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Operating instructions for chain hoist type FZ

Carl Stahl®
STAHL SEIL SYSTEME

www.carlstahl.com

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1. DEFINITIONS

This FZ Series chain block hoist has been designed for vertically lifting and lowering loads, by hand, under normal atmospheric conditions of the work place.

⚠ DANGER Indicates a imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING Indicates a imminently hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used alert against unsafe practices.

2. SAFETY RULES

2.1 General

Failure to read and comply with the contents of this manual can result in serious bodily injury or death, and property damage. Although you may be familiar with this or similar equipment, it is strongly recommended that you read this manual before installing, operating or maintaining the product.

Equipment described herein should not be used in conjunction with other equipment unless necessary and required safety devices applicable to the system. The company shall have no liability to the client for any loss, damage or other claims for compensation arising from this type of misuse. Modifications to upgrade, rerate, or otherwise alter this equipment shall be authorized only by the original equipment manufacturer.

⚠ DANGER

① NEVER use a hoist for lifting, supporting or transporting people.

② NEVER use your foot to apply pressure on hoist.

③ NEVER use two or more hoists together to lift load beyond the rated capacity of hoist.

④ NEVER lift up load beyond the rated capacity of the hoist.

⑤ NEVER lift or transport loads over or near people.

2.2 Rules before use

⚠ CAUTION Hoist operators shall be required to read this manual, the warning contained in this manual, instruction and warning labels on the hoist or lifting system. The operator shall also be required to be familiar with the hoist controls before being authorized to operate the hoist or lifting system.

⚠ WARNING Dot not use the hoist if there are deep nick, gouges or stretch on hook, contact our company or the distributor of the hoist and replace the hook with new parts.

⚠ CAUTION

1. Ensure every description of name plate is clear and visible.
2. Check the hoist before daily use according to the Daily Inspection.
3. Estimate the weight of load and choose the hoist of suitable rated capacity.
4. Ensure hooks not be deformed and rotates freely with no roughness.
5. Ensure the running of the brake system is normal.
6. Lubricate load chain according to recommendations of manufacturer

2.3 Rules for operation

⚠ WARNING

① NEVER use a twisted, kinked, damaged or stretched load chain.

② NEVER use the hoist chain as a sling.

③ NEVER use the hoist as a support.

④ NEVER support a load on the tip of the hook..

⑤ NEVER run the load chain over an sharp edge.

⑥ NEVER weld or cut a load suspended by a hoist.

⚠ WARNING

1. NEVER use damaged hoist or hoist that is not working properly.
2. NEVER swing a suspended load.
3. NEVER use the hoist chain as a welding electrode.
4. NEVER operate a hoist so far that the bottom hook touches the hoist body.
5. NEVER operate a hoist so far that the load chain pulls the anchorage.
6. NEVER operate a hoist if excessive noise occurs.
7. NEVER allow your attention to be diverted from operating the hoist.

2.4 Rules after use

⚠ CAUTION Put down the load slowly and safely after lifting.

⚠ WARNING NEVER suspend a load for an extended period of time.

2.5 Inspection and maintenance

⚠ CAUTION Ensure the qualified service personnel inspect the hoist periodically.

⚠ WARNING Do not attempt repair of a hook by heat treating, bending or attaching anything by welding. Such procedures will weaken and may cause failure of the hook.

2.6 Others

⚠ CAUTION Always consult the manufacturer or your dealer if you plan to use a hoist in an excessively corrosive environment (salt water, sea air and/ or acid, explosive environment or other corrosive compounds, etc.).

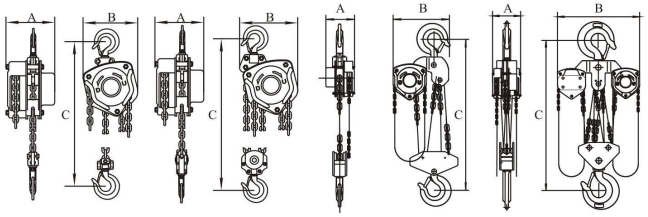
⚠ WARNING NEVER use a hoist which has been taken out of service until the hoist has been properly repaired or replaced.

3. MAIN SPECIFICATION

3.1 Operation conditions

Allowable ambient conditions
Operation temperature: -10° C to +60° C
Operation humidity: 100%RH or less, this product should not be used under water.
Non-asbestos material: Friction plates are made of asbestos free material.

3.2 Technical specification



0.5t,1t,2t 3t,5t 10t 20t

Capacity	tons	0.5	1	1.5	2	3	5	10	20
Standard lift	m	2.5	2.5	2.5	3	3	3	3	3
Running test load	Kn	6.3	12.5	18.8	25	37.5	75	125	250
Effort required to lift max. Load	N	231	309	320	360	340	414	414	414×2
No. of colums of load chain		1	1	1	1	2	2	4	8
Load chain diameter	mm	6	6	8	8	8	10	10	10
Dimensions (mm)	A	131	140	161	161	161	186	207	215
	B	127	158	187	187	210	253	398	650
	C	270	317	399	414	465	636	798	890
Net weight	kg	10	12	19	22	32	46	97	193
Packing measurement	cm	22×15×23	23×18×23	28×21×27	28×21×27	32×21×29	40×21×35	50×41×21	64×38×64
Extra weight per meter extra lift	kg	1.7	1.7	2.3	2.3	3.7	5.6	9.7	19.4

4. OPERATION

4.1 Introduction

This hoist has been designed for vertically lifting and lowering loads, by hand, under normal atmospheric conditions of the work place. However, since dealing with heavy loads may involve unexpected danger, all the Safety Rule must be followed.

Safety Working Environment: the operator must be aware of the following points while using the hoist.

(1) The operator must have a clear and unobstructed view of the entire travel area before operating the hoist. When not possible, a second or more persons must serve as observers in the nearby area.
(2) The operator must check the entire travel area is safe and secure before operating the hoist.

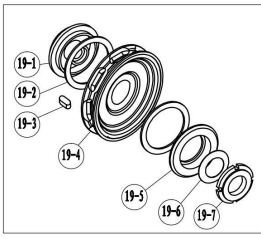
4.2 Features

Face the hand chain wheel side of the hoist, pull hand chain clockwise to raise the load and pull hand chain counter clockwise to lower the load.

The clicking sound of the pawl when load is being raised indicates normal operation.

4.3 Overload device

Overload device is optional, the effective control range is 1.3-1.8 the rated WLL of rated load the structure is as follows :



19		
	19-1	pressing block
	19-2	friction disc
	19-3	Flat key
	19-4	hand chain wheel
	19-5	pressing block
	19-6	disc spring
	19-7	self-locking nuts

5. INSPECTION

5.1 General

ALL faults on daily must remove from service to be inspected by a competent person.

5.2 Daily inspection

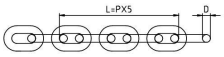
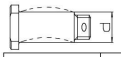
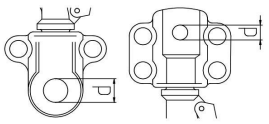
Item	Method	Discard criteria	Remedy
Name plate	Check visually	Every description should be clear and visible.	Remove from

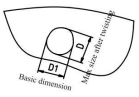
Function	Face the hand chain wheel side of the hoist, pull hand chain clockwise to raise the load and pull hand chain counter clockwise to lower the load. The clicking sound of the pawl when load is being raised indicates normal operation..		service for inspection by competent person
Hook	Check visually	No wear, deformation or damage, and the swivels should rotate freely.	
Hook latches	Check visually	No deformation and harmful flaws.	
Load chain	Check visually	No obvious rust or corrosion. Lubrication must be on surface.	
Other	Check visually	No missing nuts and/or split pins. No flaws or damages on the hoist surface. No missing and/or twist chain stopper.	

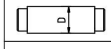
5.3 Periodic inspection

Periodic inspection shall be made at the interval shown below and should the given procedures.
NORMAL (Normal use): Six monthly inspection
HEAVY (Frequent use): Quarterly inspection
SEVERE (Excessively frequent use): Monthly inspection

Item	Method	Discard criteria	Remedy
1. Hook assembly 1.1 Stretch and wear 	Measure	Measure the dimension A when new. Capacity (t) / A*(mm) Normal / B(mm) Standard / B(mm) Discard / C(mm) Standard / C(mm) Discard 0.5 / 30.0 / 13.0 / 12.4 / 19.0 / 18.1 1 / 30.0 / 13.0 / 12.4 / 21.5 / 20.4 1.5 / 36.0 / 17.0 / 16.2 / 28.8 / 27.3 2 / 33.5 / 21.0 / 20.0 / 34.3 / 32.6 3 / 40.0 / 25.0 / 23.8 / 43.8 / 41.6 5 / 50.0 / 32.0 / 30.4 / 52.5 / 49.9 7.5 / 50.0 / 34.0 / 32.3 / 53.0 / 50.4 10 / 64.0 / 40.0 / 38.0 / 60.4 / 57.4 20 / 85.0 / 60.0 / 57.0 / 88.5 / 84.0 30 / 85.0 / 60.0 / 57.0 / 88.5 / 84.0 *These values are nominal since the dimension is not controlled to a tolerance. The A dimension should be measured when the hook is new. The A dimension should not be greater than 1.05 times that measured and recorded at the time of purchase.	Replace
1.2 Flaw	Check visually	Should be free from significant rust, weld splatter, deep nick, or gouges.	Replace
1.3 Rotate	Check visually and function	Should rotate freely with no roughness.	Replace
1.4 Hook yoke	Check visually and function	Should not slack or miss rivets, nuts or bolts.	Replace
1.5 Hook latch	Check visually	Proper positioning and smooth working.	Replace

2. Load chain 2.1 Wear	Measure	Measure  Capacity (t) / L(mm) Standard / L(mm) Discard / D(mm) Standard / D(mm) Discard 0.5,1,2(S) / 90.0 / ≥92.5 / 6.0 / ≤5.4 1.5,2,3 / 120.0 / ≥123.3 / 8.0 / ≤7.2 5~30 / 150.0 / ≥154.0 / 10.0 / ≤9.0	Replace
2.2 Flaws, deformations	Check visually	Should be free from twist or harmful flaw.	Replace
2.3 Rust	Check visually	Should be free from obvious rust.	Remove rust, oil the chain
Item	Method	Discard criteria	Remedy
3. Bottom hook pin 3.1 Twist, deformations	Check visually, measure	Replace the hook pin if there is obvious deformation, and the screw thread of hook pin should be free of flaw and deformation.  Measure Capacity(t) / D(mm) Standard / D(mm) Discard 0.5 / 6.0 / ≤5.7 1, 2(S) / 7.5 / ≤7.1 1.5, 2, 3 / 10.0 / ≤9.5 5, 7.5, 10 / 14.5 / ≤13.8	Replace
3.2 Rust	Check visually	Should be free from obvious rust.	Remove rust, oil the pin
4.Top/Bottom hook pin hole 4.1 Deformations	Measure	 Capacity (t) / Diameter (mm) Bottom hook pin hole / Top hook pin hole 0.5 / 6.5 / ≥7.0 / 10.5 / ≥11.0 1, 2(S) / 7.5 / ≥8.0 / 12.5 / ≥13.1 1.5, 2, 3 / 10.5 / ≥11.0 / 14.5 / ≥15.2 5, 7.5, 10 / 15.0 / ≥15.7 / 18.0 / ≥18.9	Replace hook assembly

<table>
<tr><td>5. Brake system
5.1 Rust</td><td>Check visually</td><td>All parts should be free from rust.</td><td>Remove rust, oil the parts, or replace.</td></tr>
<tr><td>5.2 Flaw on friction disc</td><td>Check visually</td><td>Should be free from harmful flaw.</td><td>Replace</td></tr>
<tr><td>5.3 Wear on friction disc</td><td>Measure</td><td>Retain uniform thickness and friction disc shall not be worn more than 0.5mm.
<table><tr><td colspan="2">Thickness of friction disk(H)</td></tr><tr><td>Standard</td><td>Discard</td></tr><tr><td>3.0mm</td><td>≤ 2.5mm</td></tr></table></td><td>Replace</td></tr>
<tr><td>5.4 Flatness of friction disc</td><td>Check clearance with gauge.</td><td>Clearance should be uniform. Internal part should not be thicker than external part.</td><td>Replace</td></tr>
<tr><td>5.5 Pawl
 </td><td>Check visually</td><td>Should be free from wear on the surface.</td><td>Replace</td></tr>
<tr><td>5.6 Pawl spring</td><td>Check visually</td><td>Should be free from deformation</td><td>Replace</td></tr>
<tr><td>5.7 Ratchet disc
 </td><td>Measure</td><td>Measure the external diameter A of ratchet disc
<table><tr><td rowspan="2">Capacity(t)</td><td colspan="2">Diameter A(mm)</td></tr><tr><td>Standard</td><td>Discard</td></tr><tr><td>0.5</td><td>54.5</td><td>≤52.5</td></tr><tr><td>1, 2(S)</td><td>74.5</td><td>≤71.5</td></tr><tr><td>1.5, 2, 3</td><td>85.0</td><td>≤83.0</td></tr><tr><td>5,7.5,10,20,30</td><td>94.0</td><td>≤91.0</td></tr></table></td><td>Replace</td></tr>
<tr><td>6. Lifting system
6.1 Load sheave</td><td>Check visually</td><td>Should be free from large wear or deformation.</td><td>Replace</td></tr>
<tr><td>6.2 Gear</td><td>Check visually</td><td>Tooth should be free from large wear or flaw.</td><td>Replace</td></tr>
<tr><td>6.2 Gear box</td><td>Check visually</td><td>Should be free from wear or deformation.</td><td>Replace</td></tr>
<tr><td>6.3 Hand wheel</td><td>Check visually</td><td>No large wear or no deformation on the surface of hand chain pocket.
Turn and check if it touches the cover.</td><td>Replace</td></tr>
<tr><td>7. Body
7.1 Top hook pin hole on the side plate</td><td>  </td><td>Measure the dimension D.
<table><tr><td>Capacity(t)</td><td>D1(Standard)</td><td>D(Discard)</td></tr><tr><td>0.5</td><td>10.2</td><td>≤10.7</td></tr><tr><td>1,2(S)</td><td>12.5</td><td>≤13.0</td></tr><tr><td>1.5,2,3</td><td>14.5</td><td>≤15.0</td></tr><tr><td>5-30</td><td>18.3</td><td>≤18.8</td></tr></table></td><td>Replace</td></tr>
</table>

<table>
<tr><td>7.2 Top hook pin
  </td><td>Measure</td><td>0.5t D≤9.5mm
1t, 2t D≤11.5mm
1.5t, 2t D≤13.4mm
5~30t D≤17.5mm
Measure the external diameter of the top hook pin.</td><td>Replace</td></tr>
<tr><td>7.3 Guide plate</td><td>Check visually</td><td>Should be free from wear or deformation.</td><td>Replace</td></tr>
<tr><td>7.4 Chain stopper ring</td><td>Check visually</td><td>Should be free from wear or deformation.</td><td>Replace</td></tr>
<tr><td>8. Function
8.1 Lifting and lowering</td><td>Lift and lower a light load.</td><td>No abnormal difficulty in lifting and lowering.</td><td>Overhaul and service.</td></tr>
<tr><td>8.2 Brake</td><td>Lift and lower a light load.</td><td>Confirm that none of the problems listed below occur during lifting and lower:
(1) Lifting impossible.
(2) Load slips down slowly.
(3) Load falls when the operator releases the hand lever.</td><td>Overhaul and service.</td></tr>
</table>

6. MAINTENANCE

6.1 General

Incorrect maintenance may result in serious bodily injury or death. Only trained and competent personnel could maintain this equipment.

⚠ WARNING After performing any maintenance on the hoist, always test the hoist according to this manul before returning to service.

⚠ CAUTION

(1) Always take care hand or clothes will not be caught in a chain, idle sheave or other moving parts.
(2) Never operate the hoist when maintenance.
(3) Always inspect all the items if abnormal difficulty in lifting and lowering.
(4) Never perform maintenance on the hoist while it is supporting a load.
(5) Always wipe off all dirt and water.
(6) Always store the hoist in dry and clean place.

6.2 Lubrication

Make sure to lubricate load chain, hook latches, top/bottom hook pin and hook yoke, etc.. Load chain is one of the important parts of a hoist, it is should be lubricated well with machine oil.

⚠ CAUTION

(1) Lubricate load chain weekly, or more frequently, depending on severity of service.
(2) Lubricate load chain more frequently than normal in a corrosive environment.

Notes: Recommended lubricant of this product is lithic grease #3.

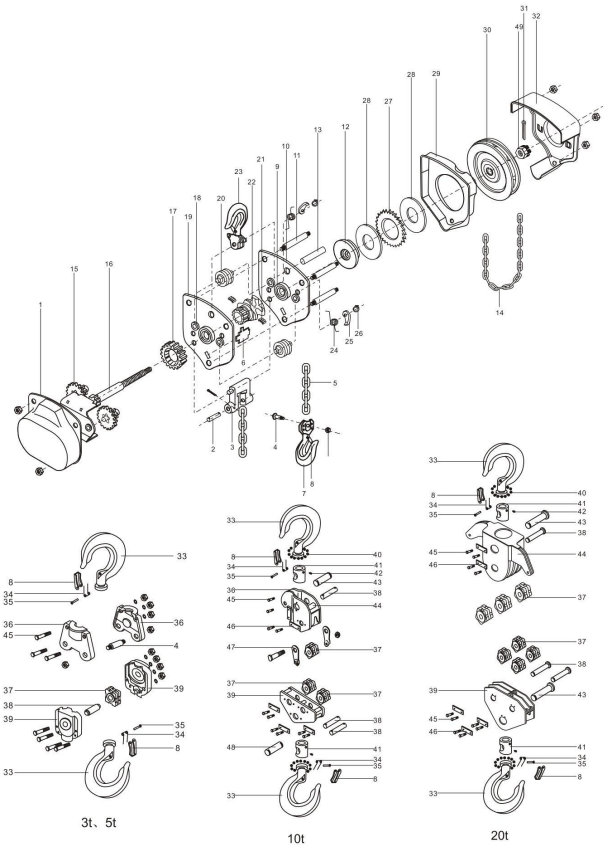
7. TROUBLESHOOTING

Trouble	Cause and explanation	Remedy
The pawl makes the proper clicking sound but fails to lift the load.	Worn friction plates.When used at high frequency without performing maintenance regularly, the friction plates will wear down. This will create gaps between the friction disc and hand wheel and cause the brake to slip.	Disassemble and replace the friction plates.
The pawl produces absolutely no sound and fails to lift the load.	The pawl has been improperly assembled. If the pawl is assembled facing the other way, or otherwise assembled incorrectly, it will not cleanly mesh with the ratchet disc.	Disassemble and then reassemble parts correctly.
	The pawl is not moving smoothly. Unless maintenance is performed regularly, dirt will adhere to the grease on the pawl and pawl shaft. Movement will become sluggish and the pawl will remain stuck in the kicked out position.	Disassemble and then reassemble parts correctly.
The chain is tight when lifting, even without a load. (A squeaking noise can be heard at times.)	Worn gear teeth or worn bearing. Unless maintenance is performed regularly, greased parts will dry, resulting in wear and damaged, and improper meshing of gears.	Disassemble and replace the pinion, load gear, gear case, side plate and ball bearing.
Improper lowering or the chain is extremely tight when lowering.	The brake is too tight. Due to shock during work, or because the load was left suspended for a long period of time, the brake tightened.	Free the brakes forcibly by jerking the hand chain.
	The brake is rusted. Unless maintenance is performed regularly, rusting will occur.	Disassemble and replace parts where necessary.
The hoist drops the load when the instant lowering is started.	The braking surface is dirty. During assembly, the braking surface must be wiped cleaned of dirt.	Disassemble and then reassemble parts correctly.
	The braking surface is oily. The braking surface must not be allowed to become soiled with grease or machine oil because it is a dry-type brake.	Disassemble and then reassemble parts. Do not oil or grease the braking surface or friction plates.
Load slipping	The braking surface is oily. The braking surface must not be allowed to become soiled with grease or machine oil because it is a dry-type brake.	Disassemble and then reassemble parts. Do not oil or grease the braking surface or friction plates.
	The braking surface is dirty. During assembly, the braking surface must be wiped cleaned of dirt.	Disassemble and then reassemble parts correctly.

8. PARTS LIST

8.1 Exploded View Drawing

FZ SERIES CHAIN HOIST 0.5T-30T



8.2 Parts list

FIG No.	DESCRIPTION
1	gear cover
2	end anchor pin
3	end anchor
4	chain pin
5	load chain
6	stripper
7	bottom hook assembly
8	safety latch
9	bearing race
10	left side plate
11	pin
12	brake seat
13	hook pin
14	hand chain
15	intermediate gear
16	driving shaft
17	splined gear
18	steel bushing
19	right side plate
20	guide roller
21	roller bearings
22	load sheave
23	top hook assembly
24	double-spring
25	pawl

FIG No.	DESCRIPTION
26	spring ring
27	ratchet disk
28	friction plate
29	brake cover
30	hand wheel
31	cotter pin
32	hand wheel cover
33	top hook
34	spring
35	rivet
36	top hook frame
37	idler wheel
38	idler wheel pin
39	bottom hook frame
40	ball bearing
41	hook frame bar
42	lock screw
43	top hook pin
44	hook frame
45	screw
46	stripper
47	sling plate
48	bottom hook pin
49	slotted nut
50	

- Produced according to the Machinary Directive 2006/42/EC, EN13157:2004 + A1:2009 and NORSOK R002(Only if fitted with an overload limiter)