



USER MANUAL

NOVA **PLUS**

RATCHET LEVER HOIST

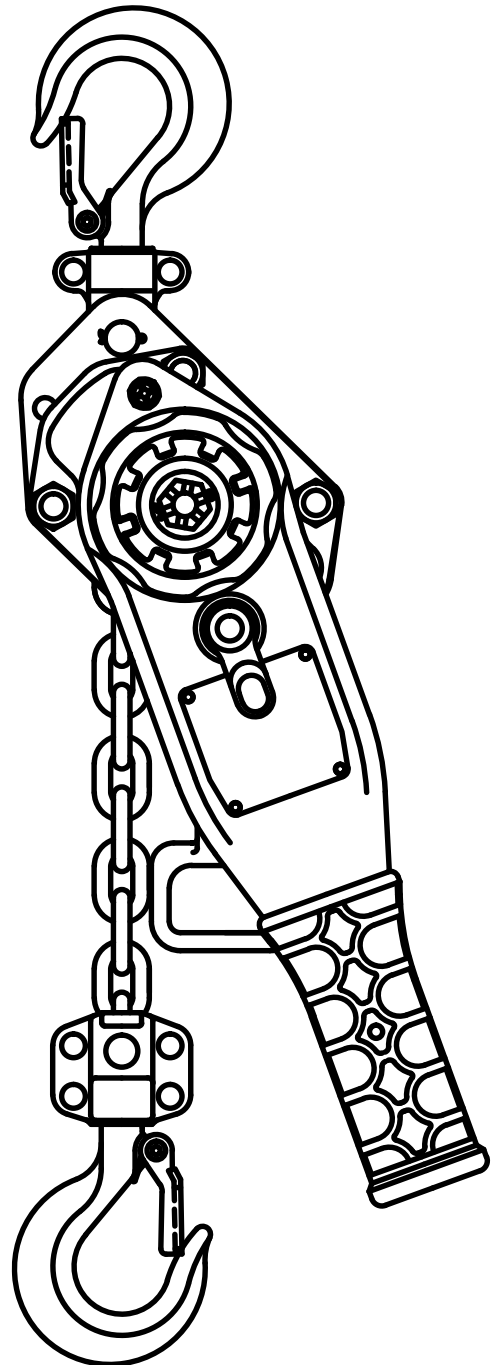
0.75 to 3 Tonnes

NPR0.75T-OLP to NPR03T-OLP

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.

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, 2204 lbs, or 1.102 US short ton). Nova Plus 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 they are not followed or are ignored, may result in injury, death, or substantial property damage.



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 B30.21 and all applicable laws, regulations and codes.

Anybody interacting with the ratchet puller 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 must be authorised by Vulcan Hoist.



CAUTION

Every safety and identification label and plate that came with the ratchet puller, including the nameplate which displays the ratchet puller'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 ratchet pullers with different capacities and options, and as such not all instructions in this manual apply to every ratchet puller. Disregard instructions that do not apply.

Safety Rules Before Operation



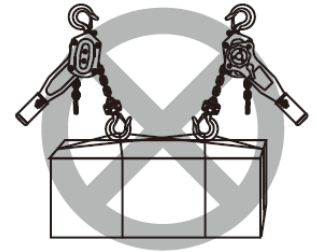
DANGER



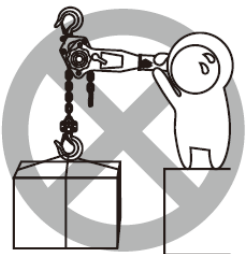
NEVER use a puller for lifting, supporting or transporting people.



NEVER apply pressure on a puller.



NEVER use two or more pullers together to lift beyond a puller's rated capacity.



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



NEVER lift or move a load over or near people.



WARNING

Do not ever extend the lever.

Do not use this ratchet puller 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 ratchet puller's first use of the shift.

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

Estimate how much you plan to move the hook. Make sure that the chain is long enough to reach the furthest point without the ring in the last chain link entering the ratchet puller's body and distance H_{min} (see section Technical Specifications) is short enough for the hook to reach the closest point.

Make sure that the planned lift or pull 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 aligned with the ratchet puller.

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



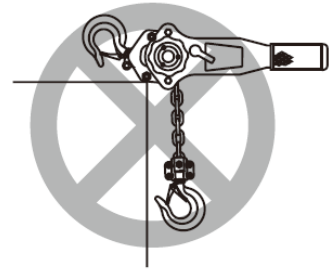
DANGER



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



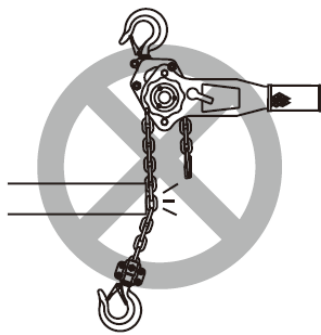
NEVER use the chain as a sling



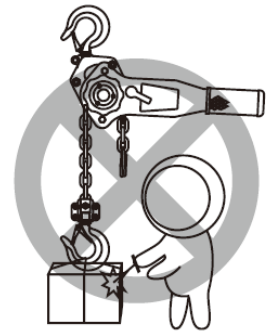
NEVER support or use the ratchet puller as a support



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 ratchet puller

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

Start lifting or pulling the load. When the load chain is under tension, check that the lever is still turning smoothly and that the load does not fall or pull away on its own.

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

NEVER use a ratchet puller if it makes excessive or unusual noise.

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

NEVER swing a suspended load.

NEVER use the ratchet puller as a welding electrode.

NEVER move the hook so far that it collides with the ratchet puller or that the lifting ring at the free end of the chain pulls on the ratchet puller's body.

NEVER allow your attention to be diverted from operating the ratchet puller.

Safety Rules After Operation



CAUTION

Land the load and unload the chain slowly and safely.

NEVER suspend a load for an extended period of time.

Operation

Free chaining

Free chaining allows the chain to be pulled quickly in either direction by disengaging the chain sprocket from its driving components and the brake.

1. Flip the selector into the “N” neutral position
2. Pull on the handwheel to pop it out
3. Pull the load chain in either direction up to its desired position. The ratchet will not be clicking.
4. Flip the selector towards either the “Up/In” or the “Down/Out” direction.
5. While pulling the chain on the hook’s side, pull and turn the handwheel clockwise until it is too difficult to do so. Release the handwheel, it should pop back towards the hoist and the selector switch will engage the direction chosen in the previous step.



WARNING

NEVER PULL OR TOUCH THE HANDWHEEL WHILE THE PULLER IS LOADED. Pulling on the handwheel disengages the chain sprocket from the driving components and the brake, which WILL CAUSE A SUSPENDED LOAD TO FALL.

Do not pull on the handwheel if the selector is not in the “N” neutral position.

NOTICE

Do not pull the chain suddenly while in free chain mode. This may set the brake close and will not allow the chain to be pulled. To reset the brake, place the selector in the down position and pull the lever handle quickly and with force. This should re-open the brake.

Turning the handwheel

Turning the handwheel will move the chain slower than free chaining but faster than cranking the lever. The handwheel must not be in free chaining mode for this to work. The driving components will stay engaged, allowing to pre-tension the chain before cranking the lever.

Selector	Turning the handwheel clockwise	Turning the handwheel counterclockwise
N	The hook will be pulled towards the puller	The handwheel will not turn
UP/IN	The hook will be pulled towards the puller	The handwheel will not turn
DOWN/OUT	The lever will turn with the handwheel	The handwheel will not turn

Cranking the lever

Cranking the handle will turn the handwheel with maximum force. The chain must be pretensioned for the lever to move the chain.

Selector	Turning the lever clockwise	Turning the lever counterclockwise
N	The lever will turn freely	The lever will turn freely
UP/IN	The hook will be pulled towards the puller	The ratchet clicks, the chain does not move
DOWN/OUT	The ratchet clicks, the chain does not move	The hook will be pulled away from the puller

NOTICE

If cranking the handle does not pull on the chain as it should, start by pre-tensioning the chain by turning the handwheel. If the chain is already tensioned, the friction discs may be worn out or the overload protection may be slipping.

Overload Protection Devices

All Nova Plus ratchet lever hoists are equipped an overload protection device. Overload protection devices have been adjusted in factory between 1.3 to 1.8 times the rated load. When lifting or pulling a load which triggers the overload protection device, the lever will turn if a considerable force exerted on it, but the hook will not move, and you won't hear the clicking of the ratcheting mechanism.

Inspection

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



WARNING

If a ratchet puller fails any one of the following inspection items, do not use it and remove it from service immediately. Do not put it back into service until every issue has been resolved.

Failure to inspect the ratchet puller as instructed may result in damage, injury, or death.

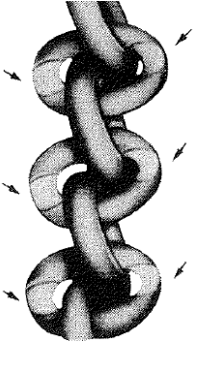
Contact Vulcan Hoist for spare parts. Do not use non-OEM parts.

These instructions are based on ASME B30.21. Also observe any other regulations that may apply.

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 no 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

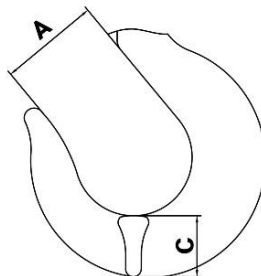
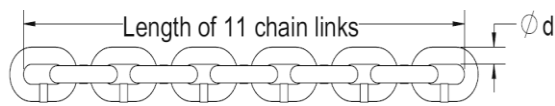
Daily Inspection

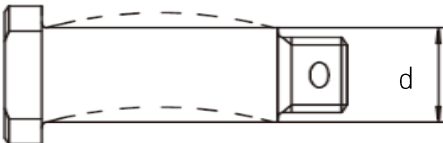
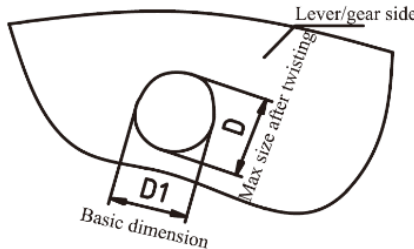
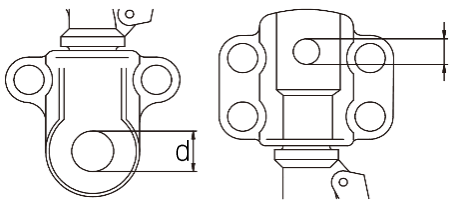
Part	Items to Inspect
Hooks and load chain	• The hooks and load chain must be free of deep nicks, gouges, bends, kinks or significant stretching
Function	• The handwheel and the lever must turn smoothly
Lever	• The lever must not be bent or damaged • The lever must not have been extended longer than its original length
Chain ring	• The chain ring or handle must be present in the last free chain link and in good condition
Overall	• There must not be any missing nut, bolt, or pin • There must not be any sign of major damage such as bumps or burns
Selector switch	• Must move smoothly and hold still in each of the three positions (in/up, neutral, out/down)
Tags, labels, nameplate	• Warning labels and tags must be present, securely fastened and legible • The nameplate and the ratchet puller's capacity tags must be securely fastened and legible
Hook latches	• Hook latches must be present on both hooks and close on their own
Hooks	• Both hooks must swivel freely

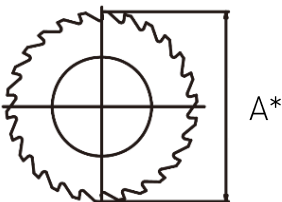
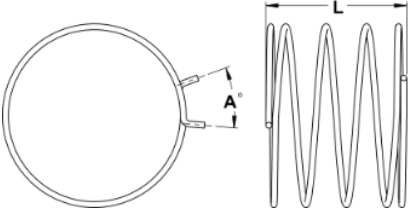
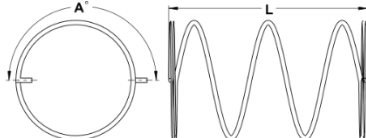
Part	Items to Inspect
Load chain	- The load chain must be lubricated. Apply oil if it appears dry - Make sure that the load chain is not twisted. Make sure that it will enter the ratchet puller straight in both directions - Eliminate kinks and twists. Do not use the ratchet puller if they keep reoccurring - Look for excessive wear. Do not use the ratchet puller even if a single chain link appears worn Normal  Twisted  Kinked  Worn out 

Periodic Inspection

A periodic inspection includes a daily inspection.

Item	Discard Criteria					
Hooks (lower and upper)						
Hook stretch and wear		Capacity [t]	A, mm [in]		C, mm [in]	
			Normal	Discard	Normal	Discard
		0.75	30.0 [1.181]	≥31.5 [1.240]	21.5 [0.846]	≤20.3 [0.799]
		1.5	36.0 [1.417]	≥37.8 [1.488]	28.8 [1.134]	≤27.3 [1.133]
		3.0	40.0 [1.575]	≥42.0 [1.653]	43.8 [1.724]	≤41.6 [1.637]
*These values are nominal. The A and C dimensions 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 Lower hooks have the same dimensions.						
Flaws and wear	• Must be free from significant rust, welds, weld splatter, deep nicks, and 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					
Load Chain						
Wear and stretch		Capacity [t]	d, mm [in]		Length, mm [in]	
			Normal	Discard	Normal	Discard
		0.75	6.0 [0.236]	≤5.7 [0.225]	198.0 [7.795]	≥203.5 [8.011]
		1.5	8.0 [0.315]	≤7.6 [0.300]	264.0 [10.394]	≥271.2 [10.677]
		3.0	10.0 [0.394]	≤9.5 [0.374]	330.0 [12.992]	≥338.8 [13.338]
Measure the pitch of 11 chain links at different places on the load chain. Discard the entire chain even if a single section has reached the discard criteria.						
Flaws	• Must be free from welds, weld splatter, nicks, gouges, and excessive wear					
Rust	• Only surface rust is acceptable. No pitting from rust, rust flakes or rust bubbles					
Lubrication	• Must be oiled					

Hook Pins						
Lower hook pin wear and deformation	 • Discard the hook pin if there is obvious bend or deformation • Screw thread must be in good condition	Capacity (t)	d, mm [in]			
			Standard	Discard		
		0.75	7.5 [0.295]	≤7.1 [0.280]		
		1.5	10.0 [0.394]	≤9.5 [0.374]		
		3.0	14.5 [0.571]	≤13.8 [0.544]		
Top hook pin wear and deformation	 • Discard the hook pin if there is obvious bend or deformation	Capacity (t)	Pin Diameter D, mm [in]			
			Discard			
		0.75	≤9.5 [0.374]			
		1.5	≤12.4 [0.488]			
		3.0	≤16.1 [0.633]			
Top hook pin holes in the side plates	 *Measure the holes' maximum diameters	Capacity (t)	D, mm [in]			
			Standard	Discard*		
		0.75	10.2 [0.401]	≥10.7 [0.421]		
		1.5	13.2 [0.520]	≥13.7 [0.539]		
		3.0	17.2 [0.677]	≥17.7 [0.696]		
Top and Lower hook pin holes	 *Measure the holes' maximum diameters	Capacity (t)	Top Hook Pin Hole Diameter, mm [in]		Lower Hook Pin Hole Diameter, mm [in]	
			Standard	Discard*	Standard	Discard*
		0.75	12.5 [0.492]	≥13.1 [0.515]	7.5 [0.295]	≥8.0 [0.314]
		1.5	14.5 [0.571]	≥15.2 [0.598]	10.5 [0.413]	≥11.0 [0.433]
		3.0	18.0 [0.709]	≥18.9 [0.744]	15.0 [0.591]	≥15.7 [0.618]
Braking System						
Rust	• All parts should be rust-free					
Pawls	• Pawls must have no surface wear • Pawl springs must push the pawl into the ratchet					
Friction disc	Capacity (t)	Friction Discs and Ratchet Thickness, mm [in]		Note that the two friction discs and the ratchet are bonded into a single part. • The friction disc must have the same thickness throughout. • Its surfaces must be clean, flat and free from cracks and gouges. • The friction discs must not be contaminated by grease or oil.		
		Standard	Discard			
	0.75	7.0 [0.256]	≤6.5 [0.256]			
	1.5	9.0 [0.354]	≤8.5 [0.335]			
	3.0	8.0 [0.315]	≤7.5 [0.296]			

Ratchet	*Measure the ratchet's maximum diameter 	Capacity (t)	External Diameter A, mm [in]	
			Standard	Discard
		0.75	74.5 [2.93]	≤71.5 [2.82]
		1.5	85 [3.35]	≤83 [3.27]
		3.0	94 [3.70]	≤91 [3.59]
Handwheel compression spring		Capacity (t)	Length L, mm [in]	Angle A
			Discard	Discard
		0.75, 1.5	≤31.5 [1.240]	≥15°
		3.0	≤34.2 [1.346]	≥40°
		Pulling System and Body		
Load Chain Sprocket	• Must not show significant wear or deformation			
Gears	• Must not show significant wear or deformation especially on teeth and bearing surface • Must be greased			
Gearcase	• Must not show deformation. Must not show significant wear on bearing surface			
Side plates	• Must be straight. See Hook Pins for the side plates' top hook pin hole dimensions			
Lever Handle System				
Ratchet spring		Capacity (t)	Length L, mm [in]	Angle A
			Discard	Discard
		0.75, 1.5	≤59.4 [2.338]	≥165°
		3.0	≤63.9 [2.515]	≥165°
Function				
Pulling and slackening	• No difficulty, abnormality, roughness in pulling and slackening with loads			
Brake	• No braking resistance when lifting or pulling. • Loads must not slip down slowly when suspended. • Loads must not slip after the lever is jerked suddenly in the lowering direction.			

Maintenance



WARNING

After performing maintenance, test the ratchet puller and perform a daily inspection.

NEVER perform maintenance while the ratchet puller is being used or supporting a load.

NEVER grease or oil the braking mechanism.

Failure to perform maintenance as instructed may result in damage, 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 ratchet puller 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 ratchet puller in storage to hold or support a load.

Perform a periodic inspection before using a ratchet puller which is coming out of storage.

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

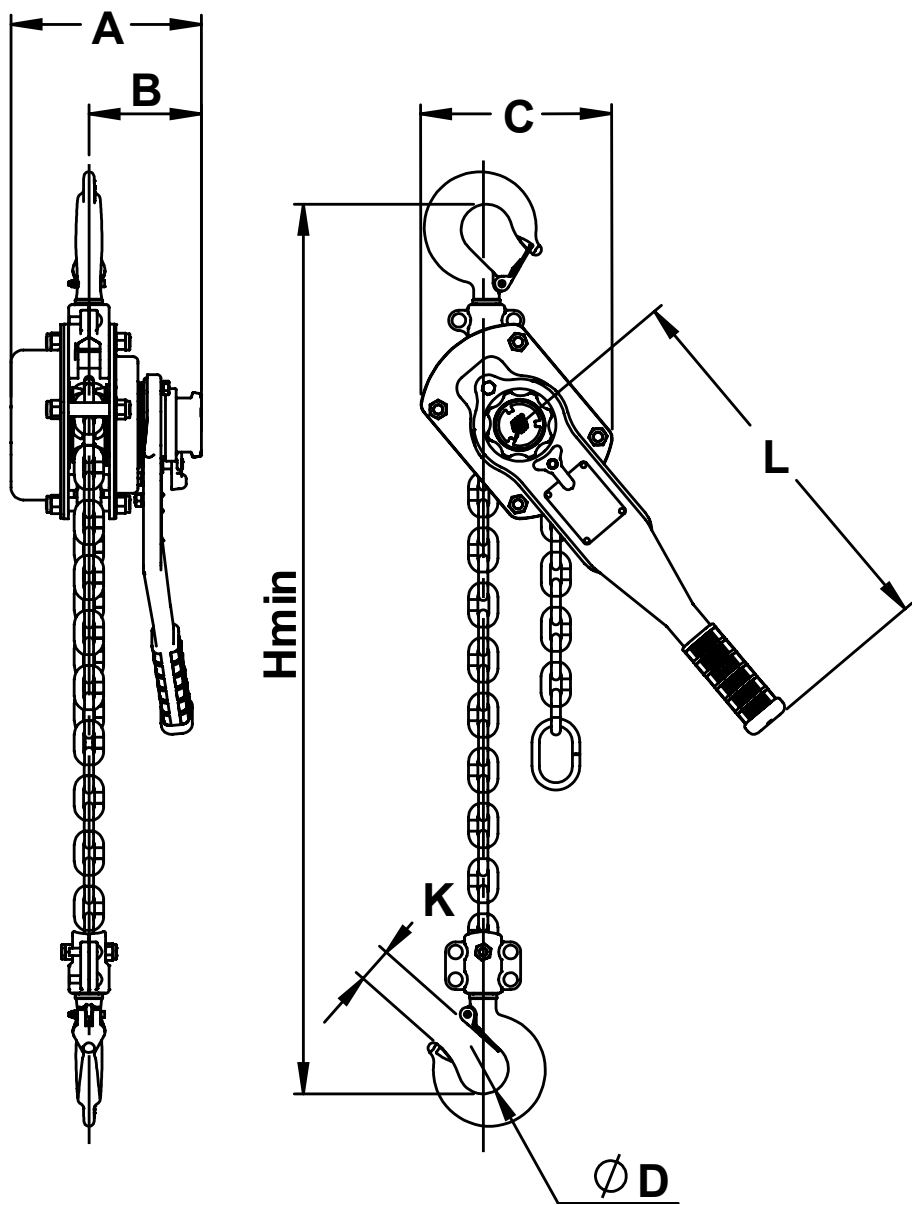
1. Outdoor ratchet pullers should be sheltered from rain and snow or brought inside when not in use.
2. If the ratchet puller is exposed to salty air, extreme temperature, high humidity environments or exposure to rain or snow, increase the inspection and maintenance frequency.

Warranty

Your Nova Plus ratchet puller is guaranteed against defects in materials and workmanship **for 2 years** from the date of purchase if all the following conditions are met:

1. Any part replacement or modification of the Nova Plus ratchet puller **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. For major problems, the Nova Plus ratchet puller must be returned prepaid to Vulcan Hoist for inspection and repair. If the repairs are under warranty, the ratchet puller will be returned prepaid.

Technical Specifications



Capacity, t [lb]	Force to lift max load, kg [lbf]	Load chain $\varnothing$ x pitch, mm [in]	Net weight*, kg [lb]	Extra weight/lift, kg/m [lb/ft]	Dimensions, mm [in]						
					A	B	C	H min	L	K**	D
0.75 [1763]	15 [33.1]	6 x 18 [0.236 x 0.709]	7.1 [15.6]	0.8 [0.54]	160 [6.30]	100 [3.94]	133 [5.24]	320 [12.60]	250 [9.84]	26 [1.024]	40 [1.575]
1.5 [3306]	30 [66.1]	8 x 24 [0.315 x 0.945]	10.8 [23.8]	1.4 [0.94]	182 [7.17]	109 [4.29]	157 [6.18]	380 [14.96]	270 [10.3]	29 [1.142]	45 [1.772]
3.0 [6613]	31 [68.3]	10 x 30 [0.394 x 1.181]	23.3 [51.4]	2.2 [1.48]	208 [8.17]	122 [4.80]	210 [8.27]	490 [19.29]	430 [16.93]	39 [1.535]	55 [2.165]

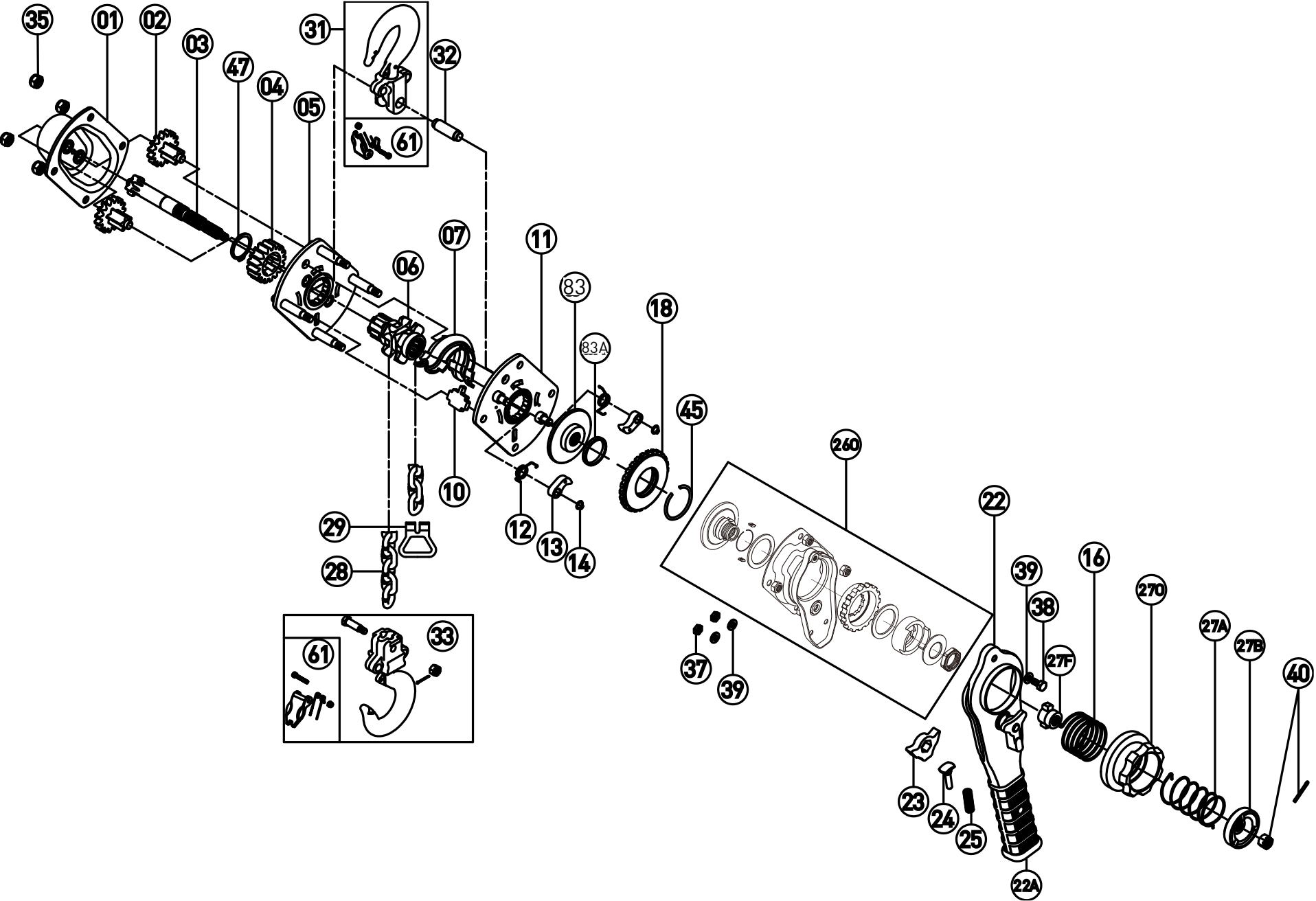
*For a ratchet puller with 5' of lift or pull distance.

**Here, K takes the safety latch into account.

Troubleshooting

Symptom	Cause	Solution
The puller will not pull and the ratchet doesn't click	The pawl doesn't engage the ratchet due to foreign materials or corrosion	Clean foreign materials and corrosion. Lubricate the pawl's pivot
	The pawl spring is damaged or disengaged	Replace the pawl spring. Assemble it properly
	The ratchet spring is loose or damaged	Tighten or replace
	The overload protection mechanism is engaged	Pull or lift loads below the ratchet puller's capacity. If overload protection is engaged with loads within the capacity, it must be replaced or recalibrated by a qualified person.
	The load is too light	Start by tensioning the chain by using the handwheel
The load slips away from the ratchet puller	The brake is slipping due to lubricant	Replace the friction disc. Clean adjacent parts.
	Worn out friction disc due to overloading, misuse or long-term wear	Replace. See the Periodic Inspection section
	Foreign materials are disrupting the ratchet puller's mechanisms	Clean
The hoist will not lower the load	The brake has closed due to shock loading or being loaded for an extended period of time.	Place the selector in the down position. Pull the lever handle quickly and with force. This should re-open the brake.
The chain cannot be slackened under load	The brake is stuck closed, maybe due to being loaded too long, shock loaded, or extensively corroded	Place the selector in out/down and pull hard on the lever. If this does not reset the brake, unload the ratchet puller and replace the braking system.
The lever is tight when pulling, even without a load, may be squeaking	Worn gear teeth or worn bearing surfaces	Replace worn parts and grease regularly

Parts



Parts list

No.	English Description	No.	English Description
01	Gear Case Assembly	27A	Handwheel Spring
02	Gears	27B	Handwheel Cover
03	Drive Shaft	27F	Adjusting Cam
04	Splined Gear	27O	Handwheel
05	Gear Side Plate Assy.	28	Load Chain
06	Load Sheave	29	End Ring Stopper
07	Chain Guide	31	Top Hook Assembly
10	Chain Stripper	32	Top Hook Load Pin
11	Brake Side Plate Assy.	33	Lower Hook Assembly
12	Pawl Spring	35	Lock Nut
13	Pawl	37	Hex Nut
14	Pawl Snap Ring	38	Hex Bolt
16	Free Chaining Spring	39	Lock Washer
18	Ratchet Disc	40	Crown Nut and Cotter Pin
22	Lever Handle	45	Brake Seat Snap Ring
23	Direction Selector	47	Drive Shaft Snap Ring
24	Selector Shaft Spring	61	Safety Latch Assembly
25	Ratchet Selector Spring	83	Brake Seat
26O	Overload Protection Assy.	83A	Brake Seat Bushing

Part codes

Capacity (t)	0.75	1.5	3
xx	3/4	1.5	3

The part number structure is:

BLPNPRxx-#yy

Where “yy” is the code appearing in the exploded view drawings and “xx” is the capacity from the table above.

For example, the rubber grip for the 1.5t model is BLPNPR1.5-#22A