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SVERO

SVERO Smart Hoist 22

500 kg



Manual



Read this manual carefully before using the Smart Hoist. Improper handling can be dangerous!

Use

The extremely low headroom, light and easy to mount Smart Hoist is intended to be mounted on a beam to lift and carry a load that can be displaced along the beam and hoisted up and down. It is especially well suited for cramped spaces.

Description

Svero's Smart Hoist 22 is mostly made of aluminum (side-plates, suspension bolt, holder, covers and chain hoist casing) and hard impact resistant fiberglass reinforced plastic (wheels), and is therefore very lightweight.

The design where the lifting function is fully integrated with the horizontal movement, means that the minimum headroom is very low, and that the load-hook is the lowest point of the structure, without any other part of it obstructing the possibility to fully utilize the low headroom.

The Smart Hoist can be adapted for beams with flange widths between 120 and 180 mm. It is delivered prepared for a 120 mm beam, but by adding spacers (included) it can be adapted for 140 mm, 160 mm and 180 mm beams. The suspension bolt has a square cross section and conical holes to fit the stop screws (Pic. 13). Through this design, the suspension bolt is fixed to the side-plates. Also the holder is fixed with a stop screw at the center of the suspension bolt, to facilitate the centering of the holder under the beam.

Furthermore, the tread of the wheels is both cylindrical and conical (the outer part), which make it suitable both for beams with even-thickness flanges (IPE, HEA, HEB) and for

inclined flanges (INP). The load is distributed on the four points on the beam where the tread of the wheels meets the beam. The distance between these points is 130 mm on each side.

The Smart Hoist is manufactured with both a falling down protection, in case of wheel breakdown, and a climbing protection, so that the wheel flanges can't climb onto the beam's flange, in case of a lop-sided load. Both of these also work as bumpers.

Fig 1 Dimensions

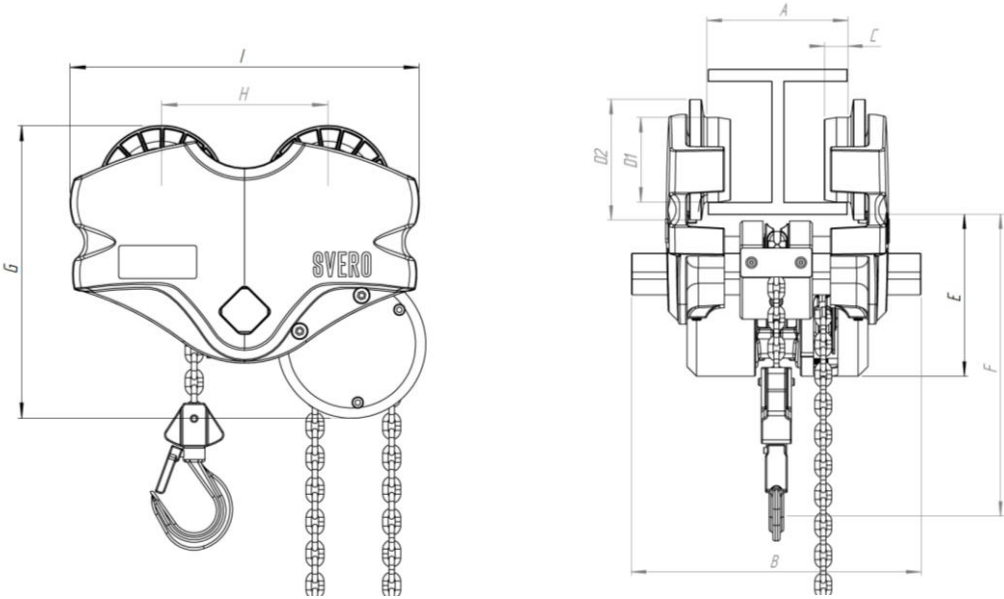


Table 1 Technical data (Fig 1)

Model	2212
WLL kg	500
Min curve radius m	1,25
Weight kg (3m lift)	10,5
Dimension A mm	120–180
Dimension B mm	240
Dimension C mm	24
Dimension D ₁ Ø mm	100
Dimension D ₂ Ø mm	70
Dimension E mm	132
Dimension Fmin mm	150
Dimension G mm	231
Dimension H mm	130
Dimension I mm	282

Mounting

It is a quick and simple operation to mount the Smart Hoist, that is provided in three parts, on a beam. The parts are one side-plate with a hoisting unit fixed in a cover (Pos. 1), another side-plate with a cover (Pos. 2), and a suspension bolt (Pos. 3) with a holder (Pos. 4), with an external guide wheel fixed in the middle of it. **At delivery the Smart Hoist is prepared for a 120 mm beam.**

Fig 2 Parts

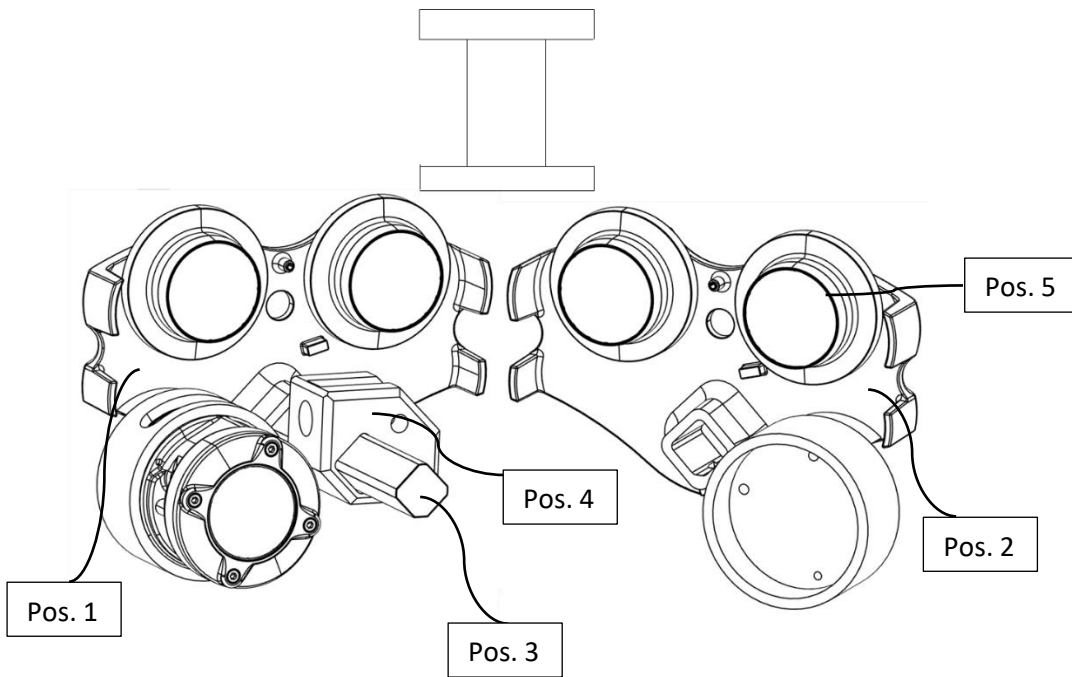


Table 2 Parts

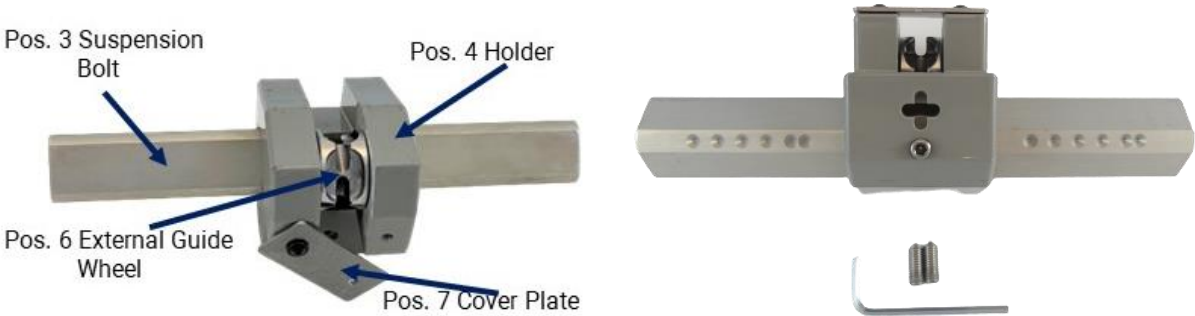
Pos.	Description
1	Side-plate 1 with hoisting unit
2	Side-plate 2 with cover
3	Suspention bolt 500 kgs
4	Holder with external guide wheel
5	Wheel with ballbearing



Pic. 1 Side Plate with hoisting unit fixed in a cover



Pic. 2 Side Plate with cover



Pic. 3 Suspension Bolt with Holder mounted (left), and from below with conical cuts, stop screws and 4 mm Allen key (right)

1. The Smart Hoist is prepared for a 120 mm beam at delivery. If it will be used on a wider beam add the relevant spacers and the right length of screw for each side-plate, according to table 1 below. Spacers and screws are supplied in marked plastic kit-bags, one for each beam width, together with Allen keys.

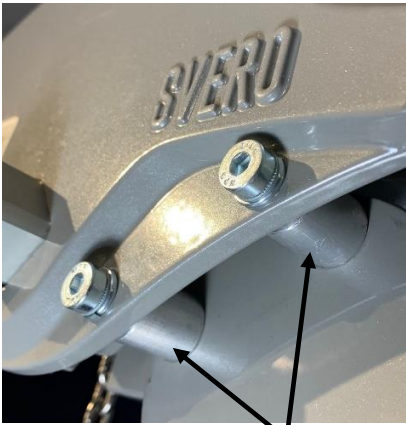
Beam width	Spacers per side	Screw Pos 1, Pic 1	Screw Pos 2, Pic 2
120 mm	2x2,5 mm	25 mm	25 mm
140 mm	2x10 mm	35 mm	35 mm
160 mm	2x20 mm	45 mm	45 mm
180 mm	2x30 mm	55 mm	55 mm



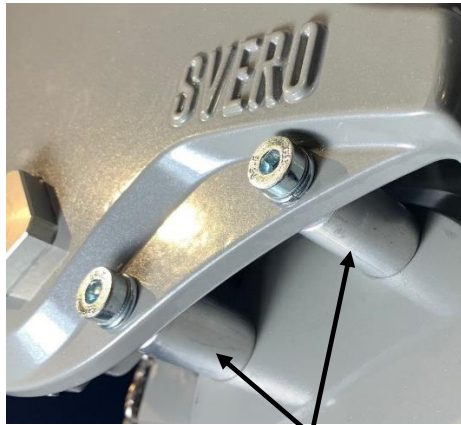
Pic. 4, 2x2,5 mm spacers for 120 mm beam



Pic. 5, 2x10 mm spacers for 140 mm beam



Pic. 6, 2x20 mm spacers for 160 mm beam



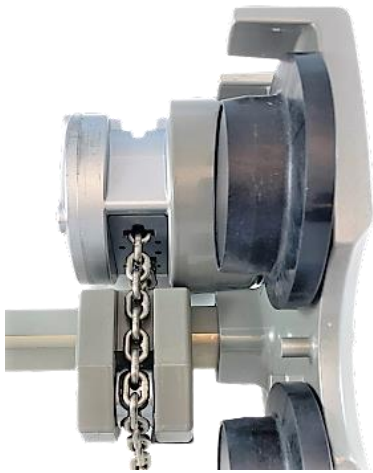
Pic. 7, 2x30 mm spacers for 180 mm beam

2. Insert the end of the suspension bolt (Pos. 3) into the hole of the side plate with the hoisting unit (Pos. 1) according to Pic. 8. One of the corners of the suspension bolt is chamfered to fit into the hole in the side plate. In this way, the conical holes automatically will face down (Pic. 3).



Pic. 8 Inserting Suspension Bolt in Side Plate with hoisting unit

3. Position the load-chain coming out of the hoisting unit on the external guide-wheel (Pos. 6 on Pic. 3) and make sure that it is not twisted. Make sure that the Holder on the suspension bolt, is aligned with the center of the hoisting unit, so that the load-chain can run in a straight line from the hoisting unit to the external guide-wheel (Pic. 9). Fasten the stop screw lightly with a 4 mm Allen key (Pic. 10).

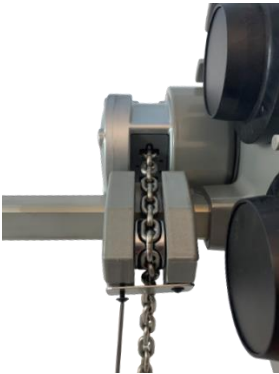


Pic. 9 Aligning the Holder with the center of the hoisting unit.



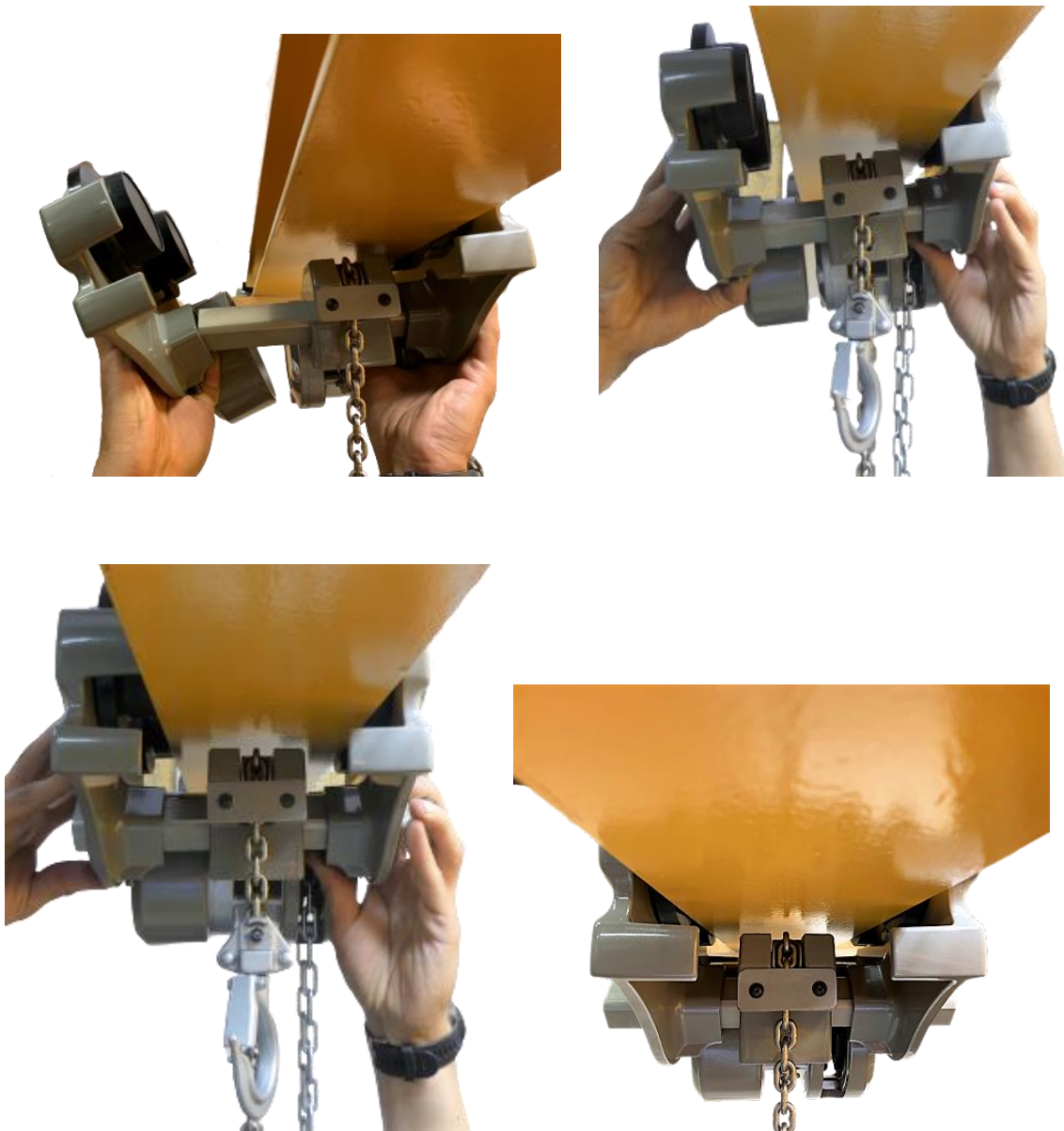
Pic. 10 Fasten the stop screw lightly with a 4 mm Allen key

4. Fasten the small cover plate on the Holder using a 2,5 mm Allen key.



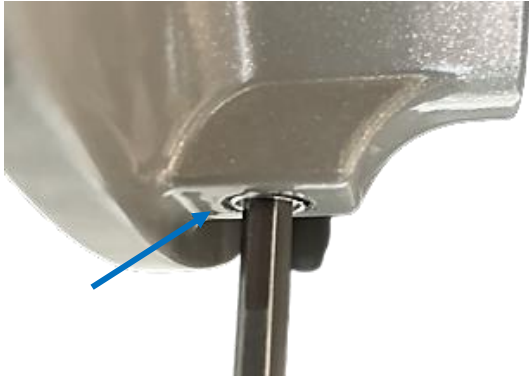
Pic. 11 Fixing cover plate

5. Position the side of the Smart Hoist with the hoisting unit fixed to it, on the beam and mount the side plate with cover (Pos. 2) on to the other end of the suspension bolt (Pos. 3). Slide this side plate against the lower flange of the beam and center the Holder (Pos. 4 on Pic. 3) under the beam (Pic. 12). The distance between the flange of the wheels on the side plates and the lower flange of the beam shall be 1 - 2 mm on each side.



Pic. 12 Center the Holder under the beam

6. Fasten the stop screw for the side plate with cover (pos. 2 on Fig. 2) lightly, in the same way as in Pic. 10 above.
7. Check the centering of the Holder and the clearance between the beam flange and the wheel flange. Tighten the stop screws. The top of the screws should now be level with the surface of the side plate (Pic. 13). The stop screws are prepared with a thread-locking fluid so that they can't loosen because of vibrations caused when moving the Smart Hoist along the beam. You should be able to screw the stop screws in and out a number of times without loss of performance, but always make sure that the thread-locking fluid is working. Otherwise add locking fluid.



Pic. 13 Stop screw in correct position

8. Finally, check that the Smart Hoist rolls easily and freely on the beam.

Now the Smart Hoist is ready for use.

Safety instructions

- Check the function of the Smart Hoist before use. See Daily checks pages 12, 16.
- Check that the beam
 - has sufficient carrying capacity
 - is securely anchored
 - has end stops
 - doesn't have more than a 0,3 % slope
 - the beam flange, on which the wheels rolls, is clean and free from obstacles
- Do not load more than the Working Load Limit (WLL).
- Make sure nobody is under a hanging load!
- The position of the load must not deviate more than 5 degrees from a vertical line from the Suspension point of the Smart Hoist to the floor.
- Handle the Smart Hoist carefully. Do not push the Smart Hoist at high speed along the beam.
- The Smart Hoist must not be used for lifting or transporting people.
- Do not leave a suspended load unattended.
- Do not use the chain hoist for welding work where it is exposed to welding spatter or current.
- Only hand power from a single person is permitted on the hand chain. If the chain feels too heavy, use a hoist with higher capacity or reduce the load.

- Do not step onto a hanging load.
- The Smart Hoist must not be used for pulling loads.
- The hoist must not be subjected to dynamic stresses, for example where a load connected to the Smart Hoist is launched from a height.
- The Smart Hoist is designed for use in the temperature range -20 to +60 °C.
- Check the installation regularly.

NB

No bending stresses may be applied to the Smart Hoist or it's hooks or load chain.

Raising/lowering

Check that the load is not anchored to the floor/ground or is otherwise fixed before making the lift. Ensure that the load chain hangs vertically and has no kinks. Only use approved straps and slings. The hand chain must also be in good condition and easily accessible. The load is raised or lowered by pulling the hand chain in either direction.

Attachment of loads

Check the equipment before use. Improper attachment of loads can be highly dangerous (see Figs. 3 a – 3 e).



Fig 3 a

The sling is applying load to the hook tip

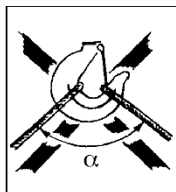


Fig 3 b

Excessive top angle on sling!
 α max 60°



Fig 3 c

Hook latch obstructed



Fig 3 d

Hook tip subject to additional bending stress

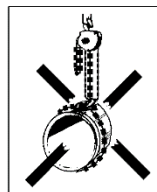


Fig 3 e

Load chain must not be used as a sling

Combined lifts

Combined lifts present special risks. This is where two or more hoisting units are used simultaneously on the same load. Danger to persons and risk of material damage can arise through dynamic stresses and uneven load distribution causing overload on individual hoists. Combined lifts must therefore be supervised by a competent person with experience in this type of lift.

Daily checks

After every working day on which the Smart Hoist has been used, the following should be checked:

- Is the Smart Hoist deformed or otherwise damaged, visible or not? Are any parts missing?
- Are the hooks intact or have any hook openings opened up? Are the hook latches undamaged and functional?
- The load chain must be undamaged, i.e. no signs of wear and no deformed or otherwise damaged links.
- The load chain must not be kinked or twisted.
- The hand chain must also be in good condition.
- The brake function must be intact.

In the event of faults or failures, the hoist must be repaired and carefully checked by a specialist before reuse.

Inspection and maintenance

Should always be performed by authorized personnel or Svero.

Periodic checks

Periodic checks are normally carried out yearly to detect and remedy any faults. If required (e.g. high frequency of use), more frequent checks may be carried out. See "Checklist for periodic checks" on page 16. Measure hooks and load chain to detect any changes in shape.

Checks of load-hook (see Fig. 4 and Table 3)

Opening dimension A on the hooks is important. A hook with an opening larger than the maximum dimension (A max) has been exposed to overloading or overheating. It therefore does not have the necessary load capacity. The hooks may also have been exposed to long-term wear (dimension B).

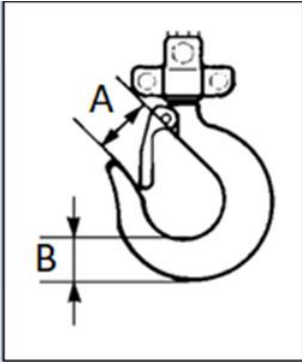


Fig 4 Load-hook

Hooks must be discarded and replaced if:

- The maximum A value is exceeded (according to Table 3)
- The minimum B value falls short (according to Table 3)
- The hook shows signs of cracking
- The hook is deformed or otherwise damaged

Defective hooks must be replaced before using the chain hoist again.

Table 3 Load-hook

Max. load ton	0,5
Dimension A nominal mm	21,0
Dimension A max mm	23,1
Dimension B nominal mm	15,0
Dimension B min mm	14,3

Checks of load chain (see Fig. 5 and Table 4)

Inspect the load chain over its whole length to detect any deformed or otherwise damaged links. Check measurements of suspect links. Measure the worn areas. Also, every 300 mm (normally), check measurements of the internal length of 5 links (pitch dimension $5 \times P$ – according to Table 4).

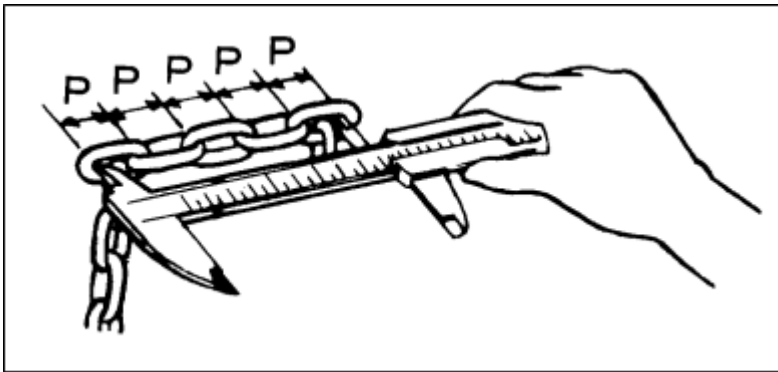


Fig 5 Checking chain dimensions

Table 4 Load chain

Max. load ton	0,5
Link diameter nominal mm	4,3
Link diameter min mm	3,9
Pitch dimension (5xP) nominal mm	60,5
Pitch dimension (5xP) max mm	62,3

The load chain must be discarded and replaced if:

- cracks are detected on any link
- any link is deformed or otherwise damaged
- The minimum value of any link's diameter falls short
- the maximum value of the pitch dimension is exceeded at any point
- the chain is damaged by overheating or has been affected by weld splatter

Furthermore

- Check that the wheels run smoothly, aren't skewed and that there is no damage on the treads and wheel flanges. If any of the wheels do not run smoothly, are skewed or damaged, they must be replaced.
- Check that the suspension bolt is fixed with the stop screws and that these are properly fastened. See sections 3, 6 and 7 under **Mounting**.
- Check that the distance between the Smart Hoist's wheels and the lower flange of the beam is 1 - 2 mm on each side. If this is not the case, adjustment must be made, see sections 5-7 under **Mounting**.

- Check that the suspension bolt is straight. If the suspension bolt is not straight, the entire Smart Hoist has been overloaded and must be replaced. A higher capacity Smart Hoist may then be required.

Repairs

Only replace damaged parts with **SVERO** original spare parts. See Fig. 2.

EU DECLARATION OF CONFORMITY

Manufacturer: Svero Lifting AB
Momarken 19, 556 50 Jönköping, Sweden

We declare that the Smart Hoist model/type 22 has been manufactured in conformity with the requirements of the EC Machinery Directive 2006/42/EG and amendments.



Håkan Magnusson
Managing Director
Svero Lifting AB

Checklist for daily and periodic checks

<i>Daily</i>	<i>Periodic</i>	<i>Inspection items</i>	<i>Inspection method</i>	<i>Note</i>
Labels				
X □	X	Rating plate	Visual	If the plate is hard to read - replace it
Function				
X	X	Raising and lowering function	Test without load	A low snapping noise should be audible
-	X	Raising and lowering function	Test with rated weight for min 300 mm	Load chain sprocket and chain work well together. Brake works. Hand pulling on the hand chain feels even and not too heavy
Hooks				
X -	X	Hook opening	Visual Measurement	Looks normal See Fig. 4 and Table 3
X -	X	Deformation	Visual	No visible deformation
-	X	Hook bearing	Visual	No abnormal play
X -	X	Wear, cracks, deformation and corrosion	Visual Measurement	No visible damage See Fig. 4 and Table 3
-	X	Hook bearing	Visual	No abnormal play
Load chain				
X -	X	Pitch	Visual Measurement	Looks normal. Measure in case of doubt See Fig. 5 and Table 4
X -	X	Wear	Visual Measurement	Looks problem-free. Measure in case of doubt See Fig. 5 and Table 4
X	X	Deformation	Visual	No deformation. Measure in case of doubt
X	X	Cracks etc.	Visual	No cracks
X	X	Rust	Visual	No rust
Screws				
X	X	Screws, nuts, rivets, cotters etc.	Visual	Must not be missing. Tighten loose items. Replace as necessary