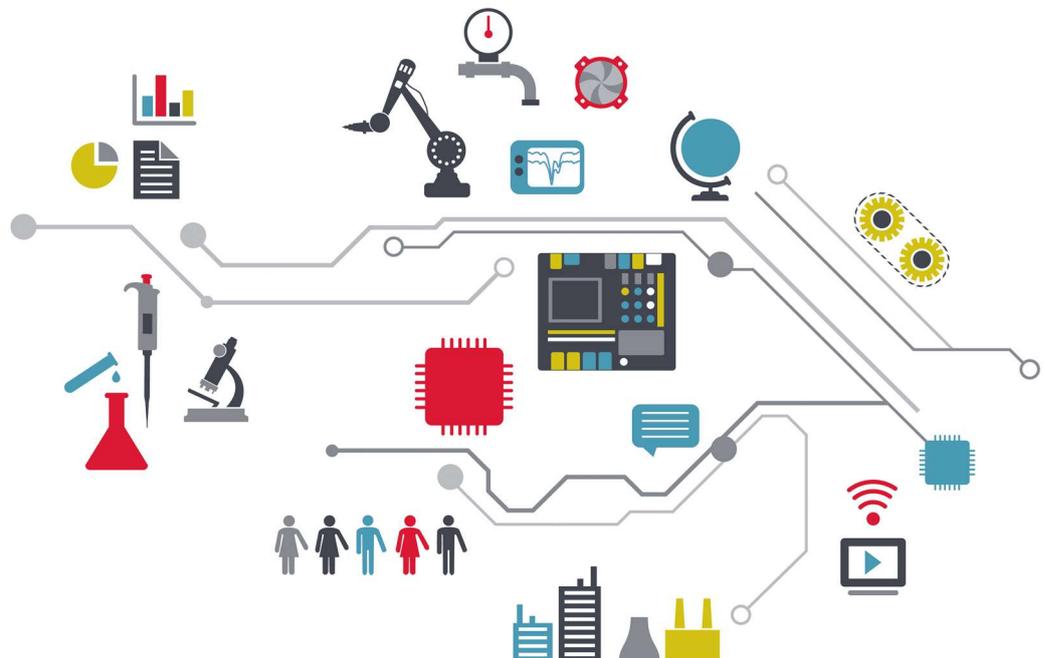


Lifting of Low Voltage Power Switchgear and Controlgear Assemblies

A GAMBICA Technical Guide



Since its publication in 2009 the BS EN 61439 series of standards has included a requirement to verify by test the safe lifting and manoeuvring of Power Switchgear and Controlgear Assemblies that have a provision for lifting. What does this mean and what can be expected by those responsible for conducting a safe lift?

1. Introduction

Prior to the publication of the BS EN 61439 series of standards there was no requirement within the relevant switchgear assembly product standard to demonstrate an assembly was safe to lift. The onus fell on diligent assembly manufacturers to demonstrate suitability, often by certification in accordance with LOLER and prior to LOLER, The Docks Regulations.

Since the publication of the BS EN 61439 series of standards, which includes a type test for lifting, there has been some confusion around the requirements to show evidence of a safe lift and the lifting features / facilities provided by an assembly manufacturer. Including the application of a Safe Working Load and the need to serialise and certify each facility uniquely.

2. Terminology

Like most BS EN documents, the BS EN 61439 series of standards has determined a number of Terms and Definitions. These are not repeated in this guide, they are available from Clause 3 of BS EN 61439-1 2011.

Likewise, LOLER Regulation 2 clarifies the terms used within the regulation.

3. BS EN 61439-1 Requirement

BS EN 61439-1 2011 clause 10.2.5.1 describes the requirements to test "ASSEMBLIES with provision for lifting means".

The test consists of:-

The maximum number of sections allowed by the original manufacturer to be lifted together shall be equipped with components and/or weights to achieve a weight of 1,25 times its maximum shipping weight. With doors closed it shall be lifted with the specified lifting means and in the manner defined by the original manufacturer.

From a standstill position, the ASSEMBLY shall be raised smoothly without jerking in a vertical plane to a height of ≥ 1 m and lowered in the same manner to a standstill position. This test is repeated a further two times after which the ASSEMBLY is raised up and suspended clear of the floor for 30 min without any movement.

Following this test the ASSEMBLY shall be raised smoothly without jerking from a standstill position to a height of ≥ 1 m and moved $(10 \pm 0,5)$ m horizontally, then lowered to a standstill position. This sequence, shall be carried out three times at uniform speed, each sequence being carried out within 1 min.

After the test, with the test weights in place, the ASSEMBLY shall show no cracks or permanent distortions visible to normal or corrected vision without additional magnification, which could impair any of its characteristics.

4. The Assembly Lifting Provision

Lifting provisions made by an assembly manufacturer can take many forms, such as, but not limited to:-

- Fork Slots
- Single purpose beam
- Lifting hook or shackle apertures
- Provision for an eyebolt
- Temporary or permanent lifting plates

The provisions may be described as integral, permanent, temporary or removable. Removal of the lifting provision may be mandatory or optional following installation. Removable provisions may be discarded or returned to the Assembly manufacturer for scrapping and recycling. Note the removed provision must not be re-used.

The BS EN 61439 series of standards provide requirements for the testing of these provisions. It does not include the "Lifting Tackle" that forms a part of the lift.

The lifting provision is classified as part of the assembly and not as separate lifting equipment for general use. In particular section 31 of HSE Document L113 "Safe use of lifting equipment - Lifting Operations and Lifting Equipment Regulations 1998 - Approved Code of Practice and guidance" states:-

"In most cases LOLER will not apply to work equipment which does not have as its principal function a use for lifting or lowering".

Section 32 e). of HSE Document L113 "Safe use of lifting equipment - Lifting Operations and Lifting Equipment Regulations 1998 - Approved Code of Practice and guidance" makes reference specifically to eyebolts but makes the provision for items attached to the load forming part of the load and not the lifting equipment.

"eyebolts permanently fixed in the load (these form part of the load);"

Lifting Tackle is not considered as part of the lifting provision under test in accordance with BS EN 61439-1 however, the assembly manufacturer may specify the method and tackle to be used in conjunction with the assembly lifting provision.

5. Lifting Equipment for General Use

Lifting equipment for general use is the equipment required to connect the assembly lifting provision to the crane/hoist/vehicle, such as, but not limited to:-

- Chains
- Slings
- Spreading Beams
- Eyebolts
- Shackles

6. Implications

The test defined in BS EN 61439-1 clause 10.2.5 is a type test, there is no requirement to validate the lifting provision on a routine basis, to mark the lifting provision with a safe working load or periodically retest the lifting provision, 3rd party or otherwise.

It is incumbent on the Assembly manufacturer to make a provision that has already been proven, in accordance with the requirements of BS EN 61439-1 as fit for purpose.

The Assembly lifting provision type tested by the Assembly manufacturer may be representative but must be the most onerous in terms of weight, span, quantity of sections and quantity of lifting points.

Furthermore, evidence of the testing conducted should be retained by the assembly manufacturer in the design verification file that under pins any EC declaration of conformity and the application of the CE mark.

Certification and maintenance of "lifting equipment for general use" to the relevant regulations and correct use of the "lifting equipment for general use" remains the responsibility of the individual or organisation conducting the lift.

The Assembly manufacturer's lifting and handling instructions should be followed at all times.

7. Conclusion

There is a requirement in the first instance to follow the instructions provided by the assembly manufacturer.

The assembly lifting provision, correctly (i.e. most onerous) type tested by a reputable manufacturer, is not required to be routine tested, is not subject to application of a safe working load and does not need to be periodically retested or uniquely identified.

The "Lifting equipment for general use" attached to the assembly lifting provision during the lifting procedure is the responsibility of the individual or organisation responsible for carrying out the lift and is subject to the relevant regulatory requirements.

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