STAGEMAKER®

OWNER'S MANUAL FOR CHAIN HOIST

SM2

English

VERLINDE
LIFTING EQUIPMENT

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Read the instructions supplied with the product before installation and commissioning.

Keep the instructions in a safe place for future reference.

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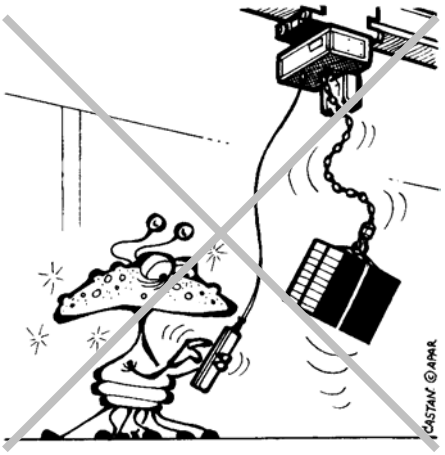
2 SAFETY INSTRUCTIONS

WARNING !

THE FOLLOWING INSTRUCTIONS FOR SAFE USE MUST BE FOLLOWED IN ORDER TO AVOID PERSONAL INJURY OR MATERIAL DAMAGE

Do not let an unqualified person use the hoist.



Do not let an unqualified person use the hoist.

Make sure that the safety rules are followed (personal safety equipment, clearance of work areas, posting up of instructions to be followed in the area...).

Always be ready during operation to press the emergency stop button. This makes all functions inactive.

Never lift more than the maximum working load indicated on the hoist. Shocks or accidental collision of the load with objects can cause excess loads.

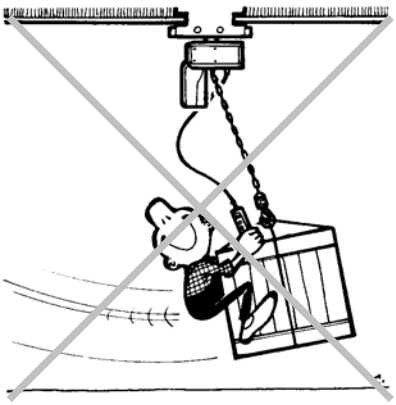
Before operation, check that the load is correctly fastened and installed on the hook. The hook safety latches should be closed correctly.

Do not drive the hook block into the bottom of the hoist. Also do not drive the chain out of the chain bag up to the slack fall stop. These may break the chain and allow the load to drop.

Never use the hoist to transport people.

Never twist the load chains (turning the hook block around...).

Never transport a load with people nearby. Do not pass the hook, with or without a load, above a person. Never go under the load.



Never swing the load intentionally.

Never swing the load intentionally

Never remove the hook safety latches.

Never sling onto the hook jaw (as there is a risk of damage to the hook and of the load falling).

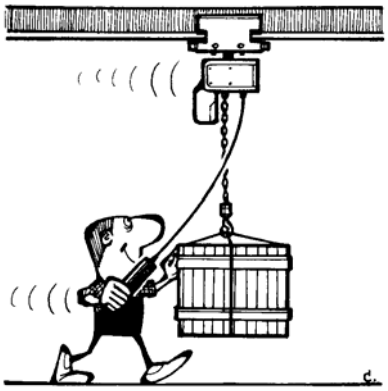
Always lift the load from the floor. Never add load to a lifted hook.

3 Instructions for proper operation and maintenance.

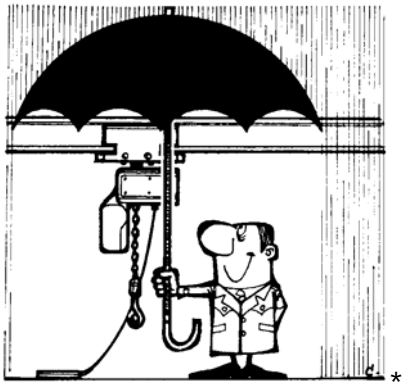
Follow the instructions below in order to keep your equipment in good condition and to keep your product safe

Never move or lift the hoist by the electric cables.
Do not set down the hoist without having an adapted support, to avoid damaging the components on the underside (electric cable, lifting chain, cable gland, chain bucket...).
Never modify the hoist unless the constructor has studied and authorized the modification.
Never modify the values and adjustments of the safety components, outside the limits provided for in the manual, or without the approval of the constructor.
Never try to repair or modify the hoist without the authorization of the constructor or a trained maintenance agent.
Never block, adjust or remove the limit switches or stops installed on the hoist without the authorization of the constructor or a trained maintenance agent.
Never use the hoist to extract, loosen, or pull sideways.
Do not touch the moving components.
Do not operate the hoist if your physical condition does not allow it.
Never use the hoist when in bad repair (wear, deformation...).
Do not subject the hoist to brutal shocks.
Never use the lifting chain as a sling
Never use a hook other than in the vertical position.
Never distract the operator while the hoist is being operated.

Make sure that the hoist is always clean.



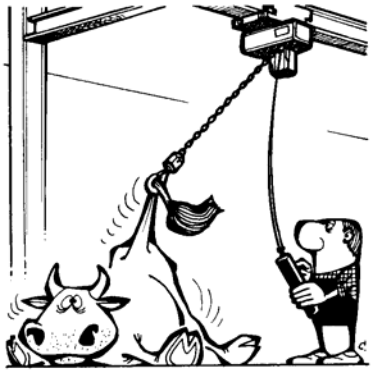
If manually moving the hoist, push the load



Material used outdoors should be protected as well as possible against bad weather conditions.

Never leave a suspended load hanging, if it is not necessary.
Never use the hoist as an earth reference for welding.
Do not use the hoist for a purpose or in an area for which it is not intended.
If manually moving the hoist, push the load.
Do not use the safety components (end buffers, emergency stop,…) as operation components.
Do not use the controls needlessly (avoid inching - stop-start operation of the buttons). This can cause overheating and even damage to the hoist.

Do not use the hoist with a power supply that is different to the one recommended (under-voltage or over-voltage, absence of phase...).
Handle the hoist by its structure, or by the devices provided for this purpose, or in its original packing.
Do not expose the hoist to an aggressive atmosphere (temperature, acidity...).
Make sure that the hoist is always clean and protected from corrosion (lubrication...).
Use the material under normal working conditions (ambient temperature, atmosphere...). Material used outdoors should be protected as well as possible against bad weather conditions. The hoist should be covered to avoid water going inside the chain bucket. In outdoor use a drain hole must be made to the chain bucket's bottom.
Store the hoist in its normal operating position (without load) away from aggressive atmospheres (dust, humidity...).
The hoist should be installed by a competent person
Make sure that the hoist attaching and supporting structure is rigid.
The hoist should be maintained regularly, following the instructions in this manual.
Keep the moving components including the chain clean and oiled as indicated in this manual. The components should only be replaced by original parts that are compatible with the type of hoist. Never use suspect spare parts or parts whose origin is not known.
Make sure that the limit stops are in place.



Never pull the load slantwise.

Never pull the load slantwise, maximum angle 3 degrees.
Make sure that the load is correctly balanced before moving it.
Avoid lifting using only one point of the load. Use adequate accessories (slings, lifting beam...). Pay attention to the center of gravity of the load to be moved.
The elements used to hang the load should be free in relation to the load to be moved (prefer a sling to a rigid beam).
When moving the load, make sure that it is sufficiently raised and clear of surrounding machines and other objects.
Make sure that the hoist is vertical to the load before hoisting.
Avoid swinging the load or the hook when using the travelling trolley or crane. In the case of several speeds, do the starting and braking operations at low speed.
The use of several machines to move a single load should be done by an experienced supervisor. All the necessary precautions should be taken to carefully ensure the distribution of the loads and to avoid overloading a single machine. The machines should be carefully checked before such an operation.
Notify the necessary people after a dangerous operation or if the hoist seems problematic (abnormal noise, abnormal behaviour...).

4 Guarantee

Our electric chain hoists are guaranteed for two years from the date of delivery.
If for a reason outside the control of the vendor, the delivery is delayed, the time lag cannot exceed three months.
If the use (installation) of the hoist is delayed, the corresponding extension of the guarantee (a single extension limited to three months) must be requested, and written confirmation obtained.
The vendor undertakes to eliminate all operating errors originating from the concept, the execution, the components or the materials themselves.

The guarantee does not cover normal wear, nor the failures resulting from lack of regular and periodic maintenance. It does not cover damage due to a lack of supervision, to false operation or to a bad utilization of the hoists, particularly due to overload conditions, slantwise drawing, undervoltage or overvoltage or a connection error.

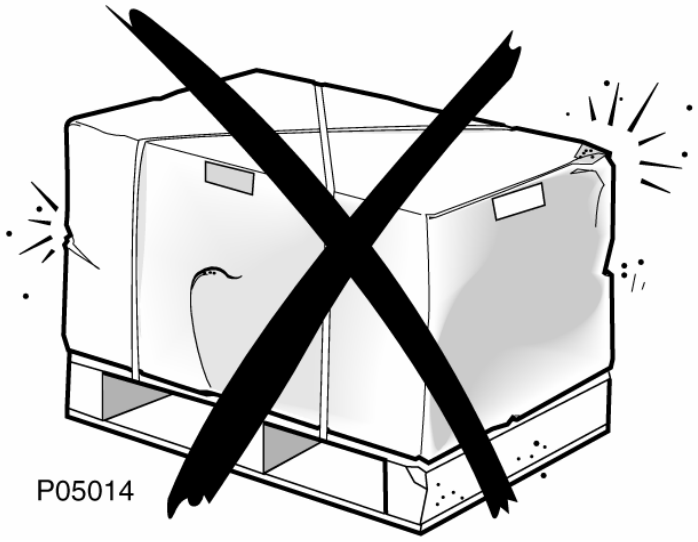
The guarantee does not apply when there is disassembly, modification or replacement of parts (mechanical or electrical) by an unauthorized party or without our prior agreement.
The guarantee only applies for original, factory-installed spare parts.
For the duration of the guarantee, the vendor undertakes to replace or repair, free of charge, the parts that are acknowledged to be damaged following examination by a qualified and authorized technical service.
The guarantee excludes any other services or indemnities. The repairs covered by the guarantee are carried out, as a rule, in the workshops of the vendor or authorized agent. When servicing of the equipment is done outside these workshops, the labor costs for disassembly or assembly of these parts are borne by the vendor when these are done exclusively by his staff or by an authorized agent.
The replaced parts become the property of the vendor and must be returned to the vendor at his expense.
For components of a relative particular importance that are not manufactured by the vendor and which carry the brand name of specialized manufacturers, the manufacturer's guarantee (which can vary according to the manufacturer) is applicable.

The guarantee does not apply for expendable parts defined by the manufacturer :

- Lifting chain
- Chain guide
- Rubber buffer
- Sprockets
- Chain bucket
- Hooks
- Friction and brake discs
- Control box cable

5 Acceptance of the material

Visually inspect the packaging to ensure that it is intact.
If not, notify it as required.
Check that the hoist corresponds to your order.
For transport reasons the chain bucket is delivered disassembled.



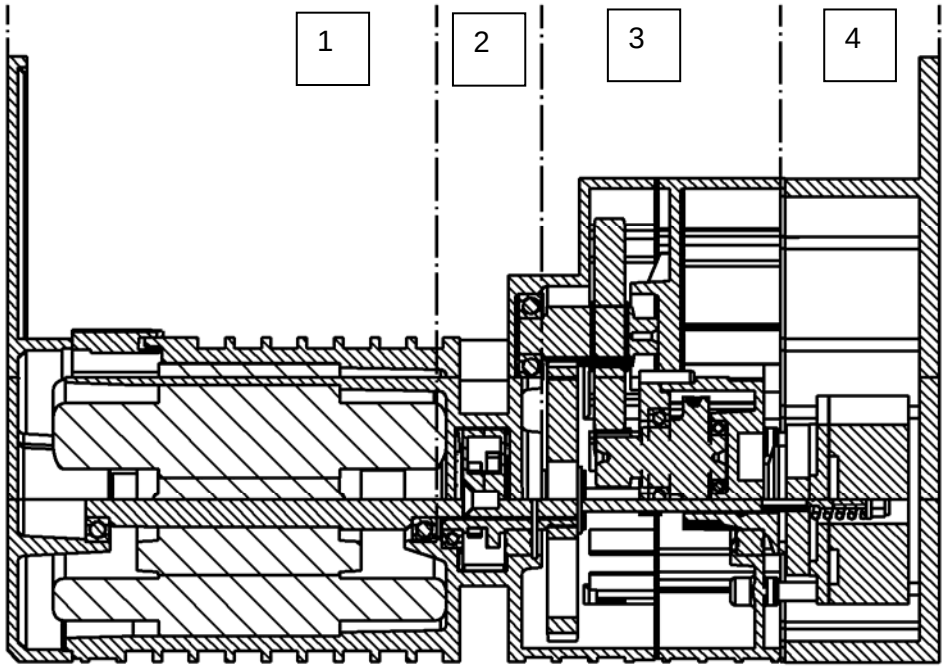
6 Description - technical characteristics

6.1 Types of hoist

Type	Load kg	Number of falls	Speed m/min.	Motor power kW	FEM group	Chain d/t
SM2 254 m1	250	1	4	0,2	1 Bm	4 x 12

☞ The slipping clutch is factory adjusted at a value of 140% (+/- 5%) of the nominal load. Then, for the maintenance operations, the setting value is 125% of the nominal load. This difference is due to the running in of the friction lining.

6.2 Main sub-assemblies / cinematic chain



1. Motor
2. Chain sprocket
3 Gear
4 Brake/slipping clutch

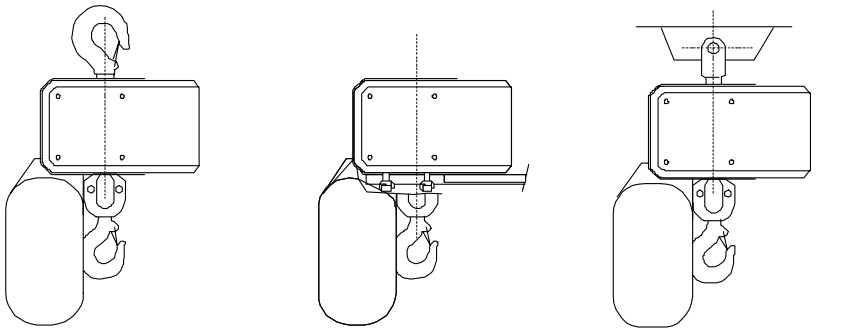
Technical advantage

The position of the slipping clutch allows, should it slip, the load to be held in all cases by releasing the control box button.

The hoist which you have just purchased should only be used with a maximum load equal to the nominal load (refer to the table above).

The length of its useful service life depends on the demands placed on it, the average operating time, the number of start-ups and its maintenance.

6.3 Attachment of the hoist



1. Suspension hook
2. Base mounting
3. Suspension using the coupling part

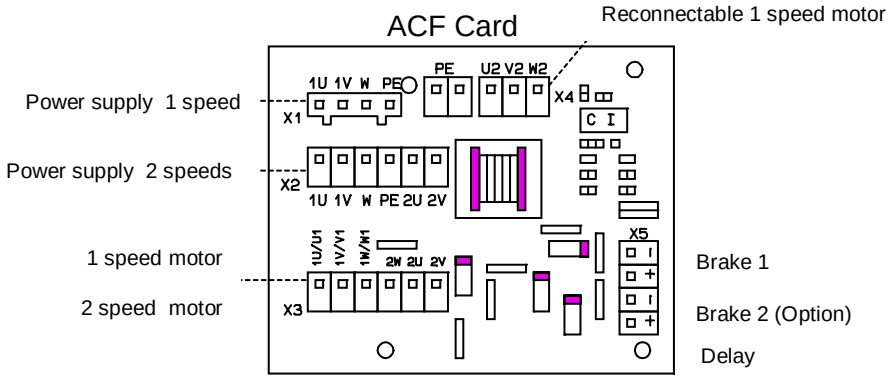
6.4 Environmental data

Ambient temperature :	-20°C to +40°C
Protection class :	IP55 as standard
Side pulling angle :	3 degrees maximum
Impact on the environment :	
Sound level :	78 dB(A)

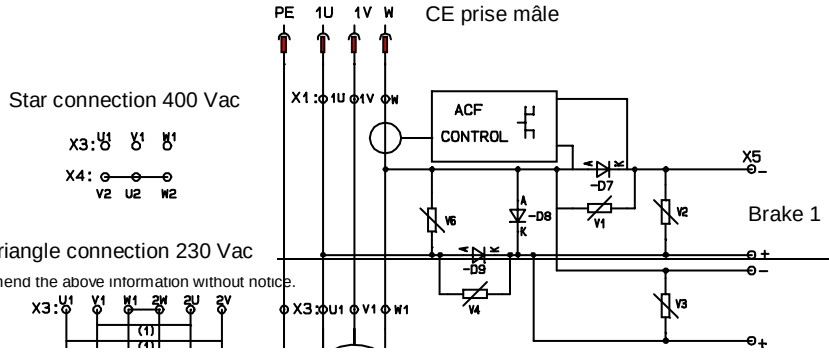
6.5 Electric board (direct voltage control ACF)

ACF board

The ACFG board controls electronically the brake. It enables a rapid brake acceleration. (As the hoist is not equipped with contactor control electric's)



1 Hoisting speed



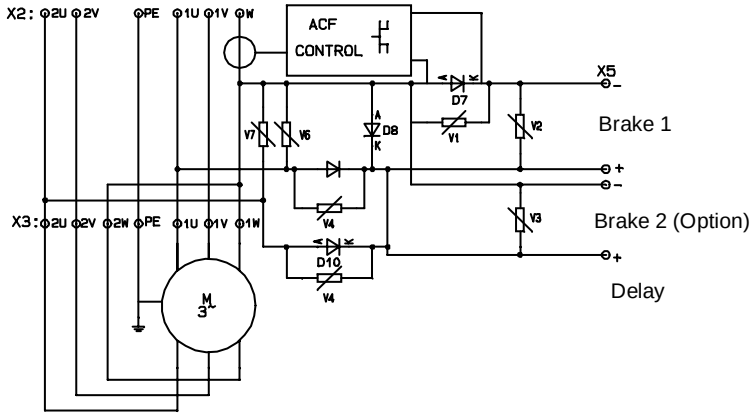
Brake 2

Delay

Motor Phases

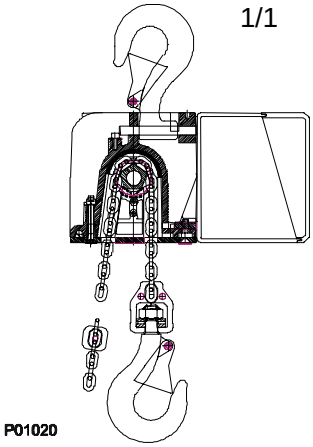
(1) Connection to be done

2 Hoisting speed

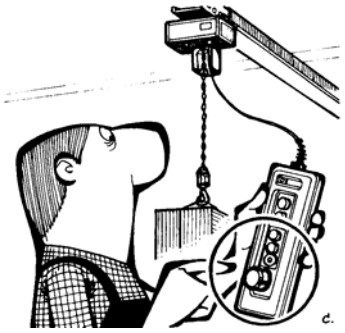


7 Installation of hoist (3 phases)

The service life of the hoist depends on the way it is installed.
The instructions in this manual must be followed carefully for the installation, use and maintenance of the hoist.
Any use contrary to our instructions can be dangerous. In this case, the manufacturer will not accept any responsibility.
Do not use the hoist until this manual has been fully read and understood.
Always keep this manual near the hoist, available to the operator and the person in charge of maintenance.
Make sure that the safety rules are followed *(harness, clearance of work areas, posting up of instructions to be followed in the area...).*
Carry out :
The electrical connection
(refer to : Electrical connection).
Fitting of the chain bucket
(refer to : Chain bucket).
Check that the suspension hook is correctly positioned.
Check that the tightening torques of the hook blocks, locking plates and chain guide conform to the torques indicated in this manual.
(refer to : Screw tightening torques).
Check that the chain is not twisted.
Check that the slack fall stop is correctly attached in the chain bucket and that the fixed point and the chain are correctly held.
Measure the dimension of the opening of the suspension hooks and the hook block.
Note it for a follow-up.



Once these checks have been completed, proceed as follows (be ready to press the emergency stop button at all times).
Oil and start to run in the chain by a few movements without load.



Check, when not under load, that the movement of the hook corresponds to the direction of the arrows on the control box.
If not, see “Troubleshooting”.
Check the operation of the brake: lift up a nominal load and then lower it.
Check the operation of the limit switch.
Carry out dynamic tests with +10% of the nominal load and static tests with +25% of the nominal load on your installation equipped with our hoist.

7.1 Electricity

Disconnect the hoist power supply before servicing the hoist electrics.

An disconnect (isolator) switch should be installed at a maximum of 6 meters from the hoist.

7.1.1 Electrical connection

The customer must supply the power supply cable, the fuses and the main isolator switch (refer to the wiring diagram).

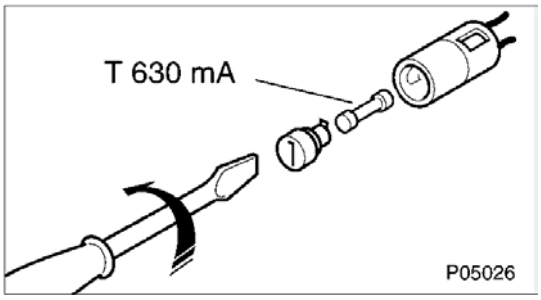
Check that the mains system is correct for the hoist.
Check that the voltage does not vary by more than ± 5% from the nominal value.
Isolate the electric sources.
Make sure that the main hoist electric power switch is off.
Do not use binding posts (luster terminals, etc.) to connect the power supply cable to the hoist.
Do not use rigid cable or cable with a section different to that indicated below to supply the hoist.
Never shunt the isolators, the power switches or the limitation or prevention equipment.
Never block, adjust or remove the limit stops or switches to go higher or lower than these allow.

7.1.2 Connection:

- Remove the control box cover.
- Insert the cable (PS) into the box through the PG cable gland.
- Connect phases L1 - L2 - L3 to contactor K21 (1), and the ground wire to the terminal board (2).
- Check that the terminals are securely tightened on each contactor.
- Close the box.
- Check the hoist operation

Minimum cable sections :

Power supply :	1 mm^2
Auxiliary current :	0.75 mm^2
Control box/hoist :	1.00 mm^2
Fuses :	T 630 mA for 48Vac
	T 500 mA for 115Vac
Main line fuses :	2,5 A



Do not change the travel direction labels in the control box or in the hoist internal wiring.

7.2 Lifting assembly

Only a genuine, manufacturer's chain may be used.

Never use the lifting chain as a sling.

Never twist the lifting chain.

Do not bundle the chain into the chain bucket.

Always keep the chain clean and oiled and check that it is in good condition every day.

7.2.1 Slack fall stop (in the chain bucket)

The slack fall stop is a safety component, not a functional one.

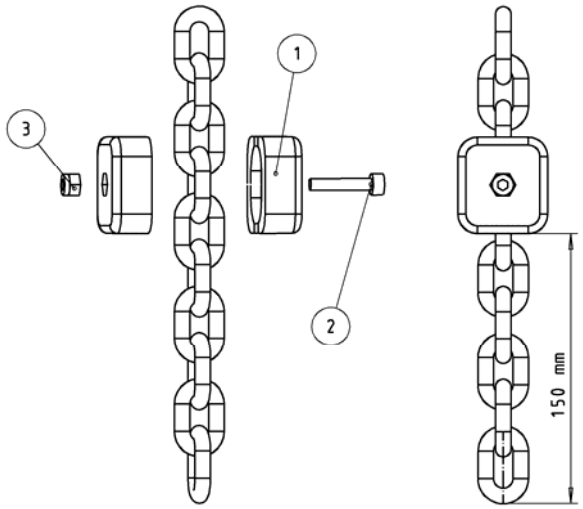
A correct length of chain is required to avoid using it.

REMOVAL:

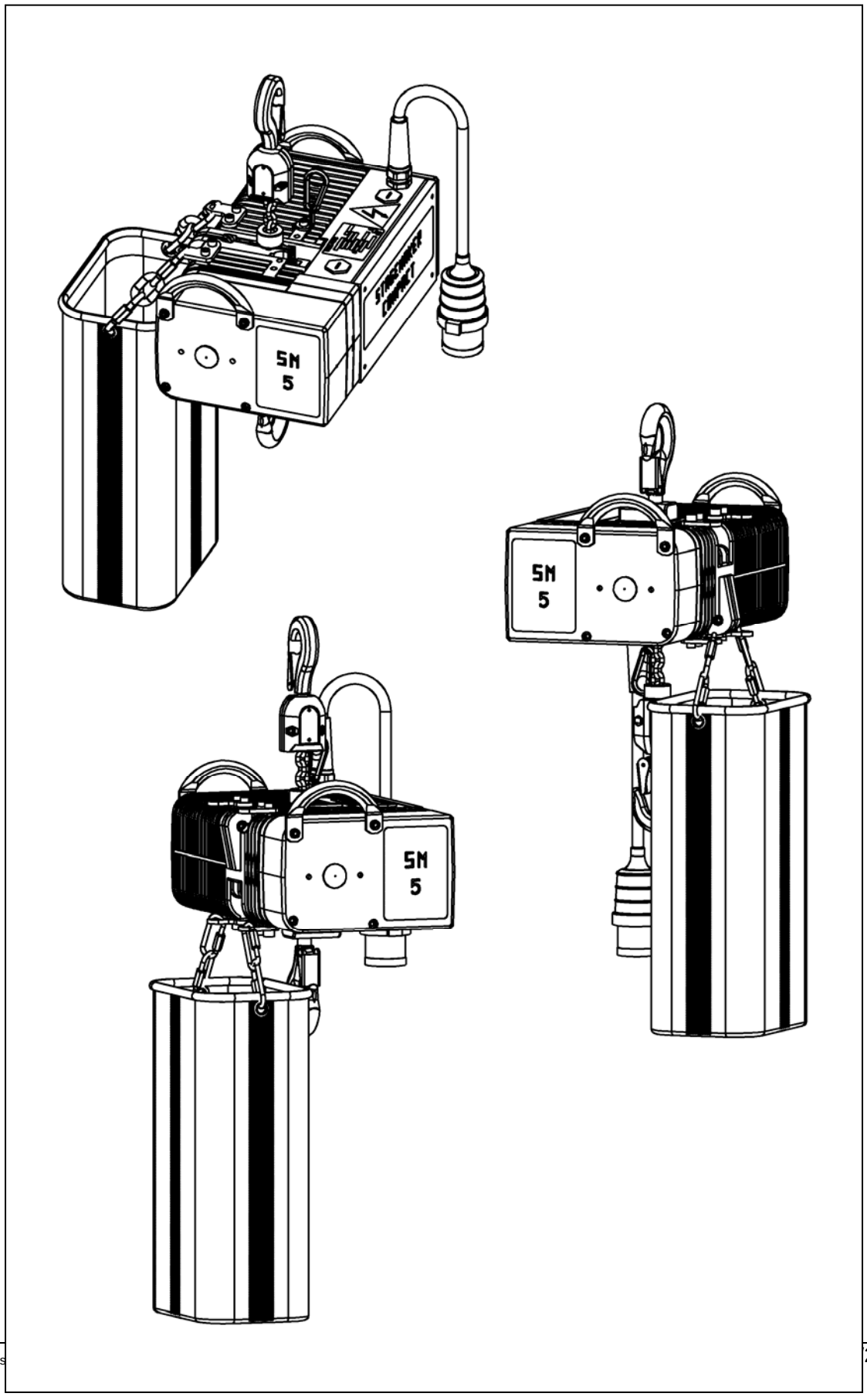
- Remove the nut.(3)
- Remove the screw.(2)
- Remove the two halves of the stop.(1)

REPLACEMENT:

- Check that there is at least 150 mm of chain under the slack fall stop.
- Position the two halves of the stop around the chain.(1)
- Insert the screw and put the nut.(3)(2)



7.2.2 Chain bucket



8 Maintenance – Replacement of hoist

8.1 Maintenance table

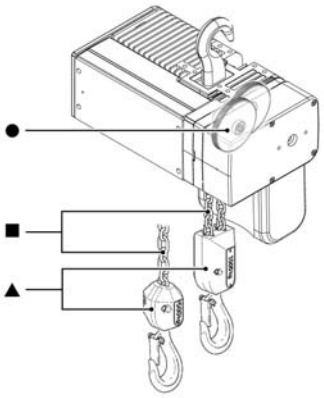
Check	Interval *	Qualification of the customer's personnel
Brake operation	Daily	Operator
Visual inspection of the chain	Daily	Operator
Suspension of the control box by the steel wire	Daily	Operator
Cleanness and lubrication of the chain	Monthly	Operator
Slipping clutch operation	Monthly	Operator
End limit switches operation	Every 3 months	Operator
Measuring of the wear on the chain	Every 3 months	Operator
Measuring of the wear on the hooks	Annually	Qualified mechanic
Tightening of the hook block screws	Every 3 months	Operator
Visual checking of hook and hook bottle	Every 3 months	Operator
Checking of the locking plate screws	Annually	Operator
Checking of the tightness of the brake screws	Annually	Qualified mechanic
Lubrication of the idler sprocket	Annually	Operator
Checking of the screw tightening torques and checking for signs of corrosion	Annually	Qualified mechanic
Adjustment of the slipping clutch and brake	Annually	Qualified mechanic
Lubrication of the gears	Lubricated for life	

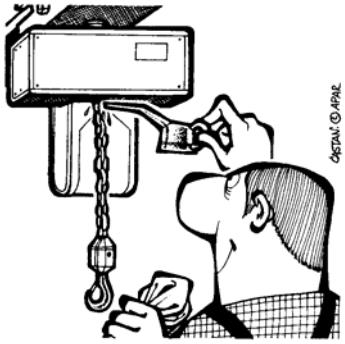
*** These intervals should be shortened depending on national regulations**

These intervals should be shortened if the hoist is used a lot, if it is used with maximum loads or in difficult ambient conditions.

8.2 Lubricants

Lubrication point	Specifications	Possible brands	Quantity
Chain ■	Oil or liquid grease	Chain lubricating fluid (Ceplattyn or similar)	As required
Idler sprocket ▲ slide bearing + bearing	Grease (**without MoS2**) KP 2 (DIN 51 502) Soap-based lithium Approx. drip point + 260°C Worked penetration 265 - 295° Operating temperature - 20°C à + 130°C	**Aral** : Aralub FK 2 **BP** : BP Energrease LS - EP 2 **Esso** : Unirex N2 **Mobil** : Mobilgrease HP **Shell** : Shell Alvanio EP Grease 2 **DEA** : Paragon EP 2 **Fuchs** : Renolit Duraplex EP 2	As required
Gears ●		**Mobil** ; MOBILITH SHC 460	4 cl



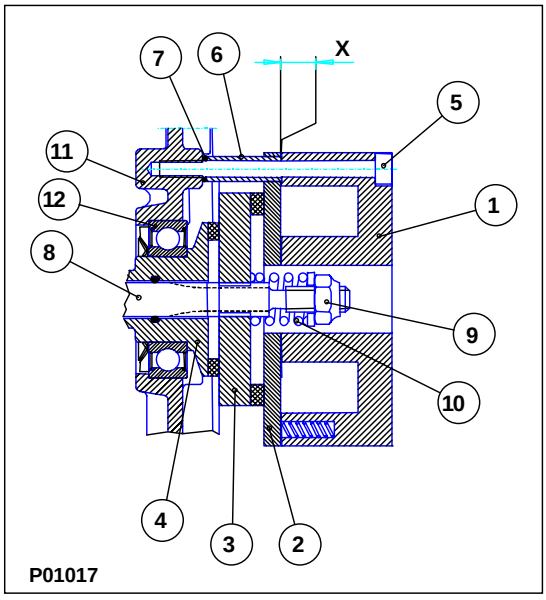


Oil the chain regularly

8.3 Brake / slipping clutch assembly

8.3.1 Operation

The brake and slipping clutch disc (3) is mounted free on the gear input shaft (8). Other brake parts are mounted on the gear cover (11).
The spring (10) keeps a pressure between the slipping clutch lining (4) and brake and slipping clutch disc (3).
The nut (9) maintains the assembly on the gear input shaft.
When the coil (1) is energized, during lifting or lowering, it pulls the brake lining plate (2) and releases the brake and slipping clutch disc (3) (*there is an airgap X for this purpose).*
The discs (3 and 4) turn freely, transmitting the movement to the gearbox.
Braking occurs when the coil is no longer energized and the brake springs (in the coil) drive back the brake lining plate (2) against the disk (3).



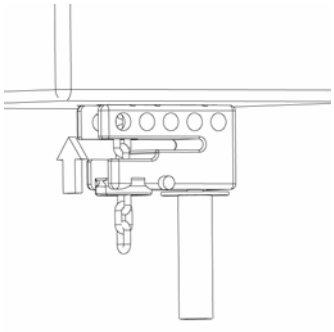
8.3.2 Adjustment of the slipping clutch :

- Hook a load of 1.25 times the nominal load into the hoist.
- Remove the brake end cap and the sealing.
- Raise the load at slow and fast speed.
- Use a key to turn the adjusting nut (9) in the required direction.
  - Turn the nut clockwise to increase the torque.
  – Turn the nut counterclockwise to decrease the torque.
- Repeat steps 3 and 4 until the load can barely be lifted at fast speed. The slipping clutch is now adjusted.
- Fit the sealing and the brake end cap taking care not to squeeze the brake leads.
- Check, at fast speed, the lifting of a nominal load.

☞ Remind : The value of the factory setting is 1,4 x the nominal load because friction lining are not running in yet.

☞ That when the slipping clutch is being adjusted the brake end cap must be removed and the motor must not be running.

☞ Do no touch the moving components. Before pressing the "lift" button on the control box, check that there is nothing in contact with the adjusting nut *(key, for example).*



☝ **To adjust the slipping clutch, it is recommended to use the chain force measuring device. Nevertheless, it is possible to use loads.**

8.3.3 Adjustment of the brake

- Before starting the adjustment, remove the load and switch off the power supply.
- Remove the brake end cap and the sealing.
- Use feeler gauge to measure the air gap (**X**) between the brake lining (2) and the electromagnet (1) at at least three points around the electromagnet.
- To adjust the brake : Tighten or untighten the screws (5) which compress or uncompress the elastic washers.
- Check the operation of the brake
- Fit the sealing and the brake end cap taking care not to squeeze the brake leads

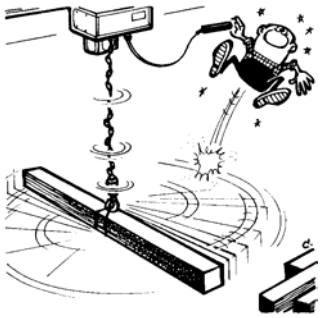
Brake air gap	Minimum air gap (mm)	Maximum air gap (mm)
Between brake lining plate (2) and coil (1)	X = 0.20	X = 0.50

☞ To replace the brake/slipping clutch assembly, the electromagnet supply wires inside the electric box must first of all be disconnected.

8.4 Chain

8.4.1 Removal of the chain

- Remove the load from the hook.
- Disassemble the hook block.
- Lower the chain into the chain bucket.
- Remove the chain bucket.



Never twist the lifting chains
(turning around of the hook block)

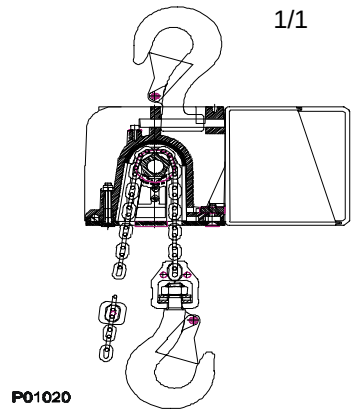
8.4.2 Replacement of the chain

- Take an electric wire of about 50 cm in length.
- Insert it into the chain guide and push until it comes out the other side of the guide.
- Hook the chain onto the end of the electric wire on the load side.
- Pull on the wire to bring the chain into contact with the sprocket.
- Press the lift control button to run the motor.
- Take care not twist the chain.
- Put the chain bucket back in place.

8.4.3 Measuring the wear on the chain

This should be done by measuring the dimensions, at several points of the chain, of one link (d) and (t), and over 11 links (11 t).
Maximum wear allowed :

Minimum link thickness allowed (d) :	3,6 mm
Maximum pitch allowed (t) :	12,6 mm
Maximum length allowed (11 t) :	134,64



☞ If these limits are exceeded**, the chain must be replaced immediately**. In this case, the wear on the chain guide and chain sprocket should also be checked and they should be replaced if necessary.

☞ If a single link is defective in any way whatsoever, **the chain must be replaced**.

✋ **Any usual and systematic stop and start at the same place cause the wear of 2 or 3 links of chain which stop in the chain sprocket.**

8.5 Suspension hook

REMOVAL:
- Remove the screw which holds the suspension pin.
- Remove the suspension pin.
- Take the hook out.

REPLACEMENT:
- Put the hook into its housing
- Place the pin inside the hook
- Fit the screw without forgetting the safety washer.

8.6 Measurement of the wear on the suspension and lifting hooks (see hook certificate)

The wear on the suspension and lifting hooks should be checked regularly. Damaged safety catches should be replaced immediately.
If the throat airgap a2 (dimension 20), increases more than 15%, the hook should be replaced.

8.7 Spare parts replacement table

✋ **Disconnect the power supply before replacing any parts.**

Spare part	To be replaced by	Qualification of the personnel

Upper chain guide	Authorized manufacturer personnel	Qualified electrician
Output shaft	Authorized manufacturer personnel	Qualified electrician
PG cable gland	Authorized manufacturer personnel	Qualified electrician
Gear input shaft + adjusting nuts	Authorized manufacturer personnel	Qualified mechanic
Motor endcap	Authorized manufacturer personnel	Qualified mechanic
Gearing (1st/2nd stage)	Authorized manufacturer personnel	Qualified electrician
Brake cap/endcap sealing	Customer	Qualified mechanic
Other sealings and O-rings	Authorized manufacturer personnel	Qualified mechanic
Brake-slipping clutch	Authorized manufacturer personnel	Qualified electrician
Brake endcap	Customer	Qualified mechanic
Lower chain guide	Customer	Qualified mechanic
Rubber buffer	Customer	Qualified mechanic
Electric box	Authorized manufacturer personnel	Qualified electrician
PC-board	Authorized manufacturer personnel	Qualified electrician
Plugs	Customer	Qualified electrician
Chain	Customer	Qualified mechanic
Chain bucket	Customer	Qualified mechanic
Slack fall stop	Customer	Qualified mechanic
Suspension hook	Customer	Qualified mechanic
Hook block (1/1; 2/1)	Customer	Qualified mechanic
Control box	Customer	Qualified electrician

Once a part has been replaced, check the operation of the hoist

8.8 Screw tightening torques (Nm)

	M5	M6	M8	M10	M12
Standard screws	6	10	24	48	83
Self-tapping screws	5	8	20	40	72

8.9 Discarding the hoist

Once the hoist has been used for the FEM class duration, all of the components must be checked by an authorized agent or by the manufacturer. The hoist should no longer be used, *unless agreement is obtained from the authorized agent or the manufacturer*.

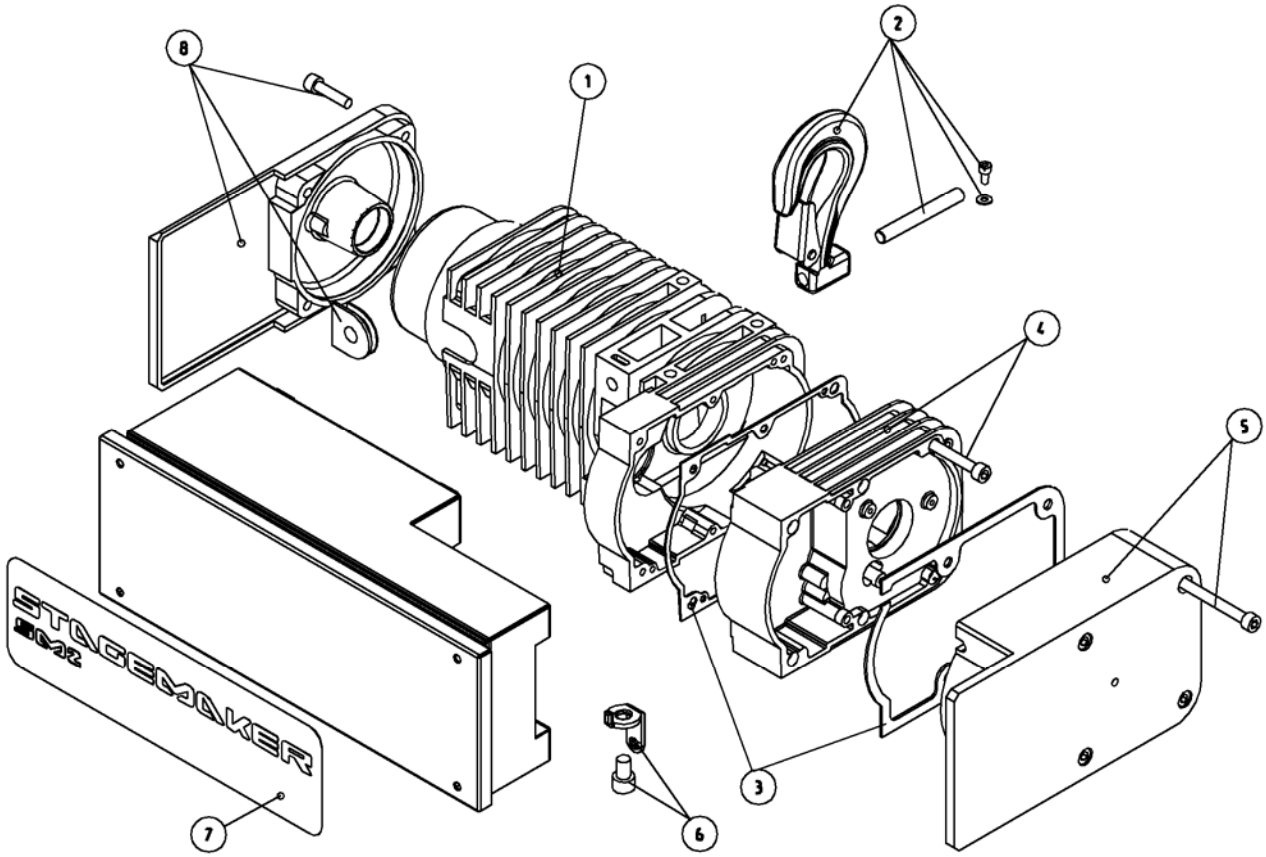
☞ Remove all greases and oils from the hoist before discarding it.

9 – Troubleshooting (3 phases)

Problem	Cause	Solution
The chain hoist does not work	• The emergency stop button is activated	• Desactivate it
	• Triggered fuse	• Replace the fuse
	• Temperature control *(optional)* activated	• Allow to cool down
	• Contactor terminal screws loose	• Tighten them
	• Main switch is off	• Turn it on
Impossible to lift the load	• Overload	• Reduce the load
	• Slipping clutch worn or incorrectly adjusted	• Adjust or replace it
Braking path of more than 10 cm	• Brake lining worn	• Adjust the brake and replace the brake components if necessary
The travel direction does not correspond to that indicated on the control box	• The power supply is incorrectly connected	• Change two phases of the power supply
Abnormal noises while the load is being moved	• The chain components are not lubricated	• Lubricate the components
	• Chain is worn	• Replace it
	• Sprocket or chain guide is worn	• Replace the sprocket or chain guide
	• Idler sprocket is worn	• Replace it
	• A supply phase is missing	• Check the connection of the 3 phases

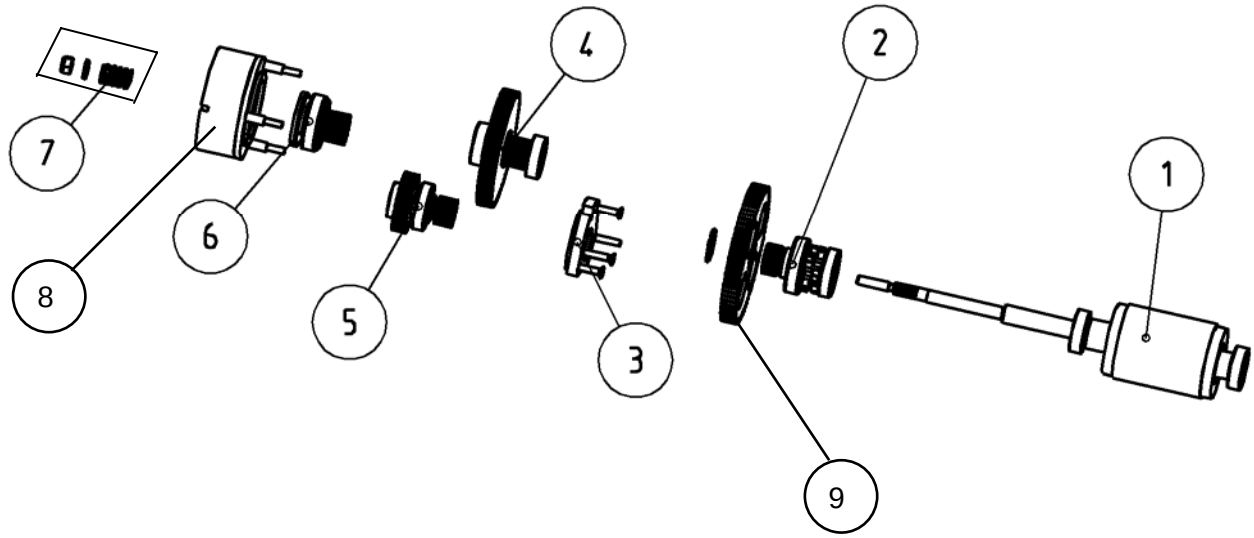
10- Illustrated catalogue of hoist (3 phases)

10.1 Casings



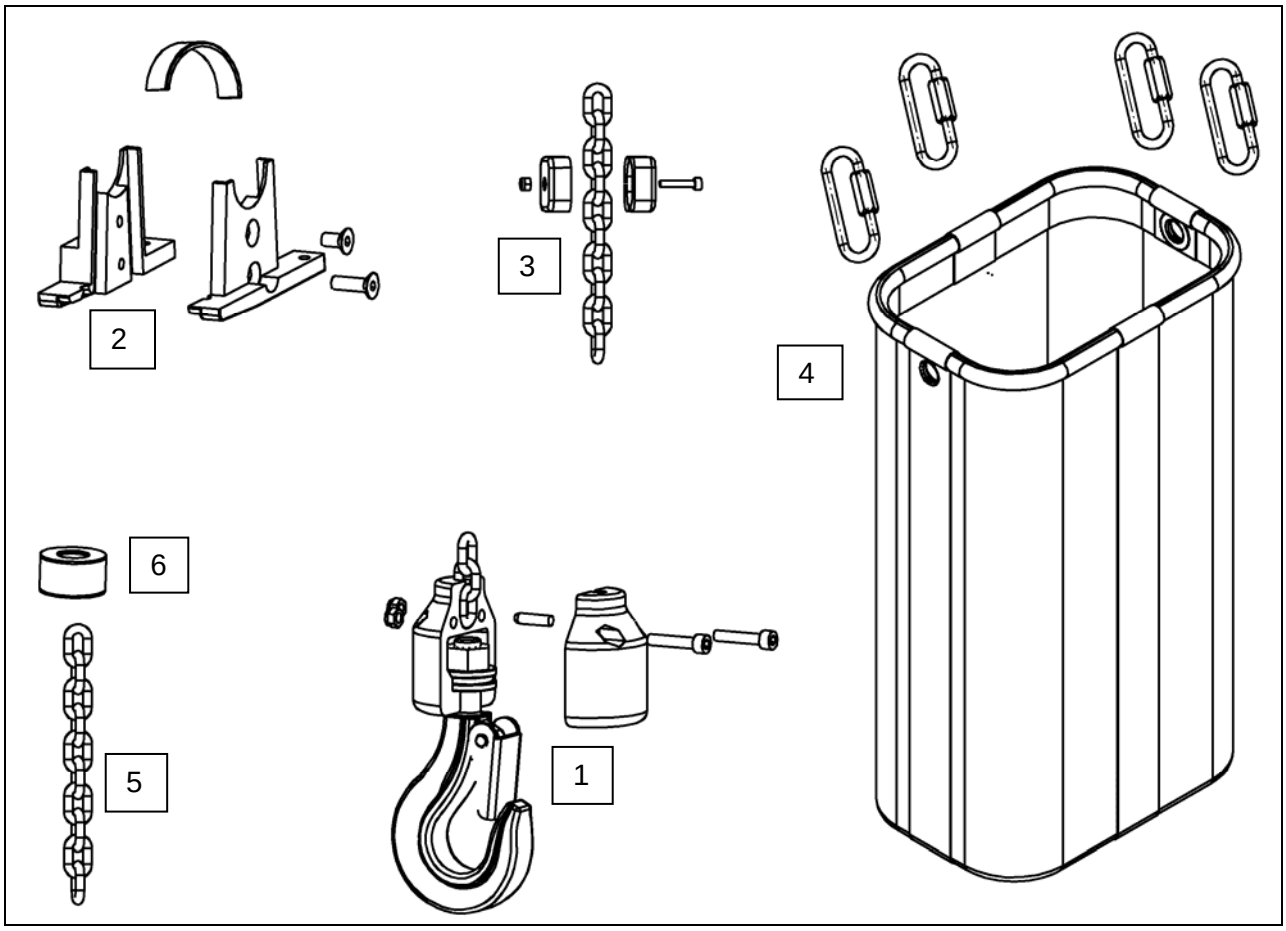
Item	Reference	Description	Qty
1	52260333	Casing, assembled with 400V/50Hz stator	1
1	52260337	Casing, assembled with 230V/50Hz stator	1
2	52293113	Suspension hook assembly	1
3	52295551	Sealing assembly	1
4	52339130	Gear cover assembly	1
5	52293683	Brake cap assembly	1
6	2218000	Cable fastening bracket	1
7	52329273	Sticker for SM2	1
8	52293682	Motor end cap assembly	1
	52320470	Rotating handles	2

10.2 Mechanism / Brake



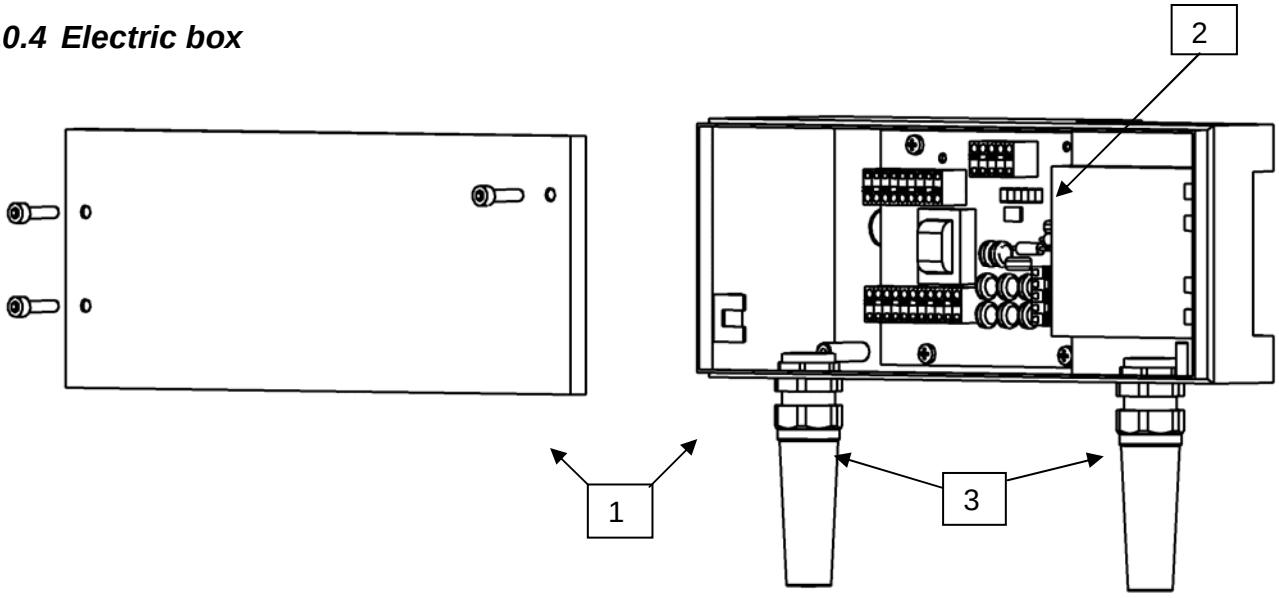
Pos	QTY	CODE	Description
1	1	52328299	Rotor assembly
2	1	52328297	Chain sprocket assembly
3	1	52328280	Cap
4	1	52328298	Complete gear 2nd step
5	1	52328308	Complete gear 1st step
6	1	52330765	Friction disc assembly for slipping clutch
7	1	2218044	Slipping clutch spring assembly
8	1	2218030	Complete brake 190V/400V
8	1	2218031	Complete brake 230V/100V
9	1	52253278	Complete gear 3rd step

10.3 Lifting assembly



Pos	QTY	CODE	Description
1	1	52328303	1 fall lifting hook block
1	1	001512	Safety latch - Steel wire type - 1 fall
1	1	2212016	Safety latch - Steel plate type - 1 fall
1	1	2212011	Lifting hook
1	1	52293114	Set of 2 half-casings with axle and screws
2	1	52330761	Upper and lower chain guide assembly
3	1	52328304	Slack fall stop assembly
4	1	52328053	Chain bucket - 20m chain length capacity
5	-	52328290	Load chain - Black
5	1	52330778	Load chain mounting tool
6	1	52328580	Rubber buffer
	1	2218023	Load plates - 1 fall type - 250Kg (set of 10)
	1	9995008	Oil can

10.4 Electric box



Pos	QTY	CODE	Description
1	1	52328295	Electric cubicle (lid and cover)
2	1	834176	Control module ACF
3	1	52283994	Spiral assembly

11- Certificates

CHAIN CERTIFICATE

_ Load chain _

Order N° : V5177910-0.ORD

TECHNICAL CHARACTERISTICS

Chain type	Standard
Diameter (d) / pitch (t)	4,0 / 12,0 mm
Class	T
Grade	RT
Maximum working stress	160 N/mm²
Surface hardness	380 – 400 HV 10
Standard	EN 818-7
Markings (6 x t)	RT
	T
Maximum working load (M3)	250 Kg
Minimum breaking force	20,10 kN
Minimum breaking stress	800 N/mm²
Total breaking elongation	10 % min.
Weight	0,35 kg/m

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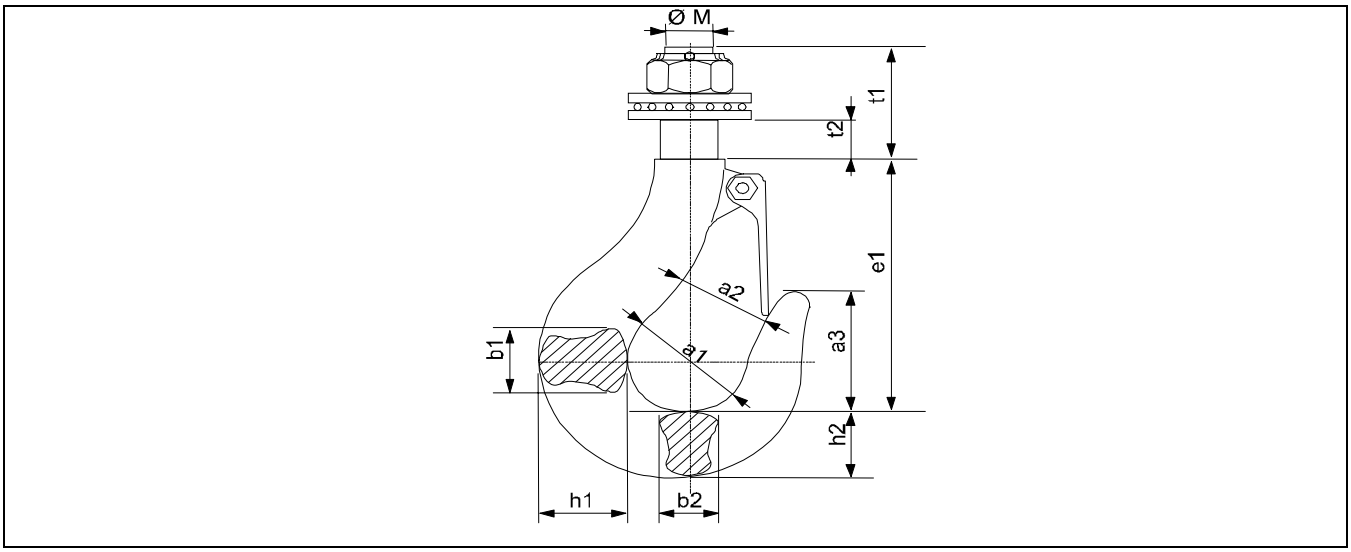
HOOK CERTIFICATE

- Lower hook -

Order N° : V5177910-0.ORD

DIMENSIONS



DIN	Dimensions (mm)°										
	Ø M	**Ø a1**	**a2***	**a3**	**b1**	**b2**	**e1**	**h1**	**h2**	**t1**	**t2**
012	14	30	20	34	19	15	83	22	19	32	10

*** Note : the a2 dimensions is the free space with the hook latch.**

TECHNICAL CHARACTERISTICS

Standard : **DIN 15401**
Quality class : **T**
Material : **34CrMo4**
Re mini : **490 MPa**

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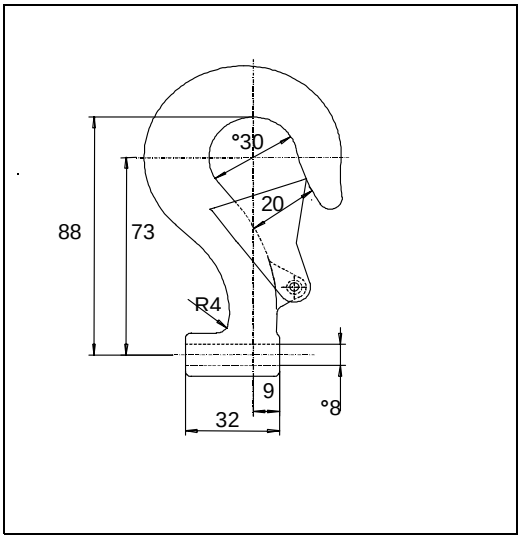
BERNARD DELEFOSSE

- Upper hook -

Order N° : V5177910-0.ORD

DIMENSIONS



TECHNICAL CHARACTERISTICS

Standard : **DIN 15401**
Quality class : **T**
Material : **34CrMo4**
Re mini : **490 MPa**

14.05.2008

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