VULCAN
HOIST - PALAN

USER MANUAL

NOVA MANUAL CHAIN HOIST

½ to 20 Tonnes

NB0.5T to NB20T

Manuel en français de l'autre côté

KEEP THIS MANUAL

WARNING

DO NOT INSTALL, OPERATE, OR PERFORM MAINTENANCE ON THIS EQUIPMENT BEFORE READING AND UNDERSTANDING THIS MANUAL IN ITS ENTIRETY. FAILURE TO READ AND COMPLY WITH THE CONTENTS OF THIS MANUAL COULD RESULT IN SERIOUS BODILY INJURY OR DEATH AND / OR PROPERTY DAMAGE.

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Important Information, Warnings and Safety

This manual contains important safety, installation, operation, and maintenance information. Make this manual available to every person designated for the operation, installation, and maintenance of these products. Unless otherwise noted, tons in this manual are metric tonnes (1000kg, 2205 lbs, or 1.102 US short ton). Nova products are metric. Equivalent imperial (inches, pounds) measurements are provided for informational purposes only.

Danger, Warning, Caution and Notice

Throughout this manual, there are procedures which, if not followed, may result in an injury, death, or substantial property damage if the warning is ignored.

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

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

CAUTION Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or property damage.

NOTICE Indicates information or company policy which relates directly or indirectly to the safety of personnel or property.

Safety Framework and General Rules

WARNING

This manual cannot cover every possible installation, operation, maintenance, circumstance and situation. You, the owner or operator of the equipment covered in this manual, are responsible for the safe and proper installation, operation, inspection, and maintenance of this equipment in accordance with ASME B30.16 and all applicable laws, regulations and codes.

Anybody interacting with the chain block must have read and understood the instructions laid out in this manual.

Vulcan Hoist will not be liable for any loss, damage, injury, death or compensation if caused, even if partially, by disregarding or misinterpreting an instruction from this manual.

Repairs must only be done with original equipment manufacturer parts by a qualified person. Any modification, including re-rating the chain block, must be authorised by the original equipment manufacturer.

CAUTION

Every safety and identification label and plate that came with the chain block, including the nameplate which displays the chain block's serial number, capacity, and manufacturer, must be securely fastened and legible. If any safety or identification label or plate is missing or no longer legible, contact Vulcan Hoist for a replacement.

NOTICE

This manual covers a wide range of chain blocks with different capacities and options, and as such not all instructions in this manual apply to every chain block. Disregard instructions that do not apply.

DANGER

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

NEVER apply pressure on a hoist.

NEVER use two or more hoists together to lift beyond a hoist's rated capacity.

NEVER lift a load heavier than a hoist's rated capacity.

NEVER lift or move a load over or near people.

Safety Rules Before Operation

WARNING

Do not use this chain block if you notice deep nicks, gouges, bends or significant stretching in the hooks, load chain, or other load bearing parts.

CAUTION

Ensure that you have read and understood this manual in its entirety.

Ensure that the nameplate and safety warning labels and plates are present, securely fastened and legible.

Perform the daily inspection described in the Daily Inspection section of this manual if it is the chain block's first use of the shift.

Be certain that the weight of the load to be lifted is lower or equal to the chain block's rated capacity.

Estimate how low and how high you plan to move the hook. Make sure that you will have enough load chain to reach that lower limit and that the hook won't collide into the chain block on the upper limit.

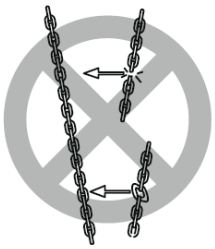
Make sure that the planned lift won't interfere with other operations going on and won't go over people.

Make sure that the load's centre of gravity and attachment point are vertically aligned with the chain block. Chain blocks are only meant to lift unguided loads vertically.

Make sure that you have somewhere to safely lower the load before you lift it. Don't leave a raised load unattended.

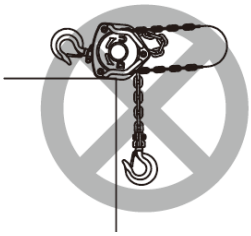
Safety Rules During Operation

DANGER



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

NEVER use the chain as a sling



NEVER support or use the chain block as a support

NEVER support a load on the tip of the hook

NEVER run the load chain over a sharp edge

NEVER weld or cut a load suspended by a chain block

Make sure that the load's attachment point sits in the hook's bowl and that the latch is closed.

Start lifting the load. When the load chain is under tension, check that the hand chain is still turning smoothly.

Lift the load until it is fully off the ground and let go of the hand chain. Check that the load is well balanced and that it does not move down on its own. Go on with your planned lift.

NEVER use a damaged chain block or a chain block that is not working properly or requires excessive force to work.

NEVER use a chain block if it makes excessive or unusual noise.

NEVER use a chain block with a chain that makes harsh, jerking moves.

NEVER swing or move a suspended load from being vertically aligned with the chain block.

NEVER use the chain block as a welding electrode.

NEVER move the hook so far that it collides with the chain block or that the free end of the chain pulls on its anchorage.

NEVER allow your attention to be diverted from operating the chain block.

Safety Rules After Operation

CAUTION

Land the load slowly and safely.

NEVER suspend a load for an extended period of time.

Operation

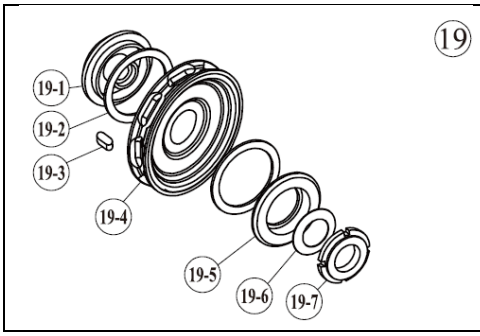
While facing the hand wheel side of the chain block, pull the hand chain to make the hand wheel turn clockwise to raise the hook or counterclockwise to lower it. The openings in the chain block's body are wide and allow the hand chain to be pulled at a certain angle, but try to avoid rubbing the hand wheel on the chain block's body. The clicking of the ratchet and pawls when raising the hook indicates normal operation.

Overload Protection Devices

The overload protection device is an option. Check your chain block's nameplate to see if it has this option. Overload protection devices have been adjusted in factory between 1.3 to 1.8 times the rated load. When lifting a load which triggers the overload protection device, the hand wheel will turn with a considerable force exerted on the hand chain, but the hook will not move, and the ratchet and pawls won't click.

NOTICE

A load could be over the rated capacity even if the overload protection device does not trigger.



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 nut

Inspection

⚠ WARNING

If a chain block fails any one of the following inspection items, do not use it and remove it from its installation immediately. Do not reinstall it until every issue has been resolved.

Failure to inspect the chain block as instructed may result in damage, injury, or death.

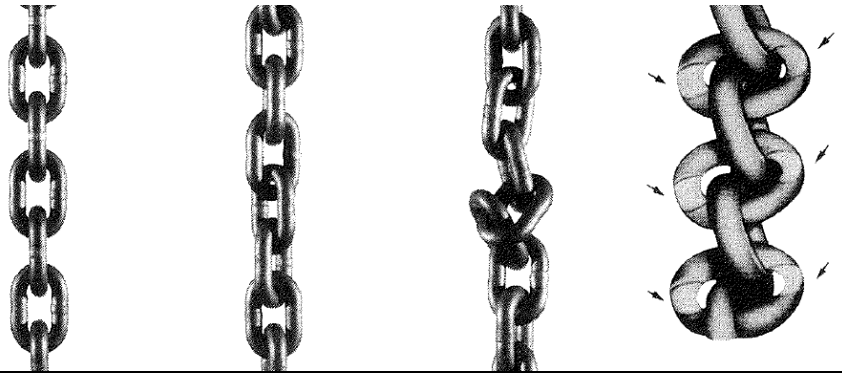
Contact Vulcan Hoist for spare parts. Do not use non-OEM parts.

These instructions are based on ASME B30.16. Also observe any other regulation that may apply.

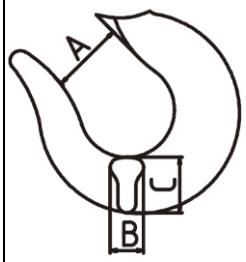
There are two types of inspection: daily and periodic. A daily inspection must be done by the chain block's operator, or a person qualified to do so at the beginning of each working shift or the first time the chain block is used in a shift. A periodic inspection must be done by a qualified person at intervals determined by the chain block's service severity.

Service Severity and Periodic Inspection Frequency		
Service	Description	Periodic Inspection Frequency
Normal Service	Randomly distributed loads within the rated load limit, or uniform loads less than 65% of rated load for not more than 15% of the time	monthly to yearly
Heavy Service	Within the rated load limit but exceeds normal service	weekly to monthly
Severe Service	Normal or heavy service with abnormal operating conditions (high humidity, extreme temperatures, salty air, etc.)	daily to weekly

Daily Inspection

Part	Items to Inspect
Tags, labels, nameplate	-Warning labels and tags must be present, securely fastened and legible -The nameplate and the chain hoist's capacity tags must be present, securely fastened and legible
Hook latches	Hook latches must be present on both hooks and close on their own
Load chain	-The load chain must be lubricated. Apply oil if it appears dry -The free end of the chain must be attached to the chain block's body -Especially for chain blocks with multiple chain falls (3t and more), make sure that the load chain is not twisted. Make sure that it will enter the chain block straight in both directions -Eliminate for kinks and twists. Do not use the chain blocks if they keep reoccurring -Look for excessive wear. Do not use the chain block even if a single chain link appears worn Normal Twisted Kinked Worn out 
Hooks and load chain	-The hooks and load chain must be free of deep nicks, gouges, bends, kinks or significant stretching
Hooks	Both hooks must swivel freely
Function	-The hand chain and the hand wheel must turn smoothly -The ratcheting clicks must be heard when turning the hand wheel in the up direction
Overall	-There must not be any missing nut, bolt, or pin -There must not be any signs of major damage such as bumps or burns

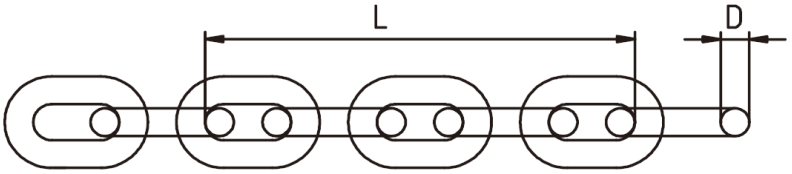
Periodic Inspection

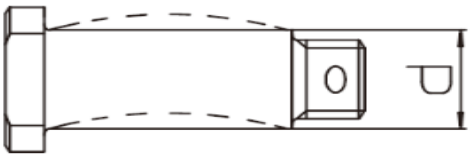
Item	Discard Criteria
Hooks (lower and upper)	
Hook stretch and wear	

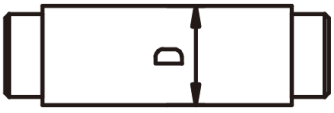
Capacity (t)	A* mm [in]	B, mm [in]		C, mm [in]	
	Normal	Standard	Discard	Standard	Discard
½	30.0 [1.18]*	13.0 [0.512]	≤12.4 [0.488]	19.0 [0.748]	≤18.1 [0.713]
1	30.0 [1.18]*	13.0 [0.512]	≤12.4 [0.488]	21.5 [0.846]	≤20.4 [0.804]
1½	36.0 [1.42]*	17.0 [0.669]	≤16.2 [0.488]	28.8 [1.134]	≤27.3 [1.075]
2	33.5 [1.32]*	21.0 [0.827]	≤20.0 [0.638]	34.3 [1.350]	≤32.6 [1.284]
3	40.0 [1.57]*	25.0 [0.984]	≤23.8 [0.937]	43.8 [0.937]	≤41.6 [1.638]
5	50.0 [1.97]*	32.0 [1.260]	≤30.4 [1.197]	52.5 [1.724]	≤49.9 [1.965]
10	64.0 [2.52]*	40.0 [1.575]	≤38.0 [1.496]	60.4 [2.378]	≤57.4 [2.260]
20	85.0 [3.35]*	60.0 [2.362]	≤57.0 [2.244]	88.5 [3.484]	≤84.0 [3.308]

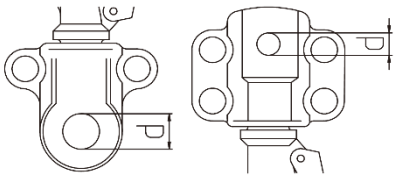
*These values are nominal. **The A dimension must be measured when the hook is new. The hook must be discarded when the A dimension is 1.05 times greater than when new**. Top and bottom hooks have the same dimensions.

Flaws and wear	Must be free from significant rust, welds, weld splatter, deep nicks, or gouges
Rotation	Must rotate freely without rough spots
Hook yokes	Must not miss rivets or bolts. Must have no slack between yoke halves
Latches	Latches must be present and stay closed when not forced open

<table>
<tr><th>Item</th><th>Discard Criteria</th></tr>
<tr><td colspan="2">Load Chain</td></tr>
<tr><td>Wear and stretch</td><td>


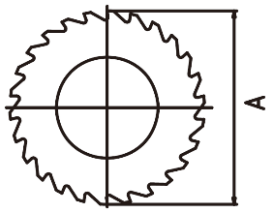
<table>
<tr><th rowspan="2">Capacity (t)</th><th colspan="2">L, mm [in]</th><th colspan="2">D, mm [in]</th></tr>
<tr><th>Standard</th><th>Discard</th><th>Standard</th><th>Discard</th></tr>
<tr><td>½, 1, 2</td><td>90.0 [3.543]</td><td>≥92.5 [3.642]</td><td>6.0 [0.236]</td><td>≤5.4 [0.213]</td></tr>
<tr><td>1½, 3</td><td>120.0 [4.724]</td><td>≥123.3 [4.855]</td><td>8.0 [0.315]</td><td>≤7.2 [0.284]</td></tr>
<tr><td>5, 10, 20</td><td>150.0 [5.906]</td><td>≥154.0 [6.063]</td><td>10.0 [0.394]</td><td>≤9.0 [0.355]</td></tr>
</table>
Measure the pitch of 5 chain links at different places on the load chain</td></tr>
<tr><td>Flaws</td><td>Must be free from welds, weld splatter, nicks or gouges</td></tr>
<tr><td>Rust</td><td>Only surface rust is acceptable. No pitting from rust, rust flakes or rust bubbles</td></tr>
<tr><td>Lubrification</td><td>Must be oiled</td></tr>
<tr><td colspan="2">Hook Pins</td></tr>
<tr><td>Bottom hook pin wear and deformation</td><td>


<table>
<tr><th rowspan="2">Capacity (t)</th><th colspan="2">d, mm [in]</th></tr>
<tr><th>Standard</th><th>Discard</th></tr>
<tr><td>½</td><td>6.0 [0.236]</td><td>≤5.7 [0.225]</td></tr>
<tr><td>1, 2</td><td>7.5 [0.295]</td><td>≤7.1 [0.280]</td></tr>
<tr><td>1½, 3</td><td>10.0 [0.394]</td><td>≤9.5 [0.374]</td></tr>
<tr><td>5, 10, 20</td><td>14.5 [0.571]</td><td>≤13.8 [0.544]</td></tr>
</table>
-Discard the hook pin if there is obvious bend or deformation
-Screw thread must be in good condition</td></tr>
<tr><td>Top hook pin wear and deformation</td><td>


<table>
<tr><th>Capacity (t)</th><th>D Discard, mm [in]</th></tr>
<tr><td>½</td><td>≤9.5 [0.374]</td></tr>
<tr><td>1, 2</td><td>≤11.5 [0.453]</td></tr>
<tr><td>1½, 3</td><td>≤13.4 [0.528]</td></tr>
<tr><td>5, 10, 20</td><td>≤17.5 [0.689]</td></tr>
</table>
Discard the hook pin if there is obvious bend or deformation</td></tr>
<tr><td>Top hook pin holes in the side plates</td><td>
<table>
<tr><th>Capacity (t)</th><th>Standard Diameter, mm [in]</th><th>Discard Diameter*, mm [in]</th></tr>
<tr><td>½</td><td>10.2 [0.402]</td><td>≥10.7 [0.421]</td></tr>
<tr><td>1, 2</td><td>12.5 [0.492]</td><td>≥13.0 [0.512]</td></tr>
<tr><td>1½, 3</td><td>14.5 [0.571]</td><td>≥15.0 [0.591]</td></tr>
<tr><td>5, 10, 20</td><td>18.3 [0.720]</td><td>≥18.8 [0.740]</td></tr>
</table>
*Measure the holes' maximum diameter</td></tr>
<tr><td>Top and bottom hook pin holes</td><td>


<table>
<tr><th rowspan="2">Capacity (t)</th><th colspan="2">Bottom Hook Pin Diameter, mm [in]</th><th colspan="2">Top Hook Pin Diameter (mm)</th></tr>
<tr><th>Standard</th><th>Discard*</th><th>Standard</th><th>Discard*</th></tr>
<tr><td>½</td><td>6.5 [0.256]</td><td>≥7.0 [0.276]</td><td>10.5 [0.413]</td><td>≥11.0 [0.433]</td></tr>
<tr><td>1, 2</td><td>7.5 [0.295]</td><td>≥8.0 [0.315]</td><td>12.5 [0.492]</td><td>≥13.1 [0.516]</td></tr>
<tr><td>1½, 3</td><td>10.5 [0.413]</td><td>≥11.0 [0.433]</td><td>14.5 [0.571]</td><td>≥15.2 [0.598]</td></tr>
<tr><td>5, 10, 20</td><td>15.0 [0.591]</td><td>≥15.7 [0.618]</td><td>18.0 [0.709]</td><td>≥18.9 [0.744]</td></tr>
</table>
* Measure the holes' maximum diameter</td></tr>
<tr><td colspan="2">Braking System</td></tr>
<tr><td>Rust</td><td>All parts should be rust-free</td></tr>
<tr><td>Pawls</td><td>

-Pawls must have no surface wear
-Pawl springs must push the pawl into the ratchet</td></tr>
</table>

<table>
<tr><th>Item</th><th>Discard Criteria</th></tr>
<tr><td>Friction discs</td><td>
<table>
<tr><th colspan="2">Friction Disc Thickness, mm [in]</th></tr>
<tr><th>Standard</th><th>Discard</th></tr>
<tr><td>3.0 [0.118]</td><td>≤2.5 [0.098]</td></tr>
</table>
Both friction discs must be similarly worn. They must have the same thickness throughout. Their surfaces must be flat and free from cracks and gouges.
</td></tr>
<tr><td>Ratchet</td><td>


<table>
<tr><th rowspan="2">Capacity (t)</th><th colspan="2">External Diameter, mm [in]</th></tr>
<tr><th>Standard</th><th>Discard</th></tr>
<tr><td>½</td><td>54.5 [2.15]</td><td>≤52.5 [2.07]</td></tr>
<tr><td>1, 2</td><td>74.5 [2.93]</td><td>≤71.5 [2.81]</td></tr>
<tr><td>1½, 3</td><td>85.0 [3.35]</td><td>≤83.0 [3.27]</td></tr>
<tr><td>5, 10, 20</td><td>94.0 [3.70]</td><td>≤91.0 [3.58]</td></tr>
</table>
</td></tr>
<tr><td colspan="2">Hoisting System and Body</td></tr>
<tr><td>Load Chain Sprocket</td><td>Must not show significant wear or deformation</td></tr>
<tr><td>Gears</td><td>Must not show significant wear or deformation especially on teeth and bearing surface</td></tr>
<tr><td>Gearcase</td><td>Must not show deformation. Must not show significant wear on bearing surface.</td></tr>
<tr><td>Hand wheel</td><td>Must not rub against covers. Must not show significant wear or deformation.</td></tr>
<tr><td>Side plates</td><td>Must be straight. See Hook Pins for the side plates' top hook pin hole dimensions.</td></tr>
<tr><td colspan="2">Function</td></tr>
<tr><td>Lifting and lowering</td><td>No difficulty, abnormality, roughness in lifting and lowering with and without loads</td></tr>
<tr><td>Brake</td><td>No braking resistance when lifting. Loads must not slip down slowly when suspended. Loads must not slip after the hand chain is jerked and released suddenly in the lowering direction</td></tr>
</table>

Maintenance

WARNING

After performing maintenance, test the chain block and perform a daily inspection.

NEVER perform maintenance while the chain block is being used or supporting a load.

NEVER grease or oil the braking mechanism.

Failure to perform maintenance as instructed may result in damages, injury, or death.

It is recommended to perform maintenance at the same frequency as periodic inspections. Only qualified personnel must perform maintenance. Vulcan Hoist offers inspection, maintenance, and repair services.

1. Clean the chain block and load chain without getting water inside the gearcase and the braking mechanism.

2. Open the gearcase. Wipe off excess worn grease. Apply new grease directly on gear teeth and bearing surfaces. Re-fasten the gearcase. NLGI No. 2 grease is recommended.

3. Oil the hook pins, hook shanks (for rotation), load chain and load chain sprockets. An ISO 68 oil is recommended.

Storing

Always store above freezing temperatures in a dry environment.

Do not use a chain block in storage to hold or support a load.

Perform a periodic inspection before using a chain block which is coming out of storage.

Specifications

Allowable Operating Conditions

1. -10°C to 60°C

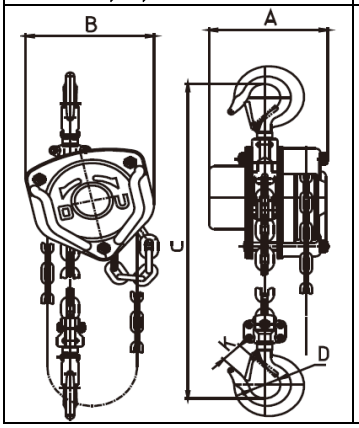
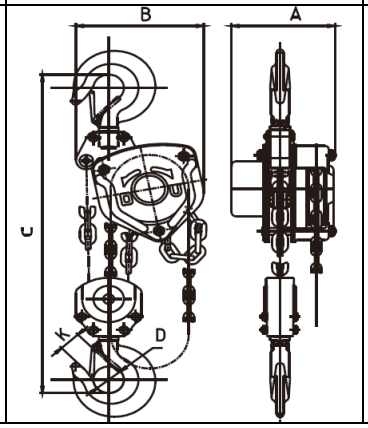
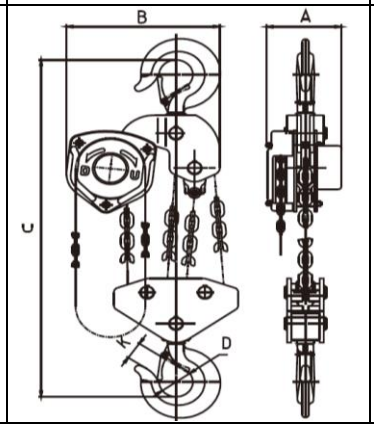
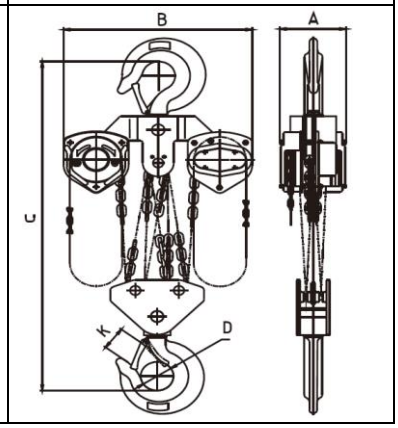
2. Can work in up to 100% relative humidity, but must not be used under water.

Outdoor Installations

1. Outdoor chain blocks should be sheltered from rain and snow or brought inside when not in use.

2. If the chain block is exposed to salty air, extreme temperature, high humidity environments or exposure to rain or snow, increase the inspection and maintenance frequency.

Technical Specifications

½, 1, 1½ et 2 t	3 et 5 t	10 t	20 t
			

Capacity (t)	Test Load (lb)	Force to lift max load (lbf)	Load chain ø (mm) x nb. falls	Hand chain to load chain ratio	Net weight* (lb)	Extra weight/ ft (lb)	Dimensions, mm [in]				
							A	B	C	D	K
½	1370	45	6.0 x 1	33.3	21.1	3.7	137.5 [5.41]	137 [5.39]	270 [10.63]	35 [1.38]	28 [1.10]
1.0	2750	72	6.0 x 1	41.5	25.7	3.7	146.5 [5.77]	162 [6.38]	317 [12.48]	35.5 [1.40]	26 [1.02]
1½	4130	81	8.0 x 1	55.6	36.2	5.1	170 [6.69]	183 [7.20]	399 [15.71]	45 [1.77]	32.5 [1.28]
2.0	5500	83	8.0 x 1	72.6	39.9	5.1	170 [6.69]	194 [7.64]	414 [16.30]	42.5 [1.67]	32 [1.26]
3.0	8260	87	8.0 x 2	111.2	54.0	8.2	170 [6.69]	220 [8.66]	465 [18.31]	50 [1.97]	37 [1.46]
5.0	13700	98	10.0 x 2	163.4	85.9	11.7	190 [7.48]	288 [11.33]	618 [24.33]	64 [2.52]	46 [1.81]
10.0	27500	98	10.0 x 4	326.8	173	21.4	190 [7.48]	384 [15.12]	798 [31.42]	85 [3.35]	50 [1.97]
20.0	55000	2x 98	10.0 x 8	2x 326.8	362.7	42.8	209 [8.23]	625 [24.61]	890 [35.04]	110 [4.33]	81 [3.19]

*For a chain block with 10' of lift.

Troubleshooting

Symptom	Cause	Solution
The pawls click but the load doesn't lift	Worn out friction plates, which creates a gap between the friction disc and the hand wheel, causing the brake to slip	Replace the friction discs
The pawls don't click and the load doesn't lift	The ratchet, the pawls or its springs have been improperly assembled	Reassemble correctly
	Pawls are not moving smoothly	Clean. Grease the pawls' pivot point

The hand chain is tight when lifting even without a load, may be squeaking	Worn gear teeth or worn bearing surfaces	Replace worn parts
Improper lowering or the chain is extremely tight when lowering.	The brake is too tight, perhaps due to shock loading or loads left suspended for an extended period of time	Free the brake forcibly by jerking the hand chain
	The brake is rusted	Clean the rust or replace rusted parts
The load drops instantly after lowering has started or the load is slipping	The braking surface is dirty, oily or greasy. The braking surfaces must be clean and dry	Clean. Replace oily or greasy parts
Hook will not go up all the way (multiple chain falls models, 3t and more)	The lower hook has been capsized causing load chain twists or knots	Flip the hook between chain falls to untwist the load chain
Lifting and lowering not smooth	Improper gear assembly. Gears must be timed correctly	Reassemble the gears by placing the markings in the same orientation
	Broken gear, bearing or load bearing surface	Replace broken parts

Warranty

Your Nova chain block is guaranteed against defects in materials and workmanship **for 1 year** from the date of purchase if all the following conditions are met:

1. Any part replacement or modification of the Nova chain block **must** be approved in writing by Vulcan Hoist.

2. No credit will be issued for defective parts. Vulcan Hoist will ship only replacement parts, subject to warranty inspection.

3. Labour will be paid at a pre-set rate depending on the problem.

4. For major problems, the Nova chain block must be returned prepaid to Vulcan Hoist for inspection and repair. If the repairs are under warranty, the chain block will be returned prepaid.

Parts

No.	Part Name	No.	Part Name	No.	Part Name
1	Gearcase assembly	19	Hand chain wheel	37	Bearing ball
2	Gear side plate assembly	20	Hand chain	38	Upper hook bearing housing
3	Brake side plate assembly	21	Hand chain wheel cover	39	Upper hook chain sprocket
4	Disc gear assembly	22	Lock nut	40	Needle roller
5	Load chain sprocket assembly	23	Guide roller	41	Upper hook yoke set
6	Upper hook assembly	24	Chain stripper	42	Ball holding screw
7	Safety latch assembly	25	Load chain	43	Upper hook pin
8	Lower hook assembly	26	Lower hook pin	44	Upper hook sprocket shaft
9	Drive shaft	27	Load chain anchor	45	Chain sling plate
10	Snap ring	28	Load chain anchor pin	46	Lower hook yoke set
11	Splined gear	29	Cotter pin	47	Chain stripper
12	Upper hook pin	30	Slotted nut	48	Hex bolt
13	Pawl spring	31	Lower hook	49	Lock washer
14	Pawl	32	Lower hook sprocket	50	Snap ring
15	Brake seat	33	Lower hook sprocket shaft	51	Upper hook pin
16	Friction disc	34	Lower hook yoke set	52	Upper chain sprocket shaft
17	Ratchet disc	35	Hex bolt	53	Lower chain sprocket shaft
18	Ratchet disc cover	36	Upper hook yoke set	54	Lower hook pin

NOVA CHAIN BLOCK