

User Instructions & Safety Manual



Chain Block

Rated Capacities
0.5 through to 30 tonnes

Note: Operator must read and fully understand the operating instructions before using this product.

Products supplied comply with the essential health & safety requirements of the Machinery Directive 2006/42/EC, the Supply of Machinery (Safety) Regulations 2008 and the Health & Safety at Work etc Act 1974 section 6.

George Taylor & Company maintain a policy of progressive development of products and reserve the right to alter, without notice, the specifications shown within this manual.



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Safety Information



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SIGNAL WORDS

Note use of the following signal words **DANGER**, **WARNING & CAUTION** with safety messages. The appropriate signal word for each has been selected using the following guidelines:

DANGER

Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. The signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes cannot be guarded.

WARNING

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. Every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator can avoid many accidents by observing the following precautions in this manual. To avoid personal injury, study the following precautions and insist those working with you, or you yourself, follow them.

Replace any Caution, Warning, Danger or Instruction safety label that is not readable or is missing.

Do not attempt to operate this equipment under the influence of alcohol or drugs. Review safety instructions with all users.

Operator should be a competent person.

DO NOT ALLOW PERSONS TO OPERATE OR ASSEMBLE THIS UNIT UNTIL THEY HAVE DEVELOPED A THOROUGH UNDERSTANDING OF SAFETY PRECAUTIONS AND HOW IT WORKS.

Never exceed the limit of a life. If it's ability to do a job, or to do so safely is in question - **DON'T TRY IT.**

General Information



This manual contains important Information to help you properly install, operate and maintain your Chain Block for maximum performance, economy and safety. Please study its contents thoroughly before putting your Chain Block into operation. By practicing correct operating procedures and by carrying out the recommended preventative maintenance suggestions, you will be assured of long, dependable and safe service. After you have completely familiarised yourself with the contents of this manual, we recommend that you carefully file it for future reference. The information herein is directed to the proper use, care and maintenance of the Chain Block and does not comprise a handbook on the broad subject of rigging. Rigging can be defined as the process of lifting and moving heavy loads using hoists and other mechanical equipment. Skill acquired through specialised experience and study is essential to safe rigging operations.

Unpacking

After opening the carton, the Chain Block should be carefully inspected for damage which may have occurred during shipment or handling. Check the Chain Block frame for dents or cracks and inspect the load chain for nicks and gouges. If shipping damage has occurred, contact your local GT branch.

DANGER

Operating a unit with obvious external damage may cause load to drop and that may result in personal injury and/or property damage.

DANGER

To Avoid Injury

Carefully check unit for external damage prior to installation.

Stop operating in the lifting direction when the hook block contacts the hoist frame and/or hanger, as noted by sudden increase in hand chain pull or tipping of the hook block.

Safety Precautions



WARNING

Choose the Right Chain Block for the job

Choose a Chain Block with the capacity for the job. Know the capacities of your loads, then match them. The application, the size and type of load, the attachments to be used and the period of use must also be taken into consideration in selecting the right Chain Block for the job. Remember the Chain Block was designed to ease our burden, and carelessness not only endangers the operator, but in many cases, a valuable load.

Inspect

All Chain Blocks should be visually inspected before use, in addition to regular periodic maintenance inspections. Inspect Chain block for operation warning notices and legibility. Deficiencies should be noted and brought to the attention of supervisors. Be sure defective Chain Blocks are tagged and taken out of service until repairs are made. Under no circumstances should you operate a malfunctioning Chain Block. Check for gouged, twisted, distorted links and foreign material. Do not operate Chain Blocks with twisted, kinked or damaged chain links. Load chain should be properly lubricated. Hooks that are bent, worn or have openings which are enlarged beyond normal throat opening should not be used. If latch does not engage in throat opening of hook, the Chain Block should be taken out of service. Chains should be checked for deposits of foreign material, which may be carried into the Chain Block mechanism. Check brake for evidence of slippage under load. Each GT Viper Chain Block is built in accordance with the specifications contained herein and at time of manufacture was tested to our interpretation of applicable sections of the European standard BS EN 13157.



This symbol points out important safety instructions which if not followed could endanger the personal safety and/or property of yourself and others. Read and follow all instructions in this manual and any provided with the equipment before attempting to operate your GT Viper Chain Block.

Consult your local GT branch for any usage of GT Viper Chain Blocks that does not involve working in a direct line of pull.

As side loading can damage chain or roller guides and could result in injury and/or property damage. Using Chain Blocks inverted is outside the design parameters and should not be done.

Do's & Do Not's

Safe Operation of Chain Blocks

The following are Do's and Do Not's for safe operation of overhead Chain Blocks. Taking precedence over any specific rule listed here, however, is the most important rule of all, Use Common Sense. A few minutes spent reading these rules can make an operator aware of dangerous practices to avoid and precautions to take for his/her own safety and the safety of others. Frequent examination and periodic inspections of the equipment as well as a conscientious observance of safety rules may save lives as well as time and money.

Safety Precautions



WARNING

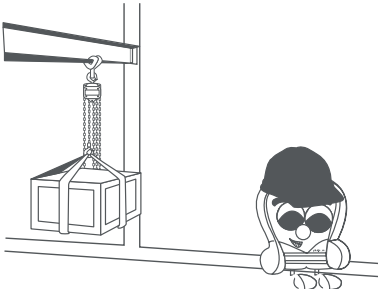
To Avoid Injury

1. **DO** be familiar with Chain Block operating controls, procedures and warnings.
2. **DO** make sure the Chain Block suspension hook is securely attached to a suitable support.
3. **DO** maintain a firm footing or be otherwise secured when operating a Chain Block.
4. **DO** make sure that load slings or other approved sling attachments are properly sized and seated in the hook saddle.
5. **DO** make sure that the hook latch, is closed and not supporting any part of the load.
6. **DO** make sure that the load is free to move and will clear all obstructions.
7. **DO** take up slack chain carefully, check load balance, lift a few centimetres and check load holding action before continuing.
8. **DO** make sure that all persons stay clear of the suspended load.
9. **DO** avoid swinging of load or load hook.
10. **DO** protect load chain from weld spatter or other damaging contaminants.
11. **DO** promptly report any malfunction, unusual performance, or damage of the Chain Block.
12. **DO** inspect Chain Block regularly, replace damaged or worn parts and keep appropriate records of maintenance.
13. **DO** use GT Viper genuine parts when repairing a Chain Block.
14. **DO** apply lubricant to the load chain as recommended in this manual.
15. **DO** replace damaged or malfunctioning hook latch.
16. **DO NOT** use a hook without a latch.
17. **DO NOT** lift more than rated load.
18. **DO NOT** use damaged Chain Block or Chain Block that is not working correctly.
19. **DO NOT** use the Chain Block with twisted, kinked, damaged or worn chain.
20. **DO NOT** lift a load unless chain is properly seated in chain wheel(s).
21. **DO NOT** use load chain as a sling or wrap chain around load.
22. **DO NOT** lift a load if any binding prevents equal loading on all supporting chains.
23. **DO NOT** apply the load to the tip of the hook.
24. **DO NOT** operate unless load is centred under Chain Block.
25. **DO NOT** operate Chain Block with other than manual power.
26. **DO NOT** permit more than one operator to pull on a single hand chain at one time.
27. **DO NOT** allow your attention to be diverted from operating the Chain Block.
28. **DO NOT** operate the Chain Block beyond limits of load chain travel.
29. **DO NOT** use Chain Block to lift, support or transport people.
30. **DO NOT** lift loads over people.
31. **DO NOT** allow sharp contact between two Chain Blocks or between Chain Block and obstructions.
32. **DO NOT** allow the chain or hook to be used as a earth for welding.
33. **DO NOT** allow the chain or hook to be touched by a live welding electrode.
34. **DO NOT** remove or obscure the warnings on the Chain Block.
35. **DO NOT** adjust or repair a Chain Block unless qualified to perform Chain Block maintenance.
36. **DO NOT** attempt to lengthen the load chain or repair damaged load chain.
37. **DO NOT** use a Chain Block inverted.

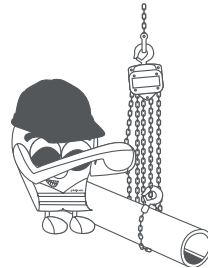
Important Safety Warnings



DO NOT leave a load suspended on the Chain Block unattended.



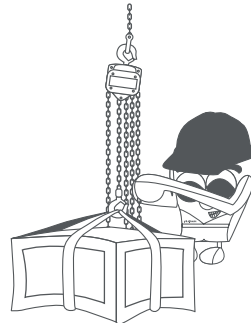
DO NOT wrap the load chain around the load and hook onto itself as a choker chain or bring the load in contact with the Chain Block.



DO NOT heat treat and **DO NOT** weld any part of the Chain Block, especially the load chain.



DO NOT attempt to lift load beyond the rated capacity.

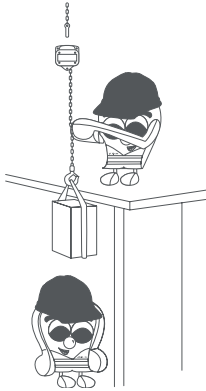


DO NOT hold the load chain in a loaded state while operating the Chain Block as serious injury may occur if the brake did not operate properly.

Important Safety Warnings



DO NOT use the Chain Block for lifting or moving people, or lifting loads over people.



DO NOT run the hook assembly into the frame of the block.



DO NOT shock load Chain Block, chain or hook.



DO NOT operate the Chain Block unless it is rigged to pull in a straight line from hook to hook, and the frame is allowed to freely swivel on the upper hook.



Safety Procedures



Safety Procedures

1. The Chain Block must always be rigged to lift in a straight line from hook to hook. The Chain Block must always be free to swivel on the upper hook. Under no conditions should the Chain Block frame be allowed to bear on any support when in use as this would cause bending of the hook or frame and damage the unit.
2. When preparing to lift or move a load, be sure that the attachments to both hooks are firmly seated in the saddles of the hooks. Avoid off centre loading of any kind especially loading on the tip of the hook. Also observe that the chain hangs straight (without twists) from Chain Block to lower hook.
3. When lifting, raise the load only enough to clear the floor or support and check to be sure brake will hold the load and that attachments to the load are firmly seated. Continue the lift only after you are assured the load is free of all obstructions.
4. Do not load beyond the rated capacity of the Chain Block. Rated capacity can be achieved with the following hand chain pulls. Since these hand chain pulls can easily be applied by one person, under no circumstances should more than one person operate the hoist hand chain. Overloading can cause immediate failure of some load carrying parts or result in damage causing failure at less than the rated capacity.

Chain Block Rated Load (t)	Effort req to lift Rated Load (N)
0.5	210
1	260
1.5	265
2	272
3	280
5	358
10	370
20	370x2
30	370x2

WARNING

Exceeding the rated capacity of the Chain Block may cause load to fall.

To Avoid Injury

Do not exceed the hand chain pulls specified in safety procedure 4.

5. Do not wrap load chain around the load or bring the load in contact with the Chain Block. Doing this will result in the loss of the swivel effect of the hook which could mean twisted chain and jammed liftwheel. The chain could be damaged at the hook.
6. Stand clear of all loads and avoid moving load over the heads of other personnel. Warn personnel of your intention to move a load in their area.
7. Do not leave the load in the air unattended.
8. Do not lower the hook to a point where the chain becomes taut between the liftwheel and loose end pin.
9. Do not run the lower hook block into the Chain Block frame. Frame and/or chain guide damage may result.
10. The Chain Block has been designed for manual operation only.

WARNING

Special Note for User

Twisting of Chain

3 tonne Chain Blocks and above have multiple falls of load chain. **THE LOAD CHAIN MUST BE INSPECTED FOR TWISTS PRIOR TO EACH LIFT.**

If the Chain Block bottom hook has looped through the multi fall of load chain this can create a twist in the load chain that can damage the Chain Block and cause injury.

Inspection

To maintain continuous and satisfactory operation, a regular inspection procedure must be initiated so that worn or damaged parts can be replaced before they become unsafe. The intervals of inspection must be determined by the individual application and are based upon the type of service to which the Chain Block will be subjected. The inspection of Chain Blocks is divided into two general classifications designated as frequent and periodic.

Frequent Inspections

These inspections are usually visual examinations by the operator or other designated personnel. The frequent inspections are to be performed daily or monthly and shall include the following items:

- a. Braking mechanism for evidence of slippage - Daily.
- b. Load chain for lubricant, wear, damaged links or foreign material - Daily.
- c. Hooks for damage, cracks, twists, latch engagement and latch operation - Monthly.

Any deficiencies noted are to be corrected before the Chain Block is returned to service.

Periodic Inspections

These are visual inspections by an appointed person who makes records of apparent external conditions to provide the basis for a continuing evaluation. For normal service, the periodic inspections are to be performed yearly and for heavy service, the periodic inspections are to be performed semi-annually. Due to the construction of the Chain Block, it will be necessary to partially disassemble the unit to perform the periodic inspections.

The periodic inspections are to include those items listed under frequent inspections as well as the following:

- a. Chain for excessive wear or stretch.
- b. Worn, cracked or distorted parts such as hook blocks, chain guide, stripper, loose end pin, shafts, gears, hook collar and bearings.
- c. Inspect for wear on the tip of the pawl, teeth of the ratchet and pockets of the liftwheel and handwheel.
- d. Loose or missing bolts, nuts, pins or rivets.
- e. Inspect brake components for worn, glazed or contaminated friction discs and scoring of the handwheel hub, ratchet and friction hubs.
- f. Corroded, stretched or broken pawl spring.
- g. Free movement of the pawl on the pawl stud. Also, apply a thin coat of lubricant to the pawl stud before reassembling the unit.
- h. Hooks - dye penetrant, magnetic particle or other suitable crack detecting inspections should be performed at least once a year, if external conditions indicate there has been unusual usage.

Any deficiencies noted are to be corrected before the Chain Block is returned to service. Also, the external conditions may show the need for a detailed inspection which, in turn, may require the use of non destructive-type testing. Any parts that are deemed unserviceable are to be replaced with new parts before the unit is returned to service. It is very important that the unserviceable parts be destroyed to prevent possible future use as a repair item and properly disposed of.

CAUTION

NOTE: Only qualified personnel to perform Chain Block maintenance

Maintenance



To determine if load chain should be continued in service, check wear, pitch and gauge lengths. Chain worn beyond length indicated, nicked, gouged or twisted should be replaced before returning Chain Block to service.

Chain should be clean, free of twists and pulled taut before measuring. For gauge limits please contact GT for more information.

Chain Block Rated Load (t)	Chain Stock Diameter (mm)
0.5	6
1	6
1.5	7.1
2	8
3	7.1
5	10
10	10
20	10
30	10
Hand Chain	5

Note that worn chain can be an indication of worn Chain Block components. For this reason, the Chain Block's chain guide roller and lift wheel should be examined for wear and replaced as necessary when replacing worn chain. Also load chains are specially heat treated and hardened and should never be repaired.

WARNING

Using other than GT supplied load chain may cause the chain to jam in the Chain Block and/or allow the chain to break and the load to drop.

To Avoid Injury

Due to the size requirements and physical properties, use only GT Grade 80(T) Load Chain in GT Viper Chain Blocks.

Important: Do not use replaced chain for other purposes such as lifting or pulling. Load chain may break suddenly without visual deformation. For this reason, cut replaced chain into short lengths to prevent use after disposal. Before returning chain to service or after replacing a load chain, lubricate liberally with chain oil or equal lubricant. Remove excess lubricant from the chain by wiping with a cloth.

Hand Chain

Hand Chain should be cleaned, inspected and gauged in the same manner as load chain. As received from the factory, the hand chain may contain an unwelded link. This link can be placed in a vice and twisted open to facilitate changing chain length. Please note that opening and closing of the connecting link more than twice is not recommended. Also, connecting links must not be made by cutting the weld side of a standard hand chain link. Hand chain should be assembled to hand wheel free from twists with weld on vertical link facing inwards towards hand wheel and weld on horizontal link facing towards the hand wheel side plate. Care must be taken to ensure that there is no twist in the hand chain loop.

Lubrication

Lubricate load chain with a light coat of chain oil or equal lubricant. Be sure the lubricant reaches the bearing surfaces between the links. Remove excess oil from the chain.

WARNING

Used motor oil contain unknown carcinogenic materials.

To Avoid Health Problems

Never use used motor oils as a chain lubricant. Only use chain oil as a lubricant on the load chain. The Chain Block normally requires no additional lubricant except for periodically lubricating the load chain as indicated or when the unit is disassembled for periodic inspections, cleaning or repairs. The brake is designed to operate dry. Do not use any grease or lubricant on the braking surfaces. When lubricating parts adjacent to the brake, do not use an excessive amount of lubricant which could seep onto the brake surface.

WARNING

Using any grease or lubricant on the braking surfaces will cause brake slippage and loss of load control which may result in injury and/or property damage.

To Avoid Injury

Do not use any grease or lubricant on the braking surfaces. The brake is designed to operate dry. When the Chain Block is disassembled for periodic inspections, check the pawl for free movement and apply a light coat of WD-40 or similar lubricant to the pawl stud. When the Chain Block is disassembled for cleaning or repairs, the following locations should be lubricated using approximately 29.5ml per Chain Block of suitable grease or equivalent:

- Gears
- Liftwheel Rollers
- Gear Bearing Rollers
- Chain Guide and Dead End Pin

Note: To assure extra long life and top performance, be sure to lubricate the various parts of the Chain Block using the lubricant specified above.

Exterior Finish

The exterior surfaces of the Chain Blocks have a durable, scratch resistant finish. Normally, the exterior surfaces can be cleaned by wiping with a cloth.

Preventative Maintenance

In addition to the periodic inspection procedure, a preventative maintenance program should be established to prolong the useful life of the Chain Block and maintain its dependability and continued safe use. The program should include the periodic inspections with particular attention being paid to the lubrication of various components using the recommended lubricants.

Used motor oil contain unknown carcinogenic materials.

Testing

Before using, all altered, repaired or used Chain Blocks that have not been operated for the previous 12 months, should be tested by the user for proper operation. First test the unit without a load and then with a light load of 20kg to be sure that the Chain Block operates properly and that the brake holds the load when the hand chain is released. Next test with a load of 100% rated capacity. In addition, Chain Blocks in which load sustaining parts have been replaced should be tested with 100% of rated capacity by or under the direction of an appointed person and a written report prepared for record purposes.

WARNING

To Avoid Injury

Use only GT Viper supplied replacement parts. Parts may look alike, however GT Viper parts are made of specific materials or processed to achieve specific properties. Any repairs to this chain block must be undertaken by a suitably qualified and competent person. Following any repairs, this Chain Block must be tested in line with the guidelines set out in the current BS EN 13157 standard prior to its reintroduction to service.

Maintenance Check List

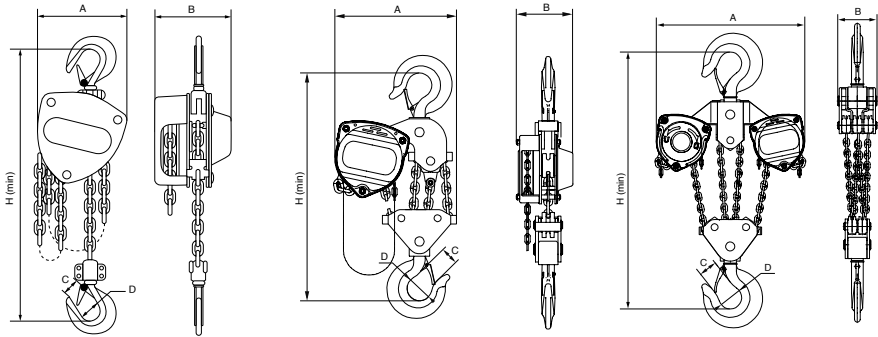


Points of Inspection	Type of Inspections	Outcome
Hook Top/Bottom		
Deformation of hook	visual	There should be no deformation of the hook. Safety catch should close against the tip of the hook securely.
Damage to the hook	visual	There should be no crack or serious damage.
Bend in the neck of hook	visual	Hook should hang square to lifting unit or top hook or to side plates (bottom block)
Suspension pin	visual	Should not be bent, cracked or worn
Side plates and suspension plates	visual	There should be no cracks, damage or wear
Rivets, bolts and nuts	visual	All fasteners should be tight
Safety catch	visual	Should close properly
Chain	visual	Should be properly lubricated and free from bends, nicks or stretch, rust and dust
Chain guide rollers	visual	Should rotate freely and keep chain in the pockets of the chain wheel(s)
Functions		
Lifting and Lowering	Lift and lower a load as per minimum load chart	Hoist should operate smoothly and easily Pawl should click during lifting
Braking	Lift and lower the full rated capacity	Lifting and lowering operations should be smooth and without any of the following defects <ol style="list-style-type: none"> 1. Load falls if chain is released 2. Load falls while lowering 3. Load slips



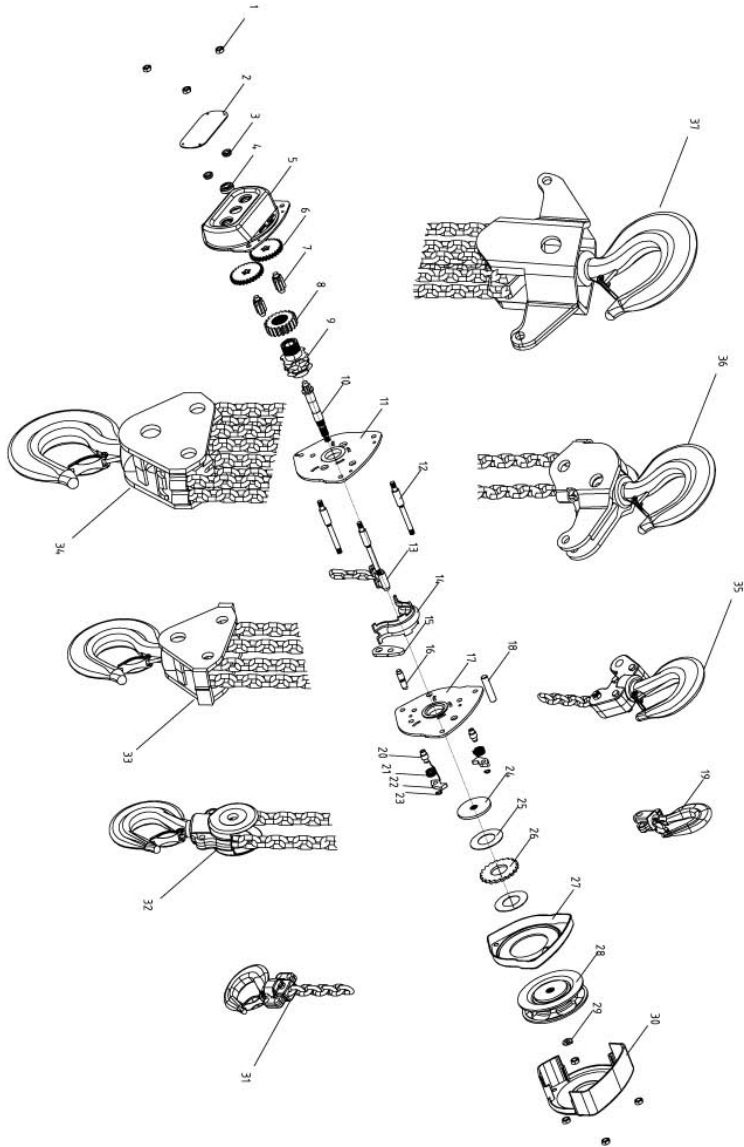
Problem	Cause	Solution
1. Chain is jammed	Load is not being pulled in a vertical direction Pull is at an angle greater than 60° Swivel Hook has ceased operating	Line load to be positioned vertically Reduce angle of pull a) Unload and de-swivel b) Replace hook assembly
2. Block Seized	Wear and tear Poor maintenance and inspection Poor storage and handling Block is overloaded	Replace block Refer to manual for maintenance and inspection details Always store unit in a dry and clean area Load block to recommended capacity only
3. Slippage of load	Brake mechanism worn	Return to supplier for repair and testing
4. Block not braking	Brake mechanism worn	Return to supplier for repair and testing

Specifications & Dimensions



Rated Capacity (t)		0.5	1	1.5	2	3	5	10	20	30
Running Test Load (kN)		6.3	12.5	20	25	40	62.5	125	250	375
Standard Lift (m)		3								
Effort Req to Lift Rated Load (N)		210	260	265	272	320	358	370	370x2	370x2
No. of Load Chain Falls		1	1	1	1	2	2	4	8	12
Load Chain Dia (mm)		6	6	7.1	8	7.1	10	10	10	10
Dimensions (mm)	A	136	156	182	198	214	266	365	630	670
	B	126.5	143	148	152	156	181	181	192	330
	C	25.5	28	38	38	42	50	57	84	84
	D	36	40	52	52	60	68	85	106	106
	H	266	324	392	407	465	636	798	890	1000
Net Weight (kg)		7	10.5	17	18	21	42	72.6	162	228
Extra weight per mtr extra lift (kg)		0.77	0.77	1.07	1.36	2.14	4.3	8.6	17.2	25.8

Spare Parts Diagram



Spare Parts List



Fig. No.	Description
1.	Lock Nut
2.	Name Plate
3.	Retainer
4.	Bearing for Splined Gear
5.	Gear Cover
6.	2nd Gear
7.	3rd Gear
8.	1st Gear
9.	Load Sprocket
10.	Pinion Shaft
11.	Gear Side Plate
12.	Support Pin
13.	End Anchor
14.	Chain Guide
15.	Chain Stripper
16.	Chain Stripper Pin
17.	Hand Chain Side Plate
18.	Hook Pin
19.	Top Hook Assembly

Fig. No.	Description
20.	Pawl Pin
21.	Pawl Spring
22.	Brake Pawl
23.	Circlip
24.	Brake Hub
25.	Brake Disc
26.	Ratchet Gear
27.	Brake Cover
28.	Hand Chain Sheave
29.	Retainer
30.	Hand Chain Cover
31.	Bottom Hook Assembly
32.	Bottom Hook Assembly (3-5t)
33.	Bottom Hook Assembly (10t)
34.	Bottom Hook Assembly (20t)
35.	Top Hook Assembly (3-5t)
36.	Top Hook Assembly (10t)
37.	Top Hook Assembly (20t)



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