


FR 330 ELEVATOR

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FR 330 ELEVATOR**1. Declaration of conformity****FREMA**

EU- declaration of conformity	CE
FREMA AUNINGVEJ 91b DK-8961 ALLINGÅBRO	
Hereby declares that FR 330 Elevator is produced in accordance to the declarations of COUNCIL DIRECTIVE on mutual rapprochement on legislation on machines (2006/42/EF, artikel 1) between member states.	
FR 330 Elevator is a machine constructed to transport grain, seed and granulates from a vertical level to a different higher level. FR 330 elevator is built to carry a maximum of 220 tons per hour.	
Furthermore, the product is subject to the following standards and circulars: The Danish Working Environment Authority declaration of lay-out of technical device, BEK nr. 612 of 25. June 2008	
Allingåbro, the 01.09.2011.  Karsten Kötter Manufacturer	

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2. Safety:

Elevator is equipped with a key locked emergency switch. The emergency switch is used when the elevators cover plates and cleaning hatches are opened. The switch is to be placed on the elevator or in the working area around the elevator.

SHIELDS AND COVER PLATES IS TO ALWAYS BE INSTALLED

When replacing/servicing belts, cops and alignment of belt etc. it is necessary to uninstall inspection hatch and other cover plates. It is also necessary for it to be possible to operate the elevator belt in order to complete the job.

In these circumstances only authorized personnel are allow in the area and when working inside the elevator is it required that the emergency stop is activated.

Overloading the elevator will result in obstruction and the engine will not be able to pull the elevator. The engines overload relay will normally activate. If that happens it is required that the emergency stop is activated before opening the cleaning hatch.

Electrical engine is not allowed when cleaning an overloaded elevator when starting/stopping the electrical engine in short intervals as this can cause damage to the electrical engine and the pull station of the elevator.

Always read manuals and signage on equipment and follow the instructions.

Never remove signage and make sure to replace old and worn out signage with a new corresponding instruction.

Never let any persons operate the elevator without thorough training.

Make sure the working area is clean and tidy.

Safety instructions:

It is necessary for installation personnel, owner and operators of the elevator to read, understand, and follow the safety instructions of both this manual and general safety instructions in a work place.

Failure to do so may lead to serious work related accidents and wrongful operation of the elevator leading to a poor work result.

Follow these safety instructions:

Always read manuals and signage on equipment and follow the instructions.

Never remove signage and make sure to replace old and worn out signage with a new corresponding instruction.

Learn the correct way to operate the equipment and never let untrained persons operate the machinery.

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If certain functions or parts of the machinery are not fully understood, it is necessary to contact the supplier or Frema in order to minimize misunderstandings.

When operating and servicing, it is required to wear a work helmet, safety glasses, gloves and safety shoes in accordance to general safety regulations.

Be prepared:

Always have a first aid kit placed in a central location, mark the spot and notify the personnel working in the area of the location.

Place signage with information for the closest hospital and fire department.

Place fire extinguishers in easy to reach spots.

Place electrical main emergency stops in central areas.

Rotating parts are dangerous:

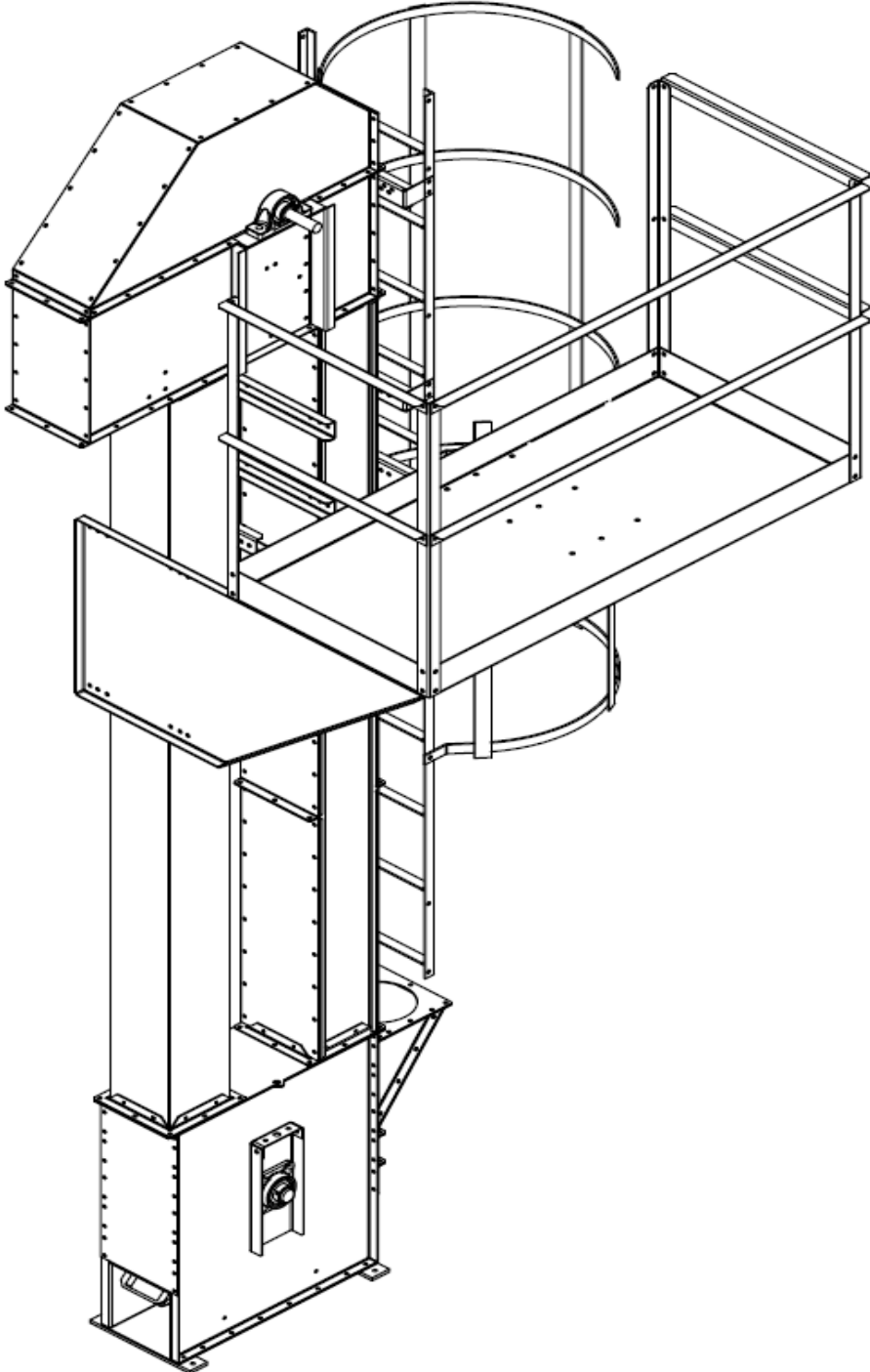
All shields are to be kept in place so rotating parts cannot grab hold of body parts and clothes which can lead to serious personal injuries.

When servicing all electrical functions is to be deactivated in a way so that accidental start by a third person is 100% impossible. Lock the service switch and disconnect the power at all possible levels.

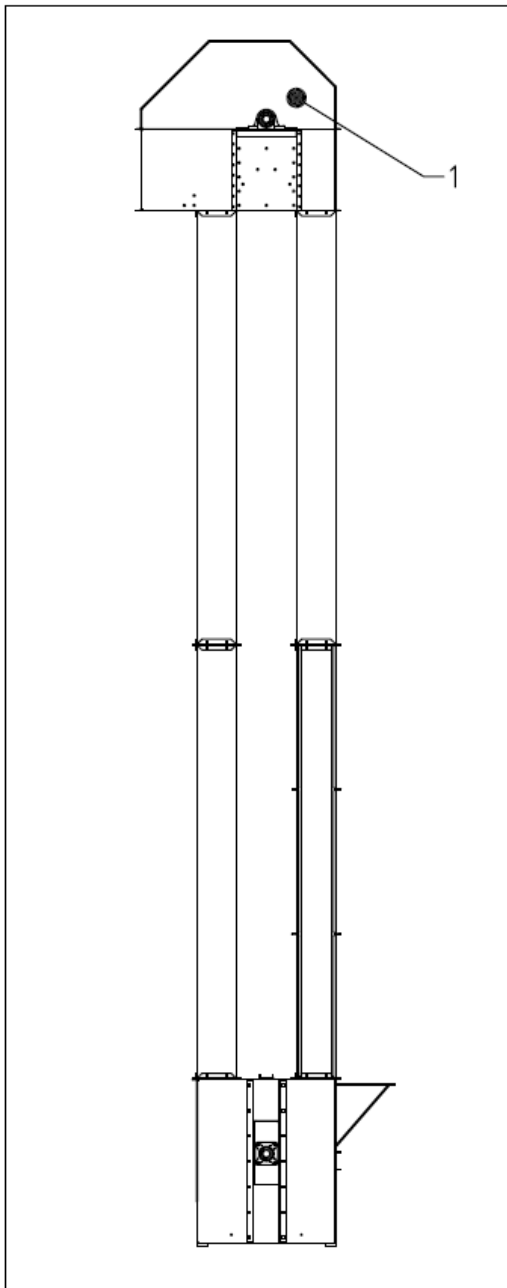
Always wear tight fitted work clothes when servicing and operating the machinery.

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3. Installation



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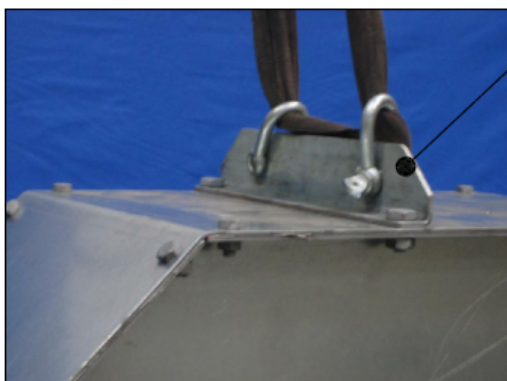


1. The elevator top is placed and fastened using bolts.

The elevator has to be plumb ± 6 mm (if not the elevator will not run silently and will damage the cups).

The elevator is shored up at every 5 m.

The top should be shored up in a way so that it is fastened in both directions. If the elevator is over 12m high, it is to be eased vertically so the weight is not placed on the pipes.



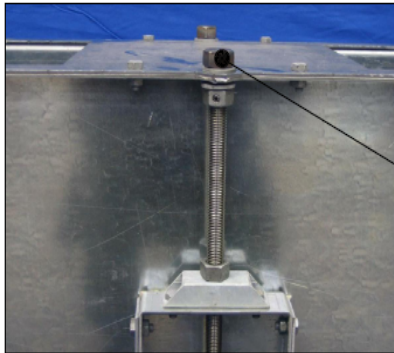
1. Lift bracket for elevator top
The lift bracket allows the elevator to be lifted in order to install pipes under the top and the bottom under the pipes

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Installation of elevator strap.
Method 1

- 1) Remove the cover plate from the elevator top
- 2) Remove the cover plate from the inspection pipe
- 3) Elevator wheel at the bottom is raised completely
- 4) Install strap
- 5) Assemble strap using v-iron
- 6) Tighten strap



Every 5.th cup should be installed so that the weight is evenly distributed on the strap.
Install the cover plate on the elevator top.
Install the cover plate on the inspection pipes.

Elevator strap installation method 2

- 1) Remove the cover plate from the elevator top
- 2) Remove the cover plate from the inspection pipe
- 3) Elevator wheel at the bottom is raised completely
- 4) Strap is installed with cups on the ground.
- 5) Strap is hoisted with crane.
- 6) Install strap with V-iron
- 7) Tighten strap and/or pull by rope.

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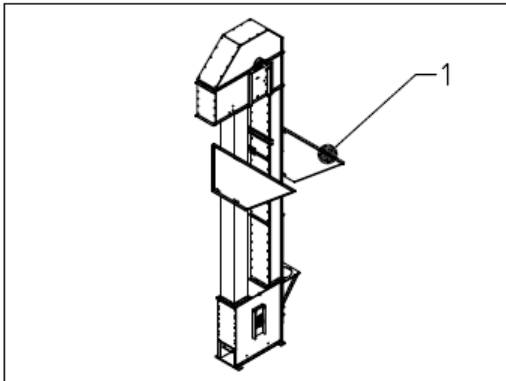
Connect power

- 1) Make sure all cover plates are installed.
- 2) Fitting for return flow barrier should be partly uninstalled
- 3) Connection of power should be carried out by authorized installer
- 4) Re-install return flow barrier once direction of rotation has been checked.
- 5) Install shield
- 6) When starting make sure the strap is running straight on the wheels and that the elevator is running silently

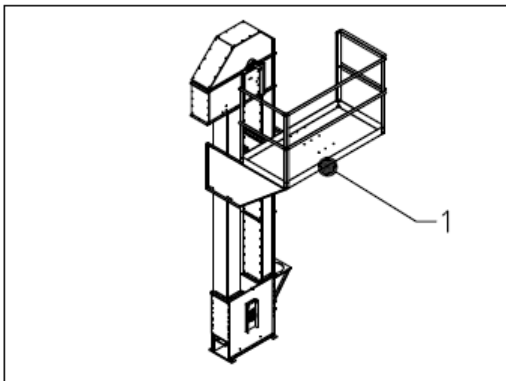


- 1) Transmission is pre-installed by manufacturer.
Maintenance of gear: read enclosed gear manual

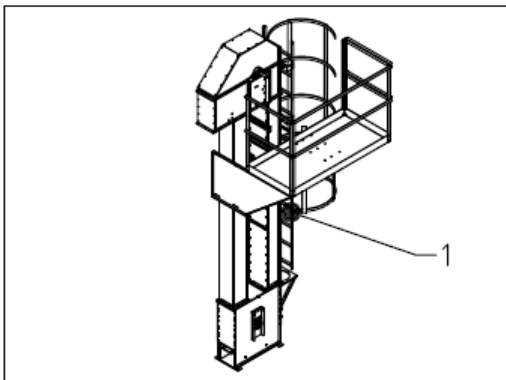
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1) Platform supports is to be installed 1200-1500 mm below the centre of the axis



1) Install platform and rail



1) Install back bracket and ramp

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START-UP

For safety reasons and to minimize damages on the equipment caused to errors in the installation process, make sure to check all elevator equipment.

REMEMBER! The return flow barrier is to be uninstalled before inspecting the elevators direction of rotation. Re-install the return flow barrier after the following procedure has been carried out.



Partly uninstall bracket for return flow barrier



Return flow cover plate should be installed alongside the return flow barrier after completion of inspection.

AFTERWARDS MAKE SURE TO CHECK:

- a) All pipes have been assembled with the necessary support.
- b) All screws in the pull station and bottom station are fastened incl. Gear.
- c) Start the elevator empty and keep it running to ensure the strap is running in the right direction. Make sure the strap is running straight on the pull and bottom drum. During this process all personnel it to be at an appropriate distance from all moving parts.
- d) All shields, cover plates, and inspection hatches are installed.
- e) Unauthorized personnel should not have access to electrical outlets, elevator and platform.
- f) Is the foundation and the surrounding areas safe so no persons can be injured?
- g) Is the electrical installation carried out as per current regulations?

Inflow of material (funnels, conveyers, chutes, etc.) to and from elevator has to be finished before final running-in can be carried out.

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FUNCTIONALITY OF THE ELEVATOR WHILE LOADED SHOULD BE CARRIED OUT IN THE FOLLOWING MANNER:

- Begin by adding a small amount of material and thereby testing the whole system (pipes, chutes, silo, etc.) is working.

HEREAFTER IT IS POSSIBLE TO TEST THE ELEVATOR AT FULL LOAD CAPACITY. MAKE SURE TO CHECK FOR:

- a) Any return flow of material in the elevator pipe.
- b) Whether the strap slides on the drums
- c) Whether the cups have the right amount of filling.
- d) Correct power usage of engine
- c) Whether the elevator has the specified load capacity

SUBSEQUENT CHECK

It is recommended to carry out an inspection after 6-8 operating hours. Check the following areas:

- a) Check any bolts keeping the cups fastened on the strap.
- b) Check that the strap is running straight in the pipe with equal space between both sides of the pipe.
- c) Check engine and gear.
- d) Check for oil leakage and any superheating in gear and engine.
- e) Check pull unit for loose bolts and setting screws.

4. USER GUIDE

When starting elevator:

Start elevator before opening inflow of material.

When stopping elevator:

Stop inflow of material and ensure the elevator is empty before stopping it.

WORK AND MAINTENANCE:

As part of work and maintenance it is recommended that an inspection is carried out after 30 and 100 hours of operation and subsequently after every 200 hours of operating. This leads to a longer longevity and less stoppage.

The following should be checked and inspected:

- a) Regularly check the strap to ensure it is running in the center of the pipe.
- b) Check all bolts in the cup are tightened.
- c) Check for damaged or missing cups.
- d) Maintenance of gear is described by gear manufacturer.
- e) Check for loose or missing bolts; especially by cover plates and shields.
- f) Ensure the rotation guard is in working order.

If the elevator is provided with manually greased bearings, ensure to grease in accordance to the working environment. It is best to grease the bearings while the elevator is running; if not possible grease while the bearings are still hot.

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5. TROUBLESHOOTING

ISSUE	DEFECT	CAUSE/SOLUTION
Return flow of material in back pipe	(Also see cups are not full or at reduced capacity)	
	Loose strap	Tighten or reduce length of strap
Strap slides, burns, or melts	Incorrect speed at pull station	Check speed of engine
	Damaged cups	Replace; find the cause of the damage
	Flat angle of unloading plate	For dry materials it recommended to use and angle of 45*, for wet materials it is recommended to use a higher angle.
	Overfill of elevator	Check capacity, increase inflow
	Bottom drum not in correct place	Centralize drum
	Low density material	Replace cups with perforated cups
	Wrong cup type	
	Strap slides or hot drive drum	Loose strap - tighten.
		Bearings on pull drum are hot and transfers heat to the drum.
		Strap is to loose to pull drum – tighten strap
Strap slides to the side	Strap or bottom drum are not centered	Bottom drum is not aligned – check and align drum
		Buildup of material around the bottom drum – clean drum.
	Strap and bottom drum are not running in center	Power drum is not aligned – check and align drum.
		Cups are not filled regularly – check and adjust elevator inflow.
Engine cuts off	Overburdened engine	Adjust inflow of material.
Noise and vibrations	Cups are hitting the interior wall	Low voltage
		Foreign objects in pipe
	Engine noise	Bend or damaged cups (also see damaged cups)
		Defect bearings in engine and drum - replace.
		Low oil level in gear.
Superheated gear	Bearings on pull drum are not in line	Cups are filled unevenly – check inflow.
	Hot bearings	Adjust bearings until in alignment.
	Low or too much oil	Faulty bearings – replace
Damaged cups	Wrong type of lubrication	Adjust content level
	Loose strap	Check supplier
Cups are not full or at reduced capacity	Foreign objects in pipe	Adjust strap or replace
	Not enough inflow of elevator	Remove.
	Return flow or material in back pipe	Check elevator capacity.
Engine wont start	Incorrect strap speed	Blockage of feeding of the elevator
		Unload plate is not aligned or damaged.
		Incorrect strap speed
	Inflow full of material	Pull drum or stap are greasy
		Inflow of material was not stopped before stopping elevator
Cup is stuck in pipe		Loose or damaged cup - replace.

FR 330 ELEVATOR**6. WARRANTY**

The warranty issued by the manufacturer includes manufacturing and the material of the delivered equipment. The warranty is valid when the equipment is used as described in this user guide, and when used in the purposed under which the equipment is delivered. The warranty covers repairs of defects and shortcomings of delivered system and not of any possible impacts caused by these.

All repairs and replacements of components during warranty cannot be executed without preceding approval and permission by the manufacturer.

On any used engines the same warranty issued by the manufacturer applies.

Warranty period is valid in accordance to existing legislation.