



January 2021

USER MANUAL

PZ SERIES LEVER HOIST

(BS EN 13157)



WARNING!

This equipment should not be installed, operated or maintained by any person who has not read and understood all the contents of this manual. Failure to read and comply with the contents of this manual may result in serious bodily injury or death and/or damage to property.

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1. DEFINITIONS

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



Indicates an imminently hazardous situation which, if not avoided, may result in death or serious injury.



Indicates an imminently hazardous situation which, if not avoided, may result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

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/or 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.

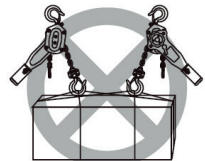
Equipment described herein should not be used in conjunction with other equipment unless the necessary and the required safety devices applicable to the system are used. The company shall have no liability to the client for any loss, damage or other claims for compensation arising from this type of misuse.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



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



2. NEVER use your foot to apply pressure on the 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



Hoist operators are required to read this manual, the warnings contained within it and follow safety instructions and warning labels on the hoist or lifting systems. The operator is also required to familiarize themselves with the hoist controls before being authorized to operate the hoist or lifting system.

WARNING!

Do not use the hoist if there are deep nicks or gouges to the hook or load chain or if the hook is stretched. Contact the distributor of the hoist and replace the hook with new parts.

CAUTION!

1. Ensure that all information displayed on the name plate is clear and visible.
2. Check the hoist daily before use according to the Daily Inspection guidelines.
3. Check the weight of the load and choose a hoist of suitably rated capacity.
4. Ensure that hooks are not deformed and they rotate freely and smoothly.
5. Ensure that the function of the brake system is normal.
6. Lubricate load chain according to the recommendations of the manufacturer.

2.3 Rules for operation

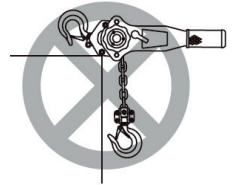
WARNING!



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



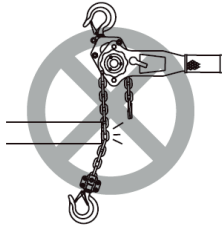
2. NEVER use the hoist chain as a sling.



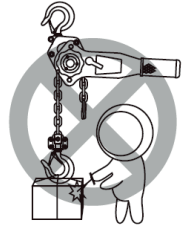
3. NEVER use the hoist as a support.



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



5. NEVER run the load chain over sharp edges.



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

WARNING!

1. NEVER use a damaged hoist or one 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 when 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



Ensure that only qualified service personnel inspect the hoist periodically.



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

2.6 OTHER



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.).



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 Operating conditions

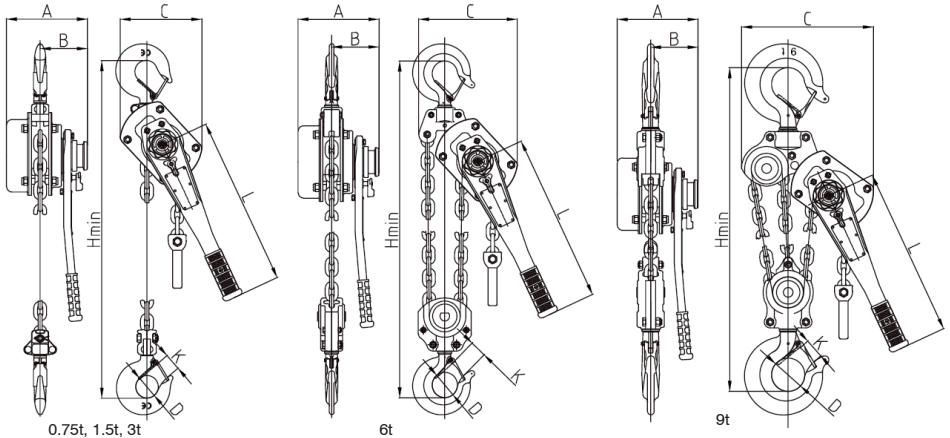
Allowable ambient conditions:

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 discs are made of asbestos free material.

3.2 Technical specifications



Model		PZ-0.75T	PZ-1.5T	PZ-3T	PZ-6T	PZ-9T
Capacity	t	0.75	1.5	3	6	9
Load chain	mm	6x18	8x24	10x30	10x30	10x30
Number of load chain falls		1	1	1	2	3
Height of lift (standard)	m	1.5	1.5	1.5	1.5	1.5
Height lifted with one complete rotation of handle	mm	18.7	16	16.8	8.4	5.6
Effort required to lift rated load	N	147	294	285	340	360
Running test load	kN	9.2	18.4	36.8	73.5	110.3
Dimensions (mm)	A	160	182	207.5	207.5	207.5
	B	100	109	121.5	121.5	121.5
	C	133	157	210	253	338
	H min	320	365	465	583	690
	L	290	290	420	420	420
	D	38	48	58	65	85
	K	28	36	43	44	54
NET weight	kg	6.6	11.8	19.4	30.6	46
Additional weight per extra metre height of lift	kg	0.81	1.4	2.2	4.4	6.6

4. OPERATION

4.1 Introduction

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

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

1. The operator must have a clear and unobstructed view of the entire travel area before operating the hoist. When this is not possible, additional personnel must serve as scouts in the nearby area to assist.
2. The operator must check the entire travel area is safe and secure before operating the hoist.

4.2 Method of operation

1. Place the selector switch on the handle in the central position (N).
2. Adjust the load chain to a suitable length for connection to the load.



WARNING!

NEVER pull the load chain sharply whilst the selector switch is set in the central position (N) as this may result in the brake engaging after which a reset will be required.

4.3 Load operation

Hoist operation	Selector switch position	Hand lever operation
Lift	UP	Clockwise
Lower	DOWN	Counterclockwise

4.4 Overload device (if fitted)

The optional overload protection device will come in to operation at between 1.3 to 1.8 times the WLL of the hoist.

	9.1	Pressing block A
	9.2	Snap ring
	9.3	Safety pawl
	9.4	Friction disc / Overload device
	9.5	Brake cover
	9.6	Reversing ratchet / Overload device
	9.7	Disc spring
	9.8	Pressing block B
	9.9	Lock nut

5. INSPECTION

5.1 General

There are two types of inspection, the **Daily Inspection** performed by the operator before using the hoist, and the more thorough **Periodic Inspection** performed by qualified service personnel who have the authority to remove the hoist from service.

5.2 Daily inspection

Item	Method	Discard criteria	Remedy
Name plate	Check visually	All information should be clear and visible.	Replace the name plate

Function	Turn the selector switch to the UP/DOWN position, pull the load chain on the hook side, and operate the handle.	The clicking sound when operating the handle indicates normal condition.	Repair or replace parts as necessary
Hook	Check visually	No wear, deformation or damage, and the swivels should rotate freely.	Replace
Hook latches	Check visually	No deformation or flaws.	Replace the part
Load chain	Check visually	No obvious rust or corrosion. Lubrication must be on surface.	Oil the load chain, replace the load chain
Other	Check visually	No missing nuts and/or split pins. No flaws or damage on the hoist surface. No missing and/or twisted chain stopper.	Replace the parts

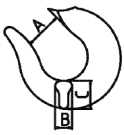
5.3 Periodic inspection

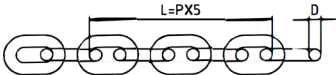
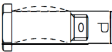
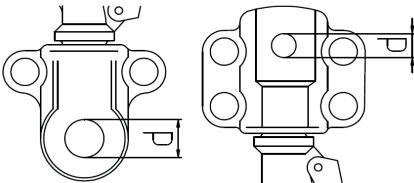
Periodic inspection shall be made at the interval shown below and should follow the given procedures.


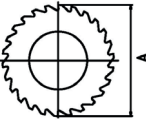

NORMAL (Normal use): Six monthly inspection

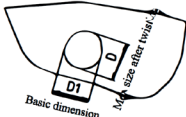

HEAVY (Frequent use): Quarterly inspection

SEVERE (Excessively frequent use): Monthly inspection

Item	Method	Discard criteria	Remedy																																																
1. Hook assembly 1.1 Stretch and wear 	Measure	Measure dimension A when new <table border="1"> <thead> <tr> <th rowspan="2">Capacity (t)</th> <th colspan="2">A* (mm)</th> <th colspan="2">B (mm)</th> <th colspan="2">C (mm)</th> </tr> <tr> <th>Normal</th> <th>Standard</th> <th>Discard</th> <th>Standard</th> <th>Discard</th> <th>Discard</th> </tr> </thead> <tbody> <tr> <td>0.75</td> <td>30.0</td> <td>13.0</td> <td>≤12.4</td> <td>21.5</td> <td>≤20.3</td> <td></td> </tr> <tr> <td>1.5</td> <td>36.0</td> <td>17.0</td> <td>≤16.2</td> <td>26.8</td> <td>≤27.3</td> <td></td> </tr> <tr> <td>3</td> <td>40.0</td> <td>25.0</td> <td>≤23.8</td> <td>43.8</td> <td>≤41.6</td> <td></td> </tr> <tr> <td>6</td> <td>50.0</td> <td>32.0</td> <td>≤30.4</td> <td>52.5</td> <td>≤49.9</td> <td></td> </tr> <tr> <td>9</td> <td>64.0</td> <td>40.0</td> <td>≤38.0</td> <td>60.4</td> <td>≤57.4</td> <td></td> </tr> </tbody> </table> <p>*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.</p>	Capacity (t)	A* (mm)		B (mm)		C (mm)		Normal	Standard	Discard	Standard	Discard	Discard	0.75	30.0	13.0	≤12.4	21.5	≤20.3		1.5	36.0	17.0	≤16.2	26.8	≤27.3		3	40.0	25.0	≤23.8	43.8	≤41.6		6	50.0	32.0	≤30.4	52.5	≤49.9		9	64.0	40.0	≤38.0	60.4	≤57.4		Replace
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9	64.0	40.0	≤38.0	60.4	≤57.4																																														
1.2 Flaw	Check visually	Should be free from significant rust, weld splatter, deep nicks 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 be slack or be missing rivets, nuts or bolts.	Replace																																																
1.5 Hook latch	Check visually	Proper positioning and smooth operation.	Replace																																																

Item	Method	Discard criteria	Remedy																																		
2. Load chain																																					
2.1 Wear	Measure	Measure  <table border="1"> <thead> <tr> <th rowspan="2">Capacity (t)</th> <th colspan="2">L (mm)</th> <th colspan="2">D (mm)</th> </tr> <tr> <th>Standard</th> <th>Discard</th> <th>Standard</th> <th>Discard</th> </tr> </thead> <tbody> <tr> <td>0.75</td> <td>90.0</td> <td>≤92.5</td> <td>6.0</td> <td>≤5.4</td> </tr> <tr> <td>1.5</td> <td>120.0</td> <td>≤123.3</td> <td>8.0</td> <td>≤7.2</td> </tr> <tr> <td>3, 6, 9</td> <td>150.0</td> <td>≤154.0</td> <td>10.0</td> <td>≤9.0</td> </tr> </tbody> </table>	Capacity (t)	L (mm)		D (mm)		Standard	Discard	Standard	Discard	0.75	90.0	≤92.5	6.0	≤5.4	1.5	120.0	≤123.3	8.0	≤7.2	3, 6, 9	150.0	≤154.0	10.0	≤9.0	Replace										
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1.5	120.0	≤123.3	8.0	≤7.2																																	
3, 6, 9	150.0	≤154.0	10.0	≤9.0																																	
2.2 Flaws, deformations	Check visually	Should be free from twists or flaws.	Replace																																		
2.3 Rust	Check visually	Should be free from obvious rust.	Remove rust, oil the chain																																		
3. Bottom hook pin																																					
3.1 Twist, deformations	Check visually, measure	Replace the hook pin if there is obvious deformation. The screw thread of the hook pin should be free from flaws and deformation.  Measure <table border="1"> <thead> <tr> <th rowspan="2">Capacity (t)</th> <th colspan="2">D (mm)</th> </tr> <tr> <th>Standard</th> <th>Discard</th> </tr> </thead> <tbody> <tr> <td>0.75</td> <td>7.5</td> <td>≤7.1</td> </tr> <tr> <td>1.5</td> <td>10.0</td> <td>≤9.5</td> </tr> <tr> <td>3</td> <td>14.5</td> <td>≤13.8</td> </tr> <tr> <td>6</td> <td>14.5</td> <td>≤13.8</td> </tr> <tr> <td>9</td> <td>14.5</td> <td>≤13.8</td> </tr> </tbody> </table>	Capacity (t)	D (mm)		Standard	Discard	0.75	7.5	≤7.1	1.5	10.0	≤9.5	3	14.5	≤13.8	6	14.5	≤13.8	9	14.5	≤13.8	Replace														
Capacity (t)	D (mm)																																				
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9	14.5	≤13.8																																			
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	 <table border="1"> <thead> <tr> <th rowspan="2">Capacity (t)</th> <th colspan="4">Diameter (mm)</th> </tr> <tr> <th colspan="2">Bottom hook pin hole</th> <th colspan="2">Top hook pin hole</th> </tr> </thead> <tbody> <tr> <td>0.75</td> <td>7.5</td> <td>≤8.0</td> <td>12.5</td> <td>≤13.1</td> </tr> <tr> <td>1.5</td> <td>10.5</td> <td>≤11.0</td> <td>14.5</td> <td>≤15.2</td> </tr> <tr> <td>3</td> <td>15.0</td> <td>≤15.7</td> <td>18.0</td> <td>≤18.9</td> </tr> <tr> <td>6</td> <td>15.0</td> <td>≤15.7</td> <td>18.0</td> <td>≤18.9</td> </tr> <tr> <td>9</td> <td>15.0</td> <td>≤15.7</td> <td>18.0</td> <td>≤18.9</td> </tr> </tbody> </table>	Capacity (t)	Diameter (mm)				Bottom hook pin hole		Top hook pin hole		0.75	7.5	≤8.0	12.5	≤13.1	1.5	10.5	≤11.0	14.5	≤15.2	3	15.0	≤15.7	18.0	≤18.9	6	15.0	≤15.7	18.0	≤18.9	9	15.0	≤15.7	18.0	≤18.9	Replace hook assembly
Capacity (t)	Diameter (mm)																																				
	Bottom hook pin hole		Top hook pin hole																																		
0.75	7.5	≤8.0	12.5	≤13.1																																	
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9	15.0	≤15.7	18.0	≤18.9																																	

Item	Method	Discard criteria	Remedy																				
5. Brake system																							
5.1 Rust	Check visually	All parts should be free from rust.	Remove rust, oil the parts or replace																				
5.2 Flaw on friction disc	Check visually	Should be free from flaws.	Replace																				
5.3 Wear on friction disc	Measure	Retain uniform thickness and friction disc shall not be worn more than 0.5mm. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Capacity (t)</th> <th colspan="2">Thickness of friction disc (H)</th> </tr> <tr> <th>Standard</th> <th>Discard</th> </tr> </thead> <tbody> <tr> <td>0.75 ~ 9</td> <td>3mm</td> <td>≤2.5mm</td> </tr> </tbody> </table>	Capacity (t)	Thickness of friction disc (H)		Standard	Discard	0.75 ~ 9	3mm	≤2.5mm	Replace												
Capacity (t)	Thickness of friction disc (H)																						
	Standard	Discard																					
0.75 ~ 9	3mm	≤2.5mm																					
5.4 Flatness of friction disc	Check clearance with gauge	Clearance should be uniform. Internal part should not be thicker than external part.	Replace																				
5.5 Pawl 	Check visually	Should be free from wear on the surface.	Replace																				
5.6 Pawl spring	Check visually	Should be free from deformation.	Replace																				
5.7 Ratchet disc 	Measure	Measure the external diameter A of ratchet disc. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Capacity (t)</th> <th colspan="2">Diameter A (mm)</th> </tr> <tr> <th>Standard</th> <th>Discard</th> </tr> </thead> <tbody> <tr> <td>0.75</td> <td>74.5</td> <td>≤71.5</td> </tr> <tr> <td>1.5</td> <td>85.0</td> <td>≤83.0</td> </tr> <tr> <td>3</td> <td>94.0</td> <td>≤91.0</td> </tr> <tr> <td>6</td> <td>94.0</td> <td>≤91.0</td> </tr> <tr> <td>9</td> <td>94.0</td> <td>≤91.0</td> </tr> </tbody> </table>	Capacity (t)	Diameter A (mm)		Standard	Discard	0.75	74.5	≤71.5	1.5	85.0	≤83.0	3	94.0	≤91.0	6	94.0	≤91.0	9	94.0	≤91.0	Replace
Capacity (t)	Diameter A (mm)																						
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3	94.0	≤91.0																					
6	94.0	≤91.0																					
9	94.0	≤91.0																					
5.8 Clutch spring	Measure	Measure the length 0.75t L≤31.5mm A≤15° 1.5t L≤31.5mm A≤15° 3~9t L≤34.2mm A≤40°	Replace																				
6. Lifting system																							
6.1 Load sheave	Check visually	Should be free from wear and deformation.	Replace																				
6.2 Gears	Check visually	Teeth should be free from excessive wear or flaws.	Replace																				
6.3 Gear box	Check visually	Should be free from wear or deformation.	Replace																				
7. Lever handle system																							
7.1 Hand lever, feed ratchet, spring pin	Check visually	Should be free from wear or deformation.	Replace																				
7.2 Torsional spring 	Measure	Measure the length 0.75t L≤59.4mm A≤165° 1.5t L≤59.4mm A≤165° 3~9t L≤63.9mm A≤165°	Replace																				

Item	Method	Discard criteria	Remedy												
8. Body 8.1 Top hook pin hole on the side plate		Measure dimension D. <table border="1" data-bbox="482 161 815 236"> <thead> <tr> <th>Capacity (t)</th> <th>D1 (Standard)</th> <th>D (Discard)</th> </tr> </thead> <tbody> <tr> <td>0.75</td> <td>10.2</td> <td>≤10.7</td> </tr> <tr> <td>1.5</td> <td>13.2</td> <td>≤13.7</td> </tr> <tr> <td>3~9</td> <td>17.2</td> <td>≤17.7</td> </tr> </tbody> </table>	Capacity (t)	D1 (Standard)	D (Discard)	0.75	10.2	≤10.7	1.5	13.2	≤13.7	3~9	17.2	≤17.7	Replace
Capacity (t)	D1 (Standard)	D (Discard)													
0.75	10.2	≤10.7													
1.5	13.2	≤13.7													
3~9	17.2	≤17.7													
8.2 Top hook pin 	Measure	<table border="1" data-bbox="426 268 658 328"> <tbody> <tr> <td>0.75t</td> <td>D≤9.5</td> </tr> <tr> <td>1.5t</td> <td>D≤12.4</td> </tr> <tr> <td>3t ~ 9t</td> <td>D≤16.1</td> </tr> </tbody> </table> Measure the external diameter of the top hook pin.	0.75t	D≤9.5	1.5t	D≤12.4	3t ~ 9t	D≤16.1	Replace						
0.75t	D≤9.5														
1.5t	D≤12.4														
3t ~ 9t	D≤16.1														
8.3 Guide plate	Check visually	Should be free from wear and deformation.	Replace												
8.4 Chain stopper ring	Check visually	Should be free from wear and deformation.	Replace												
9. Function 9.1 Lifting and lowering	Lift and lower a light load	No abnormal difficulty in lifting and lowering.	Overhaul and service												
9.2 Brake	Lift and lower a light load	Confirm that none of the problems listed below occur during lifting and lowering: <ol style="list-style-type: none"> 1. Lifting impossible. 2. Load slips down slowly. 3. Load falls when the operator releases the hand lever. 	Overhaul and service												

6. MAINTENANCE

6.1 General

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



Always test the hoist using the information provided in this manual before returning it to service following any maintenance work.



1. Always take care to ensure that hands or clothes do not get caught in the chain, idle sheave or other moving parts.
2. Never operate the hoist when it requires maintenance.
3. Always inspect all parts if abnormal difficulty in lifting and lowering occurs.
4. Never perform maintenance on the hoist whilst it is supporting a load.
5. Always wipe off dirt and water.
6. Always store the hoist in a dry and clean place.

6.2 Lubrication

Ensure that the load chain, hook latches, top/bottom hook pin and hook yoke, etc. are kept lubricated.

The load chain is one of the important parts of the hoist and should be lubricated well with machine oil.



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

7. Troubleshooting

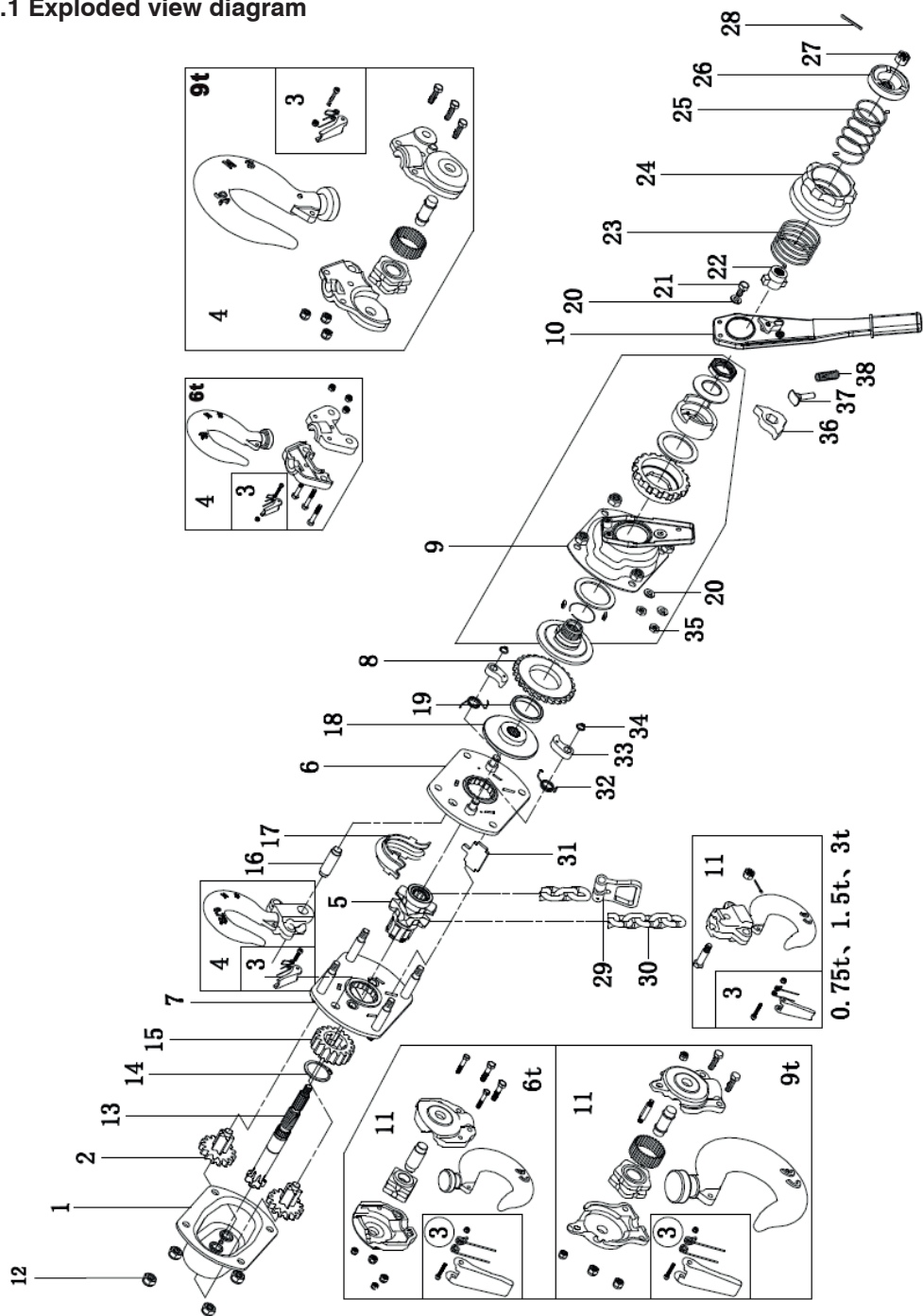


Any maintenance or repair of the lever hoist should be performed by properly trained personnel.

Problem	Cause and explanation	Remedy
The hoist will not lift the load (no clicking sound).	Pawl not engaging with ratchet disc; possible contamination with dirt or foreign material.	Clean and lubricate the pawls and ratchet disc assembly.
	Pawl spring is damaged.	Replace pawl spring.
	Ratchet spring is loose or damaged.	Tighten or replace ratchet spring.
Load slips or drifts while being lowered.	Dirt or corrosion or foreign material in hoist components.	Inspect and correct problem. Keep hoist clean and lubricated.
	The brake is slipping. Friction discs are worn from long term use, or are damaged from overloading or misuse.	Replace friction disc. See chapter 5. INSPECTION for minimum allowable thickness. Do not overload the hoist.
The load drops the instant lowering is started.	The braking surface is dirty. During assembly, the braking surface must be wiped clean of dirt.	Clean or replace the brake assembly.
	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.	Clean or replace the brake assembly.
The hoist will not lower the load.	The brake has caught. (Hoist was left under loaded condition for an extended period, or was shock loaded while in operation.)	Place selector lever in DOWN position and pull hard on the lever handle to re-set the brake. Resume operation.
	Brake components are corroded or damaged.	Replace damaged components; keep hoist clean and lubricated.
The chain is tight when lifting, even without a load. (A squeaking noise can be heard at times.)	Gear teeth are worn from long term use, or for not being greased regularly.	Disassemble and replace the load gear, gear case and side plate.

8. SPARE PARTS LIST

8.1 Exploded view diagram



8.2 Parts list

No.	Part name	No.	Part name	No.	Part name
1	Gear case assembly	14	Snap ring	27	Castle nut
2	Disc gear assembly	15	Splined gear	28	Split pin
3	Safety latch assembly	16	Top hook shaft	29	Chain ring
4	Top hook assembly	17	Chain guide cover	30	Load chain
5	Load sheave	18	Brake seat	31	Stripper
6	Brake side plate assembly	19	Brake steel bushing	32	Pawl spring
7	Gear side plate assembly	20	Spring washer	33	Pawl
8	Ratchet assembly	21	Hex head screw	34	Snap ring
9	Brake cover	22	Adjusting cam	35	Hex nut
10	Lever handle cover	23	Clutch spring	36	Reversing pawl
11	Bottom hook assembly	24	Hand wheel	37	Spring seat
12	Lock nut	25	Torsional spring	38	Spring
13	Drive shaft	26	Torsional spring cover		

