

Placement of safety equipment

Wind turbine type	Mk version
V105-3.3/3.45 MW	Mk 2
V112-3.0 MW	Mk 0–1
V112-3.3/3.45 MW	Mk 2
V117-3.3/3.45 MW	Mk 2
V126-3.3/3.45 MW	Mk 2

Version no.	Date	Description of changes
02	2015-11-12	Wind turbine type table updated. Table 3-1, p. 4, Table 4-1, p. 10, and Table 4-2, p. 11, updated.

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1 Introduction

The purpose of this document is to describe the standard safety equipment that is supplied with the Vestas wind turbine. Local regulations or customer-specific requirements may demand additional equipment be included in the turbine. For details of such equipment, refer to the project-specific documentation.

2 Tools

Item no.	Quantity	Description
115723	2	5–6 kg CO2 fire extinguisher ERP: FIRE EXTINGUISHER 5KG NO. 51
250930	2	Fire blanket ERP: FIRE BLANKET 180X110 CM
728852	2	Bracket for fire extinguisher ERP: BRACKET FOR EXTINGUISHER
10207491	2	Bracket for fire blanket ERP: BRACKET FOR FIRE BLANKET
728816	2	Installation bracket for the first aid box with snap plate ERP: FLOOR SLAB, MIDDLE LEFT
N/A	2	First aid box
115999	1	Offshore survival ration equipment (offshore only) ERP: OFFSHORE SURVIVAL RATION EQU.

Table 2-1: Tools

NOTE The standard safety equipment may be different for the various sites based on the site and local requirements.

3 Standard safety equipment inside the tower (offshore only)

The standard safety equipment inside the tower is specific to offshore wind turbines, and the brackets for securing the equipment must be ordered separately.

3.1 Firefighting equipment

1. Place the firefighting equipment next to the lift.
2. Attach the fire extinguisher sign as shown in Figure 3-1, p. 3.
3. Install the carbon dioxide fire extinguisher using the magnetic bracket (item no. 728852) below the fire extinguisher sign on the cable ladder in the base of the tower at the entrance.

4. If there is no fire extinguisher sign, locate a place on the tower wall with adequate space for the firefighting equipment and the first aid kit (a minimum of 80 x 80 cm). See Figure 3-1, p. 3.
5. Attach the fire blanket to the tower wall using a magnetic bracket (item no. 10207491) on the right-hand side of the fire extinguisher and secure it with cable ties.

NOTE The box for the fire blanket must be attached in a horizontal position in order to avoid the box will open and that the blanket will drop out of the box.

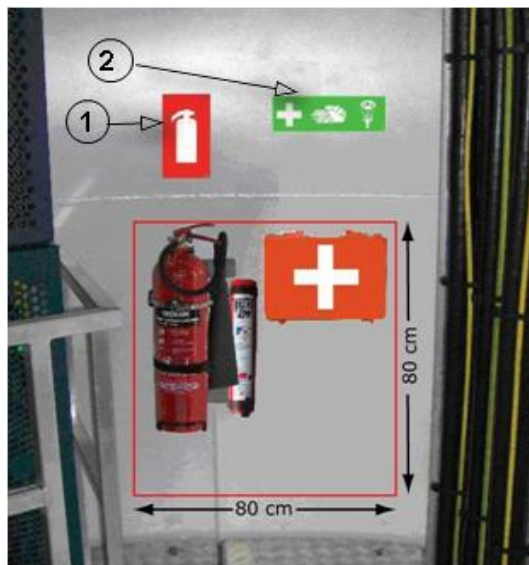


Figure 3-1: Firefighting equipment

1 Sign for fire extinguisher

2 Sign for first aid kit

3.2 First aid kit

1. Install the first aid kit below the first aid kit sign at the base of the tower. See Figure 3-1, p. 3.
2. Use the outside triangular bracket (part of item no. 728816 and marked with red in Figure 3-2, p. 4) as a template to drill holes in the back of the first aid box, and bolt the bracket on with the enclosed bolts.
3. Use washers on the inside of the first aid box to distribute the tension.
4. Attach the inside triangular bracket to the tower wall and place the first aid kit by joining the two brackets.
5. If there is no 'First Aid' sign, locate a place on the wall with adequate space for the firefighting equipment and first aid kit (a minimum of 80 x 80 cm). See Figure 3-1, p. 3.
6. Attach the first aid box on the right side in this space.

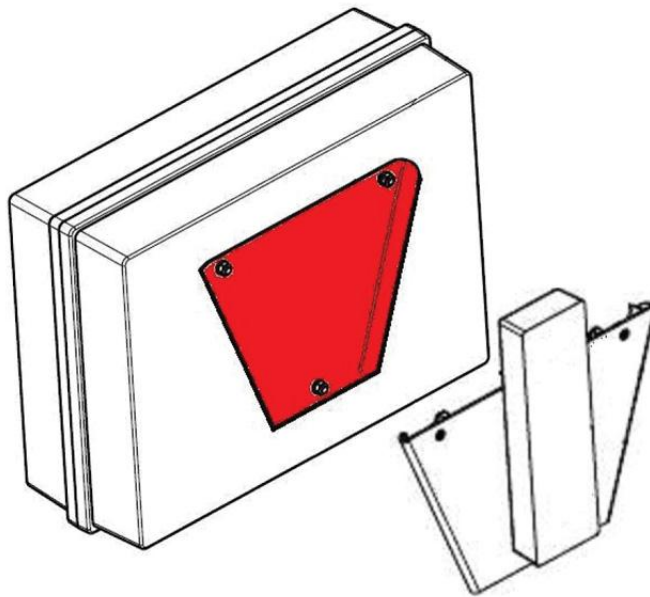


Figure 3-2: First aid kit and snap plate

Item description
Triangular bandage
Compress bandage
Gauze compress
Plaster
Wound cleaning napkin
Harness scissor
Tweezers
Space blanket
Safety pins
Eye wash (0.5 l)
Chemical ice pack (for muscles)
Disposable gloves

Table 3-1: Contents of first aid kit

3.3 Offshore survival ration and equipment

1. Place the offshore survival ration and equipment (item no. 115999) on the second platform below the survival equipment sign as in the arrangement shown in Figure 3-3, p. 5.



Figure 3-3: Offshore survival ration and equipment

Item no.	Quantity	Description
244341	1	Yellow industrial torch ERP: bright star 2618 yellow
244342	2	Batteries 1.5 V ERP: batteri 1,5 V 736-f6-r20 d
244343	1	Knife red carbon ERP: knife, w/sheath, red carbon
244344	1	Playing cards
244345	1	Sleeping bag
244346	3	Emergency supplies
244347	10	Emergency drinking water ERP: herm water plasticps.10x5x100
244349	1	Plastic container ERP: packing & packing + 60 ltr. plastic container

Table 3-2: Offshore survival ration and equipment

3.4 Stretcher (optional)

The stretcher is located on the transfer vessel depending on customer requirements.



Figure 3-4: Example of a stretcher system

Assembly of the stretcher is done in accordance with the user manual contained within the backpack. The stretcher comes equipped for horizontal helicopter hoisting or vertical hoisting in industrial or confined spaces. The durable plastic body provides protection for the casualty while allowing extraction through the most challenging environments.

The stretcher is stored rolled in a Cordura backpack for ease of transport and storage.

Item no.	Quantity	Description
N/A		Stretcher
N/A		Cordura backpack
N/A		Horizontal lift slings (pair)
N/A		Tow strap
N/A		Removable webbing handles
N/A		Steel locking 'D' carabiner
N/A		Vertical lift sling

Table 3-3: Stretcher system.

A flotation system with the following features can be added to the stretcher system for use in offshore or deployment in water. The flotation system keeps the immobilised person nearly vertical even in rough seas.

- Two side floats and chest pad provide sufficient buoyancy to support two rescuers in addition to the casualty.
- A ballast bag (when filled) keeps the foot-end down and the head elevated out of the water.

NOTE The floatation system can be either two Ethafoam floats or two CO₂ inflatable logs.



Figure 3-5: Inflatable flotation system

Item no.	Quantity	Description
N/A		Inflatable chest pad
N/A		CO ₂ Inflatable float 5" diameter logs (pair)
N/A		CO ₂ cartridge – 25 g (pair)
N/A		Extra-long handles
N/A		Empty ballast bag

Table 3-4: Inflatable flotation system

4 Standard safety equipment inside the nacelle

Figure 4-1, p. 8, and Figure 4-2, p. 9, show the overview and location of standard safety equipment placed inside the nacelle.

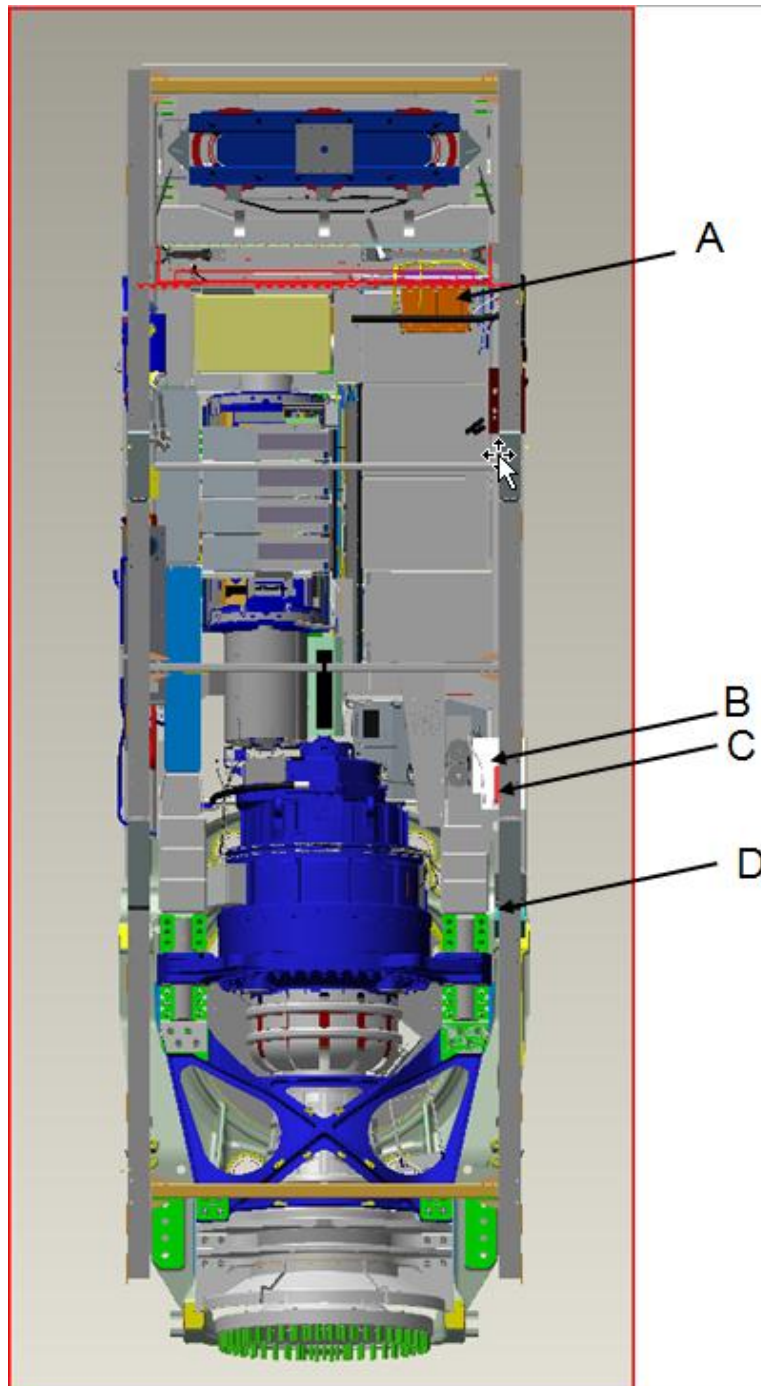


Figure 4-1: Overview of standard safety equipment inside the nacelle

- | | |
|----------------------------|------------------------|
| A Rescue equipment | B Fire blanket |
| C Fire extinguisher | D First aid kit |

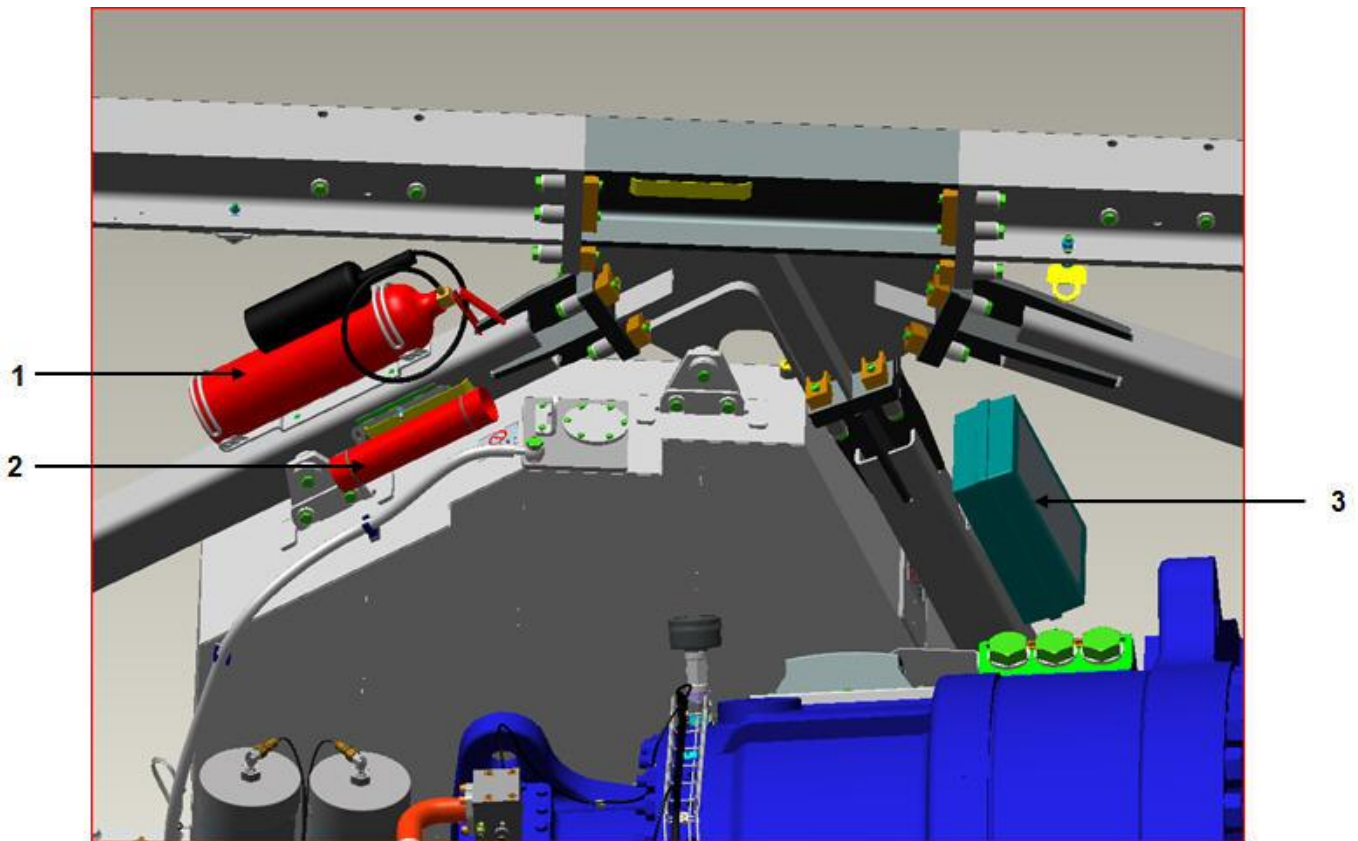


Figure 4-2: Locations of standard safety equipment inside the nacelle

- | | | | |
|---|-------------------|---|--------------|
| 1 | Fire extinguisher | 2 | Fire blanket |
| 3 | First aid kit | | |

4.1 Firefighting equipment

1. Attach the universal bracket for the fire extinguisher to the left rear frame structure near the gearbox gravitation tank as shown in position 1 in Figure 4-2, p. 9.
2. Place the fire extinguisher in the universal bracket.
3. Place the fire blanket on the rectangular bracket above the oil tank.

NOTE The box for the fire blanket must be attached in a horizontal position in order to avoid the box will open and that the blanket will drop out of the box.

4. Secure the fire blanket case to the bracket with cable ties.

4.2 First aid kit

1. Place the first aid kit on the left rear frame structure near the gearbox gravitation tank as shown in Figure 4-2, p. 9.
2. Place the first aid kit to be as accessible as possible.

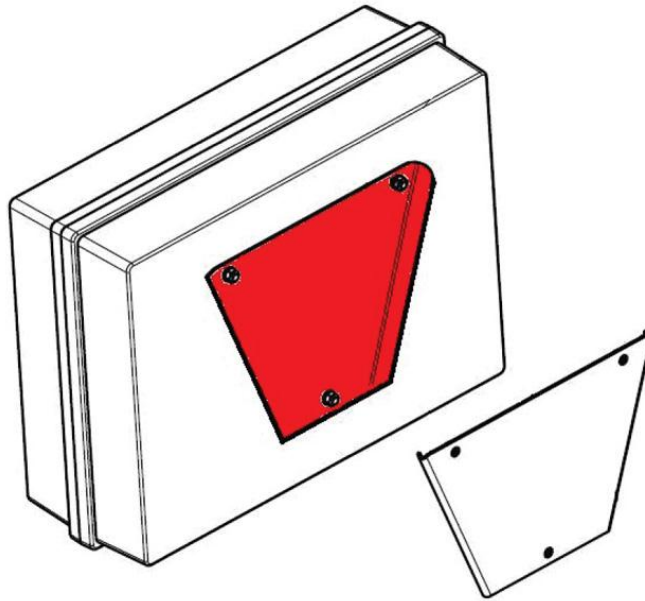


Figure 4-3: First aid kit and snap plate (above generator)

3. Use the outside triangular bracket (marked with red in Figure 4-3, p. 10) as a template to drill holes in the back of the first aid box, and bolt the bracket with the enclosed bolts.
4. Use washers on the inside of the first aid box to distribute the tension.
5. Use the inside triangular bracket as a template to drill holes in the door to the electrical cabinet, and attach the bracket to the cabinet.
6. Place the first aid kit by joining the two brackets.

Item description
Triangular bandage
Compress bandage
Gauze compress
Plaster
Wound cleaning napkin
Harness scissor
Tweezers
Space blanket
Safety pins
Eye wash (0.5 l)
Chemical ice pack (for muscles)
Disposable gloves

Table 4-1: Content of first aid kit

4.3 Rescue equipment

1. Attach the bracket for the rescue equipment to the rear left side of the nacelle as shown in Figure 4-4, p. 11.
2. Place the rescue equipment box in the bracket.
3. Place the cover (marked with red in Figure 4-4, p. 11) over the rescue equipment container, and secure the container and cover with the sling.

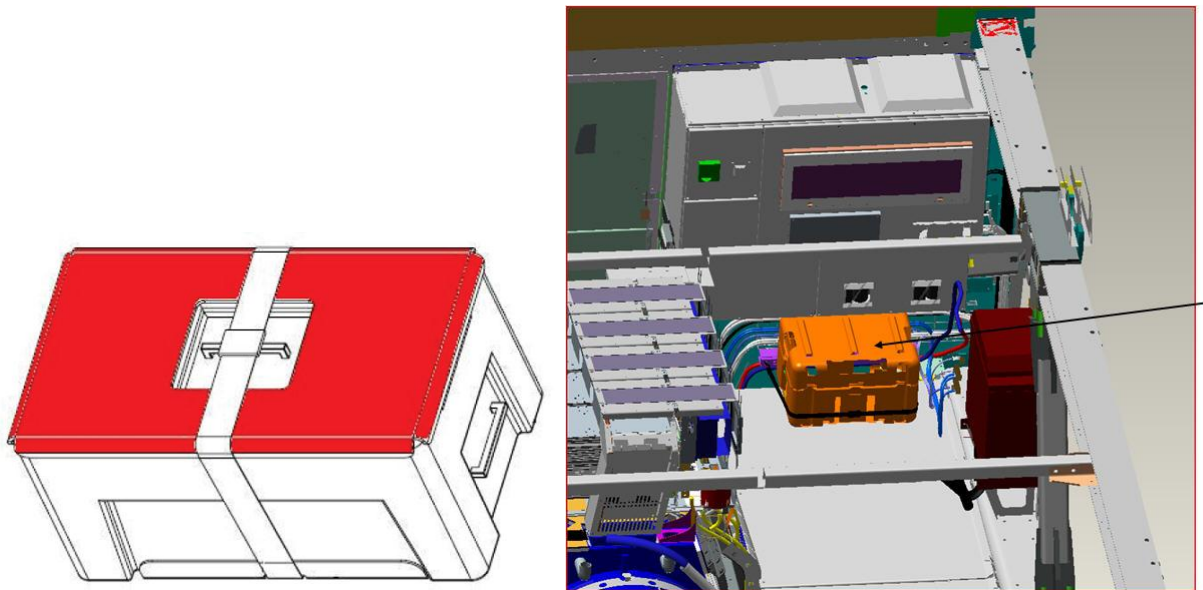


Figure 4-4: Rescue equipment

Item no.	Quantity	Description
208071	1	Rescue equipment box
N/A	1	Bracket for rescue equipment
N/A	1	Web lashing for rescue box

Table 4-2: Rescue equipment