Instruction Manual and Safety Instructions for Owners (Operators)

Manually operated chain hoist

Elephant chain hoist model C21

Rated load: 0.5t to 5t (1,102 to 11,023lbs)

Model No. :

Serial Number :

Date of initial use :

※The above information needs to be filled in by the purchaser.

⚠WARNING

Owners (operators) are required to completely understand the installation, operation, maintenance and inspection of the equipment described within this instruction manual prior to use. Failure to understand or comply with the contents of this Manual may result in property damage, serious injury or death.

- Thank you very much for your purchase of Elephant products.
- Before using Elephant manually operated chain hoists, please read this instruction manual carefully to ensure that you fully understand the product and its proper use.
- Please store this instruction manual securely as it is required for maintenance, inspection, disassembly and assembly of the product.

ELEPHANT 39 **ELEPHANT CHAIN BLOCK CO.,LTD.**

Index

1. Safety Information and Warnings

1.1 Terminology

This Instruction Manual contains safety information necessary for owners responsible for the installation, operation, maintenance and inspection of this Product, and for operators actually engaged in the operation of the Product. In order to fully comprehend the structure and operation of this Product, please make sure that you understand the contents of this Instruction Manual.

The safety information provided within this Instruction Manual includes circumstances possibly leading to hazardous situations. The four terms "Danger, Warning, Caution, and Notice" are used to clearly indicate the seriousness of hazardous conditions.

⚠ **DANGER**	Danger indicates an imminently hazardous situation which, if not avoided, may result in fatalities or serious injuries.
⚠ **WARNING**	Warning indicates a potentially hazardous situation which, if not avoided, may result in fatalities or serious injuries.
⚠ **CAUTION**	Caution indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injuries.
NOTICE	Notices cover implementation procedures which do not require caution against personal injury.

⚠ DANGER

- Never perform any operation that could result in a [DANGER] condition as described in the Instruction Manual.

⚠ WARNING

- Failure to comprehend and comply with the restrictions described within this Instruction Manual may result in fatalities, severe injuries, or property damage.
- Owners and operators of this Equipment are prohibited from using the Equipment for any purpose other than that for which it was originally intended, or make any modifications that may impair the safety of this Equipment.
- This Equipment must not be used in a corrosive atmosphere such as acidic, alkaline, steam, high temperature, toxic gas, salt water, etc.
- This Equipment must not be used in a condition where it is repeatedly subjected to dynamic loads due to connecting it to other powered cranes or such load application devices.
- This Equipment shall not be used for transporting, supporting, lifting, or lowering people, or for transporting, supporting, lifting, or lowering loads above people. This Equipment is not intended for transporting people in any way.

⚠ CAUTION

- Owners and operators of this Equipment are required to record the model, serial number, and initial date of use on the front cover of this Manual prior to using the Equipment.
- This Manual is intended to provide safety information on installation, operation, maintenance, and inspection of the Equipment under normal operating conditions.
- If this Equipment is used in combination with other equipment, the supplier of the equipment combination concerned is responsible for ensuring compliance with applicable industrial standards, federal, state, and local laws and regulations of the country.
- Repair and maintenance of this Equipment shall be conducted only with parts certified by ELEPHANT CHAIN BLOCK CO., LTD.

NOTICE

- Owners and operators of this Equipment are responsible for ensuring that all personnel engaged in the installation, operation, inspection, test, and servicing of this Equipment sufficiently comprehend the contents of this Manual, the applicable portions of ANSI/ASME B30.16 "Overhead Underhung and Stationary Hoists" standards, and OSHA regulations.

  In addition, the owner/operator must comply with ANSI/ASME B30 series when using this equipment as an overhead crane or monorail.
- Owners and operators are responsible for the installation, operation, inspection, testing, and maintenance of this Equipment in accordance with the provisions of the ANSI/ASME B 30.16 "Overhead Underhung and Stationary Hoists" standards and applicable OSHA regulations laws and regulations of the country.
- Owners and operators should contact the dealer of this Equipment if any item in this Manual is unclear, or in case any additional information is necessary. Do not install, operate, inspect, test, or maintain this Equipment unless all uncertain articles are clarified accordingly.
- Owners and operators should designate a periodic inspection schedule for this Equipment in accordance with the requirements of ANSI/ASME B30.16 "Overhead Underhung and Stationary Hoists," maintaining records of the inspections conducted.

1.2 Restrictions on the use of this Equipment are as follows :

(1)Use the chain hoist for vertical lifting and lowering of loads manually. Do not use power to lift or lower the load. Horizontal movement is possible in combination with a trolley.

(2)Do not use this Equipment to transport humans.

(3)Do not incorporate the Product as part of facility equipment or machinery.

(4)The Equipment is to be used within a temperature range of −40°C to +60°C (with humidity of 100%RH or less).

(5)Never use this Equipment in locations constantly subjected to wind, rain, or waves, or in locations susceptible to salt damage, acid, alkali, etc., as this may cause damage to the Equipment and load chains.

1.3 Warning Tags, Labels

The warning tag indicated in Figure 1 below is attached to this Equipment upon shipment from the factory. Owners and operators of this Equipment are required to comprehend and comply with all articles provided on warning tags and labels.

If tags are not attached on the hand chain of the Equipment, procure tags from your dealer and attach them accordingly. Read and follow all warnings attached to this Equipment. (Tag is not shown actual size.)

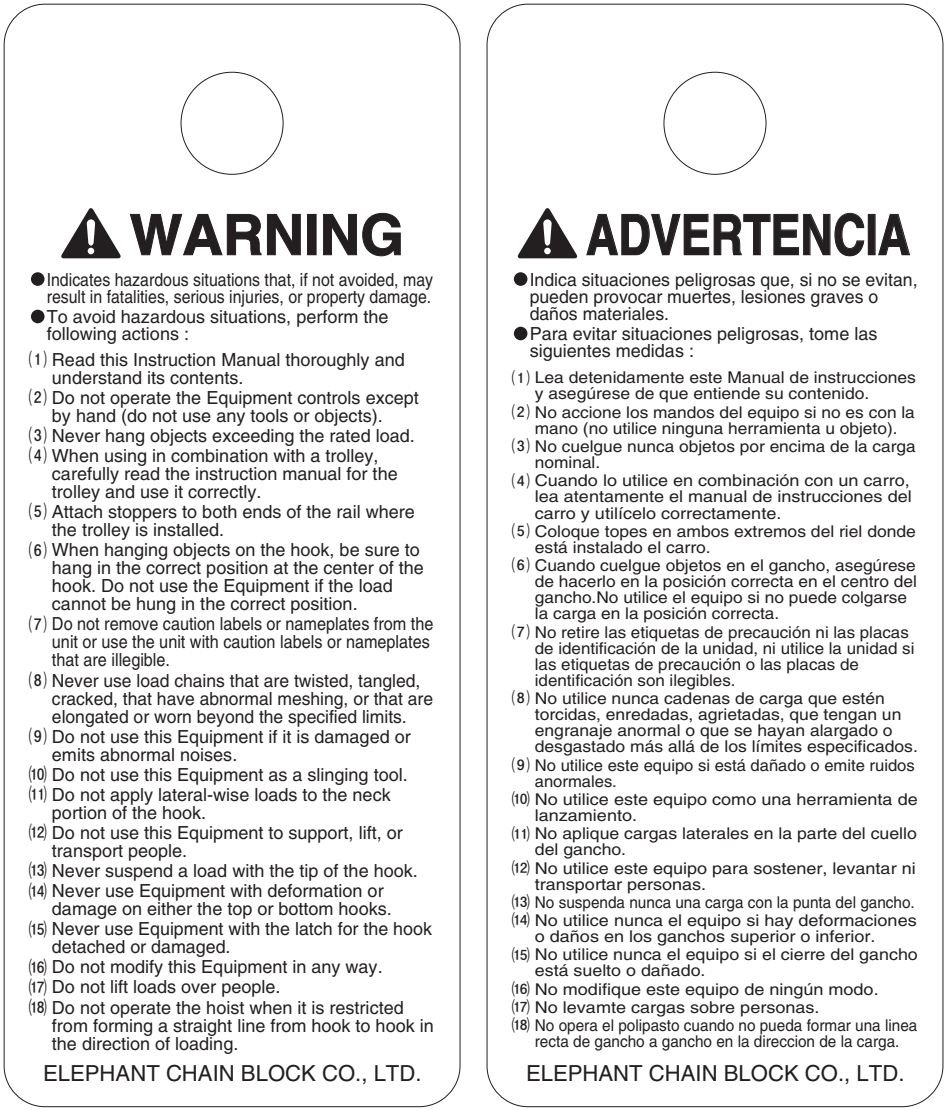


Figure 1

2. Regarding the personnel operating and using manual chain hoists

2.1 Names of Parts

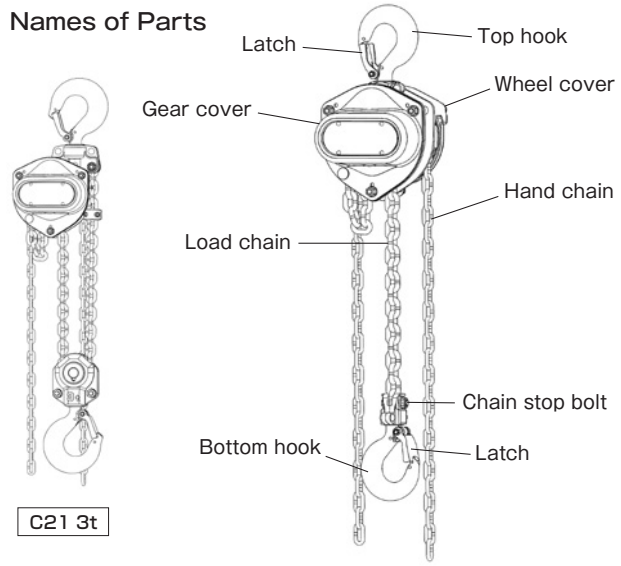
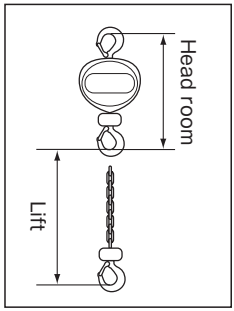


Figure 2

Head room and lift



2.2 Unpacking the Product

(1)Check that the box labeling and product matches your order.
(2)Please confirm the contents of the container.
(3)Make sure the product has not been damaged during transportation.
(4)Check that no accessories are missing or disengaged.
(5)Check the integrity and condition of screws, fittings, etc. for all components.

2.3 Specifications Table

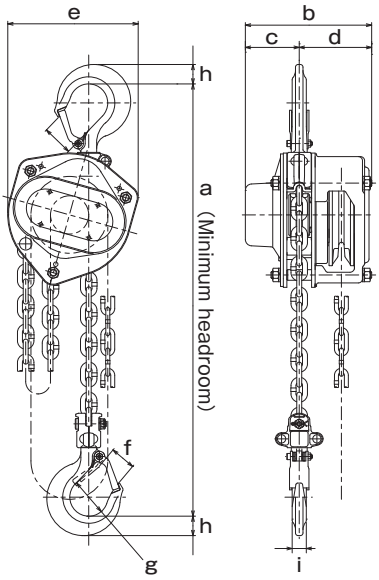
Table 1 Specifications

Model	Rated load	Lift	Load chain		Hand chain length	Minimum head room	Hand force	Self-weight
			Diameter	Number of chain falls				
C21−0.5	0.5t	10ft	4.3mm	1	10ft	275mm	255N	6.1kg
	1102lbs		0.16in			10.82in	26kgf	13.44lbs
C21−1	1t	10ft	5.6mm	1	10ft	310mm	314N	9.2kg
	2204lbs		0.22in			12.20in	32kgf	20.28lbs
C21−1.5	1.5t	10ft	6.5mm	1	10ft	340mm	324N	11.7kg
	3306lbs		0.25in			13.38in	33kgf	25.79lbs
C21−2	2t	10ft	7.5mm	1	10ft	384mm	324N	16.7kg
	4409lbs		0.29in			15.11in	33kgf	36.81lbs
C21−3	3t	10ft	6.5mm	2	10ft	480mm	373N	19.4kg
	6613lbs		0.25in			18.89in	38kgf	42.76lbs
C21−5	5t	10ft	7.5mm	3	10ft	555mm	334N	33.9kg
	11023lbs		0.29in			21.85in	34kgf	74.73lbs

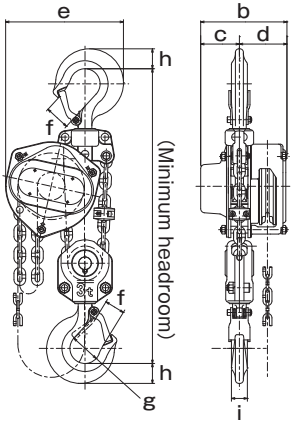
※The diameter of all hand chains is 4.5mm (0.17in).

2.3.1 C21 Dimensions

C21−0.5
C21−1
C21−1.5
C21−2



C21−3



C21−5

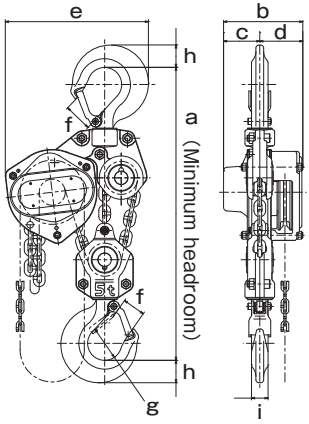


Figure 3

Table 2

Model	Rated load	a	b	c	d	e	f	g	h	i	j
C21−0.5	0.5t	275mm	131mm	54mm	77mm	121mm	30mm	36mm	17mm	13mm	24mm
	1102lbs	10.82in	5.15in	2.12in	3.03in	4.76in	1.18in	1.41in	0.66in	0.51in	0.94in
C21−1	1t	310mm	143mm	61mm	82mm	148mm	34mm	43mm	22mm	16mm	29mm
	2204lbs	12.20in	5.62in	2.40in	3.22in	5.82in	1.33in	1.69in	0.86in	0.62in	1.14in
C21−1.5	1.5t	340mm	152mm	68mm	84mm	168mm	36mm	43mm	26mm	21mm	29mm
	3306lbs	13.38in	5.98in	2.67in	3.30in	6.61in	1.41in	1.69in	1.02in	0.82in	1.14in
C21−2	2t	384mm	164mm	75mm	89mm	193mm	42mm	53mm	29mm	22mm	34mm
	4409lbs	15.11in	6.45in	2.95in	3.50in	7.59in	1.65in	2.08in	1.14in	0.86in	1.33in
C21−3	3t	480mm	152mm	68mm	84mm	209mm	44mm	53mm	35mm	28mm	36mm
	6613lbs	18.89in	5.98in	2.67in	3.30in	8.22in	1.73in	2.08in	1.37in	1.10in	1.41in
C21−5	5t	555mm	164mm	75mm	89mm	297mm	58mm	70mm	46mm	34mm	47mm
	11023lbs	21.85in	6.45in	2.95in	3.50in	11.69in	2.28in	2.75in	1.81in	1.33in	1.85in

2.3.2 C21 Hook Dimensions

(1)Measure dimensions A, B, and C in Figure 4 below, and record the actual measurements at the time of purchase. Although limit dimensions may also be determined based on the reference standard values, it should be noted that there will be some dimensional errors due to the forging process.

(2)If any of dimensions A, B, and C have reached the indicated limits, replace the hook with a new one.

(3)The opening of the hook will expand in the event loads exceeding the rated load are applied to the mouth, or if a concentrated load is applied to the tip section.

(4)Hooks with expanded openings lose their original strength and shock-absorbing capabilities, and should be replaced upon exceeding the limit.

(5)Never reuse hooks with expanded openings straightened by heating or repairing. Such attempts could cause extremely hazardous results. Hooks with flaws 1 mm or more deep or bent/twisted hooks should also be replaced.

Table 3

Model	Rated load	A	B	C
C21−0.5	0.5t	44.7 mm	17.0 mm	13.0 mm
	1102lbs	1.75 in	0.66in	0.51 in
C21−1	1t	51.0 mm	22.0 mm	16.0 mm
	2204lbs	2.00in	0.86 in	0.62 in
C21−1.5	1.5t	55.0mm	26.0 mm	21.0 mm
	3306lbs	2.16in	1.02 in	0.82 in
C21−2	2t	61.0 mm	29.0 mm	22.0 mm
	4409lbs	2.40in	1.14 in	0.86 in
C21−3	3t	67.0mm	35.0 mm	28.0 mm
	6613lbs	2.63in	1.37 in	1.10 in
C21−5	5t	91.5 mm	46.0 mm	34.0 mm
	11023lbs	3.60in	1.81 in	1.33 in

※Dimensions of the top and bottom hooks are the same.

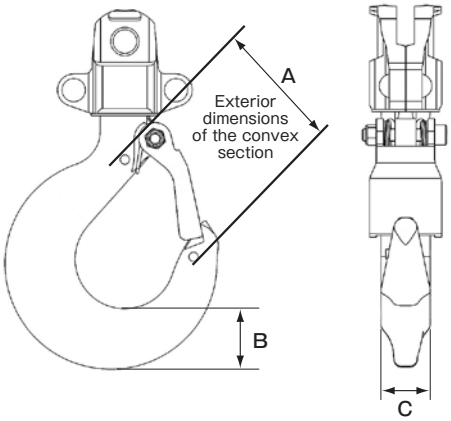


Figure 4

Purchased Product			
Model	A	B	C

※Record actual measurement value at the time of purchase.

3. Pre-Operational Procedures

3.1 Chain

⚠ WARNING

(1)Do not put a load on the load chain on the no-load side. Make sure that no load is applied to the no-load side.

(2)Before operating the equipment, make sure the load chain is not twisted or tangled. Hook for 3t (2 falls) and 5t (3 falls) are multiple falls hook. Make sure the hooks are not reversed. Be sure to correct any problems before using this equipment. (Figure 5, Figure 6)

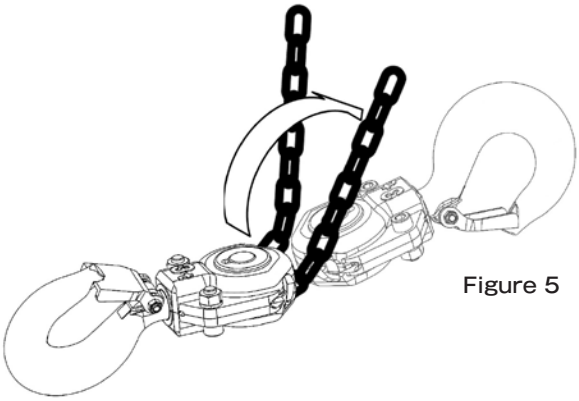
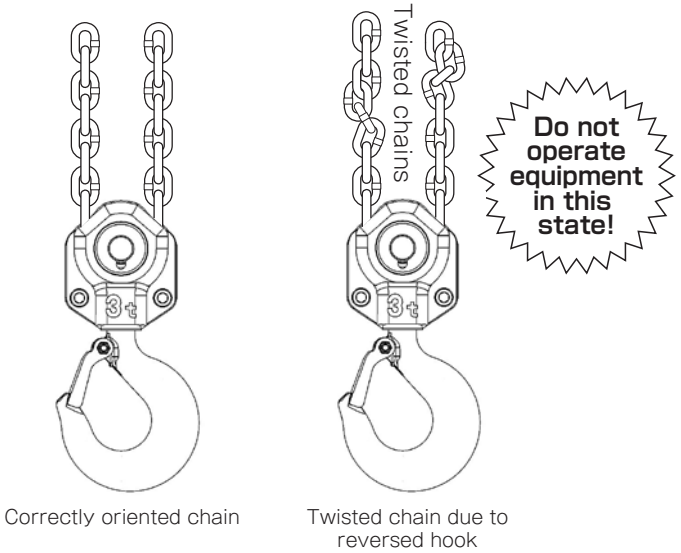


Figure 5



Correctly oriented chain

Twisted chain due to reversed hook

Figure 6

3.2 Manual Chain Hoist Installation

⚠ WARNING

(1)Never install manual chain hoists without sufficient expertise in the equipment.
(2)Make sure the location of equipment installation has sufficient strength to support the equipment under load.
(3)When suspending a load from the hook, be sure to hang it in the correct position at the center of the hook.
(4)Never suspend loads from the tip of a hook.
(5)Never use the hoist with the hook working as a fulcrum (the suspended hook is shifted from its vertical position).
(6)When using with a trolley, never pull diagonally. Unreasonable force is applied to the trolley. Please move the trolley directly under the load.

⚠ CAUTION

※Do not attach hooks in the manner illustrated in the figure below (both up and down) as it is dangerous.

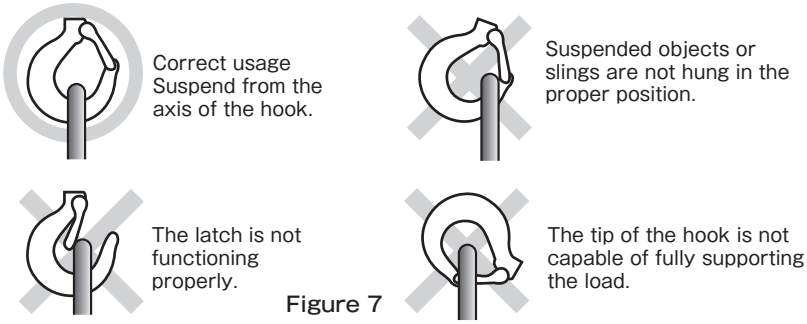


Figure 7

NOTICE

(1)When installing the hoist outdoors, lubricate the load chain. After use, clean the hoist, apply lubricant, and store in a dry place.

3.3 Pre-Operational Inspection and Test Run

⚠ WARNING

(1)Before use, check the chain sling, wire rope, sling and all other hoisting equipment for appropriate rated load. Inspect all equipment for damage, replace it as needed with new equipment, or have it repaired before use.
(2)Before operating this equipment, check the entire length of the chain and straighten any twists.
(3)Measure the dimensions of the top and bottom hooks at the time of purchase, and record the actual measurements.
(4)Make sure the model, serial number, and initial date of use for this equipment is recorded accordingly at the time of purchase.
(5)Make sure the location of equipment installation has sufficient strength to support the equipment under load.

3.3 Pre-Operational Inspection and Test Run (continued)

⚠ WARNING

(6)Make sure the equipment has been installed correctly.

(7)Make sure all nuts, bolts, and cotter pin are sufficiently secured in position.

(8)Understand the work to be done with the equipment and operate accordingly.

(9)Users are required to ensure this equipment has been safely installed and operated in accordance with laws and regulations of the country, the applicable provisions of ANSI/ASME B30.16 "Overhead Underhung and Stationary Hoists" standard and OSHA regulations, and that the maintenance and inspection requirements have been met.

(10)Before operating this equipment, make sure no interfering objects are present within its entire range of operation.

4. Precautions for Use

4.1 General Handling

⚠ DANGER

(1)Individuals unfamiliar with the contents of the instruction manual and caution plate must not operate this product.

(2)Do not use this product to support, lift, or transport people.

(3)Do not allow anyone to enter the area underneath or within the movement range of suspended loads.

Additionally, do not move the load above anyone. (Figure 8)

(4)Use this product within a temperature range of −40℃ to +60℃ (with humidity of less than 100%RH).

(5)Do not use this product in water.

(6)Never use this equipment in locations constantly subjected to wind, rain, or waves, or in locations susceptible to salt damage, acid, alkali, etc., as this could cause damage to the equipment and load chains.

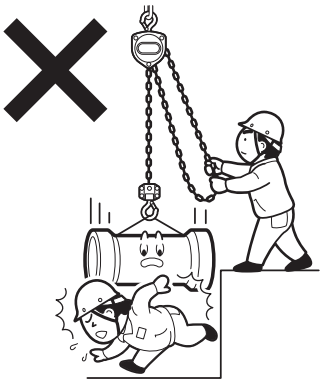


Figure 8

⚠ WARNING

(1)Only operators who have thoroughly read and fully understand the contents of this instruction manual should carry out work related to inspection and repair of the equipment. It is also necessary to understand relevant standards, laws and regulations of the country, the ANSI / ASME B30.16 and ANSI / ASME B30.10 and related standards of ANSI / ASME. Use of this product without thorough understanding of all relevant information is strictly prohibited.

(2)Those without an accurate understanding of its controls are not to operate this equipment.

(3)Those without an understanding of the proper operating procedures for attaching loads to the top and bottom hooks are not to use this equipment.

⚠ WARNING

(4)Operator are required to understand the adjustment, failure, and repair of this equipment. Operators unable to stop operation and take corrective action in the event of a malfunction are not to use this equipment.

(5)Operators should be attentive of potential malfunctions of the equipment which may require adjustment or repair, and must stop operation and contact a supervisor immediately in the event such a malfunction occurs.

(6)Individuals with restrictions in eyesight, field of vision, reaction time, or manual dexterity are not to operate this equipment.

(7)Individuals without sufficient bodily control, those with physical deficiencies, are emotionally unstable, have a history of seizures, are prone to seizures, or are otherwise likely to operate the equipment in a manner potentially hazardous to the operator or others are not to operate this equipment.

(8)Operator under the influence of drugs, medical drugs, or alcohol are not to operate this equipment.

NOTICE

Understanding of the hazard tags/labels and nameplate (tonnage) attached to the unit is required.

※From the provisions of the ANSI/ASME B30 standard:

●Engineering functions of this equipment alone cannot mitigate all hazards, which include hazards that can be mitigated by the operator's knowledge, experience, caution, and common sense. In order to enhance awareness of the above, fully understand the contents of this instruction manual and use the equipment safely.

4.2 Precautions before Operation

⚠ WARNING

(1)Never suspend loads exceeding the rated load. (Figure 9)

(2)Do not use this equipment if it is damaged or emits abnormal noises.

(3)Never use load chains that are twisted, tangled, cracked, have abnormal meshing, or are elongated or worn beyond specified limits.

(4)If attached with two or more load chain falls, do not use this equipment if the bottom hook is in an abnormal state of passing through the load chains. (Figure 10)

(5)Do not intrude into the area beneath the load or within the moving range of the load.

Additionally, do not move the load above anyone.

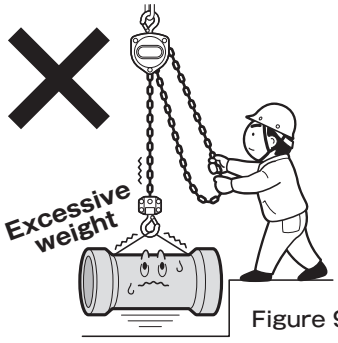


Figure 9

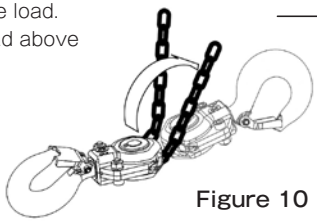


Figure 10

⚠ WARNING

(6)Never operate the hoist in such a manner as to let the load drop even a slight distance. (Figure 11)

(7)Never cut, splice, or weld the load chain.

(8)Do not operate the chain hoist if the load cannot be suspended from the center portion of the hook.

(9)Do not use this equipment as a sling suspension device. Also, do not use with the load chain wrapped around the load.

(10)Never apply loads exceeding the rated load on a single unit of this equipment when performing two-hoist lifting. (Figure 12)

(11)Never over-wind or over-lower loads.

(12)Never suspend a load with the tip portion of the hook. (Figure 13)

(13)When suspending loads from the hook, never operate the hook in such a way that a lateral load is applied to either the top or bottom hooks.

(14)Do not leave the load suspended for a long time.

(15)Do not connect the grounding from welding machines to the load chain. (Figure 14)

(16)Never allow welding electrodes to come in contact with the load chain.

(17)Do not remove caution labels or nameplates from the unit or use the unit with caution labels or nameplates in an illegible condition.

(18)Do not use the product if the nameplate affixed to the main unit is illegible.

(19)Make sure that all personnel are clear of the support load.

(20)Do not allow sparks from welding, etc. into come in contact with this equipment.

(21)When lifting or moving a load, notify surrounding workers.

(22)Never install this equipment without sufficient expertise in the equipment.

(23)Make sure the location of equipment installation maintains sufficient strength to support the equipment under load.

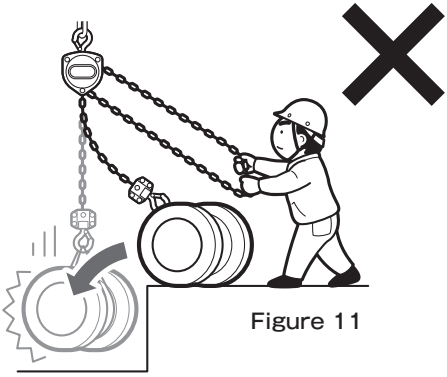


Figure 11

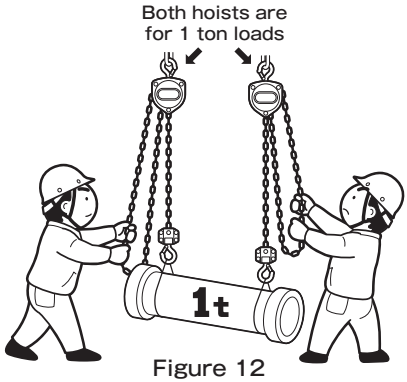


Figure 12

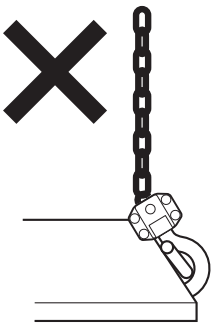


Figure 13

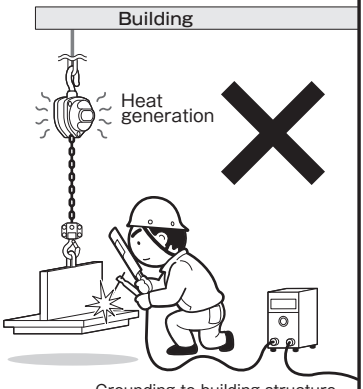


Figure 14

⚠ WARNING

⑵④Do not allow anyone to ride on suspended loads. Never use the manual chain hoist for human transport purposes. (Figure 15)

⑵⑤Never reverse a suspended load without sufficient expertise in doing so.

⑵⑥Do not suspend excessive loads.

⑵⑦Never use the hoist or the hook to work as a fulcrum.

⑵⑧Do not use damaged or deformed top/bottom hooks.

⑵⑨Never use this equipment if the load chain is deformed or damaged.

⑶⓪Do not operate the equipment with the load chain lodged against a steel plate or other corners. (Figure 16)

⑶①Do not operate the load chain by any means other than human power (do not use any tools or objects on the controls).

⑶②Suspend slings properly onto the hook.

⑶③During lifting, temporarily pause winding once either the load chain or sling comes under tension.

⑶④Keep the manual chain hoist unit and load chain clean and free of sand and other debris.

⑶⑤Make sure the lifting height is sufficient for the intended work.

⑶⑥Make sure the load chain is sufficiently lubricated.

⑶⑦Do not modify this equipment in any way.

⑶⑧Do not use with the load chain wrapped around the load. (Figure 17)

⑶⑨Do not hang the hook in a way that places a burden on the neck (neck breakage). (Do not use the hook with lateral bending force.)Attach the wire sling to the rope hook first and then tighten the load. (Figure 18)

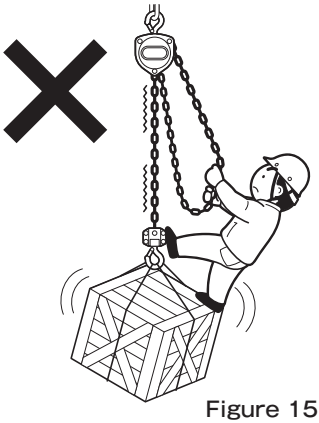


Figure 15

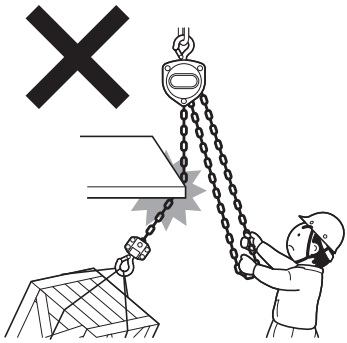


Figure 16

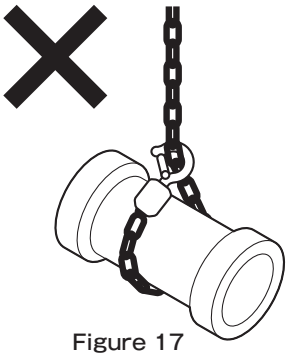


Figure 17

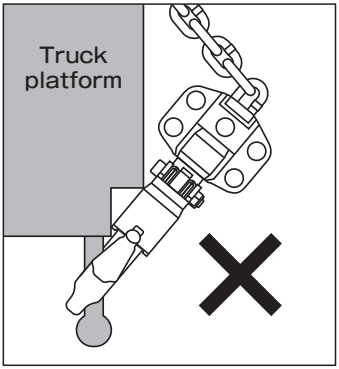


Figure 18

4.2 Precautions before Operation (continued)

⚠ WARNING

(40)Do not suspend the load chain directly from rope hook fixtures. Do not use the load chain as a suspension device. (Figure 19)

(41)Do not pull diagonally. (Move the chain block directly above the load before lifting.)

(42)Move the chain block directly above the load before lifting it.
When using with a trolley, never pull diagonally. Unreasonable force is applied to the trolley. Please move the trolley directly under the load.

(43)Do not let the trolley or chain block collide with stoppers or structures.

(44)Do not operate or move the load chain, hand chain, or load by hooking it on other structures.

(45)Do not suspend a load on the load chain on the no-load side. Also, make sure that no load is applied to the no-load side.

(46)Do not bind the hand chain. (keep it natural) (Figure 20)

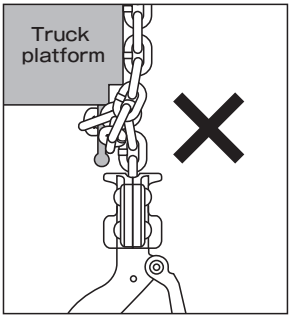


Figure 19

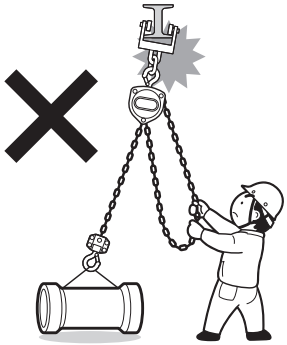


Figure 20

⚠ CAUTION

(1)When operating this equipment, be sure to maintain a firm foothold, and otherwise ensure safe working conditions (for performance of operations).

(2)Always check the brake function before using this equipment.

(3)Make sure the latch for the hook is properly attached. The latch helps prevent slings, chain slings, and other slinging tools and loads from being released.

(4)Make sure all obstacles are removed from the vicinity of the load.

(5)Avoid shaking either the load or the hook.

(6)Make sure the hook is moving in the predetermined direction.

(7)Inspect this equipment periodically and replace any damaged or worn parts. Maintain records of the inspections.

(8)Never use other than genuine parts from the manufacturer of this equipment.

(9)Focus carefully on the load during operation of the hoist. Avoid all distractions.

(10)Repairs of the equipment must only be done by qualified service technicians.

(11)After finishing operation of the hoist, wipe off any mud, water, and foreign matter, and apply lubrication to the chain and hook.

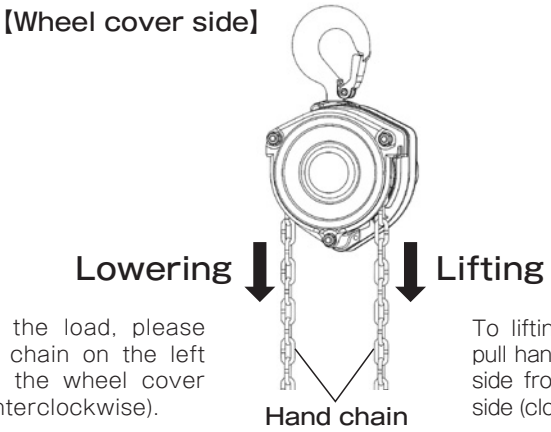
(12)Never apply lubricants to the brake parts.

(13)Store the equipment in a dry location, protected from rain and dew.

(14)Always loosen the brake for storage, and never store the equipment with the brake in a tightened condition.
※If the hoist is stored with the brake tightened, it will not be able to perform lowering operations the next time it is used.
In this case, perform a lowering operation once to disengage the brake.

(15)When disposing of this equipment, disassemble it to prevent its reuse by others.

5. Manual chain hoist Operation



⚠ DANGER

(1)Do not operate this equipment who does not understand the contents of the instruction manual and caution plate.

5.1 Lifting/Lowering Operation

(1)After installing this product, adjust the length of load chain with operating hand chain so that it is easy to suspend the load on the bottom hook.

(2)Suspend the load on the bottom hook.

(3)Apply the load on the load chain with operating hand chain. (Make sure that load chain is not slack, not twisted.)

(4)When you turn the hand chain clockwise from the wheel cover side, load chain and bottom hook will move up.

(5)When you turn the hand chain counterclockwise from the wheel cover side, load chain and bottom hook will move down.

(6)If hand chain is heavy when lowering, apply force to the hand chain at only first pull.

(7)With lifting or lowering, brake will engage the moment the load is applied.

(8)The mechanical brake rotates while in a tightened condition when lifting, immediately supporting the load by pawls upon ceasing the lifting operation. The mechanical brake is loosened corresponding to the amount of hand chain operation when lowering, and the load chain is wound down, with the mechanical brake immediately tightening to support the load when the lowering operation stops.

⚠ WARNING

(1)Make sure the location of equipment installation has sufficient strength to support the equipment under load.

(2)When performing two-hoist lifting, each unit involved in the suspension shall be individually capable of bearing the entire suspended load.

(3)Never over-wind or over-lower loads.

(4)Inspect the slings prior to hoisting. Some slinging methods may be dangerous.

6. Inspection of Manual chain hoists

6.1 Definition

This inspection procedure is compliant with the provisions of the ANSI / ASME B30.16 standard. The following word definitions, considered important, are from ANSI / ASME B30.16 and are relevant to the following inspection procedures:
Inspection criteria reflecting dimensional and geometrical characteristics are provided separately.

●**Normal Service**
Form of maintenance to be performed on equipment operated with randomly distributed loads within the rated load range and uniform loads of less than 65% of the rated load for 15% or less of the overall usage time.

●**Heavy Service**
Form of maintenance to be normally performed on equipment used under static loads exceeding the level of normal service.

●**Severe Service**
Form of maintenance to be performed on equipment subjected to operations exceeding the level of normal or heavy services and exhibiting abnormal behavior.

●**Personnel Competence**
Personnel performing duties identified within this document shall meet the applicable qualification criteria described in this document.
Additionally, those personnel are required to acquire abilities to perform the duties of the position as determined by the employer or the employer's representative and, where appropriate, to ensure competency based on education, training, experience, skills, and physical fitness.

●**Qualified Person**
To be in possession of a recognized degree or have certificate of professional standing in the applicable field, or extensive knowledge, training, and experience making one competent to solve job-related problems.

6.2 General

(a)All inspections are to be performed by designated personnel in accordance with the recommendations of the manufacturer and the requirements of this document. Defects identified shall be investigated and determined by qualified personnel as to whether they constitute a hazard and whether or not more detailed inspection or disassembly is required.

(b)Inspection frequency
Inspection intervals shall be determined by a qualified person based on the intended operating conditions and the impact of such conditions on critical hoist components.

6.3 Inspection Category

(a)**Initial inspection:** Hoists to be used for the first time and hoists experiencing repairs and components exchange shall be inspected in accordance with the **periodic inspection requirements of Section 6.5.**

(b)**Preoperation inspection:** A visual preoperation inspection, for which no records are required, shall be performed at the beginning of each operation.

(c)**Frequent inspection:** A visual inspection for which no records are required.
(1)Normal service: Monthly basis
(2)Heavy service: Weekly to monthly basis
(3)Severe service: Daily to weekly basis

(d)**Periodic Inspection:** A documented visual inspection to provide the basis for ongoing evaluation. Coded markings inscribed on the exterior of hoists are acceptable identification in lieu of a record.
(1)Normal service: Annual basis
(2)Heavy Service: Semi-annual basis
(3)Severe service: Quarterly basis

(e)Hoists not in use on a **regular** basis
(1)Hoists unused for a duration of one month or more but less than one year shall be inspected in accordance with the provisions of **Section 6.5** prior to use.
(2)Hoists unused for a duration of one year or more shall be inspected in accordance with the provisions of **Section 6.6** prior to use.

6.4 Preoperation inspections

Minimum inspection requirements include the following items:

(a)Proper operability and appropriate adjustment of the operating mechanism, and any abnormal noise emission.

(b)Periodic inspection of hooks in accordance with **ASME B30.10.** (item numbers 10-1.10.3 and 10-2.10.3)

(c)Application of load to the load chain without overall damage. Inspection items (refer to **Section 6.7.**)

(d)Load sheaves, idle wheels

(e)Proper installation of load chain terminal anchorage.

(f)Deformation, cracks, and/or other damage to the hoist unit and levers.

(g)Evidence of damage to the support structure

6.5 Frequent inspection

Minimum inspection requirements include the following items:

(a)Proper operability and appropriate adjustment of the operating mechanism, and any abnormal noise emission.

(b)Periodic inspection of hooks in accordance with **ASME B30.10.** (item numbers 10-1.10.3 and 10-2.10.3)

(c)Application of load to the load chain without overall damage. Inspection items (refer to **Section 6.7.**)

(d)Load sheaves, idle wheels

(e)Proper installation of load chain terminal anchorage.

(f)Deformation, cracks, and/or other damage to the hoist unit and levers.

(g)Evidence of damage to the support structure

6.6 Periodic Inspection

(a)Periodic inspections can be performed at the location of usage, and disassembly of the hoist is not necessary.

(b)Covers and other parts of the structure may be released or removed for inspection, but the covers must be closed or replaced before the hoist is restored to its normal state.

(c)Minimum inspection requirements include the following items:

(1)Items listed in section **6.5**

(2)Periodic inspection of hooks, including latches, in accordance with ASME B30.10 Hooks (items 10-1.10.4 and 10-2.10.4)

(3)Inspection for loose fasteners including rivets and bolts.

(4)Inspection for wear, corrosion, cracks, and distortion of structural parts.

(5)Damage and wear of load sheaves, idle wheels, etc.

(6)Inspection for traces of worn or oil-contaminated friction discs, worn pawls and ratchet wheels, corroded, stretched or broken pawl springs due to the structure of the friction brake.

(7)Inspection for damage to the support structure.

(8)One or more labels as required under provision ASME B30.21 21-1.1.4 to be intact and clearly visible.

(9)Inspection for deterioration, corrosion, cracks, damage, and deformation of load chain terminal anchorage.

(10)Inspection for missing hoist mounts and hoist fitting mounts.

6.7 Load Chain Inspection

(a)Load chains should initially be inspected with the hoist suspended in a vertical position and subjected to a load of approximately 50 pounds (23kg), with the chain integrated into the hoist.

(1)With the designated load applied, operate the hoist in both lifting and lowering directions, confirming that the load chains and load sheaves operate to feed the chain smoothly out of the load sheave.

(2)If the load chain is tangled, jumpy, or noisy, confirm that the load chain is clean and properly lubricated. If the problem persists, inspect the load chain and mating parts for wear, warping, or other damage.

(b)Load chains are to be inspected over their entire length for overall damage that may be directly hazardous, such as:

(1)Visual inspection for melt damage, weld spatter, corrosion, and deformed links.

(2)Verify the smooth feed of load chains back and forth against the sprocket wheels during the lifting and lowering operation under load.

(3)Loosen the load chain and move adjacent links to one side, inspecting the contact points for wear. When wear is evident or if elongation deformation is suspected, dimensional measurement of the chain should be performed.

Refer to the section on inspection and inspection contents and standard dimensions of load chains concerning the dimensional measurement of load chains.

6.8 Operational Tests

Newly manufactured hoists are tested by the manufacturer.

All hoists experiencing modifications or repairs, as well as previously used hoists that have not been operated within 12 months, are to be tested by, or under the direction of designated personnel, to ensure compliance with the requirements of this instruction manual.

(a)All functions of the hoist are to be confirmed with the hoist suspended under no load.

(Some hoists require the application of their rated load or manual pulling on the hook to test the lowering action.)

(b)After the no-load test, 100 pounds (46kg) per load chain should be loaded to confirm the braking control capability.

6.9 Load Tests

(a)New hoists are tested by the manufacturer with a test load of at least 125% of the rated load.

(b)Hoists experiencing modifications, replacements or repairs to load-bearing components are to be statically or dynamically load tested.

(1)The need for load testing of the hoist is to be determined by qualified persons.

(2)A written report of the test must be prepared and kept on file.

(3)The test load must not exceed 100% of the rated load of the hoist, or 125% of the rated load of the hoist.

(4)Load chain replacement is specifically excluded from this load test. However, hoist operation testing is to be conducted in accordance with the provisions of Section **6.8**.

(c)The test location and hoisting method needs to be approved by a qualified person.

6.10 Inspection, Testing Methods and Reference Values

Inspection/testing method and standard values are as follows:

Inspection and testing methods for C21 parts (*Refer to the breakdown schematics for part numbers.)
※Although details of inspection and limit dimensions are specified for respective parts, users should determine the frequency of use and duration of service individually, replacing the necessary parts with new parts or new products in order to prevent accidents and enhance the operational safety factor.
※Please note, some of the parts are forged and may have slight dimensional errors.
The following dimensions are limit values based on reference standard values.
(The instruction manual states that you should measure the dimensions at the time of product purchase and record the actual measurements (initial dimensions))

Inspection item (part name) part number	Method	Inspection/test details/standard values	Judgement, Measures
Top hook set (No.1)	Visual inspection, measurement	• Inspect opening of the hook, hook thickness and wear in vertical/horizontal dimensions. • Inspect diameter of the top hook pin-hole for elongation. • Inspect the hook for bends, twists, damage, etc. and smooth hook rotation. • Dimensions are not to exceed the limit value. (to be continued on the right)	Replace with a new part.

Table 4

Rated load	Position	Reference standard values	Limit Value
0.5t 1102lbs	A : Between punches	44.7mm 1.75in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	17.0mm 0.66in	16.2mm 0.63in
	C : Hook thickness, horizontal	13.0mm 0.51in	12.4mm 0.48in
	D : Chain stop bolt hole diameter	10.5mm 0.41in	11.0mm 0.43in
1t 2204lbs	A : Between punches	51.0mm 2.00in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	22.0mm 0.86in	20.9mm 0.82in
	C : Hook thickness, horizontal	16.0mm 0.62in	15.2mm 0.59in
	D : Chain stop bolt hole diameter	12.5mm 0.49in	13.1mm 0.51in
1.5t 3306lbs	A : Between punches	55.0mm 2.16in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	26.0mm 1.02in	24.7mm 0.97in
	C : Hook thickness, horizontal	21.0mm 0.82in	20.0mm 0.78in
	D : Chain stop bolt hole diameter	14.5mm 0.57in	15.2mm 0.59in
2t 4409lbs	A : Between punches	61.0mm 2.40in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	29.0mm 1.14in	27.6mm 1.08in
	C : Hook thickness, horizontal	22.0mm 0.86in	20.9mm 0.82in
	D : Chain stop bolt hole diameter	16.5mm 0.64in	17.3mm 0.68in
3t 6613lbs	A : Between punches	67.0mm 2.63in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	35.0mm 1.37in	33.3mm 1.31in
	C : Hook thickness, horizontal	28.0mm 1.10in	26.6mm 1.04in
	D : Chain stop bolt hole diameter	14.5mm 0.57in	15.2mm 0.59in
5t 11023lbs	A : Between punches	91.5mm 3.60in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	46.0mm 1.81in	43.7mm 1.72in
	C : Hook thickness, horizontal	34.0mm 1.33in	32.3mm 1.27in
	D : Chain stop bolt hole diameter	16.3mm 0.64in	17.1mm 0.67in

Dimension A is not to exceed actual measured value at the time of purchase.
Dimensions B and C are not to indicate wear of 5% or more in relation to the actual measured value.

Inspection/test details/ standard values (Continued)

- Inspect the hook cover joint for any openings.
- Inspect for visible scratches or deformation.
- Inspect for loosen rivets or bolts.
- Inspect the chain attachment hole for 3 ton to see if it is deformed into an oval shape.
- Inspect top hook sheave 5t that engages with the chain (pocket part) for stepped wear, scratches, and deformation.
- Inspect for signs of obduction by the chain.

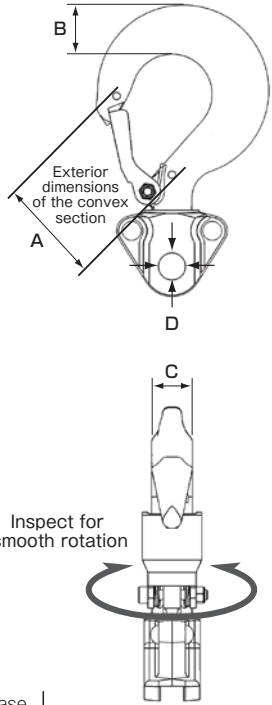


Figure 21

Inspection item (part name) part number	Method	Inspection/test details/standard values	Judgement, Measures
Safety latch set (No.3)	Visual inspection, measurement	• Inspect the hook to see if it has a safety latch. • Confirm engagement with the hook. • Confirm the repulsive force of the spring, and if there is any damage or deformation.	Replace with a new part.

Table 5

Rated load	Marking	Dimension A	Dimension B
0.5t 1102lbs	C−3	45.0mm	22.0mm
		1.77in	0.86in
1t 2204lbs	F−4	48.0mm	22.0mm
		1.88in	0.86in
1.5t 3306lbs	F−5	54.0mm	31.0mm
		2.12in	1.22in
2t 4409lbs	E6	59.0mm	31.0mm
		2.32in	1.22in
3t 6613lbs	C−8	66.5mm	37.2mm
		2.61in	1.46in
5t 11023lbs	5.0	82.0mm	45.0mm
		3.22in	1.77in

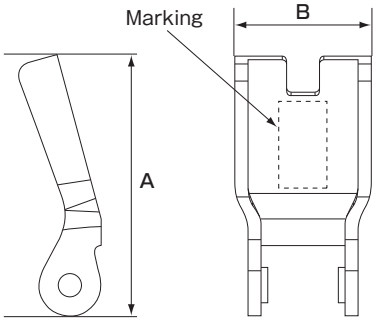


Figure 22

Inspection item (part name) part number	Method	Inspection/test details/standard values	Judgement, Measures
Bottom hook set (No.17)	Visual inspection, measurement	• Inspect the opening of the hook, hook thickness and wear in vertical/horizontal dimensions. • Inspect elongation of the chain stop bolt hole. • Inspect the hook for bends, twists, damage, etc. and smooth hook rotation. • Dimensions are not to exceed the limit value. • Inspect the hook cover joint for any openings. • Inspect for visible scratches or deformation. • Inspect for loosen rivets or bolts. • Inspect the chain attachment hole for 5 ton to see if it is deformed into an oval shape. (to be continued on the right)	Replace with a new part.

Table 6

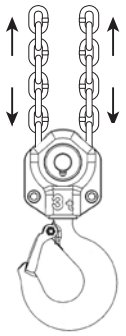
Rated load	Position	Reference standard values	Limit Value
0.5t 1102lbs	A : Between punches	44.7mm 1.75in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	17.0mm 0.66in	16.1mm 0.63in
	C : Hook thickness, horizontal	13.0mm 0.51in	12.4mm 0.48in
	D : Chain stop bolt hole diameter	6.2mm 0.24in	6.7mm 0.26in
1t 2204lbs	A : Between punches	51.0mm 2.00in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	22.0mm 0.86in	20.9mm 0.82in
	C : Hook thickness, horizontal	16.0mm 0.62in	15.2mm 0.59in
	D : Chain stop bolt hole diameter	8.8mm 0.34in	9.3mm 0.36in
1.5t 3306lbs	A : Between punches	55.0mm 2.16in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	26.0mm 1.02in	24.7mm 0.97in
	C : Hook thickness, horizontal	21.0mm 0.82in	20.0mm 0.78in
	D : Chain stop bolt hole diameter	10.3mm 0.40in	10.8mm 0.42in
2t 4409lbs	A : Between punches	61.0mm 2.40in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	29.0mm 1.14in	27.6mm 1.08in
	C : Hook thickness, horizontal	22.0mm 0.86in	20.9mm 0.82in
	D : Chain stop bolt hole diameter	10.8mm 0.42in	11.3mm 0.44in
3t 6613lbs	A : Between punches	67.0mm 2.63in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	35.0mm 1.37in	33.3mm 1.31in
	C : Hook thickness, horizontal	28.0mm 1.10in	26.6mm 1.04in
	D : Chain stop bolt hole diameter	10.3mm 0.40in	10.8mm 0.42in
5t 11023lbs	A : Between punches	91.5mm 3.60in	Not to exceed actual measured value at the time of purchase.
	B : Hook thickness, vertical	46.0mm 1.81in	43.7mm 1.72in
	C : Hook thickness, horizontal	34.0mm 1.33in	32.3mm 1.27in
	D : Chain stop bolt hole diameter	10.8mm 0.42in	11.3mm 1.44in

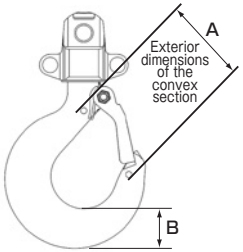
Dimension A is not to exceed actual measured value at the time of purchase.
Dimension B & Dimension C are not to indicate wear of 5% or more of actual values.
Dimension D are not to indicate wear of 0.5mm (0.01 in) or more of above reference values.
Position of hole for chain stop bolt for 3ton is on Top hook side.

Inspection/test details/ standard values (Continued)

- Inspect bottom hook sheave 3t, 5t that engages with the chain (pocket part) for stepped wear, scratches, and deformation.
- Inspect for signs of obduction by the chain.

Inspect for smooth moving





Inspect for smooth rotation

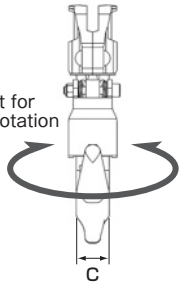


Figure 23

Inspection item (part name) part number	Method	Inspection/test details/standard values	Judgement, Measures
Chain stop bolt set (No.26)	Visual inspection, measurement	• Inspect for wear of the chain stop bolt diameter. • Inspect for damage or deformation of chain stop bolt. • Inspect for cracks in the hex. castle nut. • Inspect for deterioration of the cotter pin.	Replace with a new part. ※Periodic replacement is recommended

Table 7

Rated load	Dimension A	Dimension A limit value	Dimension B	Dimension C	Marking
0.5t 1102lbs	6.0mm	5.5mm	21.5mm	M5XP0.8	HD
	0.23in	0.21in	0.84in		
1t 2204lbs	8.5mm	8.0mm	31.5mm	M6XP1	HE
	0.33in	0.32in	1.24in		
1.5t 3306lbs	10.0mm	9.5mm	33.5mm	M8XP1.25	CH
	0.40in	0.37in	1.31in		
2t 4409lbs	10.5mm	10.0mm	36.5mm	M8XP1.25	CI
	0.41in	0.40in	1.43in		
3t 6613lbs	10.0mm	9.5mm	33.5mm	M8XP1.25	CH
	0.40in	0.37in	1.31in		
5t 11023lbs	10.5mm	10.0mm	36.5mm	M8XP1.25	CI
	0.41in	0.40in	1.43in		

A dimension values are not to indicate wear of 0.5mm (0.01 in) or more.

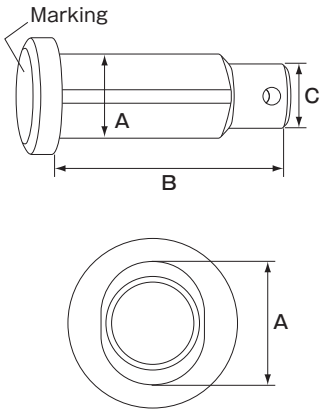


Figure 24

Top hook pin (No.30)	Visual inspection, measurement	• Insect for damage, deformation, pin diameter wear. • Check whether the diameter exceeds the limit value.	Replace with a new part.

Table 8

Rated load	Marking	Dimension A reference standard value	Limit value
0.5t 1102lbs	A	10.0mm	9.5mm
		0.40in	0.37in
1t 2204lbs	B	12mm	11.4mm
		0.47in	0.44in
1.5t 3306lbs	C	14mm	13.3mm
		0.55in	0.52in
2t 4409lbs	D	16mm	15.2mm
		0.62in	0.59in
3t 6613lbs	C	14mm	13.3mm
		0.55in	0.52in
5t 11023lbs	D	16mm	15.2mm
		0.62in	0.59in

A dimension values are not to indicate wear of 5% or more.

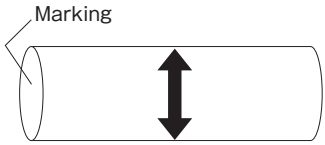


Figure 25

Inspection item (part name) part number	Method	Inspection/test details/standard values	Judgement, Measures
Gear side plate set (No.31)	Visual inspection, measurement	• Inspect for damage or deformation of the top hook pin hole and stay bolt holes. • Inspect metal for cracks, wear, or looseness.	Replace with a new part.

Table 9

Rated load	Dimension A	Dimension A limit value
0.5t 1102lbs	10.3mm	10.8mm
	0.40in	0.42in
1t 2204lbs	12.3mm	12.8mm
	0.48in	0.50in
1.5t 3306lbs	14.3mm	14.8mm
	0.56in	0.58in
2t 4409lbs	16.3mm	16.8mm
	0.64in	0.66in
3t 6613lbs	14.3mm	14.8mm
	0.56in	0.58in
5t 11023lbs	16.3mm	16.8mm
	0.64in	0.66in

A dimension values are not to indicate wear of 0.5% or more.
Measure length and width at 90 degree angles.

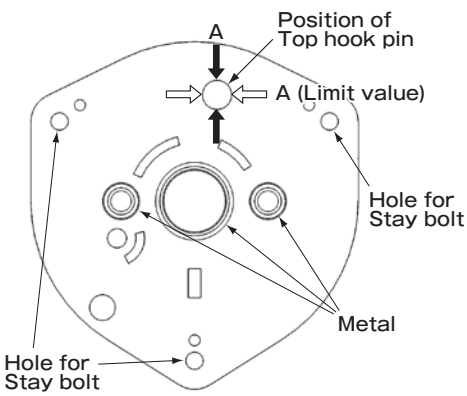


Figure 26

Wheel side plate set (No.35)	Visual inspection, measurement	• Inspect for damage or deformation of the top hook pin hole and stay bolts. • Inspect the pawl pin for looseness. • Inspect metal for cracks, wear, or looseness.	Replace with a new part.

Table 10

Rated load	Dimension A	Dimension A limit value
0.5t 1102lbs	10.3mm	10.8mm
	0.40in	0.42in
1t 2204lbs	12.3mm	12.8mm
	0.48in	0.50in
1.5t 3306lbs	14.3mm	14.8mm
	0.56in	0.58in
2t 4409lbs	16.3mm	16.8mm
	0.64in	0.66in
3t 6613lbs	14.3mm	14.8mm
	0.56in	0.58in
5t 11023lbs	16.3mm	16.8mm
	0.64in	0.66in

A dimension values are not to indicate wear of 0.5% or more.
Measure length and width at 90 degree angles.

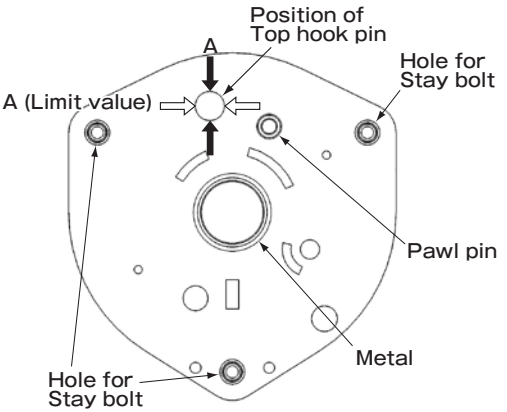
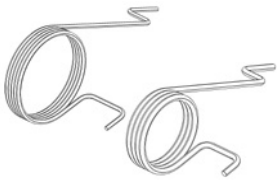
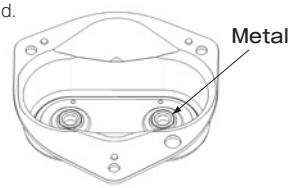


Figure 27

Inspection item (part name) part number	Method	Inspection/test details/standard values	Judgement, Measures
Hex. Nut (No.38)	Visual inspection	• Inspect for damage, wear, deformation, etc.	Replace with a new part.
Spring washer (No.39)	Visual inspection	• Inspect for damage, wear, deformation, etc.	Replace with a new part.
Pawl (No.43)	Visual inspection	• Inspect for chipped teeth on pawls, bumpy wear and damage • Inspect for smooth rotation	Replace with a new part.
E ring (No.45)	Visual inspection	• Inspect for opening of ring and damage	Replace with a new part.
Pawl spring A,B set (No.46)	Visual inspection	• To be without wear on the surfaces contacting the pawls. • Bending portion of the spring to be free of indicate cracks or breaks. • Spring to be free of expansion/contraction or deformation due to compression.	Replace with a new part.  Figure 28
Chain stop pin (No.50)	Visual inspection	• Inspect for damage, wear, deformation, etc.	Replace with a new part.
Clip (No.51)	Visual inspection	• Inspect for damage, wear, deformation, etc.	Replace with a new part.
Gear case set (No.52)	Visual inspection	• Inspect for large deformation • Inspect for significant deformation and wear with bumps identifiable by hand. • Inspect for cracks, wear or rattling of the metal clasped to the gear cover.	Replace with a new part.  Figure 29
Name plate (No.81)	Visual inspection	• Inspect for damage,deformation, legibility.	Replace with a new part.
Pinion shaft (No.56)	Visual inspection	• Inspect for chipped gear teeth, bumpy wear or damage. • Inspect for smooth rotation of the gear when passing through the disc hub and feed gear.	Replace with a new part.
Castle nut (No.57)	Visual inspection	• Inspect for damage, wear, deformation, etc.	Replace with a new part.
R pin (No.58)	Visual inspection	• Inspect for damage, wear, deformation, etc.	Replace with a new part.
Check washer (No.59)	Visual inspection	• Inspect for damage, wear, deformation, etc.	Replace with a new part.

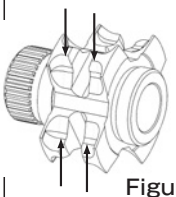
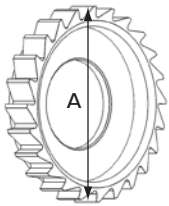
Inspection item (part name) part number	Method	Inspection/test details/standard values	Judgement, Measures
Washer for pinion shaft (No.60)	Visual inspection	• Inspect for damage, wear, deformation, etc.	Replace with a new part.
2nd/3rd gear set (No.61)	Visual inspection	• Inspect for chipped gear teeth, bumpy wear or damage, deformation.	Replace with a new part.
Load gear (No.64)	Visual inspection	• Inspect for chipped gear teeth, bumpy wear or damage, deformation.	Replace with a new part.
Load sheave (No.65)	Visual inspection	• Inspect the part that engages with the chain (pocket part) for stepped wear, scratches, and deformation. • Inspect for signs of obduction by the chain Locations with possibility of being obducted by the chain  Figure 30	Replace with a new part.
Chain guide (No.68)	Visual inspection	• Inspect for bumpy wear, damage • Inspect for signs of obduction by the chain	Replace with a new part.
Chain guide pin (1.5ton and more capacities) (No.69)	Visual inspection	• Inspect for damage, wear, deformation, etc.	Replace with a new part.
Chain stripper (No.70)	Visual inspection	• Inspect for damage, wear, deformation, etc.	Replace with a new part.
Hand wheel cover (No.73)	Visual inspection	• Inspect for damage, wear, deformation, etc.	Replace with a new part.
Tag (No.110)	Visual inspection	• Inspect for damage, legibility.	Replace with a new part.
Disc hub (No.75)	Visual inspection	• Inspect for chipped gear teeth, bumpy wear and damage. • Inspect for smooth rotation when the pinion shaft is passed through.	Replace with a new part.
Ratchet wheel (No.76)	Visual inspection, measurement	• Inspect for chipped teeth, wear in positions engaging the pawls, damage • Braking section to be free of any bumpy wear	Replace with a new part.

Table 11

Rated load	Dimension A	Dimension A limit value
0.5t 1102lbs	58.0mm	56.3mm
	2.28in	2.21in
1t 2204lbs	70.0mm	67.9mm
	2.75in	2.67in
1.5t 3306lbs	70.0mm	67.9mm
	2.75in	2.67in
2t 4409lbs	85.0mm	82.5mm
	3.34in	3.24in
3t 6613lbs	70.0mm	67.9mm
	2.75in	2.67in
5t 11023lbs	85.0mm	82.5mm
	3.34in	3.24in



Dimension A :
Ratchet wheel diameter

Figure 31

A dimension values are not to indicate wear of 3% or more.

<table>
<tr><th>Inspection item
(part name)
part number</th><th>Method</th><th>Inspection/test details/standard values</th><th>Judgement, Measures</th></tr>
<tr><td>Friction disc
(No.77)</td><td>Visual inspection, measurement</td><td>• Inspect for scratches, cracks, and surface roughness.
• Braking section to be free of any bumpy wear
• Inspect the surface for oil or dirt</td><td>Replace with a new part.</td></tr>
</table>

Table 12

Rated load	Dimension A	Dimension A limit value	Dimension B	Dimension C
0.5t 1102lbs	2.5mm	2.3mm	43.0mm	26.2mm
	0.098in	0.090in	1.69in	1.03in
1t 2204lbs	2.5mm	2.3mm	53.5mm	32.0mm
	0.098in	0.090in	2.10in	1.25in
1.5t 3306lbs	2.5mm	2.3mm	53.5mm	32.0mm
	0.098in	0.090in	2.10in	1.25in
2t 4409lbs	2.5mm	2.3mm	70.0mm	45.0mm
	0.098in	0.090in	2.75in	1.77in
3t 6613lbs	2.5mm	2.3mm	53.5mm	32.0mm
	0.098in	0.090in	2.10in	1.25in
5t 11023lbs	2.5mm	2.3mm	70.0mm	45.0mm
	0.098in	0.090in	2.75in	1.77in

A dimension values are not to indicate wear of 0.2mm or more.

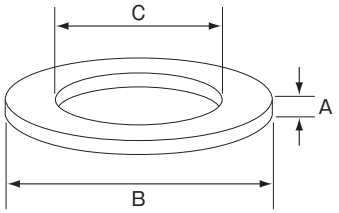


Figure 32

<table>
<tr><td>Brake cover
(No.78)</td><td>Visual inspection</td><td>• Inspect for damage, wear, deformation, etc.</td><td>Replace with a new part.</td></tr>
<tr><td>Chain stopper set
(for 3ton only)
(No.82)</td><td>Visual inspection, measurement</td><td>• Inspect for damage, wear, deformation, etc.</td><td>Replace with a new part.</td></tr>
<tr><td>Hand wheel
(No.85)</td><td>Visual inspection</td><td>• Inspect for damage, wear, deformation, etc,
• Inspect for good engaging with hand chain when pulling hand chain.</td><td>Replace with a new part.</td></tr>
<tr><td>Hand chain
(No.80)</td><td>Visual inspection</td><td>• Inspect for damage, wear, deformation, etc.
• Inspect for rust
• Inspect for good engaging with hand wheel when pulling hand chain.</td><td>Replace with a new part.</td></tr>
</table>

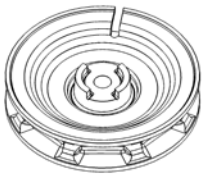


Figure 33

Inspection item (part name) part number	Method	Inspection/test details/standard values	Judgement, Measures
Load chain (No.79)	Visual inspection, measurement	• Inspect for any damage, deformation. • Inspect for elongation beyond the specified value. • Inspect for rust	Replace with a new part.

Table 13

Rated load	Diameter (mm)		Pitch (P×5) (mm)	
	Standard value	Limit value	Standard value	Limit value
0.5t 1102lbs	4.3mm	4.0mm	60.3mm	62.1mm
	0.16in	0.15in	2.37in	2.44in
1t 2204lbs	5.6mm	5.3mm	85.6mm	88.2mm
	0.22in	0.20in	3.37in	3.47in
1.5t 3306lbs	6.5mm	6.1mm	95.6mm	98.5mm
	0.25in	0.24in	3.76in	3.87in
2t 4409lbs	7.5mm	7.1mm	105.3mm	108.5mm
	0.29in	0.27in	4.14in	4.27in
3t 6613lbs	6.5mm	6.1mm	95.6mm	98.5mm
	0.25in	0.24in	3.76in	3.87in
5t 11023lbs	7.5mm	7.1mm	105.3mm	108.5mm
	0.29in	0.27in	4.14in	4.27in

Wear of the diameter is not to exceed 5% of the dimension value indicated above.
5-link pitch must not be elongated by 3% or more of the dimension value indicated above.

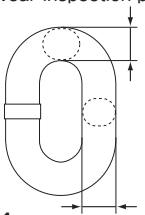
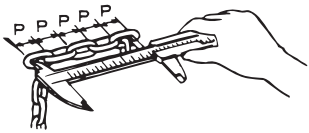
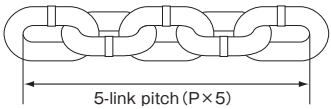


Figure 34



Pitch measurement method

Figure 35



5-link pitch

Figure 36

Lubrication and greasing of various parts

Load chain

- First, use cleaning solution to remove dust and dirt from the load chain.
- Apply NLGI No. 00 grease.
- Depending on the frequency of use and other conditions, increase the frequency of grease application to the load chain during daily inspections.

Gears and other parts

- First, use cleaning solution to remove any dust and dirt from the old grease coating of the gears.
- Apply NLGI No. 1 grease evenly to the gear sections.
- Apply grease to the pawls and rotating parts, as well as the rotating parts of the load sheave and side plate.

After completing the inspection of each of the above parts and assembling the inspected and repaired product, be sure to check the following.
Check the appearance, are there any abnormalities? Are there any parts you forgot to install?
Operate up and down with no load and check for any abnormal noises.
Is there a pawl sound when lifting up? Isn't the manual force required to turn the hand chain heavy?
Apply a load (rated load) and perform hoisting and hoisting operations, and check that there are no abnormal sounds, that the hand chain is not heavy to operate, and that the brakes are not slipping

7. Disassembly, Assembly and Adjustment

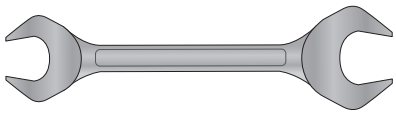
7.1 Tools and Equipment/Consumables used for Disassembly/Assembly

Prepare the following tools and supplies :

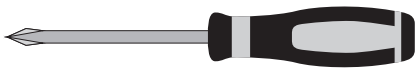
1. Wrench
2. Phillips screwdriver
3. Nippers
4. Pliers
5. Hexagonal wrench
6. Radio pliers
7. Snap ring pliers
8. Plastic hammer
9. Brush
10. Grease (NLGI. No. 1)
11. Oil (NLGI. No. 00)
12. Waste cloth

※Apply gear grease (NLGI. No. 1) and load chain oil (NLGI. No. 00) .
※Use the following tools to disassemble and reassemble the hoist.
Be sure to work carefully.

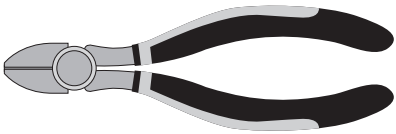
1. Wrench



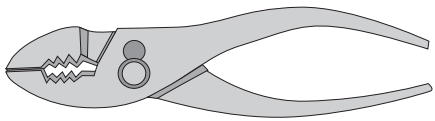
2. Phillips screwdriver



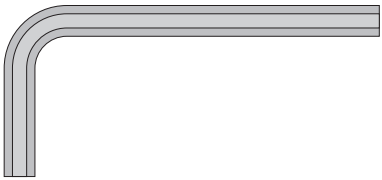
3. Nippers



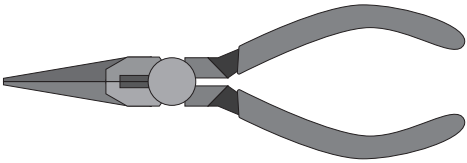
4. Pliers



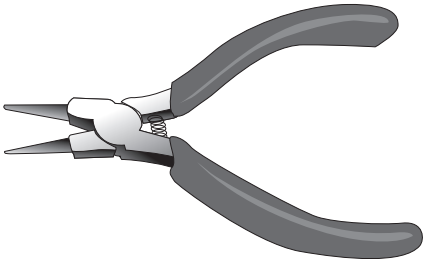
5. Hexagonal wrench



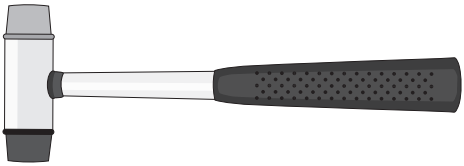
6. Radio pliers



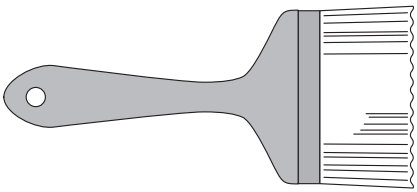
7. Snap ring pliers



8. Plastic hammer



9. Brush

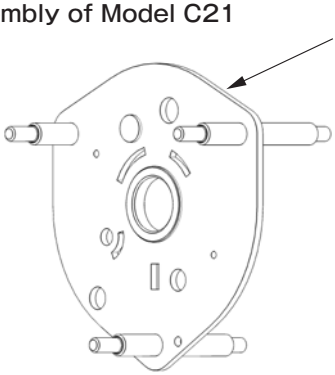


⚠ WARNING

Incorrect disassembly and assembly may cause death or serious accidents.
Disassembly and assembly should be carried out by a specialist or by someone with specialized knowledge specified by the operator.

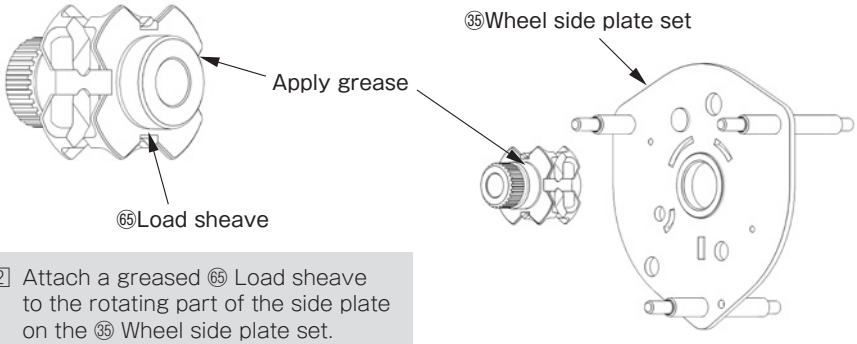
※Apply gear grease (NLGI. No. 1) and load chain oil (NLGI. No. 00).

7.2 Assembly of Model C21

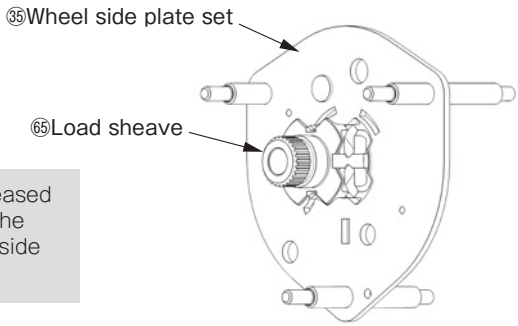


1 Prepare ㉟ Wheel side plate set
※Pawl pin side facing down.

Load sheave

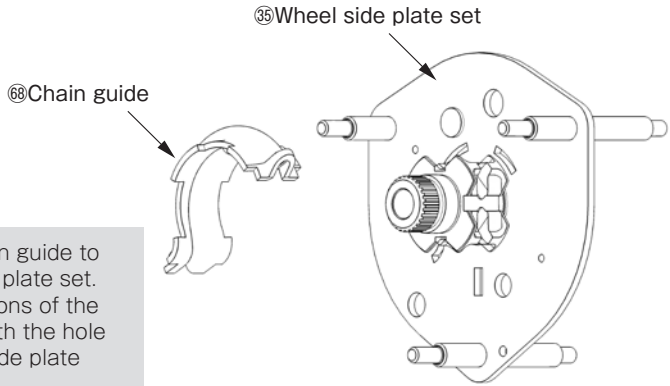


2 Attach a greased ⑥⑤ Load sheave to the rotating part of the side plate on the ㉟ Wheel side plate set.

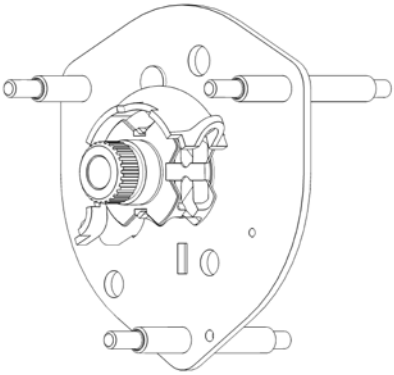


3 Complete status of which greased ⑥⑤ Load sheave attached to the rotating part of the ㉟ Wheel side plate set.

Chain guide

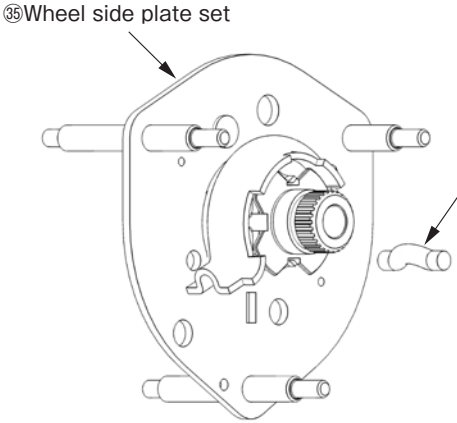


4 Install the ㊽ Chain guide to the ㉟ Wheel side plate set. Align the protrusions of the ㊽ Chain guide with the hole of the ㉟ Wheel side plate set.

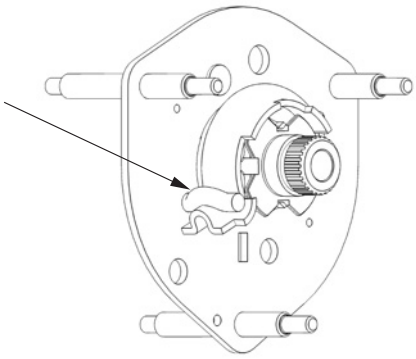


5 Condition of the ㊽ Chain guide attached to the ㉟ Wheel side plate set.

Chain guide pin

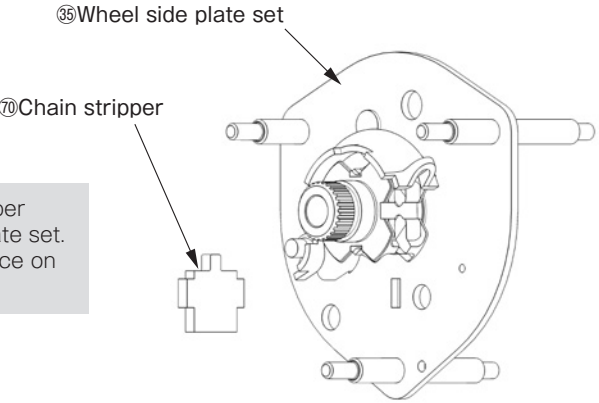


6 Attach the ㊽ Chain guide pin to the ㉟ Wheel side plate set.
※㊾ Chain gude pin is attached for 1.5t and more capacities only.

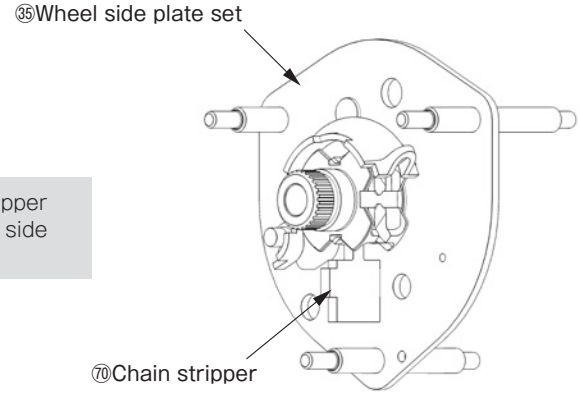


7 ㉟ Wheel side plate set with ㊾ Chain guide pin attached like this.
※㊾ Chain gude pin is attached for 1.5t and more capacities only.

Chain stripper

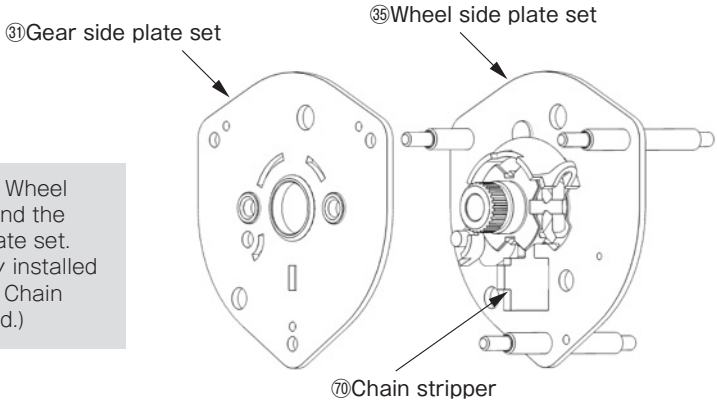


8 Insert the ⑦⓪ Chain stripper into the ㉟ Wheel side plate set. (Place the rounded surface on the load side.)

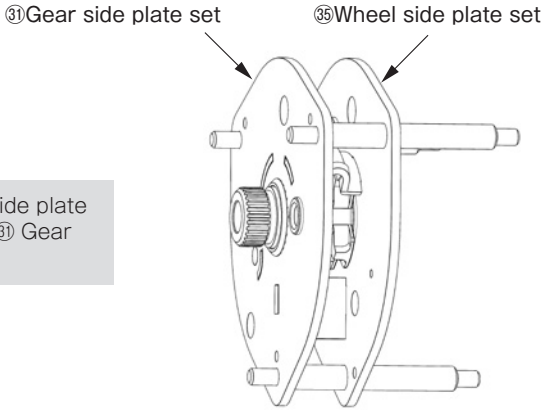


9 Condition of ⑦⓪ Chain stripper attached to the ㉟ Wheel side plate set.

Gear side plate

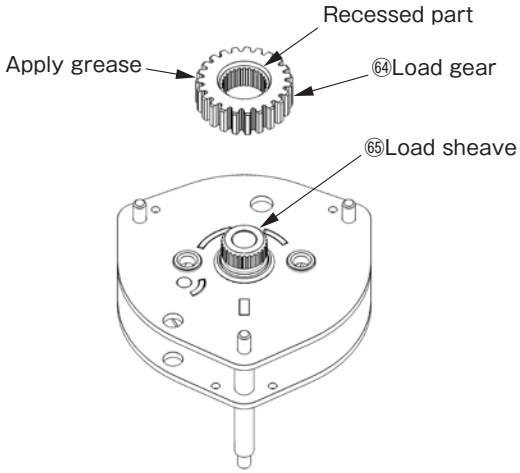


⑩ Combine the ㉟ Wheel side plate set and the ㉛ Gear side plate set. (It can be easily installed by fixing the ⑦⓪ Chain stripper by hand.)

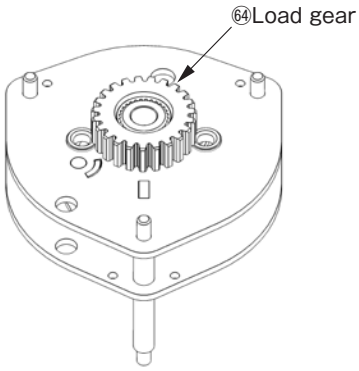


⑪ Condition of ㉟ Wheel side plate set combined with the ㉛ Gear side plate set.

Load gear

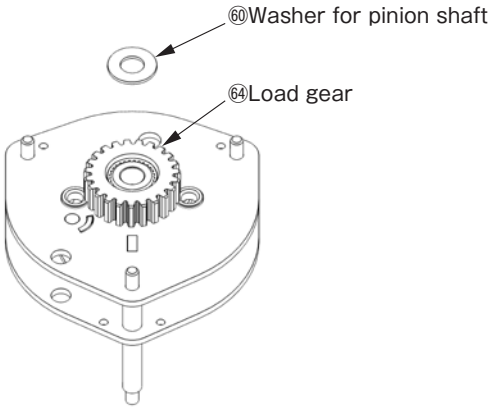


⑫ Attach the ⑥④ Load gear to the ⑥⑤ Load sheave with resessed part facing up.

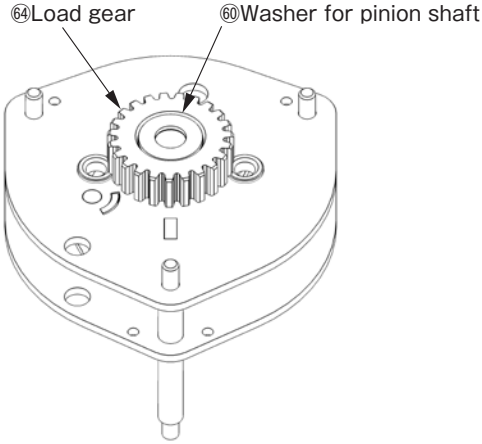


13 Condition of the ⑭ Load gear combined with the ⑮ Load sheave

Washer for pinion shaft

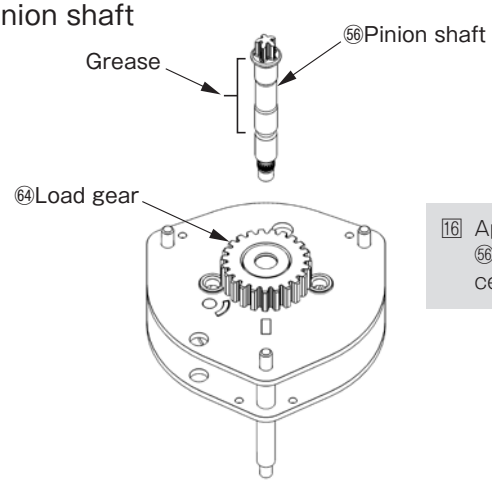


14 Install the ⑥ Washer for the pinion shaft on the center of the ⑭ Load gear. (Set the flat part of the ⑥ Washer for pinion shaft to the ⑭ Load gear side.)

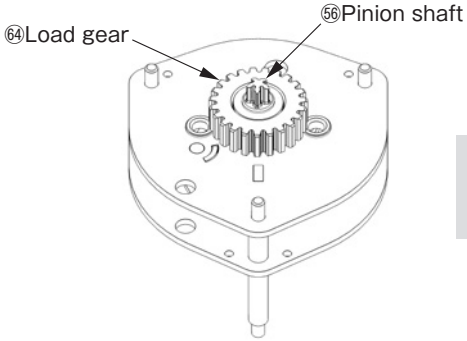


15 Condition of ⑥ Washer for the pinion shaft installed on the center of the ⑭ Load gear.

Pinion shaft

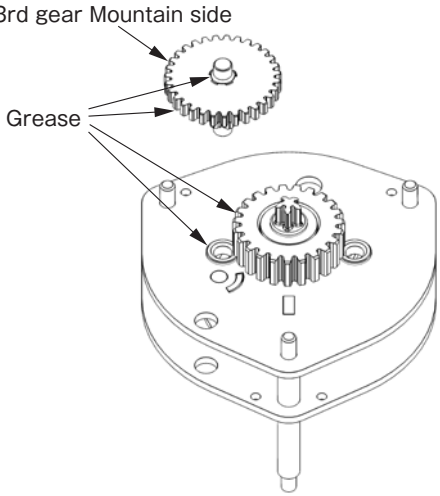


16 Apply grease to the shaft part of the ⑯ Pinion shaft and insert it into the center of the ⑭ Load gear



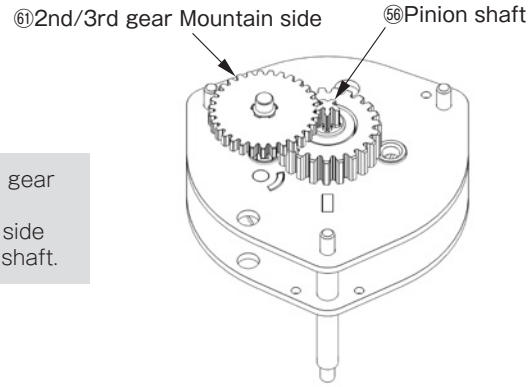
17 Condition of the ⑯ Pinion shaft inserted into the center of the ⑭ Load gear

2nd/3rd gear

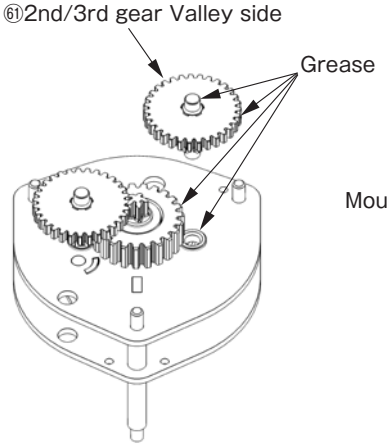


18 There are 2 kinds of ⑪ 2nd/3rd gears. They are Mountain side gear and Valley side gear .
Set the ⑯ Pinion shaft in the center, facing each other so that the marks on the mountain side and the marks on the valley side are in a straight line.
Firstly, install the ⑪ 2nd/3rd gear mountain side. Apply grease to the metal part and gear part of the side plate.

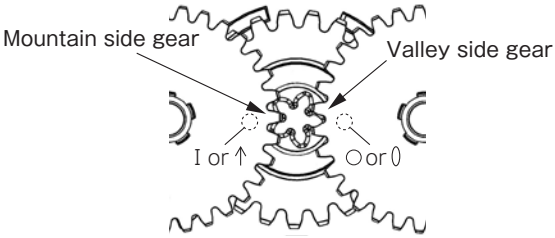
Gear combination		
Rated load	Mountain side	Valley side
0.5t 1t	I	○
1.5t 3t	↑	()
2t 5t	↑	()



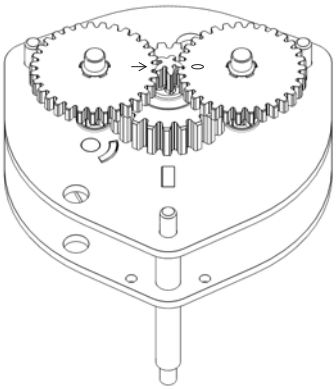
⑲ The state where the ⑥① 2nd/3rd gear mountain side is installed.
Align the mark on the mountain side with the center of the ⑤⑥ Pinion shaft.



⑳ Install the ⑥① 2nd/3rd gear valley side.
Apply the grease to the gears and metal part of the side plate



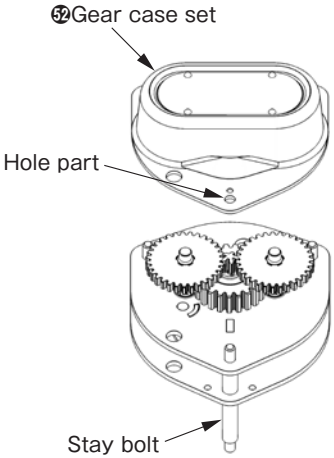
㉑ The state where the ⑥① 2nd/3rd gear valley side is attached.
Align the mark on the ⑥① 2nd/3rd gear valley side with the center of the ⑤⑥ Pinion shaft.



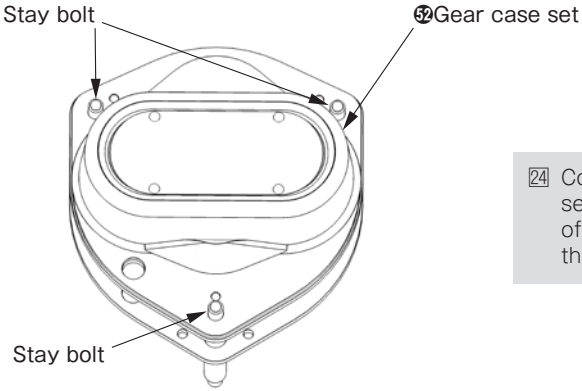
Gear combination		
Rated load	Mountain side	Valley side
0.5t 1t	I	○
1.5t 3t	↑	()
2t 5t	↑	()

㉒ Make sure that the ⑥① 2nd/3rd gear marks are aligned with the ⑤⑥ Pinion shaft.
※After installation, rotate the gear and check if it rorates smoothly.
※If the mark is misaligned, it will lead to defects such as not rotating.

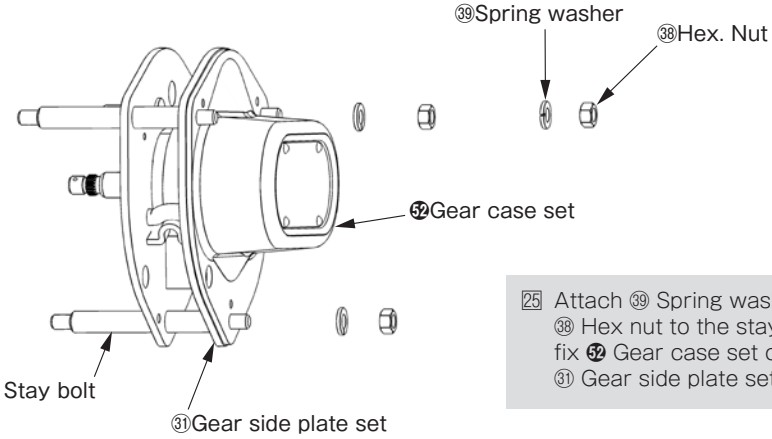
Gear case set



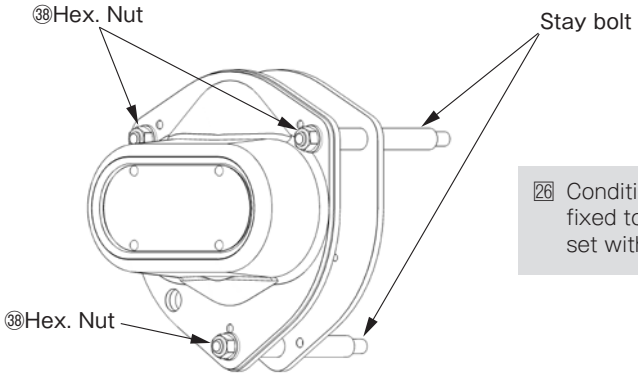
㉓ Align the three holes in the ㊷ Gear case set with the three stay bolts, attach the ㊷ Gear case set, and cover the gears.



㉔ Condition of the ㊷ Gear case set attached to the positions of three stay bolts to cover the gears.

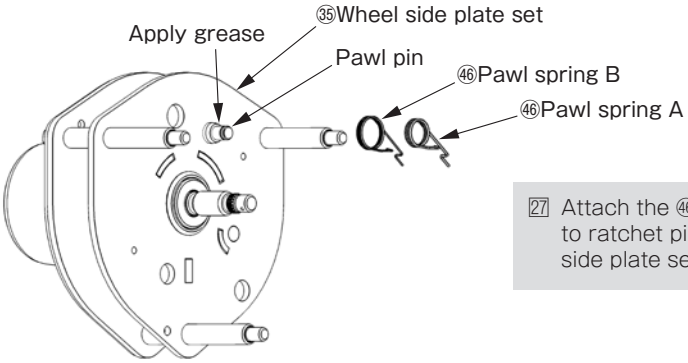


㉕ Attach ㊴ Spring washer and ㊳ Hex nut to the stay bolts to fix ㊷ Gear case set on the ㉛ Gear side plate set.

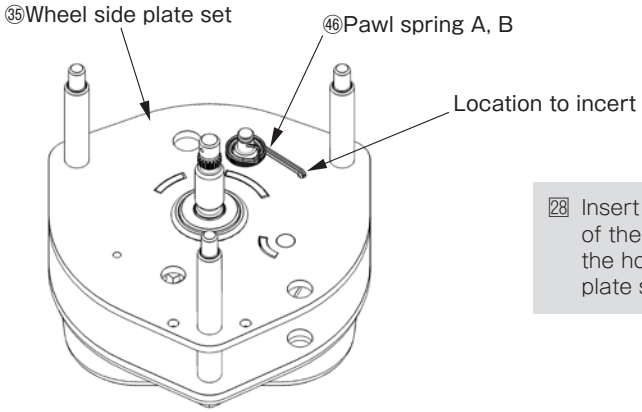


26 Condition of ㊷ Gear case set fixed to ㉛ Gear side plate set with ㊳ Hex nuts.

Pawl spring

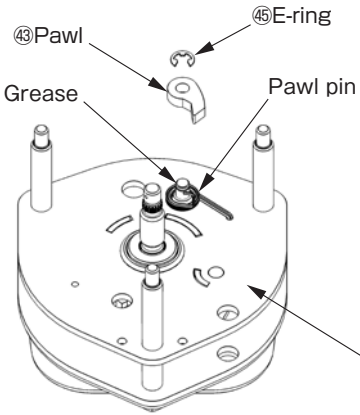


27 Attach the ㊻ Pawl spring A,B to ratchet pin on the ㉟ Wheel side plate set.

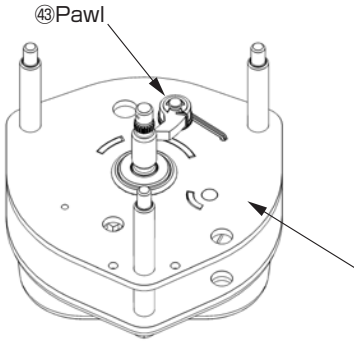


28 Insert part of the long parts of the ㊻ Pawl spring A,B into the holes in the ㉟ Wheel side plate set.

Pawl

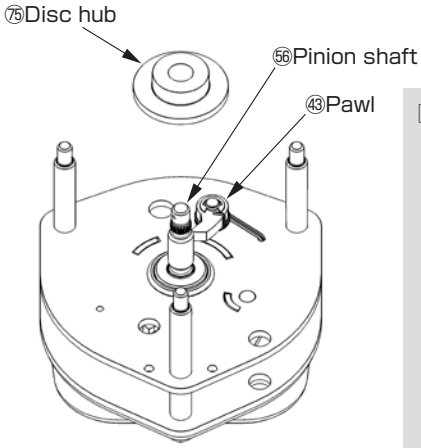


29 Attach the ㊸ Pawl and ㊺ E-ring to the ratchet pin on the ㉟ Wheel side plate set.
※Apply grease to the ratchet pin.

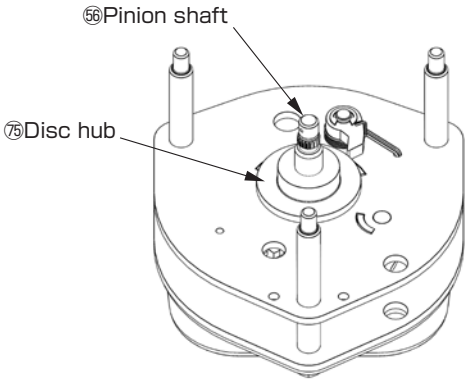


30 Condition of ㊸ Pawl attached to pawl pin of ㉟ Wheel side plate set

Disc hub

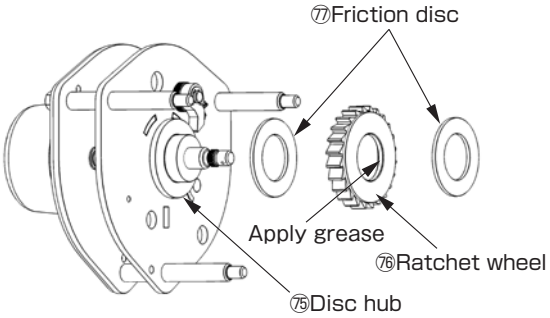


31 Install the ㉕ Disc hub on the ㊻ Pinion shaft. Since the mounting part of the ㊻ Pinion shaft is a screw,turn the ㉕ Disc hub by hand and tighten until it stops moving.
If you screw in the ㉕ Disc hub, it will hit the ㊸ Pawl, so please spread the ㊸ Pawl when installing.
Shape of ㉕ Disc hub for 0.5t is different from for 1ton and more capacities.
As for their difference, please see Breakdown Schematics.

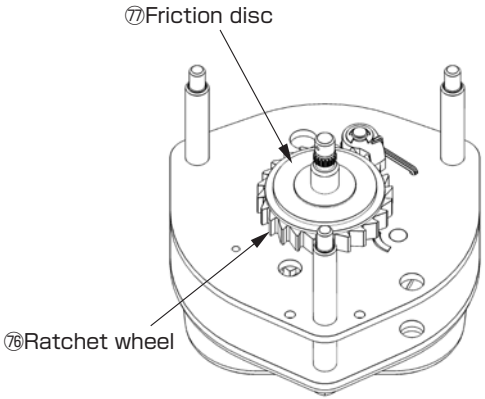


32 Condition of ㊺ Disc hub attached to ㊻ Pinion shaft

Ratchet wheel Friction disc

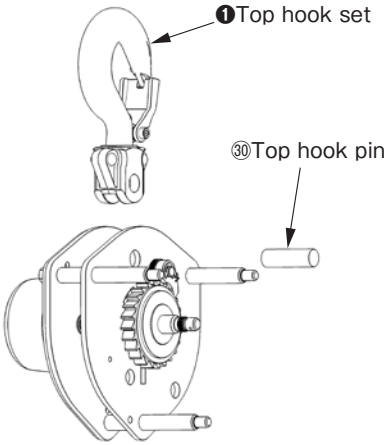


33 Install the ㊼ Friction disc, ㊻ Ratchet wheel and ㊼ Friction disc on the ㊺ Disc hub on this order.
※Make sure that Ratchet wheel and Pawl are engaged correctly.
※Apply very small amount of grease on the inside of the Ratchet wheel.



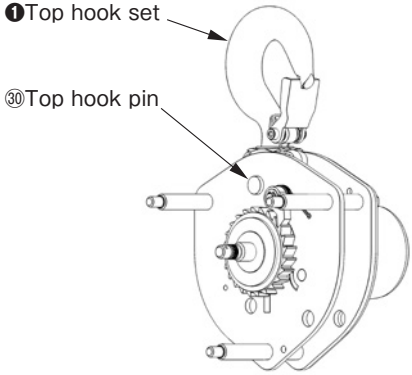
34 Condition of the ㊼ Friction disc, ㊻ Ratchet wheel and ㊼ Friction disc attached to ㊺ Disc hub on this order.

Top hook set



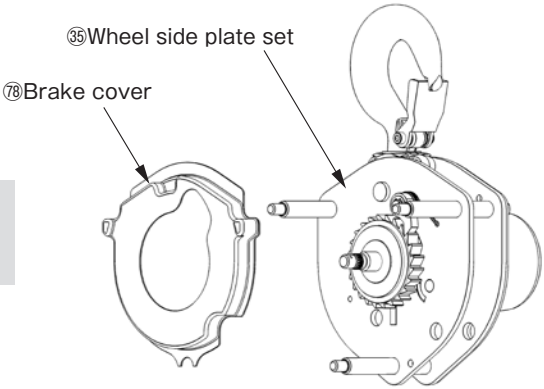
㉟ Align the holes in the ❶ Top hook set with the holes in the gear-side and wheel-side side plates, and fix them with the ㉚ Top hook pin.
※The top hook pin has a marking, please insert from marking side.

Rated load	Marking
0.5t	A
1t	B
1.5t/3t	C
2t/5t	D

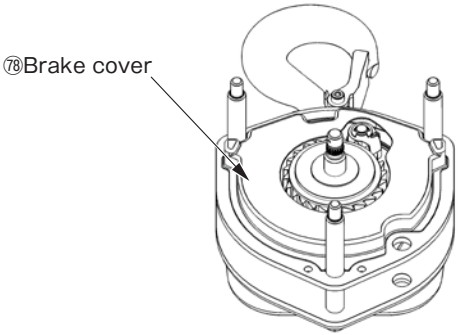


㊱ Condition of the ❶ Top hook set attached

Brake cover

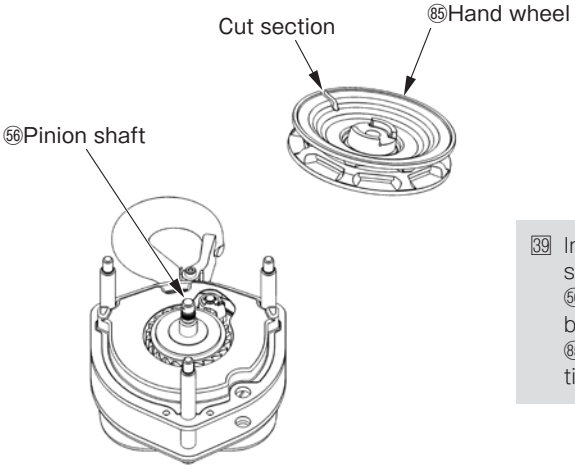


㊲ Install the ㉘ Brake cover according to the shape of the ㉟ Wheel side plate set.

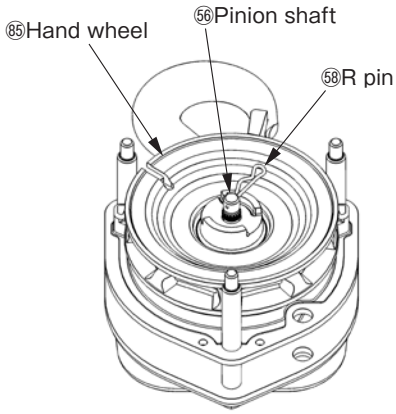


㊳ Condition of ㉘ Brake cover attached

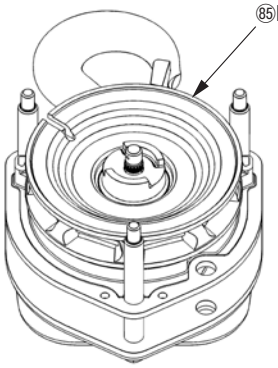
Hand wheel



㊴ Install the ㉟ Hand wheel cut section side up on the ㊻ Pinion shaft(opposite the brake lining) Turn the ㉟ Hand wheel by hand and tighten until it stops.

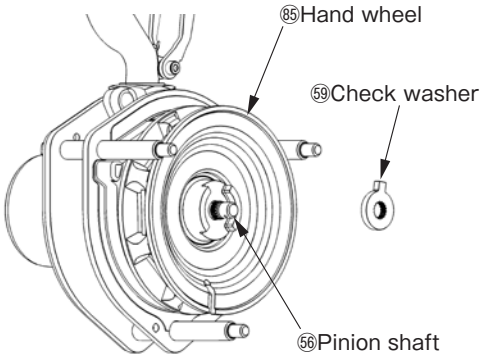


㊵ Insert the ㊽ R pin into the hole of the ㊻ Pinion shaft to fix the movement of the ㊻ Pinion shaft.
Tighten the ㉟ Hand wheel again.
Remove the ㊽ R pin after tightening.

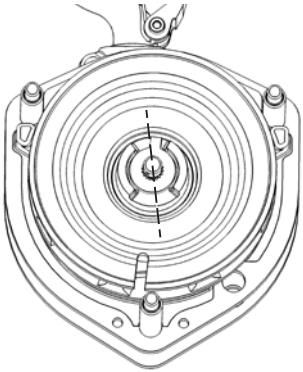


41 Completion status of No.40.

Check washer

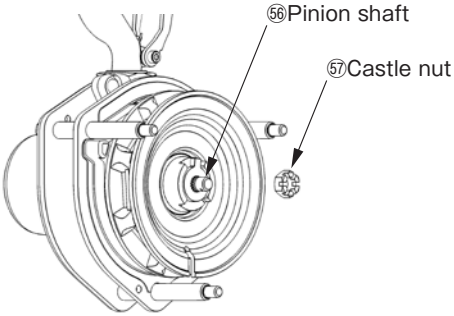


42 Install the ⑤⑨ Check washer with the roundness on the ⑧⑤ Hand wheel side through the ⑤⑥ Pinion shaft.
There are 2 large and small cutouts(fan-shaped items) on the ⑤⑨ Check washer mounting part of the ⑧⑤ Hand wheel.
Either side is fine, so please install it on the right side of the center of the notch.
※If it is installed all the way to the right side, the brake will not be released.



43 Condition of the ⑤⑨ Check washer attached to the right of the center of the notch in the ⑧⑤ Hand wheel.

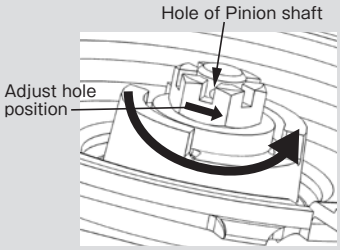
Castle nut



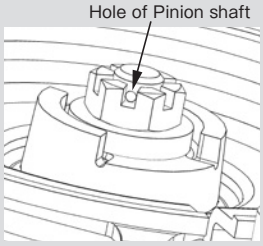
㊹ Hand-tighten the ⑰ Castle nut onto the ⑯ Pinion shaft.

If the groove of the Castle nut exceeds the hole of the Pinion shaft, see below ㊺ A.
If the groove of the Castle nut does not reach the hole of the Pinion shaft, see below ㊺ B.
If the groove of Castle nut matches the hole of the Pinion shaft, see below ㊺ C.

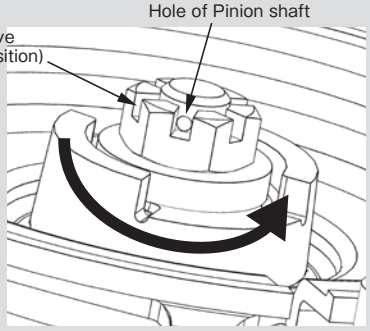
㊺A If the groove of the Castle nut exceeds the hole of the Pinion shaft,



If the ⑰ Castle nut is tightened and the groove of the ⑰ Castle nut exceeds the hole of the ⑯ Pinion shaft, loosen the ⑰ Castle nut and align the groove of the ⑰ Castle nut with hole where the ⑱ R pin will be inserted.

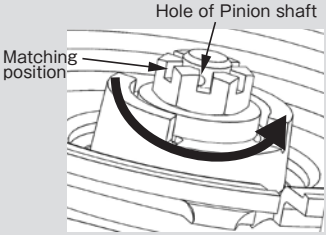


The figure to the left shows that aligning the groove of the ⑰ Castle nut with the hole position of the ⑯ Pinion shaft(the hole position where the ⑱ R pin is inserted) after loosing the ⑰ Castle nut.

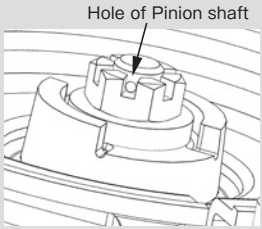


Once the ⑰ Castle nut groove and ⑯ Pinion shaft hole position (the hole position where the ⑱ R pin is inserted) are aligned, loosen the ⑰ Castle nut by one groove, and then align the groove of the ⑰ Castle nut with the hole position of the ⑯ Pinion shaft(the hole position where the ⑱ R pin is inserted).

45B If the groove of the Castle nut does not reach the hole of the Pinion shaft,

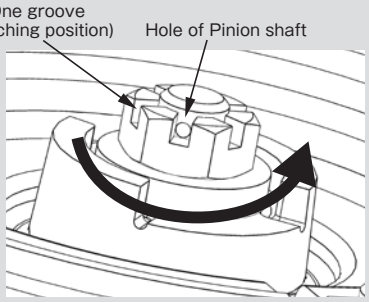


If the ⑤⑦ Castle nut groove does not reach the hole in the ⑤⑥ Pinion shaft when the ⑤⑦ Castle nut is tightened, loosen the ⑤⑦ Castle nut and align the groove of the ⑤⑦ Castle nut with the hole where the ⑤⑧ R pin will be inserted.

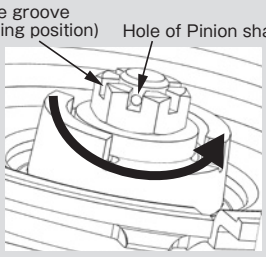


The figure to the left shows that aligning the groove of the ⑤⑦ Castle nut with the hole position of the ⑤⑥ Pinion shaft(the hole position where the ⑤⑧ R pin is inserted) after loosing the ⑤⑦ Castle nut.

Once the ⑤⑦ Castle nut groove and ⑤⑥ Pinion shaft hole position (the hole position where the ⑤⑧ R pin is inserted) are aligned, loosen the ⑤⑦ Castle nut by one groove, and then align the groove of the ⑤⑦ Castle nut with the hole position of the ⑤⑥ Pinion shaft(the hole position where the ⑤⑧ R pin is inserted).

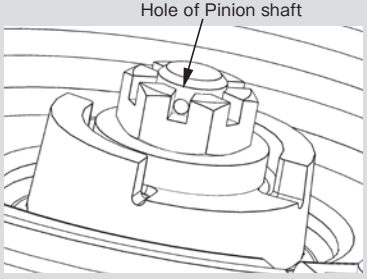


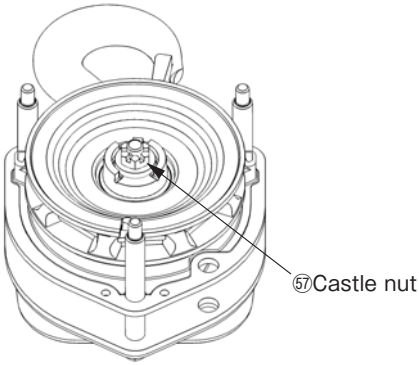
45C If the groove of Castle nut matches the hole of the Pinion shaft,



If the ⑤⑦ Castle nut is tightened and the groove on the ⑤⑦ Castle nut matches the hole on the ⑤⑥ Pinion shaft,loosen the ⑤⑦ Castle nut by one groove and align the hole on the ⑤⑥ Pinion shaft and the groove on the ⑤⑦ Castle nut.

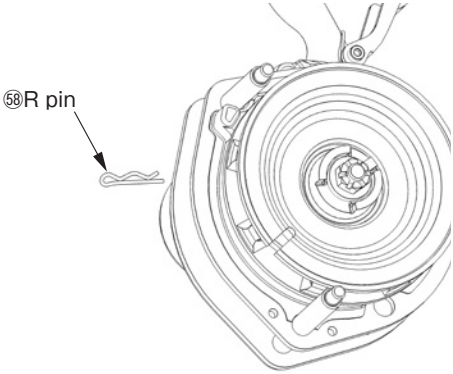
The figure to the right shows that aligning the groove of the ⑤⑦ Castle nut with the hole position of the ⑤⑥ Pinion shaft after loosing the ⑤⑦ Castle nut by one groove.



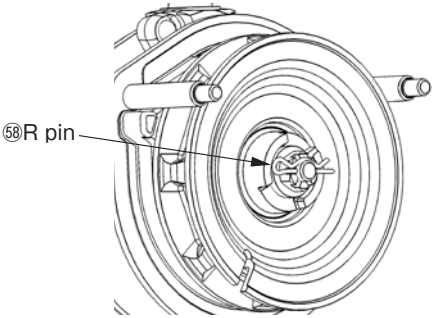


46 Completed installation of the ㊼ Castle nut

R pin

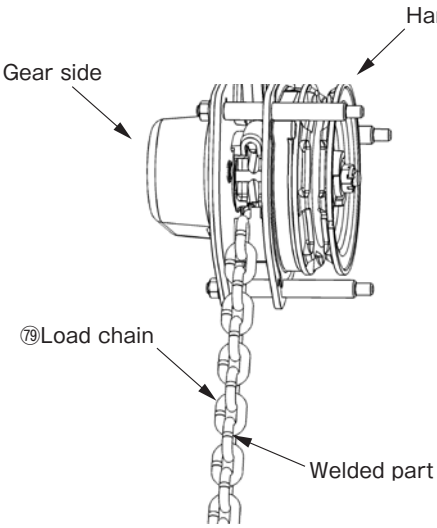


47 Insert the ㊽ R pin into the adjusted slotted hole of ㊻ Pinion shaft so that ㊼ Castle nut will not be loosen.

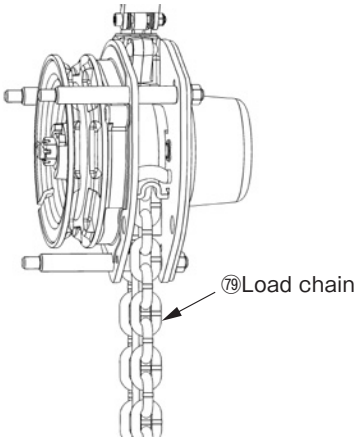


48 Lay down the ㊽ R pin inserted in the hole of ㊻ Pinion shaft to the side (for 1ton and more capacities)
※㊽ R pin can not be laid down to the side for 0.5t

Load chain

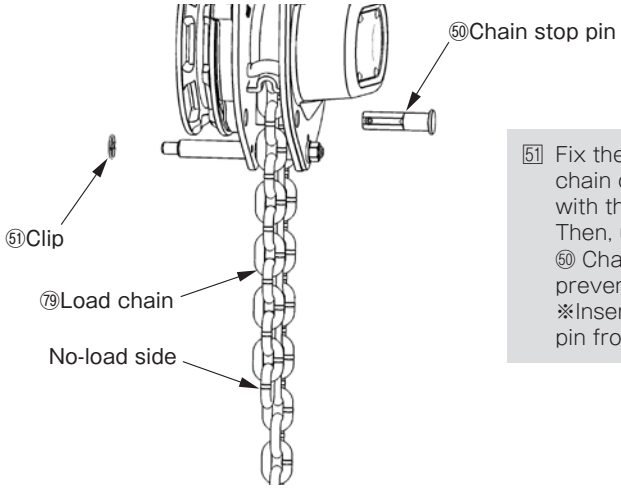


49 Place the gear case side to the left and the ⑧⑤ Hand wheel side to the right so that the ⑥⑤ Load sheave can be seen.
Put the end of ⑲ Load chain into the ⑥⑤ Load sheave with the welded part of the ⑲ Load chain facing up(Vertical link).
Turn the ⑧⑤ Hand wheel so that the ⑲ Load chain can be sent to the other side(no load side).

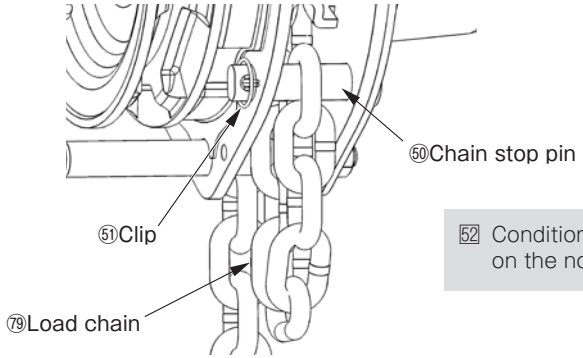


50 With the ⑲ Load chain attached.

Chain stop pin

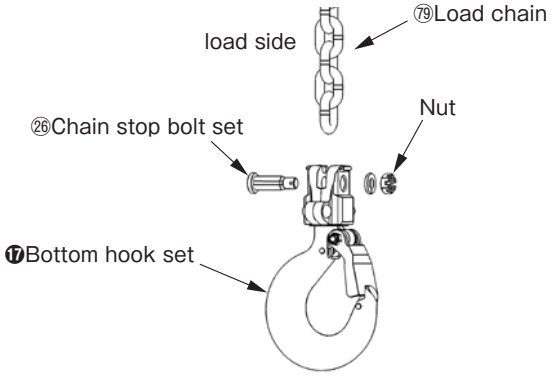


51 Fix the end of ⑦⑨ Load chain on the no-load side with the ⑤⓪ Chain stop pin. Then, using ⑤① Clip for the ⑤⓪ Chain stop pin to prevent it from coming off.
※Insert the ⑤⓪ Chain stop pin from hand wheel side.

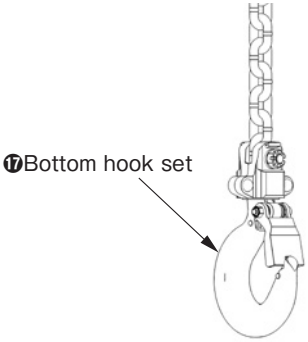


52 Condition of the ⑦⑨ Load chain on the no-load side installed

Bottom hook set

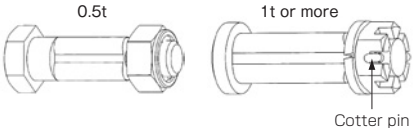


53 Attach the ⓱ Bottom hook set to the ⑲ Load chain on the load side using the ㉖ Chain stop bolt set. Install the ⓱ Bottom hook set so that the welded side of the second link from the end is on the nut side of the ㉖ Chain stop bolt. ※Apply screw lock to the 0.5t screw.

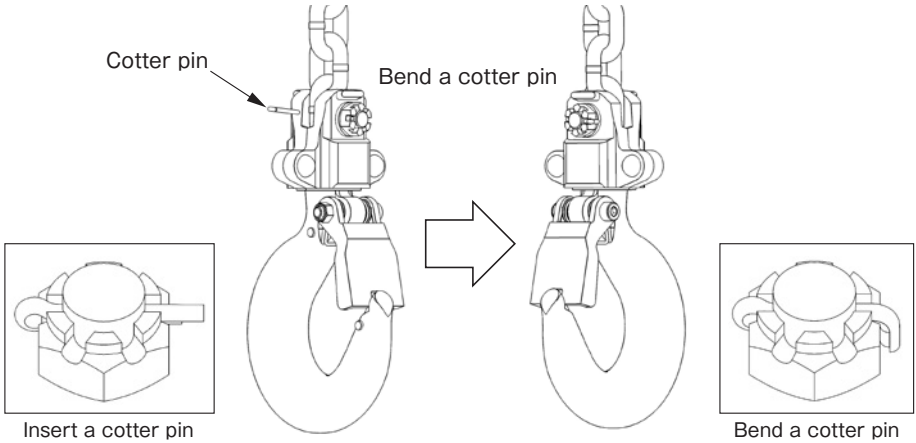


54 Complete status of which the ⓱ Bottom hook set is attached to the ⑲ Load chain on the load side

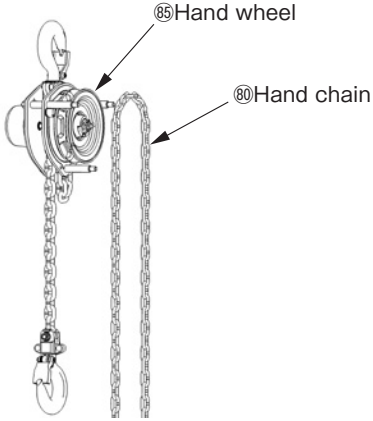
Note 1) For 0.5t, U nut is used for ㉖ Chain stop bolt set, For 1 t and more capacities, spring washer, castle nut, cotter pin are used for it.



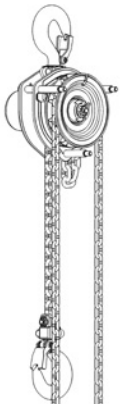
55 Secure the ⓱ Bottom hook set and ⑲ Load chain with cotter pin so that they do not come off.



Hand chain

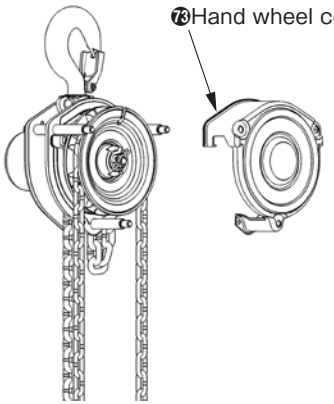


56 Attach ⑧⓪ Hand chain to the ⑧⑤ Hand wheel.
Insert the hand chain into hand wheel notch and turn the hand wheel to attach it.

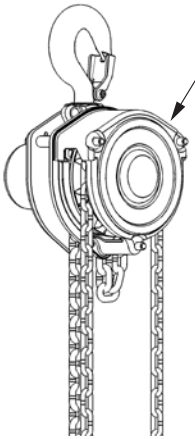


57 Condition of ⑧⓪ Hand chain attached to the ⑧⑤ Hand wheel.

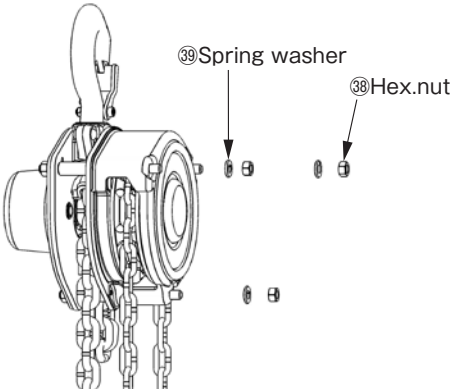
Hand wheel cover



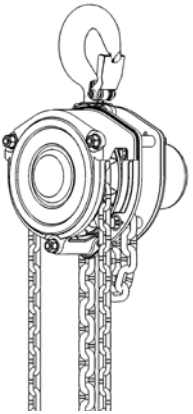
58 Attach the ⑦③ Hand wheel cover to prevent the ⑧⓪ Hand chain from coming off the ⑧⑤ Hand wheel.



59 Condition of the ㉝ Hand wheel cover attached to prevent the ㉚ Hand chain from coming off the ㉟ Hand wheel.

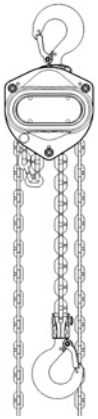


60 Secure the ㉝ Hand wheel cover with the ㊴ Spring washer and ㊳ Hex.nut so that ㉝ Hand wheel cover does not come off.



61 Condition of ㉝ Hand wheel cover secured with the ㊴ Spring washer and ㊳ Hex.nut so that ㉝ Hand wheel cover does not come off.

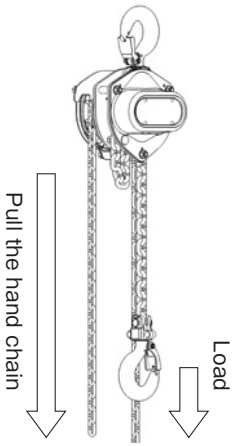
Assembly completed



62 Assembly completed

Check the appearance and check the movement of the product with no load.

Hoisting check

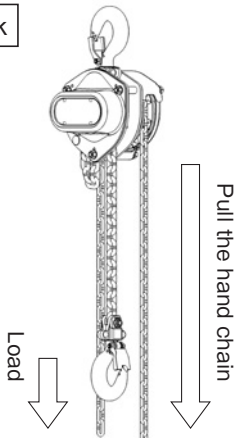


63 Load the bottom hook and pull the hand chain in the direction of the arrow.

Is the brake slipping?
Are there any abnormal sounds?
Is there a clacking sound when winding up?
Is there any weight in the operation of the hand chain?

If there is any abnormality, please reassemble.
If there is no abnormality, please check the lowering.

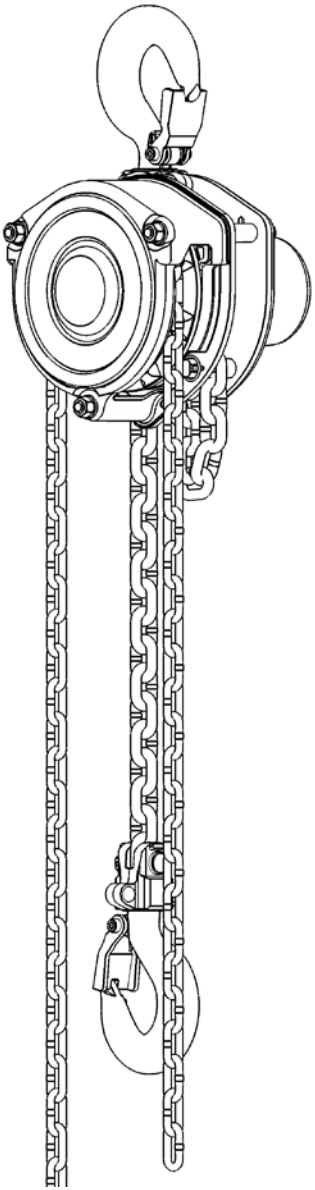
Lowering check



64 Is the brake slipping?
Are there any abnormal sounds?
Is there any weight in the operation of the hand chain?

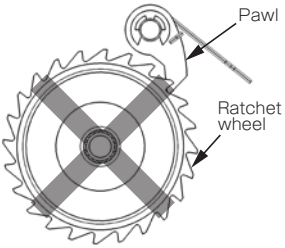
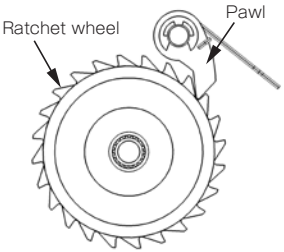
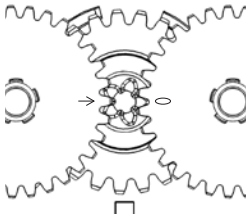
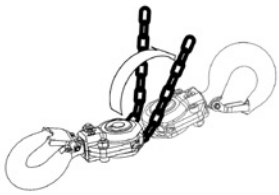
If there is any abnormality, please reassemble.
If there are no errors, the process is complete.

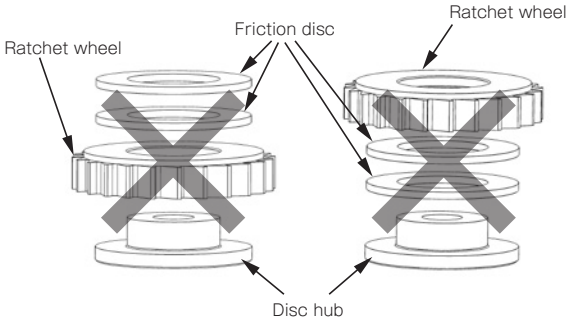
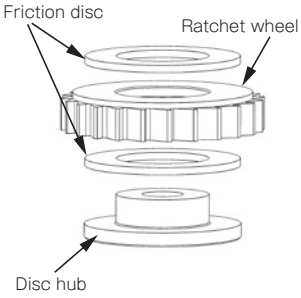
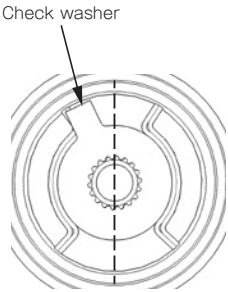
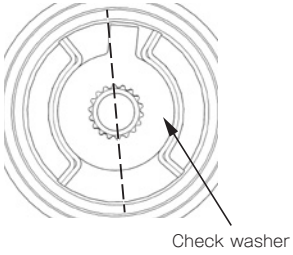
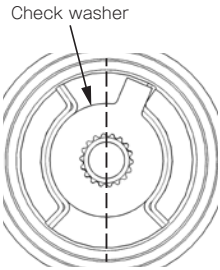
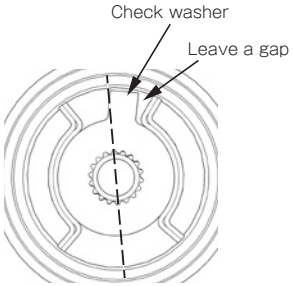
Complete



7.3 Is this a malfunction!? First check for (commonly found assembly errors)

・Check again according to the instructions below before calling for repairs:

When in this situation:	The cause and target of inspection is:	How to fix:
①Hand chain does not move either up or down. There is no audible pawl engaging sound.	Ratchet wheel in the brake section is not assembled correctly. Ratchet wheel is assembled backwards and is not engaged with the pawl. 	Reassemble ratchet wheel correctly. Make sure the pawl and the ratchet wheel are engaged, and also check for the clicking sound when the ratchet wheel is turned. 
②Hand chain does not move either up or down. There is no audible pawl engaging sound.	The pawl and ratchet wheel are not engaged. There are dirt, corrosion on pawl and pawl pin. Check the spring failure.	Disassemble, clean and lubricate the brake, pawl, and pawl spring parts. Replace pawl spring and check the spring force.
③Hand wheel does not move(turn).	The mark on the mountain side and the mark on the valley side of the 2nd and 3rd gears are misaligned. (Not in a straight line around the pinion shaft)	Set the 2nd and 3rd gears facing each other so that the mark on the mountain side and the mark on the valley side are in a straight line. 
④Bottom hooks on two falls chain hoist does not rises fully to the end(touching the body). 	Bottom hook is reversed and the chain is twisted.  Twisted chain due to reversed hook	Restore reversed bottom hook and check if the chain is twisted. Then confirm whether the bottom hook rises fully until it touches the main unit.  Chain in correct orientation

When in this situation:	The cause and target of inspection is:	How to fix:
⑤Brake does not work. There is no clicking sound of the pawl engaging. Load is slipped down. 	Brake parts are not assembled correctly. Pawl spring is damaged.	Assemble brake parts correctly so that the pawl engages the ratchet wheel. Confirm the clicking sound of ratchet wheel meshing with the pawl before use. 
⑥Brake does not work. Load is slipped down.	The brake is not working because the check washer is located to the left of the center. 	Attach the check washer to the right side of the center of the hand wheel cutout (fan shape). 
⑦The hand wheel does not turn in the lowering direction.	The brake does not release because the check washer is installed all the way to the right. 	Attach the check washer to the right side of the center of the hand wheel cutout (fan shape) 

Inspection records

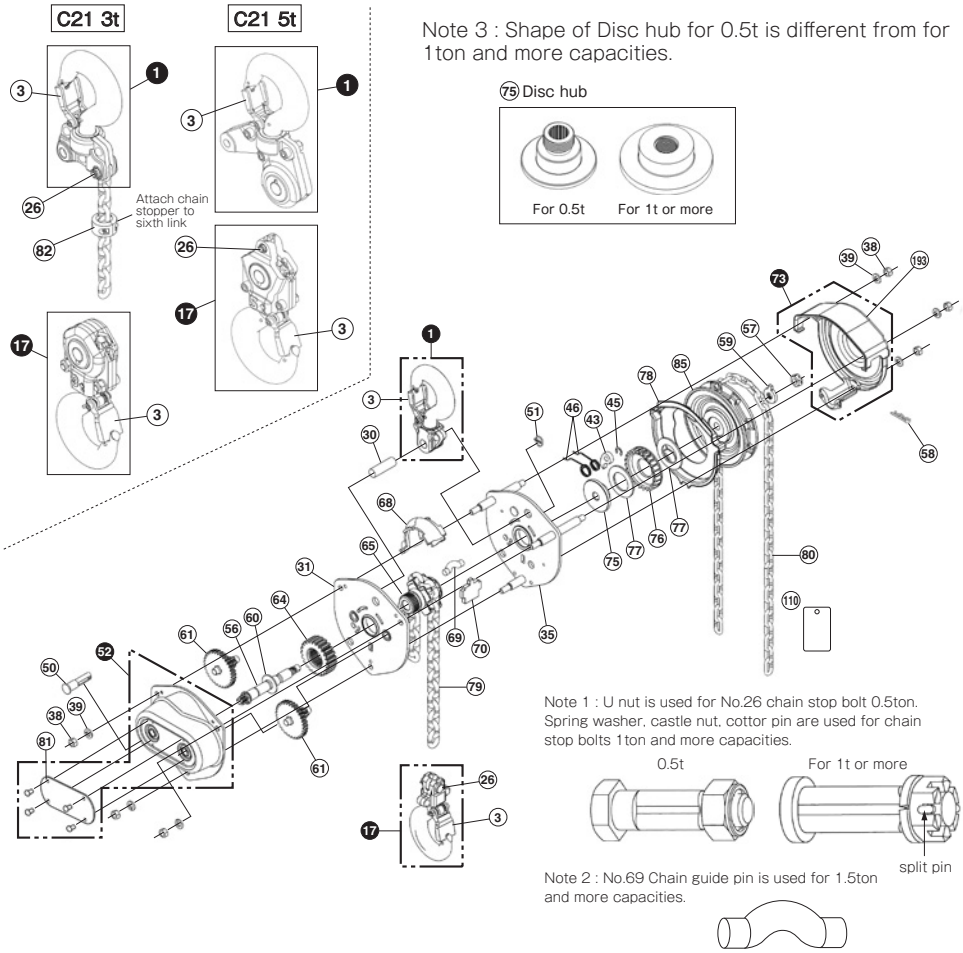
Model		Date of inspection	
Tonnage		Name of qualified person (Name of inspector)	
Production No.			
Lift			

Inspection Part (Part No., Part Name)			Inspection contents	Judgment	Remarks
1		Top hook set Actual value A mm B mm C mm D mm	Check for openings in hook, twists, damage, etc.		
			Between punches		
			Hook thickness, vertical		
			Hook thickness, horizontal		
			Hole diameter of top hook pin		
	3	Safety latch set	Whether the hook is engaged, damaged, deformed, etc.		
17		Bottom hook set Actual value A mm B mm C mm D mm	Check for openings in hook, twists, damage, etc.		
			Between punches		
			Hook thickness, vertical		
			Hook thickness, horizontal		
			Hole diameter of chain stop bolt set		
	3	Safety latch set	Whether the hook is engaged, damaged, deformed, etc.		
26		Chain stop bolt set Actual value mm	Check the bolt diameter for wear, damage, deformation, etc.		
30		Top hook pin Actual value mm	Inspect for pin diameter wear.		
31		Gear side plate set mm Actual value mm	Inspect for wear and deformation of the pin hole diameter in the respective parts		
35		Wheel side plate set Actual value mm	Inspect for wear and deformation of the pin hole diameter in the respective parts		
38		Hex. nut	Inspect for damage, wear, deformation, etc.		
39		Spring washer	Inspect for damage, wear, deformation, etc.		
43		Pawl	Inspect for wear with bumps identifiable by hand and other damage.		
45		E-ring	Inspect for openings in the snap ring and damage, etc.		
46		Pawl spring A/B set	Inspect for damage, wear, deformation, etc.		

Inspection Part (Part No., Part Name)			Inspection contents	Judgment	Remarks
50		Chain stop pin	Inspect for damage, wear, deformation, etc.		
51		Clip	Inspect for opening of ring and damage		
52		Gear case set	Inspect for damage, wear, deformation, etc.		
	81	Name plate	Inspect for damage, deformation, legibility.		
56		Pinion shaft	Inspect for chipped gear teeth and other damage		
57		Castle nut	Inspect for damage, wear, deformation, etc.		
58		R pin	Inspect for damage, wear, deformation, etc.		
59		Check washer	Inspect for damage, wear, deformation, etc.		
60		Washer for pinion shaft	Inspect for damage, wear, deformation, etc.		
61		2nd/3rd gear set	Inspect for chipped gear teeth and other damage		
64		Load gear	Inspect for chipped gear teeth and other damage		
65		Load sheave	Inspect for engagement with the chain, damage, deformation, etc.		
68		Chain guide	Inspect for damage, wear, deformation, etc.		
69		Chain guide pin (1.5t or more)	Inspect for damage, wear, deformation, etc.		
70		Chain stripper	Inspect for damage, wear, deformation, etc.		
73		Hand wheel cover	Inspect for damage, wear, deformation, etc.		
	193	Warning sticker	Inspect for damage, legibility.		
75		Disc hub	Inspect for chipped gear teeth and other damage		
76		Ratchet wheel Actual value mm	Inspect for chipped gear teeth and other damage		
77		Friction disc Actual value mm	Inspect for wear, damage, deformation, etc.		
78		Brake cover	Inspect for wear, damage, deformation, etc.		
82		Chain stopper(3t only)	Inspect for wear, damage, deformation, etc.		
85		Hand wheel	Inspect for wear, damage, deformation, etc.		
79		Load chain Actual value Diameter mm Pitch mm	Inspect for wear, damage, deformation, etc.		
80		Hand chain	Inspect for damage, wear, deformation, etc.		

※ Example : Please indicate ○(good) or X(replacement) in the judgment.
※ Please perform the above checks and inspections. Also, be sure to keep inspection records.
※ Be sure to replace any parts that you think are unsafe, even in the slightest, with new parts.
※ Please be sure to replace spring-related parts during inspection.
※ Please be sure to replace hex nuts, spring washers, and cotter pins that are considered consumable parts during inspection.

Breakdown Schematics and Parts Names: Models C21 0.5t to 5t



Symbols in Breakdown Schematics		Parts Names	Symbols in Breakdown Schematics		Parts Names	Symbols in Breakdown Schematics		Parts Names	Symbols in Breakdown Schematics		Parts Names
Set	Individual unit		Set	Individual unit		Set	Individual unit		Set	Individual unit	
1		Top hook set		45	E-ring		61	2nd/3rd gear set		77	Friction disc
	3	Safety latch set		46	Pawl spring A,B set		64	Load gear		78	Brake cover
17		Bottom hook set		50	Chain stop pin		65	Load sheave		82	Chain stopper set (for 3ton only)
	3	Safety latch set		51	Clip		68	Chain guide			
	26	Chain stop bolt set	52		Gear case set		69	Chain guide pin (1.5ton and more capacities)		85	Hand wheel
	30	Top hook pin		81	Name plate					79	Load chain (Standard lift)
	31	Gear side plate set		56	Pinion shaft		70	Chain stripper		80	Hand chain (Standard lift)
	35	Wheel side plate set		57	Castle nut	73		Hand wheel cover		110	Tag
	38	Hex.nut		58	R pin		193	Warning Sticker			
	39	Spring washer		59	Check washer		75	Disc hub			
	43	Pawl		60	Washer for pinion shaft		76	Rachet wheel			

※Spare parts with black colored line are included in spare parts on parts number in grey colored hatching.
For example, Part No.26 chain stop bolt set is included in Part No.17 Bottom hook set.
※Spare parts with black colored line can be supplied individually.
※No.26 Chain stop bolt set is included in top hook set for C-21 3ton

The goods has passed rigid inspection by us ahead of delivery in accordance with our standard in terms of test load and all other respects in good and satisfactory condition.

Inspector J. Uryu

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Phone : 072-365-7778 Fax : 072-365-7869

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