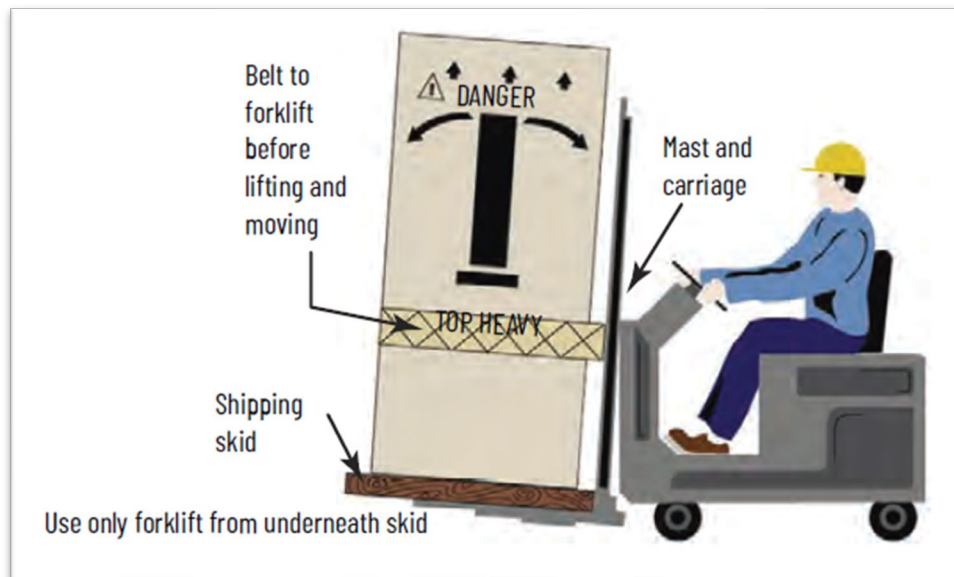


Figure 8 - Use of a Forklift Truck

6.2 Lifting/Slinging

Certified lifting equipment should be used, and in accordance with a task specific Risk Assessment Method Statement (RAMS) and an approved lift plan. For example, the use of a lifting sling is the preferred method for overhead lifting of export packaged sections, but you can use this method for all types of sections. Follow the lifting sling procedure:

- a) Place the lifting sling under the shipping platform.
- b) The spreader bar must have a larger span (overhang) than the electrical equipment, as illustrated in Figure 9 - Lifting Sling on Crated/Packaged Electrical Equipment and in Figure 10 - Lifting Sling on Uncrated Electrical Equipment (Without Lifting Angle).
- c) Carefully stabilize the electrical equipment during handling.

IMPORTANT: All rigging must be designed to support the load with the appropriate safety factor. An approved lift plan as part of the specific RAMS is applicable.

The Permission to Ship (PTS) documentation should specify site and offloading requirements and confirm the following:

- The **manufacturer confirms physical suitability**, not just compliance on paper.
- The **project team verifies site readiness** before delivery.
- Safety risks are addressed **before equipment is in transit**, where changes are costly.
- Responsibilities between factory, logistics, and site teams are clearly defined. This reduces the risk of:
 - o Equipment damage
 - o Unsafe lifting operations
 - o Delays caused by rejected deliveries
 - o Last-minute site modifications.
- A **final integrated checkpoint** that confirms:
 - o Electrical equipment compliance with standards and specifications
 - o Full alignment with **actual site conditions**, including safe offloading, handling, and installation.

In following the steps outlined, the PTS becomes a **preventive safety and constructability control**, not just an administrative approval to ship.

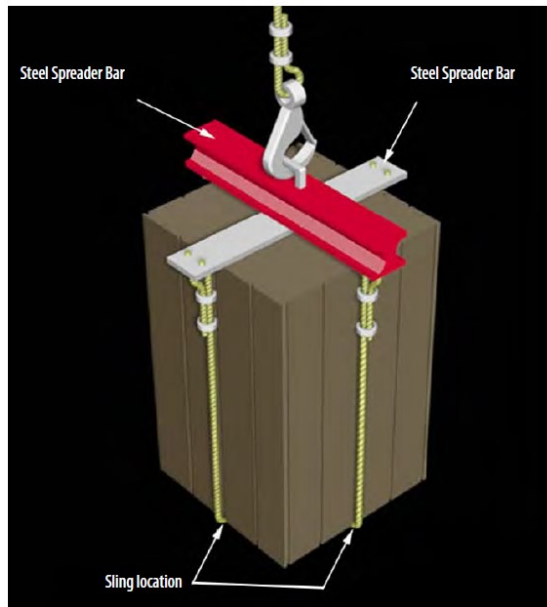


Figure 9 - Lifting Sling on Crated/Packaged Electrical Equipment

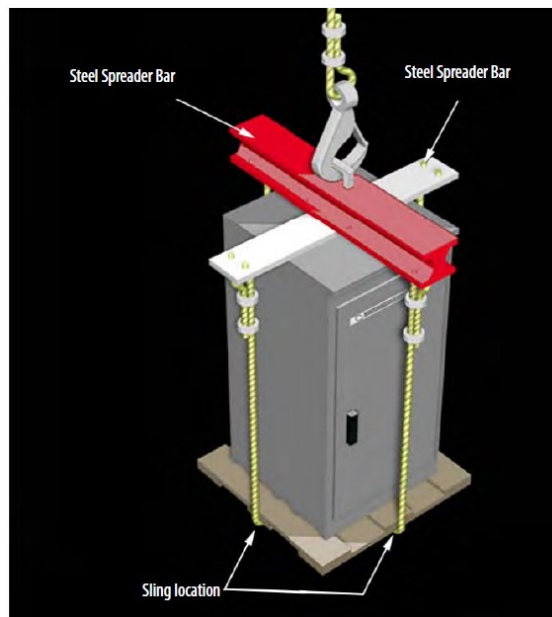


Figure 10 - Lifting Sling on Uncrated Electrical Equipment (Without Lifting Angle)

6.3 Handling

Equipment may be transported in a building by powered pallet truck, forklift, teleporter forks or via skoots. Where powered pallet trucks are utilised to transport electrical equipment, it will be positioned underneath the pallet and raised to facilitate transport to required laydown location. Panels moved in this fashion will require two persons to stabilise the load during transfer. Where electrical equipment can be manually handled and installed, an assessment and team lift may coordinate the task to lift and fit into position using approved manual handling methods. **IMPORTANT:** These works will be covered by a RAMS specific for the task. Regulation 69 and Schedule 3 of the Safety Health and Welfare at Work (General Application) Regulations 2007 outlines requirements for the undertaking of risk assessment for

manual handling. An example on what to assess when conducting risk assessment is provided in HSA guidelines provided for managing ergonomic risks.²¹

Lifting and shifting activities may warrant the provision of specialist equipment such as a spider crane or other. Refer to **Appendix 5 – Lift and Shift Presentation** for some examples.

6.4 Storage

Where possible, avoid double-handling on-site through storage prior to end placement. Comply with manufacturer's recommendations. If it is necessary to store the electrical equipment for any length of time, take the following precautions:

- a) Direct to offsite storage.
- b) Wrap the electrical equipment in a covering of heavy-duty plastic or similar material to help prevent the entry of dirt and dust.
- c) For electrical equipment not installed and energized immediately, store in a clean, dry place. Maintain a storage temperature between -10 and +35 degrees Celsius (°C). If the storage temperature fluctuates or humidity exceeds 60%, use a space heater to help prevent condensation. It is recommended to store electrical equipment in a heated building that offers adequate air circulation and protection from dirt and water.
- d) Electrical equipment that are designed for indoor applications do not have sufficient packaging for outdoor storage. If they are to be stored outdoors, install temporary electrical heating to help prevent condensation and add packaging for protection from the outside elements. A space heater that is rated at 200 watts per section is adequate for the average electrical equipment. Remove all loose packaging and flammable materials before you energize space heaters.
- e) Electrical equipment should be kept dry internally whilst de-energised, and enclosures should remain sealed (where possible) to prevent moisture ingress. This may be accomplished by using temporary heating (e.g. blow heaters or by energising optional self-contained panel anti-condensation heaters).

²¹ HSA (2019). *Managing Ergonomic Risk in the Workplace to Improve Musculoskeletal Health*. Available at: <https://www.hsa.ie/media/gcpfhxpg/103525-hsa-12-managing-ergonomic-brochure.pdf>

7.0 Lift and Shift Provisions

Employers/contractors are legally required to risk assess all hazards, put adequate control measures in place, train employees and ensure adequate supervision. Safe systems of work must be implemented to ensure all tasks are planned, organised, performed, maintained, and revised as appropriate to be, so far as is reasonably practicable, safe and without risk to health. The Safety Statement should specify how safety and health will be secured and managed, detailing the hazards identified, risks assessed, and control measures implemented. Risk Assessment Method Statements (RAMS)²² and Safe Plan of Action (SPA) are commonly used for assessing the risks and detailing safe working protocols in construction. Risk assessments must be completed for every lifting operation. Guidance for overhead lifting is provided in **Appendix 6 – Overhead Lifting**.

7.1 Load Characteristics

Check the manufacturer's specifications or shipping documentation for details of load weight, centre of gravity and other characteristics required for planning safe lifting. A final transport split drawing is generally required for delivery of large infrastructure/services. The transport plan should include the layout of electrical equipment in the transporting vehicle and space for safe access, fixation of lifting equipment and offload. Selection of appropriate equipment at an early stage will negate potential issues with access, reach, transport and installation.

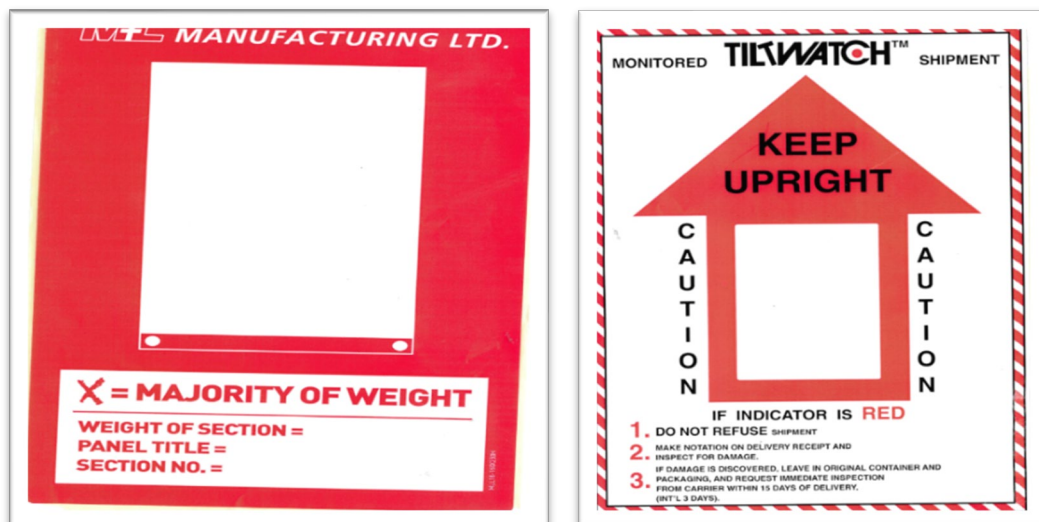


Figure 11 - Sample Shipping Labelling (incl. CoG)

7.2 Safe Lifting

Key considerations for safe lifting include the following:

- Provide access for forklifts, skoots, chain blocks, or gantries.
- Check slab capacity for point loads.
- Prepare a Risk Assessment Method Statement (RAMS) and a lift plan.
- Use skid-mounted assemblies where possible to eliminate reassembly.
- Install certified lifting lugs (as per Figure 14 - Application of Lugs for Lifting), pad eyes, and spreader beams as required.
- Where possible fit electrical equipment with lifting eyes or approved lifting points.

²² HSA (2022). *Risk Assessment Method Statement (RAMS) – Guidance and Template*. Available at: https://www.hsa.ie/eng/your_industry/construction/resources-for-contractors/risk_assessment_method_statement_rams_template_and_guidance/

- Always follow manufacturer's lifting and handling instructions.

When lifting by forks (either by industrial lift truck or telehandler), consider the following:

- Facing/side loaded truck / Room for forks to set in
- Stoppers between pallets to stop forks entering a second pallet.
- Each panel to be ratchet strapped securely to the lifting equipment.

The load position and pallet type must be carefully considered as follows:

- Suitable capacity for panel size and skoot placement
- Birds mouth arrangement on pallet (ideally plastic <150mm high)
- Skoots to be used to move the panel
- Manage manual handling and push-pull hazards as per the HSA's guidance on Managing Ergonomic Risk in the Workplace to Improve Musculoskeletal Health²³ and the HSE UK's Risk Assessment of Pushing and Pulling (RAPP) Tool.²⁴



Figure 12 - Access Points for Lifting (with removable covers)



Figure 13 - Example of a Lifting Lug

²³ HSA (2019). *Managing Ergonomic Risk in the Workplace to Improve Musculoskeletal Health*. Available at: <https://www.hsa.ie/media/gcpfhxpg/103525-hsa-12-managing-ergonomic-brochure.pdf>

²⁴ HSE UK (2016). *Risk Assessment of Pushing and Pulling (RAPP) Tool*. Available at: <https://www.hse.gov.uk/pubns/indg478.pdf>

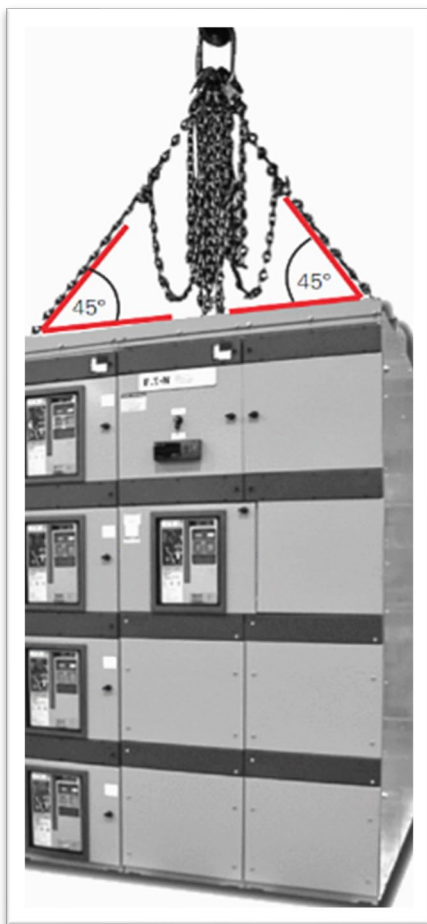


Figure 14 - Application of Lugs for Lifting



Figure 15 - Use of Skoots

7.3 Rigging Requirements for Safe Lifting

For all rigging activities the following are required at a minimum:

- A Lifting Supervisor / Appointed Person
- Slinger/Signaller
- Risk Assessment Method Statement (RAMS)
- Lift plan
- Trained lift and shift operatives.

From the Truck:

- Via Forklift / telehandler (and always appropriately strapped/secured before lifting).

Transport (external):

- Strapped to the forklift/ telehandler frame
- Assess ground conditions in advance - Level ground is preferable
- Still on pallet/ panel secured to pallet – all secured to the forklift/ telehandler.

Internal (after laydown):

- Use a lifting frame if required to lift the panel from the pallet
- Where birds mouth pallets are not available:
 - o Remove pallet fixings
 - o Lower and secure safely to Skoots
 - o Move to the final position / remove skoots
 - o Do not attempt to move unsafe or unstable loads
 - o Insitu electrical equipment and RAMS and lift plan required.
- When the correct birds mouth arrangement is available on pallets:
 - o Roll in the skoots
 - o Ratchet strap the panel to the skoots
 - o Remove the panel to pallet fixings
 - o Move to the final position.

Internal (existing electrical equipment with unknown SWL/ Characteristics):

- This work is high risk
- Consult the manufacturer/ supplier (if possible), for panel characteristics
- Consider overturning / top heavy electrical equipment as worst-case scenario
- Where possible use a forklift for lifting safely as the first scenario
- Lift via a lifting frame to skoots where possible.

Load Position/ pallet type:

- Suitable capacity for panel size and skoot placement. As illustrated in Figure 16 - Panel Tilter in Action, a key requirement is for suitable capacity for panel size and positioning the panel from horizontal to vertical or vice versa.
- Birds mouth arrangement on pallet, ideally plastic <150mm high – to allow for skoots to be used to move the panel.



Image of Panel Tilter in the horizontal position laden with Panel Cubicle.



Image of Panel Tilter transferring to its horizontal position while laden with Panel Cubicle.

Figure 16 - Panel Tilter in Action

7.4 Installation of Electrical Equipment on Brownfield Sites

Brownfield sites often pose a greater challenge in terms of facilitating sufficient clearance for safe access and egress, as illustrated.

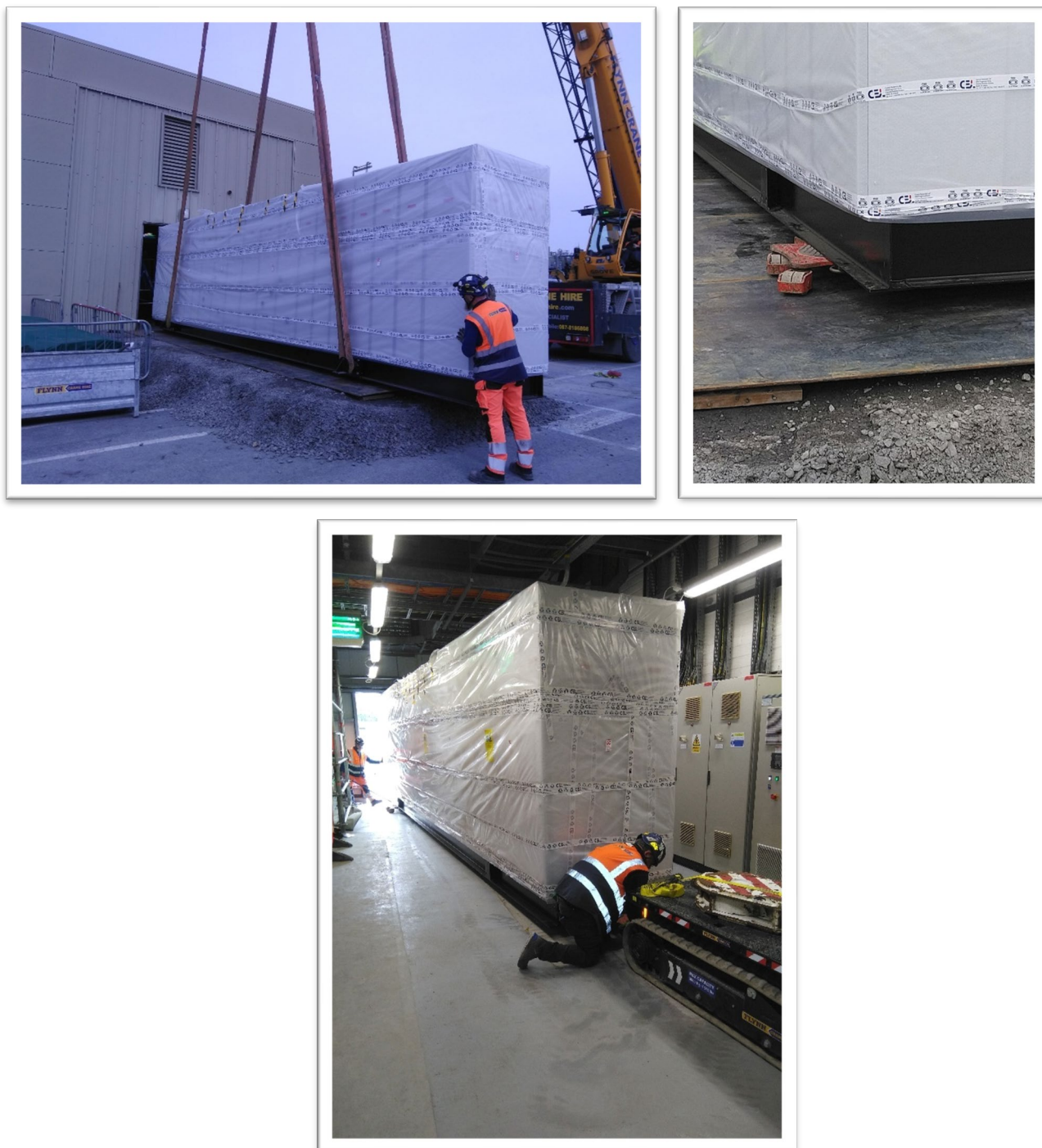


Figure 17 - Examples of Brownfield Installation

7.5 Installation of Electrical Equipment on Greenfield Sites

Greenfield sites should take into consideration the transportation, installation and appropriate positioning of the electrical equipment. Ground conditions and clearance (a lack of obstructions/slopes etc.) are critical considerations for safe transportation, lifting and shifting. **IMPORTANT:** lifting devices must only be operated by competent persons and in adherence with safe working protocols (e.g. task specific RAMS).

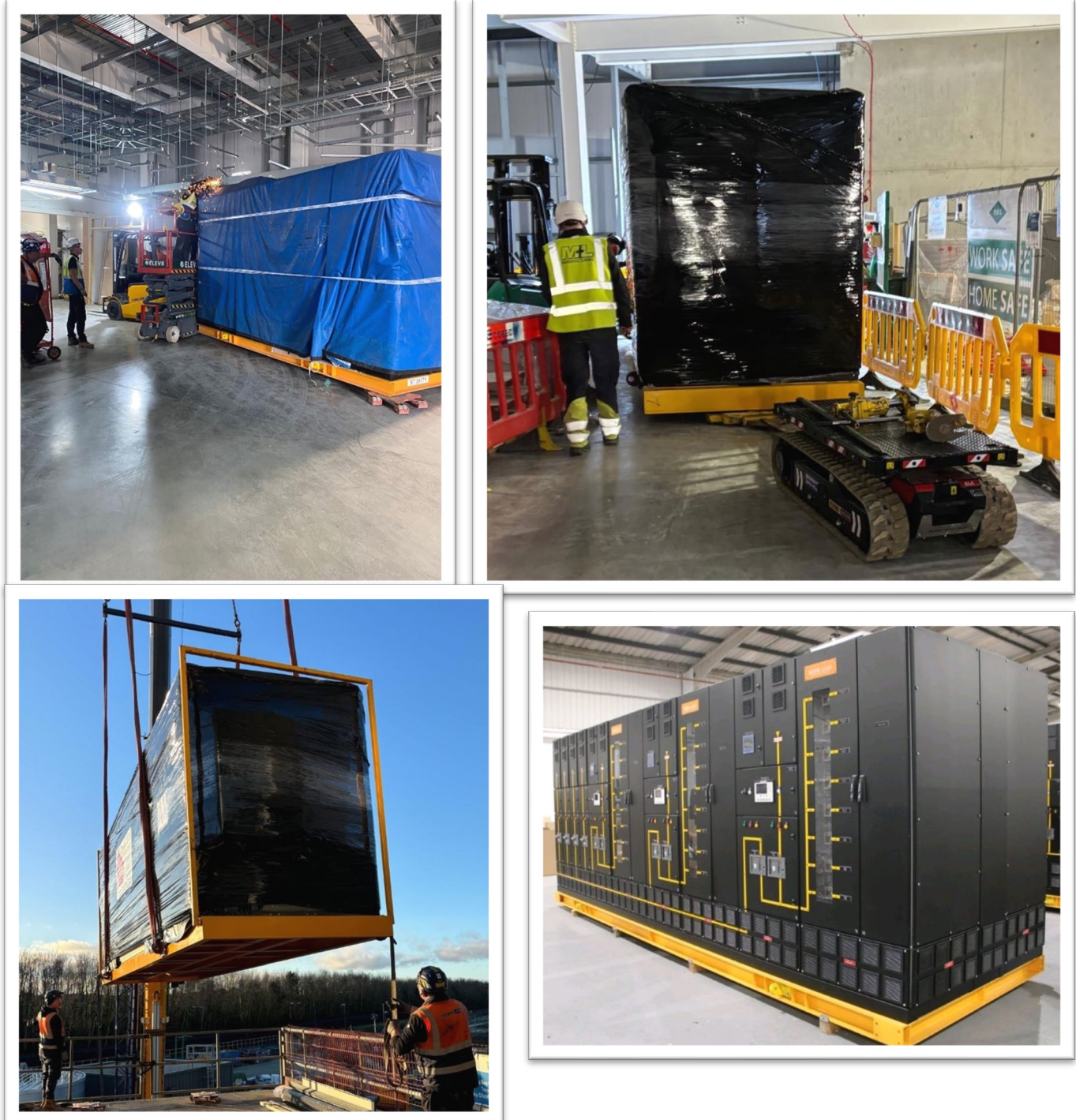


Figure 18 - Examples of Greenfield Installation

7.6 Emergency Actions

In the event of an unsafe act or event occurs (e.g., instability, equipment failure, or unsafe conditions), the worker(s) shall:

- 1) Stop work immediately,
- 2) Lower the load safely, where possible, and
- 3) Notify the Area Supervisor and follow the rescue plan / site emergency plan.

8.0 Managing Top-Heavy Equipment

8.1 Key Weight Components

Key weights considerations include:

- Breakers and busbars are the heaviest parts of electrical equipment.
- These components can be positioned at the top, middle, or bottom of the Equipment assembly.
- Equipment with breakers or busbars positioned near the top or middle poses a higher risk of toppling due to a raised centre of gravity.

Risks include:

- Electrical equipment is often top-heavy, which creates tipping and handling risks during lifting and shifting.

8.2 Design Recommendations:

Consider supplying withdrawable breakers (as per **Figure 19 - Withdrawable Breaker**) or removable metalwork drawers to be fitted after the equipment or panel is installed in its final position. This reduces the weight, protects sensitive equipment components and improves stability during movement.

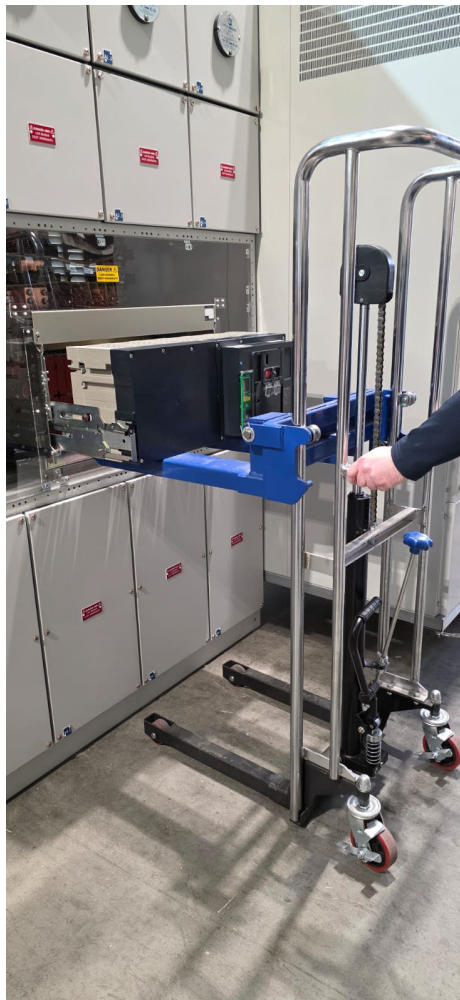


Figure 19 - Withdrawable Breaker

8.3 Manufacturer Recommendations:

Key considerations include:

- Provide accurate centre of gravity (CoG) coordinates (X, Y, Z).
- Supply detailed lifting diagrams and General Arrangement (GA) drawings.
- Ensure lifting points are aligned with the CoG for safe handling.

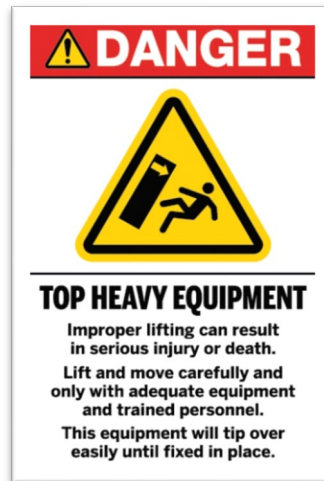


Figure 20 - Typical Load Label

Figure 7 and Figure 20 illustrate examples of labelling that panel manufactures should fit to the equipment before shipping that give clear guidance and warning on the load characteristics of different equipment.

IMPORTANT: The centre of gravity symbol should be applied to at least two adjoining vertical surfaces to ensure it is visible from multiple angles.

8.4 Cable Entry Strategy

Cable entry and exit strategies depends on site conditions. To prevent top-heavy equipment, the method of cable entry and exit should be carefully considered as follows:

- Top cable entry and exit help to maintain a lower effective CoG by allowing optimal placement of breakers and busbars.
- Electrical equipment is generally not designed to bear cable weight; therefore, sufficient cable containment and supports are mandatory to protect panel structures.

9.0 Floor-Standing and Wall-Mounted Equipment

9.1 Floor-Standing Equipment:

- Requires stable, level floors and proper plinths.
- Skid-mounting recommended.
- CoG must align with lifting points.
- Forklift access should be included in plinth design.
- Heavy components should be positioned at the base of the assembly. However, placement of equipment must also conform with the temperature rise test verifications in accordance with relevant standards; for low voltage, this would be in adherence with IEC EN61439-1.

9.2 Wall-Mounted Equipment:

- Wall strength and fixings must be verified.
- Weight reduction measures should be applied where possible.
- Top cable entry may still be required to maintain a low CoG.
- Suitable lifting methods (e.g., hoists, gantries) must comply with guidelines from the Health and Safety Authority²⁵.
- Manufacturer's instructions must be followed.

²⁵ HSA (2007). *Guide to the Safety, Health and Welfare at Work (General Application) Regulations 2007*, Chapter 2 of Part 2: Use of Work Equipment. Available at: https://www.hsa.ie/media/scpcdqdi/work_equipment_.pdf

10.0 Recommendations

Ensuring the safe and efficient lifting and shifting of electrical equipment is critical from the earliest stages of project design. Early collaboration between the design team and the electrical equipment manufacturer is essential to anticipate and mitigate risks associated with material handling, stability, and installation constraints. By incorporating best practices (as listed below), and by following the Lift & Shift Check Sheet throughout all project stages, projects can significantly improve safety, reduce handling risks, and ensure greater reliability and maintainability of electrical equipment.

Best practice includes the following considerations:

- Obtaining Permission to Ship prior to site receipt – as per **Appendix 1 – Permission to Ship Template**.
- Locating equipment rooms near external access points.
- Using skid-mounted assemblies to minimise on-site handling.
- Considering modular equipment buildings to reduce installation complexity.
- Managing centre of gravity (CoG) and positioning of heavy components – as per **Appendix 2 – Manufacturer/ Supplier Checklist**.
- Designing forklift-compatible plinths to simplify final placement.
- Ensuring floors are ready, level, stable, and suitably load-rated - as per **Appendix 4 – Lift & Shift Checklist by Site Team**.
- **Select appropriate lifting equipment** – examples are provided in **Appendix 5 – Lift and Shift Presentation** albeit that these are for illustrative purposes only and should not be interpreted as exact representations of required practice.

Minimising manual handling directly reduces the risks associated with lifting and shifting, thereby enhancing site safety. All site lifting operations must comply with HSA guidelines at every stage. Refer to Guide to Safety, Health and Welfare at Work (General Application) Regulations 2007²⁶ regarding the manual handling of loads and the use of work equipment. Additionally, HSA guidelines are provided for managing ergonomic risks²⁷ and for manual handling risk assessment in transport and storage²⁸.

²⁶ HSA (2007). *Guide to the Safety, Health and Welfare at Work (General Application) Regulations 2007*, Chapter 2 of Part 2: Use of Work Equipment. Available at: https://www.hsa.ie/media/scpcdqdi/work_equipment_.pdf

²⁷ HSA (2019). *Risk Assessment for Managing Ergonomic Risks – to improve Musculoskeletal Health*. Available at: <https://www.hsa.ie/media/kfpltfef/103525-hsa-9-managing-ergonomic-risks-brochure.pdf>

²⁸ HSA (2013). *Guide on Manual Handling Risk Management in Transport and Storage*. Available at: https://www.hsa.ie/media/tb5l23rr/guide_on_manual_handling_risk_management_in_transport_and_storage-copy.pdf

11.0 Lift and Shift Check Sheet

This guidance includes the following recommendations for the safe lift and shift of electrical equipment:

1. **Consider Modular Equipment Buildings.**
2. **Use Skid-mounted assemblies** to minimise handling:
 - Reduces manual handling risks and simplifies installation.
3. **Locate electrical equipment near exterior entrances in greenfield projects:**
 - Minimizes internal handling and transport challenges.
4. **Early engagement of all stakeholders** - through design, manufacture, FAT as per **Appendix 2 – Manufacturer/ Supplier Checklist**.
5. **Position heavy components at the base of the assembly** where possible, complying with IEC EN 61439-1 temperature rise test verifications (LV only):
 - Improves stability and safety during lifting and in use.
6. **Design plinths for forklift/telehandler fork compatibility:**
 - Enables safer and easier positioning without crane use.
7. **Identify Centre of Gravity (CoG) and design top cable entry** accordingly:
 - Critical for safe lifting and stability.
8. **Verify floor loadings, ceiling heights, and access routes** to accommodate equipment:
 - Ensures the site can safely support and accommodate equipment.
9. **Fit lifting eyes or approved lifting points** wherever possible:
 - Facilitates safe and proper handling.
10. **Ensure each electrical equipment unit shipped has the following:**
 - Full panel layouts, including splits (where applicable) shall be provided
 - Weights clearly labelled on the external packaging and on drawings.
 - CoG clearly labelled on external and internal packaging temporarily.
 - Transport/ trailer layout plan to be provided.
11. **Site Readiness Checks and Permission to Ship:**
 - Site readiness checklist completed as per **Appendix 3 – Site Readiness & Equipment Release Checklist**.
 - Room ready for receipt, as confirmed by the Permission to Ship, as outlined in **Appendix 1 – Permission to Ship Template**.
 - Critical for equipment stability during placement /alignment and operation.
12. **Provide clear Risk Assessment Method Statements (RAMS) and a Lift Plan:**
 - Essential for planning and managing lifting hazards.
13. **Verify competencies and training of lift and shift crew/ contractor:**
 - Only use competent lift and shift crews.
14. **Ensure certified lifting equipment** is aligned with the CoG for safe handling:
 - Ensures lifting safety and compliance.

15. Always follow manufacturer's lifting instructions.

A summation of checks to be undertaken at various stages of a lift and shift of electrical equipment is provided under respective headings.

11.1 Design Stage (Architect/ Consultants)

Consider the following:

- Locate switch rooms near the exterior of buildings (where access is easier).
- Verify doorways, corridors, ceiling heights.
- Check slab loading capacity.
- Consider temporary openings.
- Allow lifting beams/gantries.
- Maintain replacement paths.
- Design plinths for use of forklift, skoots etc.
- Ensure floors are stable and level.
- Evaluate modular building feasibility.

11.2 Manufacturing Stage (Equipment Manufacturer)

The panel manufacturer is responsible for ensuring assemblies are designed, built, and documented in accordance with standards. In respect of low voltage electrical equipment, IEC 61439-1 applies. Refer to Clause 6.2.2 Instructions for handling, installation, operation and maintenance. This clause includes:

- Confirmation of dimensions and weight including panel splits for transport.
- Providing CoG data and lifting diagrams (and suitably labelled ... be warned that the CoG may change over time).
- Installing certified lifting lugs/padeyes.
- Provide lifting eyes/approved lifting points.
- Mark lifting points and orientation arrows
- Submit general arrangement drawings with lifting methods.
- Ensure structural integrity of frames and bracing.
- Provide a handling and installation manual with lifting instructions and safety notes.

Other factors that may need implementation:

- Implement skid-mounted option.
- Fit transport bracing.

11.3 Installation Stage (Client, Construction Management Team, Contractor)

Consider the following:

- Appoint competent lifting contractor.
- Approve RAMS as per HSA guidelines²⁹.
- Approve Lift Plan.
- Verify load data (weight, dimensions, CoG).
- Define exclusion zones and role of slinger/signaller.
- Assess weather conditions.

²⁹ HSA (2022). *Risk Assessment Method Statement (RAMS) – Guidance and Template*. Available at: https://www.hsa.ie/eng/your_industry/construction/resources-for-contractors/risk_assessment_method_statement_rams_template_and_guidance/

- Inspect lifting gear before use.
- Use trained personnel only.
- Inspect and agree access routes before delivery.
- Ensure slabs and plinths are ready.
- Select safe lifting accessories. Use approved lifting methods and eyes
- Use guide ropes/stabilisers.
- Remove braces only after final placement.
- Complete final anchoring, levelling, and alignment.
- Ensure that third-party on-site modifications require manufacturer approval to maintain compliance. For example, laying electrical equipment from vertical to flat might not be a viable solution.
- Competent person to sign off to confirm compliance.

Appendices

Appendix 1 - Permission to Ship Template³⁰

PERMISSION TO SHIP			
IMPORTANT: Prior to dispatch, the Vendor must advise the responsible Client Contact of the delivery date and approximate time of arrival (ETA) of the goods to jobsite, with a minimum notice time of 48 hrs.			
SECTION 1 – GENERAL DETAILS			
Vendor:		Client:	
Vendor Ref:		Project:	
Purchase Order No:		Project No:	
Material:		Department:	
Requisition No:		Client Contact:	
Vendor Contact:		Client Telephone No:	
Vendor E-mail:		Client E-mail:	
SECTION 2 – PACKAGING / LABELLING - to be completed by the Vendor			
Project Name:		Transport Registration No:	
Project No.:		Container / Box:	
Requisition No:		No. of Containers / Boxes:	
Requisition Tags:		Package Dimensions:	
Freight Company:		Package Net Weight (Kg):	
Freight Contact Person:		Shipping Date:	
Type of Transport:		Delivery Date:	
SECTION 3 – CHECKLIST OF ATTACHMENTS – select Y or N or N/A as appropriate			
Packaging List?		Lifting/Rigging Procedure?	
FAT Punch List/Release Form?		Special Storage/Handling?	
Certificates?		Centre of Gravity Label?	
Insurance?		Other?	

³⁰ CIF (2026). *Permission to Ship Template*. Available at: [CIF web link](#)

SECTION 4 – APPROVALS – as per project workflow			
Company:	Function/Role:	First Name, Surname:	Signature & Date:
	Vendor		
	Client Project Management:		
	Client Electrical Engineer:		
	Client Materials Controller:		
	Client Procurement:		
SECTION 5 – DELIVERY ADDRESS / CONTACT DETAILS / INSTRUCTIONS			
Site Contact (Company):		Delivery Address (Including Postcode & Country):	
Site Contact (Person):			
Email for Contact Person:			
Phone No. for Contact Person:			
Delivery Requirements/ Instructions:	1.		

Appendix 2 - Manufacturer/ Supplier Checklist³¹

1. Factory Acceptance Testing (FAT)
2. Punchlist
3. Panel split will determine transport and loading/unloading arrangements
4. Permission to Ship, as per **Appendix 1 – Permission to Ship Template**.

IMPORTANT: the Permission to Ship (PTS) should also address exact site requirements for safe offloading and final positioning.

By including site and offloading requirements in the PTS:

- The **manufacturer confirms physical suitability**, not just compliance on paper;
- The **project team verifies site readiness** before delivery;
- Safety risks are addressed **before equipment is in transit**, where changes are costly; and
- Responsibilities between factory, logistics, and site teams are clearly defined.

This reduces the risk of:

- Equipment damage;
- Unsafe lifting operations;
- Delays caused by rejected deliveries; and
- Last-minute site modifications.

Permission to Ship form should serve as a **final integrated checkpoint** that confirms:

- Electrical equipment compliance with standards and specifications;
- Full alignment with **actual site conditions**, including safe offloading, handling, and installation.

By doing so, the PTS becomes a **preventive safety and constructability control**, not just an administrative approval to ship. An indicative checklist is provided overleaf.

Electrical Equipment Reference No:			
Number of Pieces:			
No.	Checklist Items:	Yes	No
01	Has a successful Factory Acceptance Testing (FAT) been completed?	☐	☐
02	Has a Permission to Ship form been received, as per Appendix 1 – Permission to Ship Template ?	☐	☐
03	Have the as-built split transportation GA drawings been provided to the project team?	☐	☐
04	Have the as-built split transportation GA drawings been provided (i.e. attached to each section)?	☐	☐
05	Have the CoG labelling been provided on external protection (two sides) and on the internal panel?	☐	☐
06	Are weights clearly displayed on external protection and internal panel?	☐	☐

³¹ CIF (2026). *Manufacturer/ Supplier Checklist*. Available at: [CIF web link](#)

Electrical Equipment Reference No:			
Number of Pieces:			
No.	Checklist Items:	Yes	No
07	Are lifting lugs provided by the manufacturer/ supplier?	☐	☐
08	Are all panels loaded as per applicable load plan developed for transportation?	☐	☐
09	Has the electrical equipment been loaded safely for transportation and offload?	☐	☐
Additional Comments:			
➤ Unsafe loads will be refused offloading at project site.			

Appendix 3 - Site Readiness and Equipment Release Checklist³²

IMPORTANT: This checklist is to be completed by the site project team prior to acceptance of delivery of the electrical equipment to the project site.

Item for Delivery:			
Item Description:			
Equipment Serial Number:			
Docket No./Shipping Ref:			
No.	Checklist	Yes	No
	Is the switchroom ready for acceptance of the delivery of electrical equipment, and confirmed/ approved by the Project Manager/Construction Manager/PSCS/Construction Management Team/Lift and Shift Contractor? IMPORTANT: If No, do not proceed with delivery / If Yes, proceed with the following checks and initiate a Permission to Ship (PTS) document as per Appendix 1 – Permission to Ship Template.	☐	☐
01	Is there documentation in place & signed by all parties involved (i.e. RAMS, Lift Plan)?	☐	☐
02	Are the relevant characteristics of the load known and available to the lift and shift team (e.g. weight, dimensions, centre of gravity, lifting points etc.)?	☐	☐
03	Is there a safe unloading area designated for the delivery lorry or escort vehicle to park up?	☐	☐
04	Is the switchroom clean, painted and ready for acceptance?	☐	☐
05	Is there safe access and egress to the delivery lorry or escort vehicle (where required)?	☐	☐
06	Are the ground conditions suitable to proceed (solid and level)?	☐	☐
07	Are all unloading plant & lifting equipment in good condition (e.g. crane, forks, skids)?	☐	☐
08	Are there competent & trained personnel present for use of lifting equipment & slinger/ signaller?	☐	☐
09	Is there enough room for applying securing straps when using forklift or panel jacks?	☐	☐
10	Is the loading bay or laydown area free from obstructions?	☐	☐
11	Is there adequate personnel present to unload/transport equipment safely?	☐	☐
12	Is there a suitable exclusion zone set up for unloading or lifting?	☐	☐
13	Is there any other reason the delivery/free-issue equipment should not be accepted?	☐	☐
14	Has the delivery and equipment been checked against the purchase order and delivery docket?	☐	☐
15	Are all parts and accessories included with the delivery or with the free-issued equipment?	☐	☐

³² CIF (2026). *Site Readiness and Equipment Release Checklist*. Available at: [CIF web link](#)

For No, specify why in corresponding comments line below

IMPORTANT: If there is any doubt regarding the safety or stability of the load for lifting or moving then stop the works immediately and escalate the situation to line management. Do not take risks!

No.	Comments:		
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
Project Name:		Date:	
Company Name:		Completed by:	

Appendix 4 - Lift and Shift Checklist by Site Team³³

Item for Delivery:	
Item Description:	

Aspect	Checklist	Yes	No	N/A
Legislation	- Safety, Health and Welfare at Work Act 2005 duties met - Compliance with GA Regulations 2007 (Work Equipment, Lifting Equipment, Manual Handling) - Construction Regulations 2013 applied where relevant	☐	☐	☐
Planning	- Risk assessment completed - Method statement prepared - Site survey carried out - Ground conditions verified	☐	☐	☐
Roles	- Appointed Person / Supervisor identified - Competent operators and riggers assigned - Contractor compliance confirmed	☐	☐	☐
Equipment	- Lifting equipment has valid thorough examination certification(s) - Skoots / jacks / winches inspected and fit for use - Lifting accessories marked with WLL	☐	☐	☐
Safe System of Work	- Lifting / moving plan documented - Rigging / de-rigging per manufacturer's guidance - Load stability ensured - Communication system in place	☐	☐	☐
	- Use skid-mounted assemblies to minimise handling	☐	☐	☐
	- Identify Centre of Gravity (CoG) and design top cable entry accordingly	☐	☐	☐
	- Ensure certified lifting equipment is aligned with the CoG for safe handling	☐	☐	☐
	- Provide clear Risk Assessments Method Statements (RAMS)	☐	☐	☐
	- Locate electrical equipment near exterior entrances in greenfield projects	☐	☐	☐
	- Verify floor loadings, ceiling heights, and access routes to accommodate the equipment	☐	☐	☐
	- Fit lifting eyes or approved lifting points wherever possible	☐	☐	☐
	- Ensure floors are level and stable	☒	☐	☐

³³ CIF (2026). *Lift and Shift Checklist by Site Team*. Available at: [CIF web link](#)

Aspect	Checklist	Yes	No	N/A
	- Design plinths for forklift compatibility	☐	☐	☐
	- Heavy components should be positioned at the base of the assembly where possible (and for LV, compliance with IEC EN 61439-1 temperature rise test verifications)	☐	☐	☐
	- Always follow manufacturer's lifting instructions	☐	☐	☐
Training	- Operators hold CSCS or equivalent - Competent Supervisors and Appointed Persons (for lifting operations) - Training records up to date	☐	☐	☐
Emergency Preparedness	- Rescue plan documented - First aid provision confirmed - Emergency contacts briefed	☐	☐	☐
Additional Comments:				

Appendix 5 - Lift and Shift Presentation

IMPORTANT: The images and performance criteria provided in Appendix 5 are kindly provided by FLYNN Crane Hire. These particulars are for illustrative purposes only and should not be interpreted as exact representations of required practice.

Merlo P40.14 Telehandler



- Unladen Weight – 9,950kg
- Maximum Load Capacity – 4,000kg
- Maximum Lift Height – 13.5m
- Maximum Outreach – 9.3m
- Front Stabilisers used to achieve maximum lift capacity & to level forks when offloading from transport trailers.
- Ideal for unloading palletised goods from transport trailers and delivering to the laydown or lift area on site.
- When using a telehandler, a spotter should always be in place to assist the operator.
- Loads should be removed from the transport trailer by extending the boom, picking the load up and retracting and lowering the boom to ground level. Before driving, the load must be strapped to the fork carriage using ratchet straps.

Hoeflon TC1 Tracked Carrier



- Unladen Weight – 500kg
- Maximum Load Capacity – 1,200kg
- Dimensions – 1450 x 800 x 420mm
- Swivel Load Platform – 1340 x 730mm
- Rubber, Non-Marking Tracks
- Fully electric, zero emissions
- Remote Controlled
- Ideal for transporting or towing equipment to the lift area.
- Less manual handling compared to using non-powered pallet trucks or Skoots.
- Can be used to tow equipment up to 5,000kg on Panel Skoots.

Alma Crawler ML 3.0FX Tracked Carrier



- Unladen Weight – 790kg
- Maximum Load Capacity – 3,000kg
- Dimensions – 1,780 x 790 x 540mm
- Swivel Load Platform – 1,700 x 750mm
- Rubber, Non-Marking Tracks
- Fully electric, zero emissions
- Remote Controlled
- Ideal for transporting or towing equipment to the lift area.
- Less manual handling compared to using non-powered pallet trucks or Skoots.
- Can be used to tow equipment up to 15,000kg on Panel Skoots.

Hoeflon C6e Spider Crane



- Fully electric, zero emissions
- Remote Controlled Operation
- Variobase Outriggers (Positional at any angle)
- Operating Weight – 2,906kg (With Jib & Ballast)
- Operating Weight – 2,756kg (Without Jib & With Ballast)
- Operating Weight – 2,181kg (Without Jib & Ballast)



- Track Dimensions – 1,070mm x 180mm (0.3852m²)
- Maximum Possible Outrigger Loading – 3,300kg
- 760mm Wide – Fit through a standard doorway.
- The Hoeflon C6e is the perfect machine for installing equipment up to 1,500kg.
- Lightweight and can be used on raised floor slabs due to its low ground pressure and outrigger loadings.

Hoeflon C10e Spider Crane



- Fully electric, zero emissions
- Remote Controlled Operation
- Multi Position Outriggers (Positional at 5 Stages)
- Operating Weight – 4,700kg (With Jib & Ballast)
- Operating Weight – 4,500kg (Without Jib & With Ballast)
- Operating Weight – 3,180kg (Without Jib & Ballast)
- Track Dimensions – 1,500mm x 230mm (0.69m²)
- Maximum Possible Outrigger Loading – 5,200kg
- 807mm Wide – Fit through a standard doorway.

Palfinger PCC57.002 Tracked Knuckle Boom



- Diesel Engine / 400v 32A Operation
- Fully Remote Controlled Operation
- Variobase Outriggers positional at 0-100%
- Pick and carry option with main boom
- Operating Weight – 26,020kg (With Jib & Ballast)
- Operating Weight – 24,735kg (Without Jib & With Ballast)
- Operating Weight – 19,235kg (Without Jib & Ballast)
- Maximum Possible Outrigger Loading – 24,000kg
- Can be reduced to 2.08m High x 1.9m Wide by removing from its tracks – Fit through a double doorway.

Panel Skoots



- A safe way to move electrical panels and other equipment into position, when used correctly, strapped together, the Skoots and load become one.
- Panel Skoots can be attached to tracked carriers using a 'push pull' bar and the load can be pulled or pushed through a building and into final position, reducing manual handling drastically.
- When using panel Skoots, it is vital the travel path is walked prior to movement to ensure it is free from material / debris that could cause the Skoots to stop suddenly, causing the load to become unstable.
- Equipment to be moved should be assessed to ensure that panel Skoots are the correct way to move it, wide, bulky loads for example are not suitable for movement using panel Skoots.
- Manual handling is to be avoided. Where unavoidable, there is a requirement to manage manual handling and push-pull hazards as per the HSA's guidance on Managing Ergonomic Risk in the Workplace to Improve Musculoskeletal Health³⁴ and the HSE UK's Risk Assessment of Pushing and Pulling (RAPP) Tool.³⁵

³⁴ HSA (2019). *Managing Ergonomic Risk in the Workplace to Improve Musculoskeletal Health*. Available at:

<https://www.hsa.ie/media/gcpfhxpg/103525-hsa-12-managing-ergonomic-brochure.pdf>

³⁵ HSE UK (2016). *Risk Assessment of Pushing and Pulling (RAPP) Tool*. Available at:

<https://www.hse.gov.uk/pubns/indg478.pdf>

Appendix 6 - Overhead Lifting

Overhead lifting provides a convenient method for moving electrical equipment. This handling method is recommended for electrical equipment that is supplied with lifting angles or lifting eyes. Lifting angles or eyes shall be rated for the total weight of the panel plus safety factor.

IMPORTANT: Verify that the load rating of the lifting device is sufficient to handle the load safely.

Inspect the shipping weights on the packing slip enclosed in the shipment and observe the following:

- Attach rigging to lifting means.
- Do not pass ropes or cables through the support holes in the lifting angle. Use slings with load-rated hooks or shackles.
- Select or adjust the rigging lengths to compensate for any unequal weight distribution of the load and support the electrical equipment in an upright position.
- Reduce tension on the rigging and compression on the lifting angle by making sure the angle between the lifting cables and vertical plane does not exceed 45 degrees.

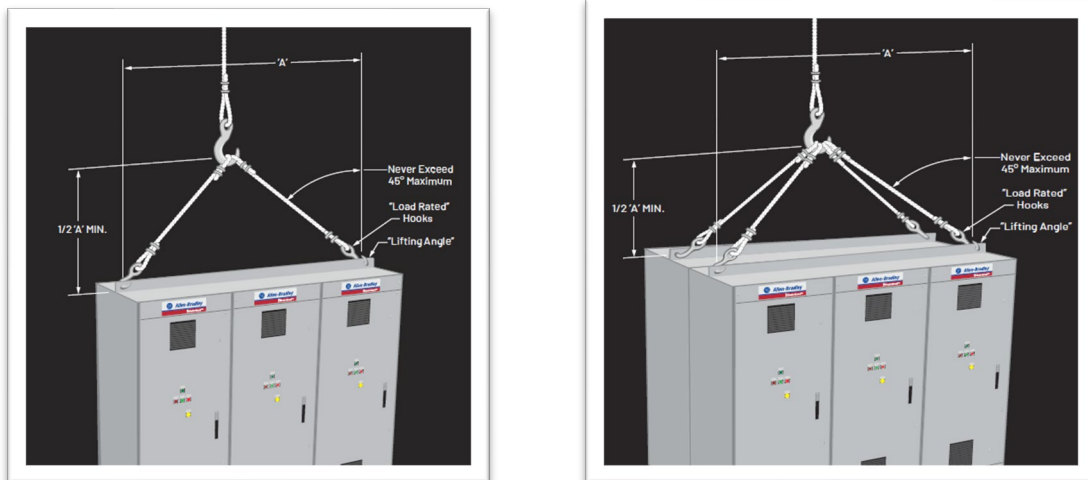


Figure 21 - One Lifting Angle (Single-front Column) & Two Lifting Angles (Double-front Column)

IMPORTANT: Electrical equipment may contain heavy, mounted equipment (e.g. transformers), that could be adversely affected if tilted.