GE VERNOVA

Hydro Power
Quality Management System

Document No.:

HS-HSH00-000000000EC

Replaces:	C-R-M Code:	Language :	Total:	Revision:	Revision Date:
HS-HSH00-000000000EC_rev C	Mandatory to be used as it is by Regions	En	28 Pages	D	01/03/2024

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OVERALL PROCEDURE FOR PACKAGING, LIFTING, LASHING AND STORAGE.

1 MODIFICATIONS

Index	Date DD/MM/YYYY	Description	Name
A	02/09/2019	First Issue -Based on doc. HG-MB-3-G_I-001_Rev F	V. Bhavsar
B	04/06/2020	Structure review	S. Bourdin
C	02/03/2021	Conformity of transportation mean Responsibilities of supplier (lashing/lifting) Wooden crate construction List of specific procedures	S. Bourdin
D	01/03/2024	Cancel French Replace “GE Logo” by “GE Vernova Logo” Replace “GE ” by “GE Vernova” Replace “GE engineering” by “GE Vernova contact.” Replace ”Sub-contractor ” by “Sub-contractor or manufactory” Replace “supplier” by “Sub-contractor or manufactory” Lexicon and scope Expert’s list found by link. Specific PALILA procedure list in GE Vernova system Lifting calculation Lashing calculation Physical validation of a lifting/lashing Storage content adjustment Packaging content adjustment Cleaning & rust chapter merge Refer Specification_P6HEM7100, Adjust the relevant chapters and cancel the relevant appendix. Refer Specification_ HS-HSH70-000000000EC, Adjust the relevant chapters and cancel the relevant appendix. Appendix and chapter are reorganized according to the chapter merge and order change.	Y.PEI

Contents

2 PURPOSE

The purpose of this technical document is to define:

– the standard products generally employed for the cleaning, protection, packaging, lifting and lashing of parts.

– the techniques generally used for lifting and lashing.

3 SCOPE

This document is applicable to all parts that must be cleaned, protected and packaged to be shipped and possibly stored.

The particular client specifications or those of the engineering department take precedence over or will be complementary to the specifications described in the present document.

The turbine and generator shafts, wicket gate, rotor segments, poles, stator frame, runner and membranes…… have specific procedure in the GE Vernova System.
(https://corella.ren.apps.ge.com/innovator/Client/)
Please request it from your GE Vernova contact in compliance with GE Vernova regulations. GE Vernova contact need download the latest version from GE Vernova system.

In case of doubt on a particular part, contact your GE Vernova contact.

4 RESPONSIBILITIES

GE Vernova Engineering is responsible for the writing and issuance of technical specifications related to the above noted activity.

The engineering department must be advised of any problems encountered during protection and packaging activities.

The sub-contractor or manufactory is responsible for conditioning materials based on the present document issued by GE Vernova.

The sub-contractor or manufactory can recommend an alternative method for protecting and packaging of the material with the agreement of GE Vernova. The sub-contractor or manufactory who does this remains responsible for the material while it is being handled, shipped, or stored. This remains true even when GE Vernova has approved the alternative method.

The sub-contractor or manufactory is responsible for temporarily protecting the part during fabrication (stoppage, inter-operation, internal movements…)

The sub-contractor or manufactory is responsible for packing, lifting and lashing operations. In this context, they must provide GE Vernova with the associated documentation (eg: Lifting plan, lashing plan, calculation note, etc.).

The sub-contractor or manufactory is responsible for following & using the latest version of this document.

5 5 MANDATORY RULES

1/ The 4 operations of this procedure, packing - lifting - lashing - storage, must be carried out by professionals authorized by GE Vernova experts (https://gevernova.box.com/s/e1r3p1i1fiusbtgiesvv8rrhjrag19io)

2/ 100% compliance with international and local legislation considering the place of departure and place of arrival.

3/ 100% product integrity (0% corrosion, 0% deformation, 0% shock). All machined and unpainted parts are covered with anticorrosion protection. Components will be protected from contact with lifting and lashing accessories to avoid deterioration of one or the other.

4/ The minimum rules applying are those of this procedure and the CTU code of the International Maritime Organization (CTU code:
(https://www.imo.org/en/OurWork/Safety/Pages/CTU-Code.aspx).
They are supplemented by any specific procedures (List in GE Vernova System).
(https://corella.ren.apps.ge.com/innovator/Client/)
Please request it from your GE Vernova contact in compliance with GE Vernova regulations. GE Vernova contact need download the latest version from GE Vernova system.

5/ Packing and lashing operations must be documented, step by step, by photos sent to the claimant to authorize the shipment. Failure to comply with these 5 rules will result in GE Vernova's recourse to obtain full compensation for the damage suffered.

6 LEXICON

CTU: Cargo Transport Units

CTU Code: IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units

OCG : Out of Gauge

Sea/Export worthy packing- Cover component with VCI, Foam and silica gel/ desiccant Wrap it after that Outer side Wrap/cover aluminum barrier foil around the component, hold both edges of barrier foil together, seal it with hot sealing machine, keep open space for blower nozzle, suck all air from the barrier foil bag and by hot sealing close the blower opening.

IMPORTANT: See Chapter 4 for the scope of sub-contractor or manufactory responsibilities.
Different definition of roles and responsabilities (R&R) of sub-contractor or manufactory is not part of this document.

7 CLEANING & RUST PREVENTIVE

7.1 Cleaning:

For details of cleaning procedures and cleaning products list, please refer to specification P6HEM7100
(https://corella.ren.apps.ge.com/innovator/Client/)
Please request it from your GE Vernova contact in compliance with GE Vernova regulations. GE Vernova contact need download the latest version from GE Vernova system.

7.2 Rust preventive

For the protection of all metallic components, please refer to specification P6HEM7100.

IMPORTANT

The protection for Embedded parts in contact with concrete shall be referred to Contact C of specification P6HEM7100.
Embedded parts can include supports, jacks, anchor to be installed permanently in the concrete. In case of doubt, contact your GE Vernova contact.
A special care shall be considered to ensure these surfaces are not affected by corrosion before to proceed to start concreting, protection shall be checked regularly in order to avoid any surface affectation. In case protection is affected and shipment/ storage conditions do not allow to keep the affected area in a safe environment, it shall be repaired with relevant product (refer to contact C of specification P6HEM7100)

Before placing the parts in the crate, all machined steel surfaces must be coated with protection material, the detail material can be found in specification P6HEM7100.

8 PACKAGING

IMPORTANT:
For details of packaging, please refer to packaging specification HS-HSH70-000000000EC.
(https://corella.ren.apps.ge.com/innovator/Client/)
Please request it from your GE Vernova contact in compliance with GE Vernova regulations. GE Vernova contact need downloaded the latest version from GE Vernova system.

For the packaging guidelines, refer packaging specification HS-HSH70-000000000EC. Sub-contractor or manufactory need follow it also during the packaging process.

The packaging categories and protections can be found in packaging specification HS-HSH70-000000000EC.

The common packaging products can be found in packaging specification HS-HSH70-000000000EC.

Sub-contractor or manufactory are responsible for packaging that must comply with the laws and regulations of air /sea / road /rail transportation, and dangerous components transportation in different regions.

8.1 PACKAGING PROCESS

IMPORTANT: If the transport scheme is not fixed, The Sub-contractor or manufactory is responsible for making adequate suggestions to GE Vernova before packaging.

Use: crate or platform, as recommended in packaging specification HS-HSH70-000000000EC.

The hardware (The parts referred to as hardware include without limitation: bolts, nuts, washers, locking sheets, valves, electrical components…..) and hazardous products and particular case need refer to packaging specification HS-HSH70-000000000EC is packed before shipping begins.

8.2 SHIPPING CRATES AND SECUREMENT

Shipping crates can be fabricated from different components depending on the weight, dimensions, geometry of the part, i.e. plywood, planking, etc.
Details of model crates please refer the packaging specification HS-HSH70-000000000EC. **Direct contact between a component and wood is strictly prohibited.**

IMPORTANT : If stacking is required during transportation, please refer to the packaging specification HS-HSH70-000000000EC. The Sub-contractor or manufactory is responsible for making adequate suggestions to GE Vernova before stacking.

If the weight of the components is over 4535 kg / 10 000 lbs, the Sub-contractor or manufactory is responsible to propose an adequate support design to GE Vernova before packing.

In general, shipping crates will be assembled using spiral nails or screws. Nail heads or points must not protrude beyond the interior walls to avoid perforating the packaging or damaging the parts.

In conclusion, a wooden crate or other must:

- Maintain and resist the loading forces subjected to transport accelerations (CTU code),
- Resist the forces induced by the lifting slings (angle β),
- Resist the lashing forces induced by accelerations (CTU code) and the forces induced by the lashing slings (angle α and β).

Each area of the crate in contact with the part, slings or wedges must have suitable reinforcements.

The types of wood used to make packaging are numerous and depend on the region and the species or reconstituted materials available. However, they must imperatively comply with the ISPM 15 international standards. Versions, in many languages, are available via the links below.
(https://www.ippc.int/fr/core-activities/standards- setting/ispms/ https://www.ippc.int/en/publications/640/)

Generally, we consider:

Waterproof Plywood: To be used in Export & non-Export worthy packing.
Pine wood box: Applicable for both Export & Non-Export worthy packing

8.3 OVERSEA

In addition to the application of packaging specification HS-HSH70-000000000EC, Special precautions are taken for shipping packaging, The product used must be accepted by the final client. such as:
Crates must be thoroughly fumigated with insecticide; fiber wax paper should separate or wrap metal parts.

Various materials and steps for vacuum packaging must comply with the packaging specification HS-HSH70-000000000EC, and protection must refer to the specification P6HEM7100.

8.4 AUXILIARIES AND ELECTRICAL EQUIPMENT

The packing of these equipment such as junction boxes, electrical cubicles, valves panels, etc. is not part of this document. Considering the very specific requirements for each equipment, the Sub-contractor or manufactory is responsible to submit their own packing procedure for approval by GE Vernova.

9 PICTURES

- Once protected, detail pictures of the component or the protected area must be taken.

- A picture of the box should be taken with a digital camera before closing it.

- A picture of the crate or Consolidated Part is taken when everything is ready for shipment.

These pictures will be forwarded to GE Vernova's purchasing department by e-mail for evaluation prior to release

10 SECUREMENT DEVICES PERFORMANCE

10.1.1 Main and non-exhaustive references.

CTU code
(https://www.imo.org/en/OurWork/Safety/Pages/CTU-Code.aspx)

EN 12195-1 ;12195-2 ;12195-3 ; 12195-4 ; 12640 (http://www.boutique.afnor.org/search/results/word/12195)

GE Vernova requirements
The means of transport must be suitable for the load transported and be in a condition to do so. The main points are:

- Clean installation surface, without deformation that could affect the integrity of the load (holes, bumps, etc.),
- Present points capable of withstanding the lashing forces (sufficient number, no deformation of the lashing points ...),
- Have an identification of the capacities of the tie-down points,
- Comply with the legislation.

Anti-slip mat (μ = 0.6 min) is **mandatory for all interfaces** that do not have sufficient blocking (Parts, supports, means of transport).

For lashing operation, below requirements shall be considered as bare minimum,

- LC marking on each accessory or tool.
- Lashing plan with calculation note available, on place, for each lashing
- Special tool
    - Respective country standards must be followed and as minimum:
        - A calculation note regarding the safety factor.
        - User manual
        - Detailed quality and load test report
        - Identification point for lashing with color code defined in clause Marking.
        - Unique identification plate

10.1.2 Road Transportation

Any structure designed for any cargo securement system for road transportation shall be in accordance with the cargo securement standard regulation:
FOR ALL: CTU code of the IMO (International Maritime Organization)
(https://www.imo.org/en/OurWork/Safety/Pages/CTU-Code.aspx)
HNA : Quebec transport
(https://www.transports.gouv.qc.ca/fr/entreprises- partenaires/ent-camionnage/Pages/arrimage- charges.aspx)
Federal Motor Carrier Safety Administration (FMCSA).
(https://www.fmcsa.dot.gov/regulations/cargo- securement/cargo-securement-rules)
HLA : to complete
HEU : EN 12195
HIN : Ministry of Road Transport and Highways
(https://morth.nic/ais)
HCN : EN 12195

At a minimum, the following accelerations must be considered:
1) 0.8g deceleration in the forward direction.
2) 0.5g acceleration in the rearward direction.
3) 0.5g acceleration in a lateral direction.

Where g represents the gravitational acceleration applied on the cargo.

Adapt the speed and visibility of the product (reflector) according to the conditions.

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10.1.3 Rail road Transportation

Any structure designed for any cargo securement system for railroad transportation shall be in accordance with the cargo securement standard regulation:
FOR ALL: CTU code of the IMO (International Maritime Organization)
(https://www.imo.org/en/OurWork/Safety/Pages/CTU-Code.aspx)

HNA: Railway Association of Canada (www.railcan.ca)
Association of American Railroads (http://www.aar.org)
HLA : to complete
HEU : EN 12195
HIN : Ministry of Road Transport and Highways (https://morth.nic.in/)
HCN : EN 12195

The cargo securement systems must be capable of withstanding the following three forces:
1) 3g longitudinal acceleration.
2) 2g lateral acceleration.
3) 2g vertical acceleration.

Where g represents the gravitational acceleration applied on the cargo.

IMPORTANT
Accelerations during rail transport change considerably from region to region. Pay particular attention to local legislation.

10.1.4 Maritime transportation

Any structure designed for any cargo securement system for maritime transportation shall be in accordance with the cargo securement standard regulation:
FOR ALL: CTU code of the IMO (International Maritime organization)
(https://www.imo.org/en/OurWork/Safety/Pages/CTU-Code.aspx)
HNA: to complete
HLA : to complete
HEU : EN 12195
HIN : Ministry of Road Transport and Highways
(https://morth.nic.in/)
HCN : EN 12195

At a minimum, the following accelerations must be considered:
1) 0.4g (0.2g vertical) deceleration in the forward direction.
2) 0.4g (0.2g vertical) acceleration in the rearward direction.
3) 0.8g (1g vertical) acceleration in a lateral direction.

Where g represents the gravitational acceleration applied on the cargo.

10.1.5 Lifting process of the transportation

Use only well-known accessories Sub-contractor or manufactory in the international trade.

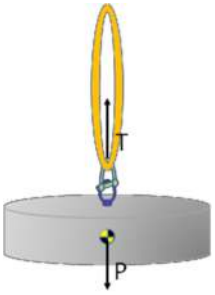
For lifting operation, below requirement shall be considered as bare minimum,

- Lifting plan with calculation note and risk analysis available, on place, for each lifting
- WLL marking on each accessory or tool.
- Special tool
    - CE certification if going to be used within Europe.
    - If outside Europe respective country standards must be followed and as minimum:
        - Calculation note regarding the safety factor.
        - User manual
        - Detailed quality and load test report
        - Identification point for lifting with color code defined in clause Marking.
        - Unique Identification plate

11 CALCULATION RULES FOR LIFTING

An Excel file is available for you to perform the calculations as below.

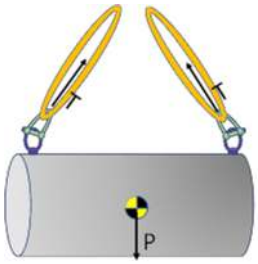
Lifting - lashing calculation sheet.

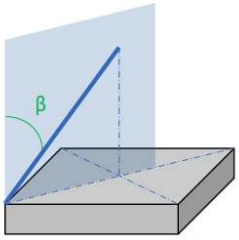


Calculation rules

Lifting at 1 point above the center of gravity.

$$T = P$$

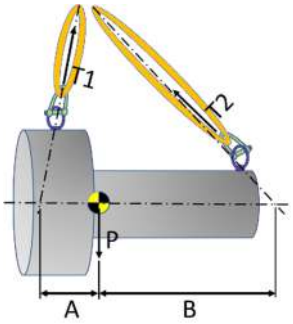


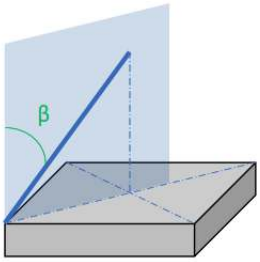


Calculation rules

Lifting at 2 points equidistant from the center of gravity

$$T = \frac{P}{2\cos\beta}$$

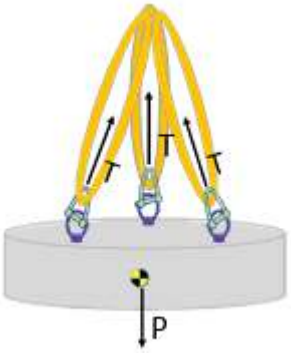


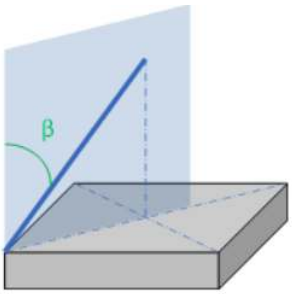


Calculation rules

Lifting at 2 points non equidistant from the center of gravity

$$T1 = \frac{B}{A+B} * \frac{P}{\cos\beta 1} \qquad T2 = \frac{A}{A+B} * \frac{P}{\cos\beta 2}$$

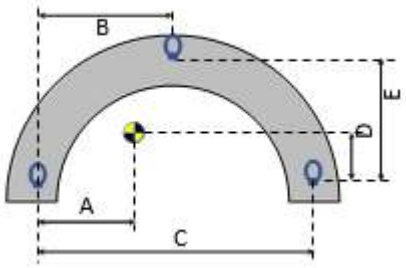


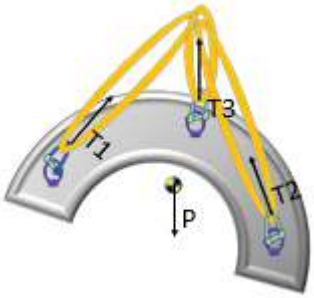


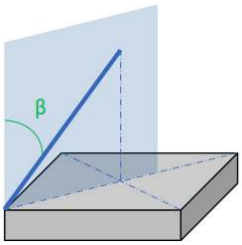
Calculation rules

Lifting at 3 points at 120° equidistant from the center of gravity.

$$T = \frac{P}{3\cos\beta}$$



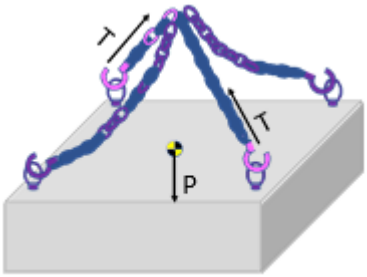


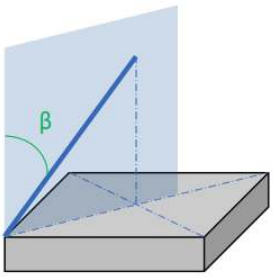


Calculation rules

Lifting at 3 points non equidistant from the center of gravity

$$T1 = \left(1 - \frac{D}{E} + \frac{B * D}{C * E} - \frac{A}{C}\right) * \frac{P}{\cos \beta 1}$$
$$T2 = \left(\frac{A}{C} - \frac{B * D}{C * E}\right) * \frac{P}{\cos \beta 2}$$
$$T3 = \left(\frac{D}{E}\right) * \frac{P}{\cos \beta 3}$$



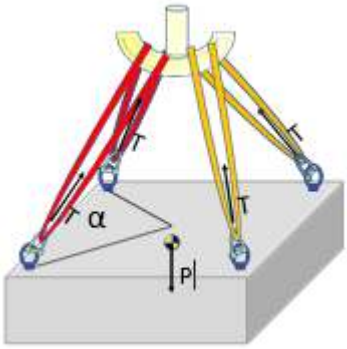


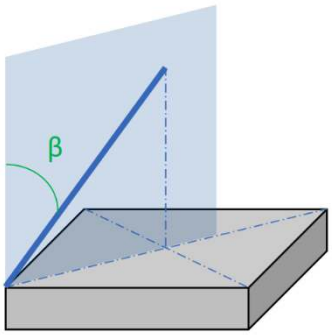
Calculation rules

4-point lifting:

Equidistant from the center of gravity. At 90 °
Independent slings
Rigid piece

$$T = \frac{P}{2 \cos \beta}$$



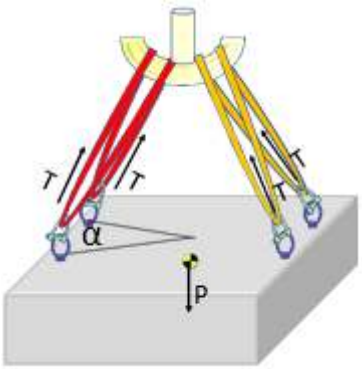


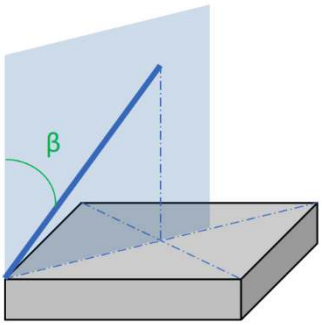
Calculation rules

4-points lifting:

Equidistant from the center of gravity.
α > 30°
2 slings passing through the hook
Rigid piece

$$T = \frac{P}{2.9\ \cos\beta}$$



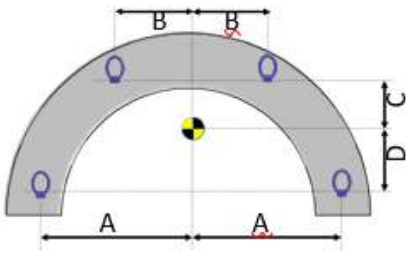


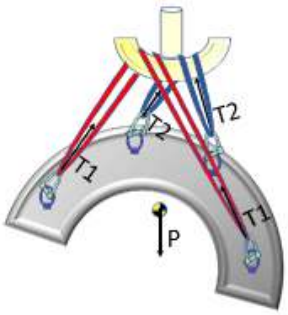
Calculation rules

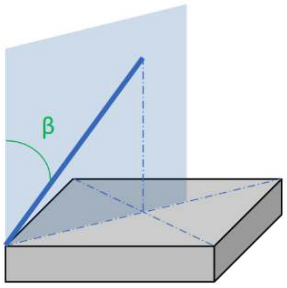
4-points lifting:

Equidistant from the center of gravity.
α < 30°
2 slings passing through the hook
Rigid piece

$$T = \frac{P}{3.6\,\mathrm{cis}\beta}$$





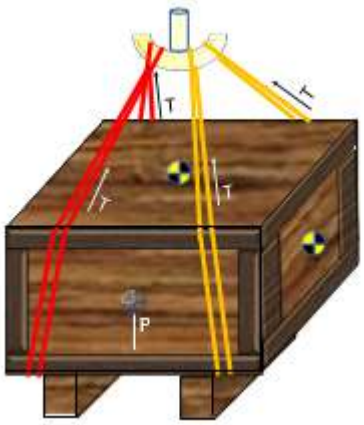


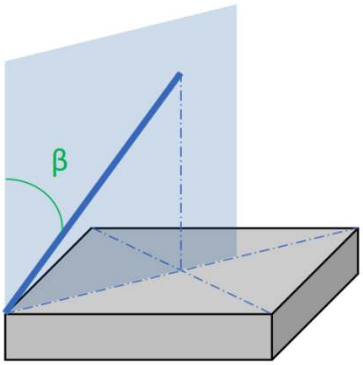
Calculation rules

4-points lifting :

Equidistant from the center of gravity.
2 slings passing through the hook
Rigid piece

$$T1 = \frac{P * \frac{C}{C+D}}{2 * cos\beta 1}\frac{4}{3} \qquad T2 = \frac{P * \frac{D}{C+D}}{2 * cos\beta 2}\frac{4}{3}$$



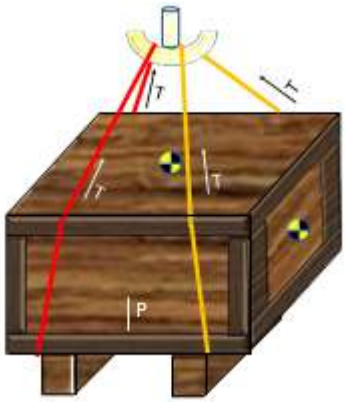


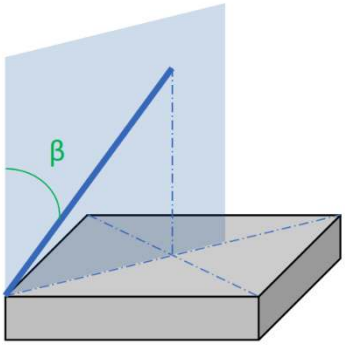
Calculation rules

Lifting in basket mode with 2 slings:

Equidistant from the center of gravity.
Rigid piece

$$T = \frac{P}{2 * 2\ cos\beta}$$





Calculation rules

Lifting with 2 round textile slings:

Equidistant from the center of gravity.

Rigid piece

$$T = \frac{P}{\frac{1}{2} * 4\,cos\beta}$$

12 CALCULATION RULES FOR LASHING

12.1 Friction (Refer to CTU code https://www.imo.org/en/OurWork/Safety/Pages/CTU-Code.aspx).

Combination of materials in the contact surface [a]	Friction factor μ
Sawn wood	
Sawn wood – fabric base laminate/plywood	0,45
Sawn wood – grooved aluminium	0,4
Sawn wood – shrink film	0,3
Sawn wood – stainless steel sheet	0,3
Plane wood	
Plane wood – fabric base laminate/plywood	0,3
Plane wood – grooved aluminium	0,25
Plane wood – stainless steel sheet	0,2
Plastic pallet	
Plastic pallet – fabric base laminate/plywood	0,2
Plastic pallet – grooved aluminium	0,15
Plastic pallet – stainless steel sheet	0,15
Steel and metal	
Steel crate – fabric base laminate/plywood	0,45
Steel crate – grooved aluminium	0,3
Steel crate – stainless steel sheet	0,2
Concrete	
Concrete rough – sawn wood battens	0,7
Concrete smooth – sawn wood battens	0,55
Anti-slip mat [a)]	
Rubber	0,6 [b)]
Other material	as certified [c)]

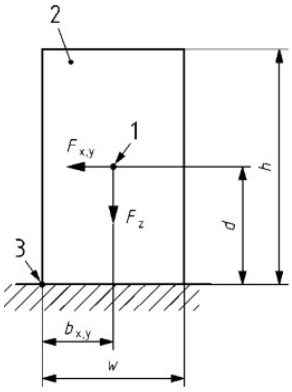
a) Surface, dry or wet but clean,
b) May be used with fμ = 1,0 for direct lashing.
c) When special materials for increased friction like skid-inhibiting mats are applied, a certificate for the friction factor μ is required

12.2 Calculations

An Excel file is available for you to perform the calculations as below.

Lifting - lashing calculation sheet.

12.2.1 Stability

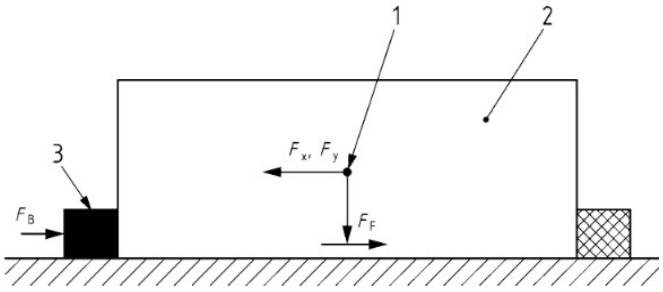


$$bx, y > \frac{\mathrm{Cx, y}}{\mathrm{Cz}}\ d$$

1: Center of gravity
2: Load
3: Tilting edge

IMPORTANT
If the calculation shows that the part is unstable, continue the calculations for the sliding AND contact your GE contact to inform them of the instability

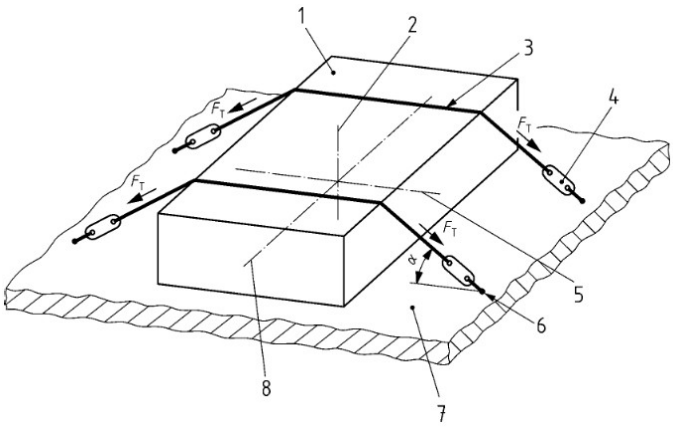
12.2.2 Blocking



$$\boldsymbol{Fb} = (\boldsymbol{Cx, y} - \mu * \boldsymbol{Cz})m\ x\ g$$

1: Center of gravity
2: Load
3: Blocking device
μ: Friction factor
m: mass
g :gravity (10 m.s-2)

12.2.3 Frictional lashing

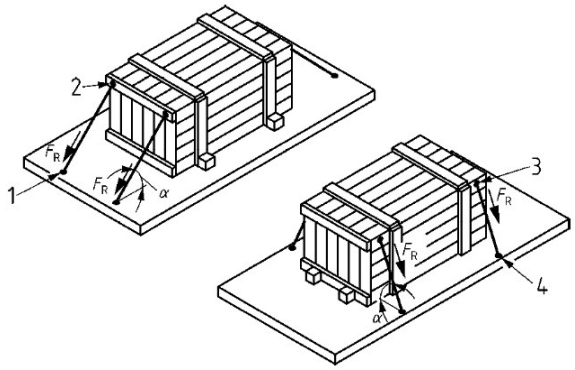


$$n \geq \frac{(Cx,y - \mu * Cz)m * g}{2\mu * \sin\alpha * Ft} Fs$$

1: Load
2: Vertical axis
3: Lashing device
4: Tensioning device
5: transverse axis
6: Lashing point
7: Horizontal plan
8: Longitudinal axis μ: Friction factor
m: mass
g: gravity (10 m.s-2)
Ft: tension force (STF)
Fs: 1.1 except in the case of braking 1.25
n: Number of lashing device

12.2.4 Direct lashing

12.2.4.1 Slope lashing

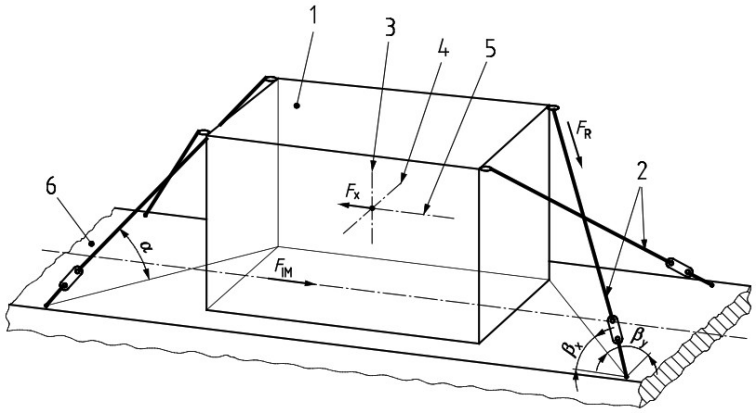


$$LC \geq m * g \frac{(Cx,y - \mu * F\mu * Cz)}{2(\cos\alpha + \mu * F\mu * \sin\alpha)}$$

1: Lashing point
2: Attachment point
3: Attachment point
4: Lashing point

μ: Friction factor
m: mass
g: gravity (10 m.s-2)
Fμ: Safety factor for friction (0.75)
LC: Lashing capacity

12.2.4.2 Diagonal lashing

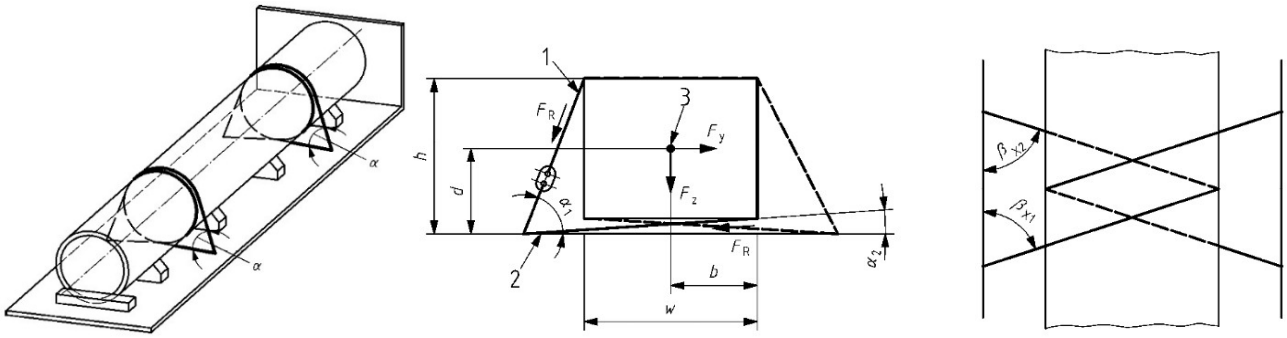


$$LC \geq m * g \frac{(Cx,y - \mu * F\mu * Cz)}{2(\cos\alpha * \cos\beta x,y + \mu * F\mu * \sin\alpha)}$$

1: Load
2: Lashing device
3: Vertical axis
4: Transverse axis
5: Longitudinal axis
6: Loading plane

μ: Friction factor m: mass
g: gravity (10 m.s-2)
Fμ: Safety factor for friction (0.75)
LC: Lashing capacity

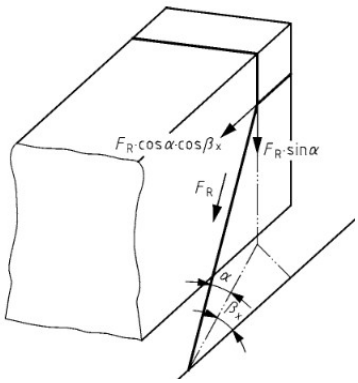
12.2.4.3 Loop lashing



$$n \geq m * g \frac{(Cy - \mu * F\mu * Cz)}{LC(\cos\alpha 1 * \cos\beta x1 + \cos\alpha 2 * \cos\beta x2 + \mu * F\mu * \sin\alpha 1 + \mu * F\mu * \sin\alpha 2)}$$

1: First line of lashing
2: Second line of lashing
3: Center of gravity μ: Friction factor
m: mass
g: gravity (10 m.s-2)
Fμ: Safety factor for friction (0.75)
n: Number of lashing device
LC: Lashing capacity

12.2.4.4 Spring lashing



$$LC \geq m * g \frac{(Cx - \mu * F\mu * Cz)}{\sum_{i=1}^{n}(\cos\alpha i * \cos\beta x, yi) + \sum_{i=1}^{n}(\mu * F\mu * \sin\alpha i)}$$

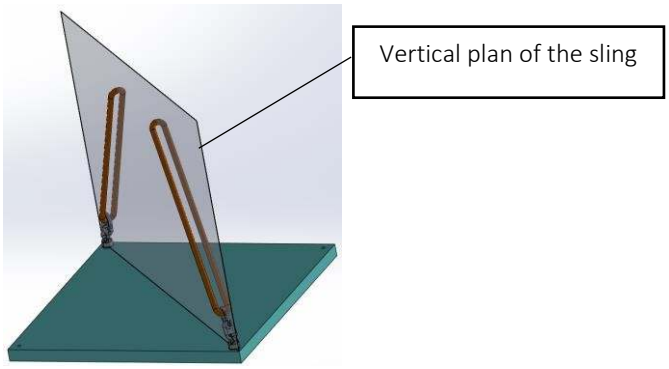
μ: Friction factor m: mass
g: gravity (10 m.s-2)
Fμ: Safety factor for friction (0.75)
n: Number of lashing device
LC: Lashing capacity

13 Validation of a lifting or lashing physically

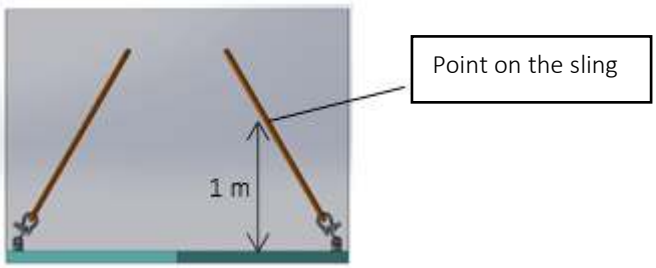
13.1 Lifting

The aim is to check that the WLL of each accessory is greater than the tension to which it is subjected using the previous formulas.
To determine the cos β, 2 solutions:

- You have a smartphone that measures angles and a calculator that does cosines (pay attention to the unit, degree, grad or radian).
- You don't have a smartphone, but you have a tape measure. The presentation below shows you how to do it.

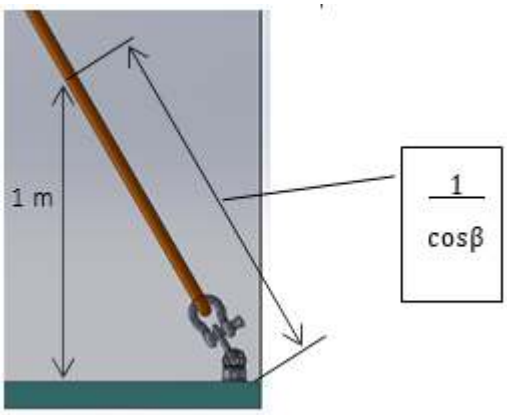


Position yourself in the plane of the sling and identify the point of the sling which is 1 m high.



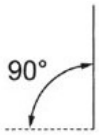
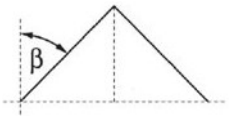
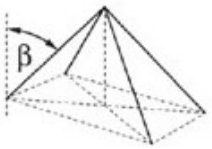
Measure the distance from the point on the sling to the part.

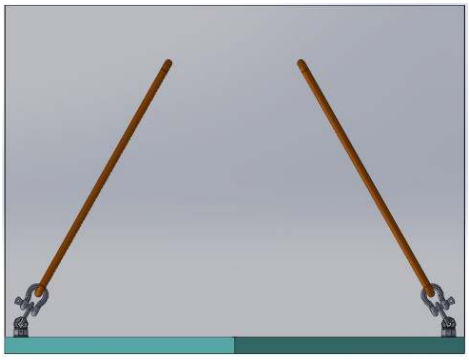
You obtain $\frac{1}{\cos\beta}$



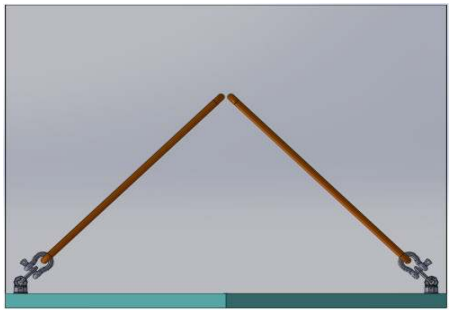
When using a multi-leg sling, it is important to know if the angle β is:

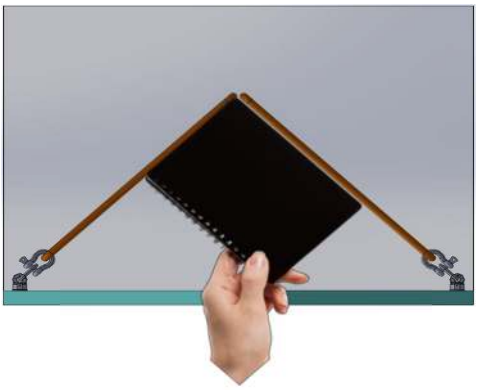
- Between 0° and 45°,
- Between 45° and 60°
- Beyond 60° (stop the line)

					
β	0° → 7°	0° → 45°	45° → 60°	0° → 45°	45° → 60°
Facteur / Factor	1	1.4	1	2.1	1.5
CMU / WLL	1000	1400	1000	2100	1500

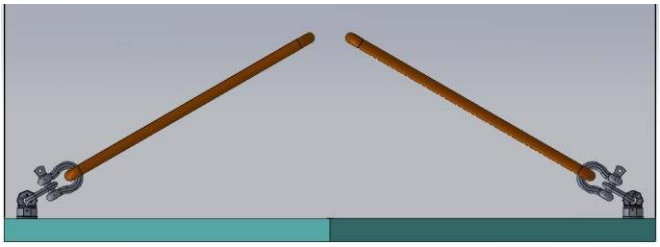


In this configuration, if you place an object with a right angle (ex: notebook, telephone, etc.), if the slings are hidden by this object, the angle β is less than 45°

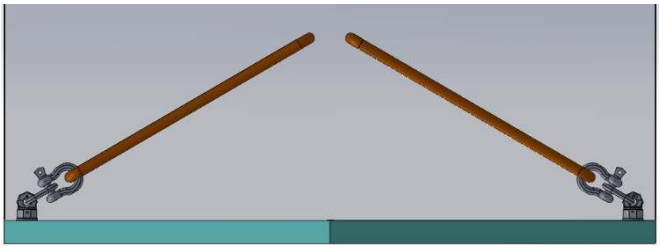


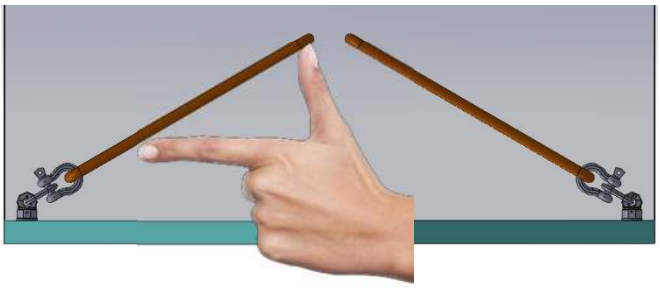


As before, place an object at a right angle, we notice that the slings are aligned with the edges of the object, the angle β is at 45°

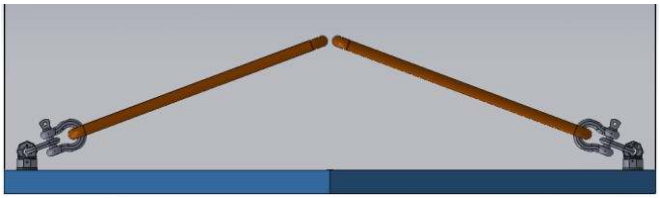


In this case, we notice that the slings are above the object, the angle β is greater than 45°





By placing your thumb and index finger (horizontal) at 90°, you can control the angle β relative to 60°

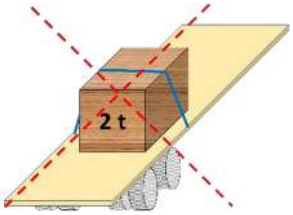


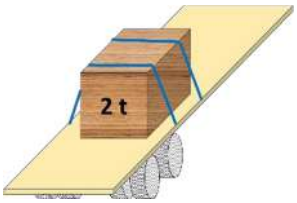
In this configuration, the sling passes over the index finger, the angle β is greater than 60°: STOP THE LINE

13.2 Lashing

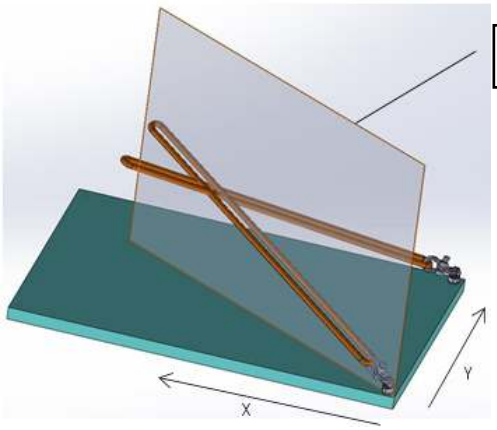
In the context of lashing by friction, with an angle α between 75° and 90° it can be ESTIMATED (this is not a calculation, just an approximation) that 1 strap is needed per ton lashed.
WARNING :

- Anti-slip mat μ=0.6 between the crate and the support
- STF > 500 daN



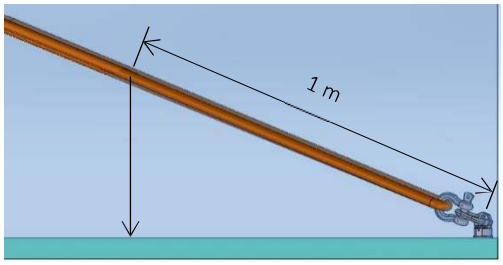


In the context of a direct lashing, the slings' holding force can be assessed with a simple tape measure.
Effort = LC x Value measured along an axis (X or Y)

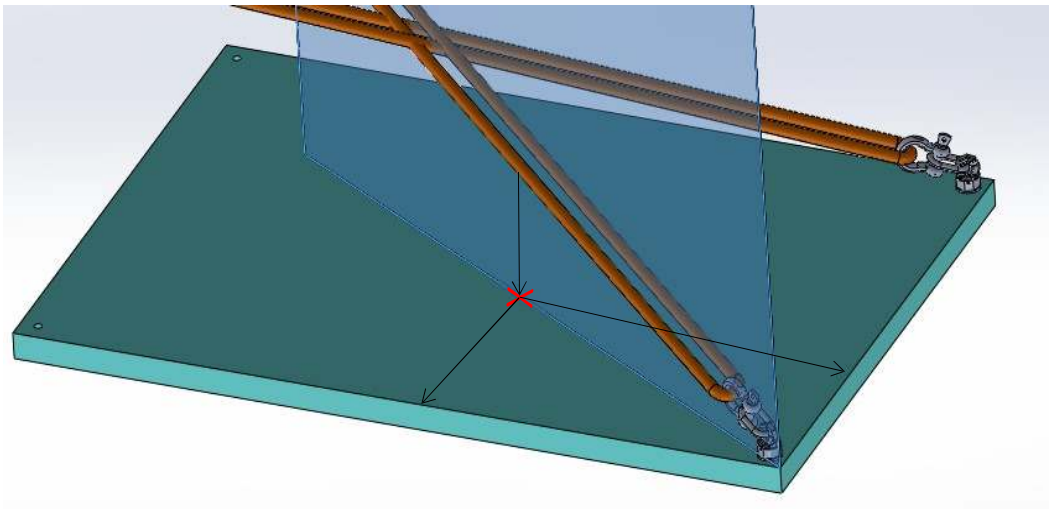


Vertical plan of the sling

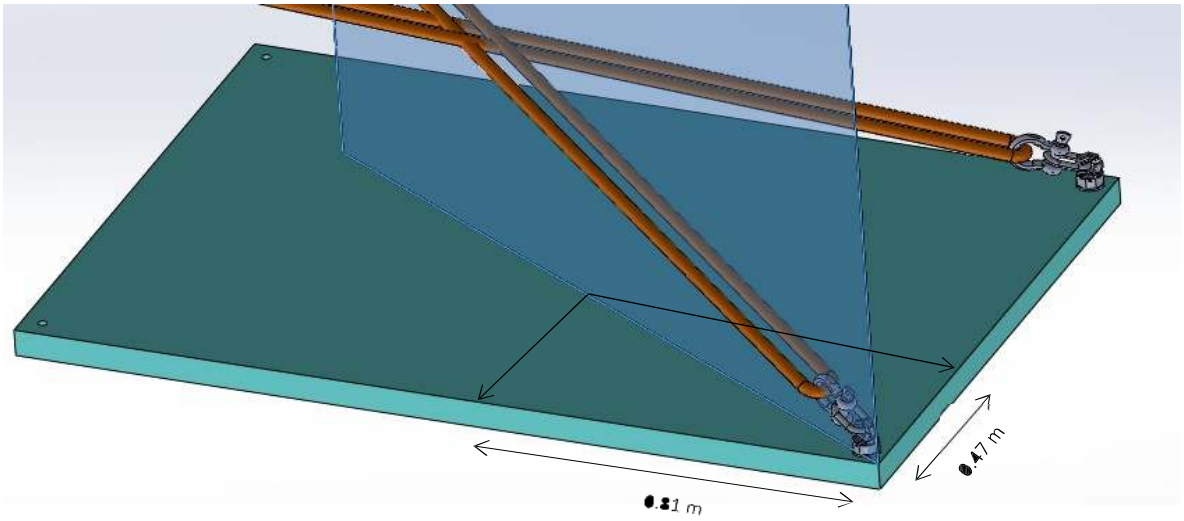
Measure a length of 1 meter along the sling starting from the attachment point on the support. Then project the end of the measure vertically onto the transport support (make a cross).



Transfer, perpendicularly, the position of this cross to the edges of the transport support.



The distances, in meters, measured on the edges of the means of transport in relation to the attachment point, give the effectiveness of the sling in the chosen direction.



In this example, with an LC of 1000 daN, the retaining force on the axis:

- X is: 1000 x 0.81 = 810 daN
- Y is: 1000 x 0.47 = 470 daN

14 STORAGE, GE REQUIREMENTS

The colored circles are painted directly on the packaging.

● CLASS A Red circle → storage in an air-conditioned enclosed building with temperatures that must not drop below +5°C and must not exceed +35°C.
● CLASS B Black circle → storage in a dry enclosed building (well ventilated).
● CLASS C Blue circle → storage in a sheltered area protected from water and dust, equipment placed on wooden pallets.

● CLASS D Green circle → storage in a storage park, dry ground, equipment placed on wooden pallets (protected against mechanical damage).
● CLASS E F G → to be defined by project, if needed
● CLASS H Orange circle → storage of hazardous/dangerous material (paint, gas, oil, chemical anchors, etc.) in well ventilated rooms and apart from other material.

On tank retention, to avoid pollution in case of leakage or spill.
Must respect the specific directive specified on the safety data Sheet.
Must respect the instruction of storage incompatibility.

If the client requires splitting the different parts by unit, the number of the unit will be placed in the center of the circle, for example: 1
If the components stored is a spare part, add “R” mark on the colored circle to differentiate it from the other parts.

For the details pertaining to temporary surface protection of component(s) during storage, please refer to the specification P6HEM7100