KITO

OM-CS5ZZZ-MGE-02

KITO Chain Sling 100 (S5 Model)

Owner's Manual

To Customer

- Thank you for purchasing KITO Chain Sling 100 (S5 Model).
- The operators and maintenance engineers of KITO Chain Sling 100 (S5 Model) are requested to read this manual before operation and maintenance work.
- After reading, please keep this manual at hand for future use.

Table of Contents

Introduction

· Equipped with link chains and various fittings, KITO Chain Sling 100 (S5 Model) has been designed and manufactured to provide optimum slings for your various types of slinging work.

• **In case you purchase and assemble the link chains and various fittings on your own, those certified by a business entity as being familiar with the structure of the chain sling and having expertise should assemble them according to the instructions in the separately provided "KITO Chain Sling 100 (S5 Model) Assembly Manual".**

■ Disclaimer

· KITO shall not be liable for any damage incurred thereof due to natural disaster such as fire, earth quake, and thunderbolt, conduct by third party, accident, willful conduct or negligence by customer, erroneous use and other use exceeding the operational condition.

· KITO shall not be liable for any incidental damage due to the use or non-use of KITO Chain Sling 100 (S5 Model) such as the loss of business profit, suspension of business and damage of the lifted load.

· KITO shall not be liable for any damage arising from negligence of the contents in the Owner's Manual and the use of KITO Chain Sling 100 (S5 Model) exceeding the scope of its specification.

· KITO shall not be liable for any damage arising from the malfunction due to the combination of KITO Chain Sling 100 (S5 Model) with other devices in which KITO is not concerned.

■ Restriction on Use

· KITO Chain Sling 100 (S5 Model) described herein is not designed and manufactured for transporting people. Do not use it for that purpose.

· KITO Chain Sling 100 (S5 Model) described herein is designed for the materials handling work such as lifting/lowering and traveling the load under ordinary operational condition. Do not use it for the work other than materials handling work.

· Do not assemble and use KITO Chain Sling 100 (S5 Model) as part of the equipment/machine not intended for moving a load.

■ Operators

· In case of using KITO Chain Sling 100 (S5 Model) to carry out slinging work or operating a crane, comply with the local laws and regulations.

· Be sure to wear the proper clothing and protective equipment when using and operating KITO Chain Sling 100 (S5 Model).

■ Before Use

Before using KITO Chain Sling 100 (S5 Model), measure the dimension measurement positions described in "KITO Chain Sling 100 (S5 Model) Periodic Inspection Standard Manual" and take down the measured values.

"KITO Chain Sling 100 (S5 Model) Assembly Manual" and "KITO Chain Sling 100 (S5 Model) Periodic Inspection Standard Manual" are separately provided. Contact KITO for any inquiries.

Safety Precautions

Improper use of KITO Chain Sling 100 (S5 Model) causes danger such as drop of lifted load. Read this Owner's Manual carefully before installation, operation and maintenance. Use the product after understanding the product knowledge, safety information and precautions. **Please keep this manual in a place always accessible to the operators and maintenance engineers.**

Description of Signal Words

This Owner's Manual classifies the precautions into three categories of "DANGER", "WARNING" and "CAUTION".

⚠ **DANGER**	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ **WARNING**	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ **CAUTION**	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Further, the event described in CAUTION may result in serious accident depending on the situation. Both DANGER and CAUTION describe important contents. Please follow the instruction.

Description of Safety Symbols


Prohibited

⃠ means "Prohibited" or "You must not do".
Prohibited action is shown in the circle or described near the circle.
This Owner's Manual uses ⃠ as the general prohibition.


Mandatory

❗ means "Mandatory Action" or "You must do".
Required action is shown in the circle or described near the circle.
This Owner's Manual uses ❗ as the general instruction.

1. Handling the Product

(1) General Matters on Handling and Control

⚠ DANGER


Prohibited

- **The chain sling shall not be disassembled and repaired by personnel other than maintenance engineers.**
- **Do not modify the chain sling and its accessories.**

Failure to comply with these instructions may result in death or serious injury.


Mandatory

- **Understand the contents of the Owner's Manual sufficiently. Then operate the chain sling.**

Failure to comply with this instruction may result in death or serious injury.

⚠ CAUTION


Mandatory

- **When discarding the chain sling, disassemble it not to be used and discard in accordance with the ordinances of local government or the rules specified by the business entity.**

Ask the local government or the relevant section for the details.

- **Carry out daily inspection by user.**
- **Carry out inspection (monthly, annual) by maintenance engineer.**
- **Before using the product, prepare a list of measured values of each part by referring to "(2) Periodic inspection" on page 12 and the subsequent pages.**
- **Keep the record of the inspection.**

Failure to comply with these instructions may cause bodily injury or loss of property.

(2) Precautions for Use

⚠ DANGER

Prohibited

- **When the working load limits of the chain sling are exceeded, never lift a load.**
- **Never get on the suspended load. Also, never use the chain sling for any purposes of carrying someone.**
- **Do not operate the chain sling in the manner of swinging the suspended load.**
- **Do not stay below the suspended load.**
- **Do not use the damaged chain sling.**

Failure to comply with these instructions may result in death or serious injury.

Mandatory

- **Fully understand the performance and characteristics of the product to select an optimum chain sling suitable to the working conditions.**

Failure to comply with this instruction may result in death or serious injury.

⚠ CAUTION

Prohibited

- **Care should be taken not to allow the suspended load to be caught by other structure or wiring.**
- **Do not use the chain sling whose sling tag is defaced.**

Failure to comply with these instructions may cause bodily injury or loss of property.

Mandatory

- **Before using the chain sling, check the dimension measurement positions of the fittings described in the separately provided KITO Chain Sling 100 (S5 Model) Period Inspection Standard Manual and take down the measured values.**

Failure to comply with this instruction may cause bodily injury or loss of property.

(Heat resistance) When using the chain sling in the high-temperature atmosphere, reduce the working load limit as listed in the table.
Once the chain sling is used under high temperature, use it at the reduced working load limit even under normal temperature.

Temperature	working load limit (%)
Over –40°C to 100°C	100
Over 100°C to 200°C	90
Over 200°C to 300°C	75
Over 300°C to 350°C	65
Over 350°C to 400°C	60
Over 400°C	Unacceptable

(Cold resistance) Operable down to –40°C.

(Chemical resistance) Inoperable.

(Durability) In case of the following conditions, reduce the working load limit to 80%, and select the appropriate slings.

1. Work that is carried out with high frequency or when the working load is applied continuously
2. Work in which vibration is applied continuously
3. Usage by incorporation in an automatic line

(Safety factor) A safety factor for working load limit of single-leg lifting is 5 or more.

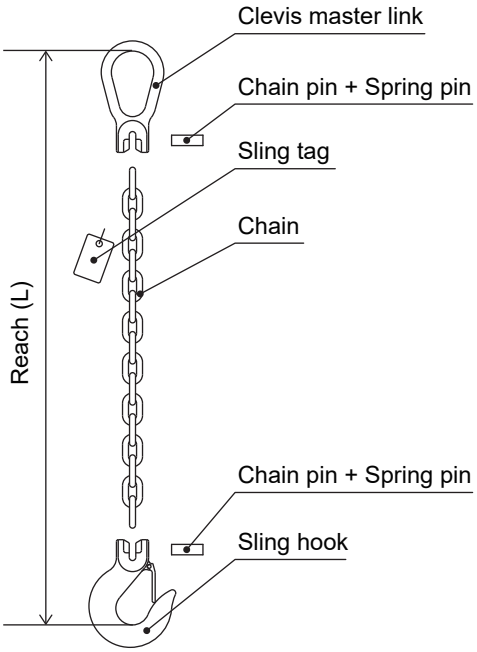
(Angle of loading) The working load limit changes depending on the angle of loading. See Table “Slinging Methods and Working Load Limits” on Page 6 to select the sling you want to use.

When using the chain sling under the special working conditions, consult KITO beforehand.
KITO responds to special specifications, including textile slings.

(3) Types and Component Parts of KITO Chain Sling 100 (S5 Model)

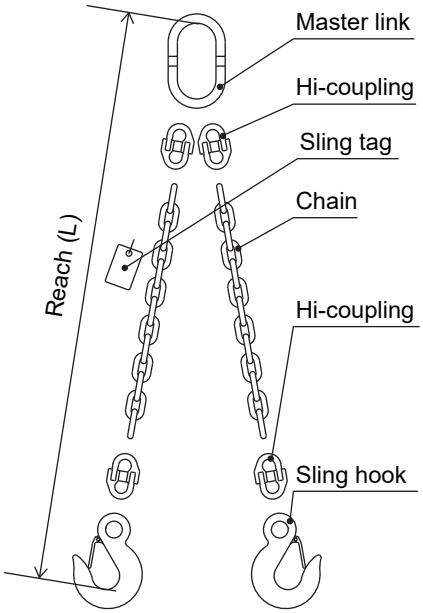
Clevis Type Constituent Components

Single leg sling



Eye Type Constituent Components

Double legs sling



(4) Slinging Methods and Working Load Limits

⚠ DANGER

Mandatory

- **The working load limits of the chain sling differ depending on the slinging method and angle of loading (*θ* in the table).**
- **Be sure to check the slinging method and angle of loading, and select the sling suitable to the suspended load.**

Failure to comply with these instructions may result in death or serious injury.

Note that in the case of using the Large Master Link HMG/HMH or the Master Link HMF with sub links, the “Slinging Methods and W.L.L. (Working Load Limits)” will be different.
Please refer to the appropriate tables and use the product within the range of the working load limits.

Reductions in the working load limits

In order to use products safely over a long period, when using products under the conditions described on the right, the working load limits should be reduced to 80% and the appropriate slings should be selected.

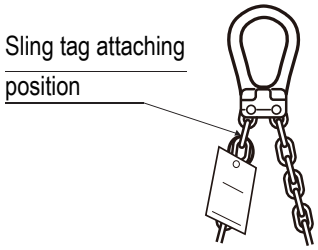
- ▶ 1. Work that is carried out with high frequency or when the working load is applied continuously
- ▶ 2. Work in which vibration is applied continuously
- ▶ 3. Usage by incorporation in an automatic line

Slinging method		Slinging with hooks							Direct slinging														
									Endless										Choke hitch				
		※	※			※			※				※										
		Single leg	Double legs			Triple and quadruple legs			Double legs						Quadruple legs						Single leg	Double legs			Double choke hitch
Angle of loading θ		–	60°	90°	120°	60°	90°	120°	60°	90°	120°	60°	90°	120°	60°	90°	120°	60°	90°	120°	–	60°	90°	120°	–
Chain diameter (mm)	ø6.0	1.1	1.7	1.5	1.1	2.4	2.1	1.5	1.7	1.5	1.1	1.2	1.1	0.7	2.4	2.1	1.5	1.8	1.5	1.1	0.7	1.2	1.1	0.7	1.1
	ø7.0	1.5	2.4	2.1	1.5	3.2	2.8	2.0	2.4	2.1	1.5	1.6	1.5	1.0	3.2	2.8	2.0	2.5	2.1	1.5	1.0	1.6	1.5	1.0	1.5
	ø8.0	2.0	3.2	2.8	2.0	5.0	4.0	2.8	3.2	2.8	2.0	2.2	2.0	1.4	5.0	4.0	2.8	3.6	2.8	2.0	1.4	2.2	2.0	1.4	2.0
	ø10.0	3.2	5.1	4.5	3.2	8.0	6.4	4.5	5.1	4.5	3.2	3.6	3.2	2.2	8.0	6.4	4.5	5.6	4.5	3.2	2.2	3.6	3.2	2.2	3.2
	ø13.0	5.2	8.0	7.3	5.2	12.5	10.4	7.3	8.0	7.3	5.2	5.7	5.2	3.6	12.5	10.4	7.3	9.0	7.3	5.2	3.6	5.7	5.2	3.6	5.2
	ø16.0	8.0	12.5	11.2	8.0	20.0	16.0	11.2	12.5	11.2	8.0	9.0	8.0	5.6	20.0	16.0	11.2	14.0	11.2	8.0	5.6	9.0	8.0	5.6	8.0
	ø20.0	12.5	20.0	18.0	12.5	32.0	25.0	18.0	20.0	18.0	12.5	14.0	12.5	9.0	32.0	25.0	18.0	22.4	18.0	12.5	9.0	14.0	12.5	9.0	12.5
When using the Large Master Link **HMG/HMH**	ø6.0	1.1	1.7	1.5	1.1	2.0	2.0	1.5	1.7	1.5	1.1	1.2	1.1	0.7	2.0	2.0	1.5	1.8	1.5	1.1	0.7	1.2	1.1	0.7	1.1
	ø7.0	1.5	2.0	2.0	1.5	3.2	2.8	2.0	2.0	2.0	1.5	1.6	1.5	1.0	3.2	2.8	2.0	2.5	2.1	1.5	1.0	1.6	1.5	1.0	1.5
	ø8.0	2.0	3.2	2.8	2.0	5.0	4.0	2.8	3.2	2.8	2.0	2.2	2.0	1.4	5.0	4.0	2.8	3.6	2.8	2.0	1.4	2.2	2.0	1.4	2.0
	ø10.0	3.2	5.0	4.5	3.2	8.0	6.4	4.5	5.0	4.5	3.2	3.6	3.2	2.2	8.0	6.4	4.5	5.6	4.5	3.2	2.2	3.6	3.2	2.2	3.2
	ø13.0	5.0	8.0	7.3	5.2	11.5	10.4	7.3	8.0	7.3	5.2	5.7	5.2	3.6	11.5	10.4	7.3	9.0	7.3	5.2	3.6	5.7	5.2	3.6	5.2
	ø16.0	8.0	11.5	11.2	8.0	–	–	–	11.5	11.2	8.0	9.0	8.0	5.6	–	–	–	–	–	–	5.6	9.0	8.0	5.6	8.0
	ø20.0	11.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9.0	–	–	–	–
When using the Master Link **HMF** with sub links	ø6.0					2.8	2.2	1.5							2.8	2.2	1.5	1.9	1.5	1.1					
	ø7.0					3.8	3.0	2.1							3.8	3.0	2.1	2.6	2.1	1.5					
	ø8.0					5.0	4.0	2.8							5.0	4.0	2.8	3.5	2.8	2.0					
	ø10.0	–	–	–	–	8.0	6.4	4.5	–	–	–	–	–	–	8.0	6.4	4.5	5.6	4.5	3.2	–	–	–	–	–
	ø13.0					13.0	10.4	7.3							13.0	10.4	7.3	9.1	7.3	5.2					
	ø16.0					20.0	16.0	11.2							20.0	16.0	11.2	14.0	11.2	8.0					
	ø20.0					32.0	25.0	18.0							32.0	25.0	18.0	22.4	18.0	12.5					

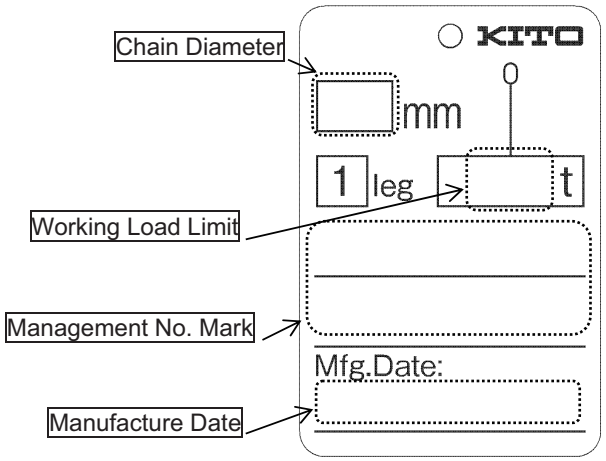
◎For slinging methods that have a “ * ” mark, in situations where the chain is used by hooking on a grab hook (in order to adjust the length, etc.) the working load limits become 70% of the values shown in the above table. For slinging methods that do not have a “ * ” mark, no load reduction is required.
◎The bold-faced numerical values in the tables are exclusive values for “When using the Large Master Link HMG/HMH” and “When using the Master Link HMF with sub links” respectively.
◎Note that only the grab hook is available for the choke hitch shown in the tables; other hooks are not available.

(5) Sling Tag

The sling tag indicating the working load limits is attached to KITO Chain Sling 100 (S5 Model).
Before using the chain sling, check that it is properly attached.
Before using the chain sling, be sure to check the sling method and the working load limits for each angle of loading.



Sling Tag



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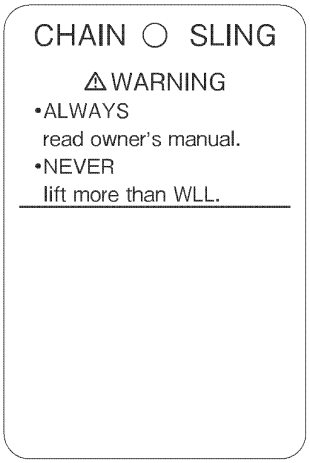

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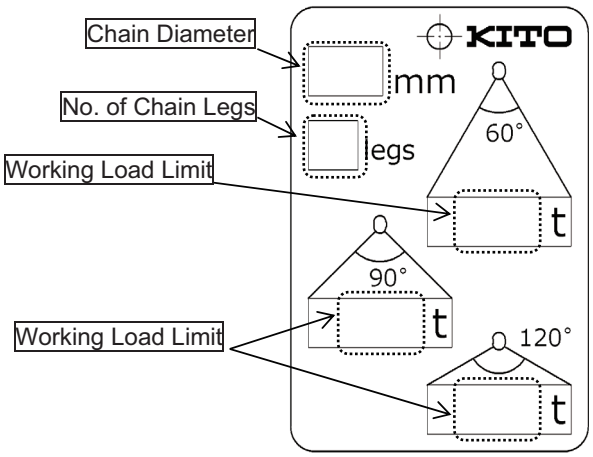

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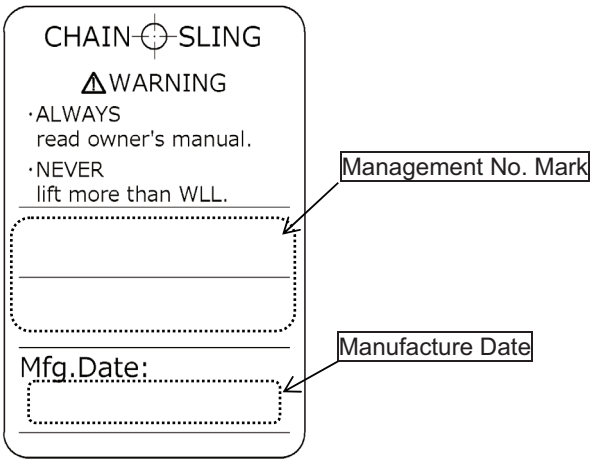

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2. Considerations for Safety Work

⚠ DANGER

Mandatory

- **Carry out daily inspection before operation.**

  Failure to comply with this instruction may result in death or serious injury.

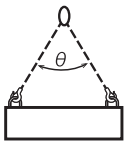
Prohibited

- **Do not use in a wrong manner.**

  Failure to comply with this instruction may result in death or serious injury.

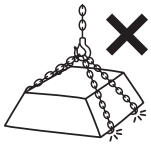
· When the working load limits of the chain sling are exceeded, never lift a load.

· The working load limits differ depending on the angle of loading. Before selecting the sling, check the angle of loading.

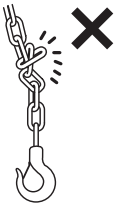


· Do not apply a shock load to the chain sling.

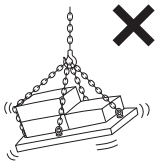
· When lifting a load with sharp edges, be sure to apply pads to them to protect the links from a direct bending force.



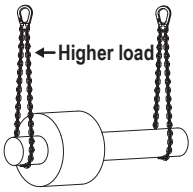
· Before using the chain sling, correct a twist of the chain.



· When lifting a load with multiple chain sling legs, lift it in such a manner that each chain will be equally loaded.



· In case it is difficult to equally lift a load due to the type of packing, select the slings based on the higher-load side.

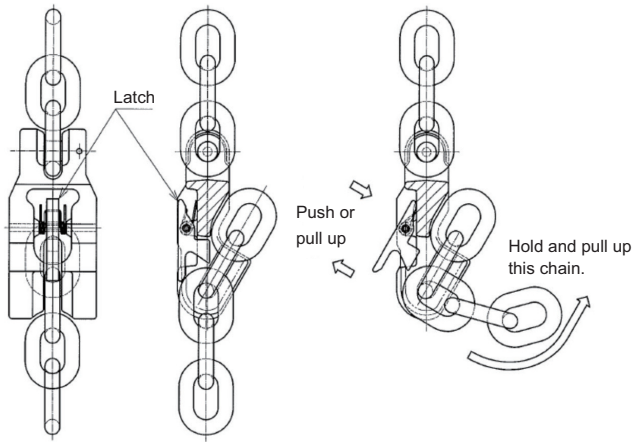


· Be sure to lift a load in the center (deepest spot) of the hook. Do not lift a load with the tip of the hook.
· Do not use the Hook without a Hook Latch or damaged Hook.
· Do not leave a load left suspended for a long time.
· Observe the working conditions (Page 4) to use the chain sling.
· Observe the service limits due to wear and elongation. Do not use the chain sling if it is deformed or cracked.
· Do not enter beneath a lifted load.
· Be careful not to pinch your fingers in the latch when using the self locking hook or swivel hook with latch lock.
· Do not cut, extend, or weld the load chains.

<Precautions for using a shortening clutch>

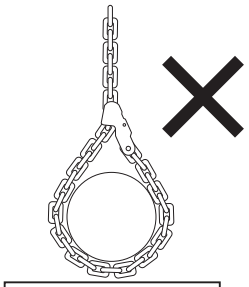
· When attaching a shortening clutch VWW, engage a link until a latch (stopper pawl) clicks and make sure that the link does not come off.

· When detaching, press the latch hard to disengage the link, and remove.

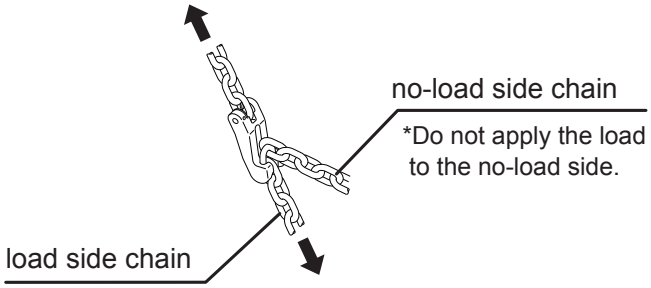


When used　　When detaching

· Be sure to apply the load to the load side chain.
· Do not lift it wrapped around a load (choke hitch). Doing so may cause deformation and breakage of the shortening clutch.

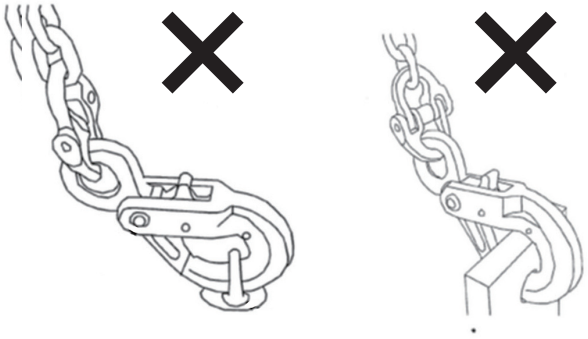


Choke hitch



<Precautions for using a self locking hook or a swivel hook>

· Do not swivel the swivel hook HJK with a load applied.Doing so may break the nut part.
· When slinging a hook onto an eyebolt, etc., make sure to enter the center of the hook and use it.Do not receive a load at the end of the hook because it may be deformed or damaged. For the Self locking hook HJJ and swivel hook HJK, a lock mechanism will be damaged.



Receiving the load at the end

3. Cautions After Use

⚠ CAUTION

Mandatory

- **When carrying the chain sling, do not throw or drag it.**
- **After using the chain sling, wipe off dirt and waterdrops and store it in a place with an appropriate environment to protect against rust.**

Failure to comply with this instruction may cause bodily injury or loss of property.

4. Management

(1) Daily inspection

⚠ DANGER

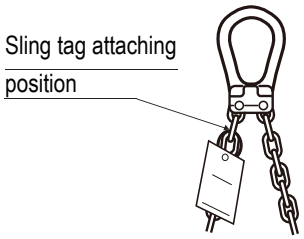
Mandatory

- **Carry out daily inspection before operation.**
- **Carry out daily inspection by user**
- **In case a defect is found during inspection, do not use the chain sling.**

Failure to comply with these instructions may result in death or serious injury.

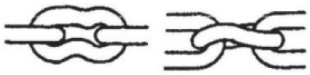
▌Check if the sling tag is attached.

· Do not use the chain sling having no sling tag.



▌Check the sling chain for any deformation.

· Do not use the sling chain whose deformation is visually detectable.

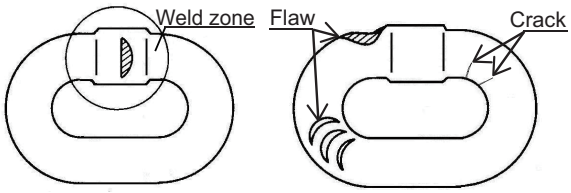


▌Check the sling chain for any flaws.

· In case a weld zone has a flaw deeper than 1.0 mm, do not use the chain sling.

· In case a non-weld zone has a flaw deeper than 1.5 mm, do not use the chain sling.

· Do not use the chain sling if it is cracked.



▌Check the fitting assembly for any deformation and flaws.

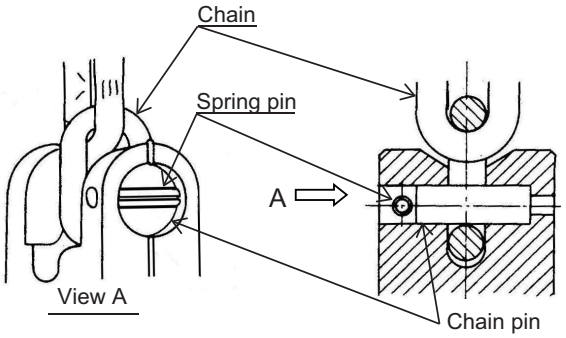
· Do not use the fitting assembly whose deformation or flaws are visually detectable.

▌Check the fitting assembly for any defects.

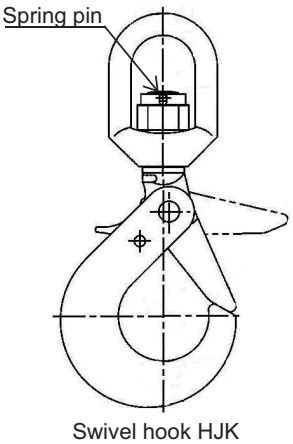
· Check the chain pin of the clevis-type fitting for any defects. Do not use the chain pin whose deformation is visually detectable.

· Once the spring pin is removed, it is not reusable. Do not use the fitting assembly if it has no spring pin.

· Check that the spring pins are attached to the chain joint and swivel hook HJK.



Chain joint of the hook or fitting



Swivel hook HJK

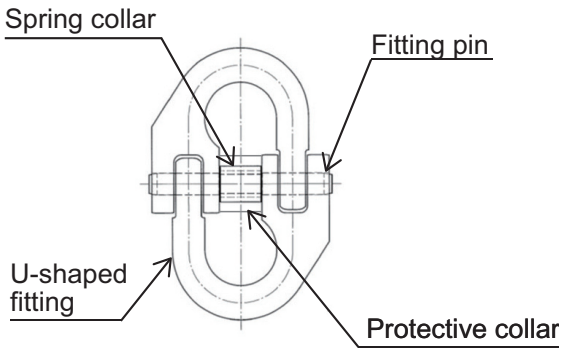
▌Check the hi-coupling assembly for any defects and deformation.

· Do not use the hi-coupling whose fitting pin is about to come off.

· Once the spring collar and protective collar are removed, it is not reusable.

· Do not use the hi-coupling whose fitting pin or U-shaped fitting is deformed. In case they are deformed, they may have been overloaded.

· Do not use the considerably corroded hi-coupling.



(2) Periodic inspection

⚠ DANGER

Prohibited

- **Never use other than KITO original parts.**
- **To use supply parts, check the type of the relevant component parts.**

Failure to comply with these instructions may result in death or serious injury.

Mandatory

- **Periodic inspection and repair should be carried out by the maintenance engineers certified by the business entity.**
- **Be sure to carry out periodic inspection and repair with no load suspended.**
- **In case a defect is found in periodic inspection, repair it immediately without using the chain sling as it is.**

Failure to comply with these instructions may result in death or serious injury.

⚠ CAUTION

Mandatory

- **Danger always exists in moving a suspended load. Observe correct operation and proper management.**

Failure to comply with this instruction may cause bodily injury or loss of property.

▌Periodic inspection has to be conducted by those certified by the business entity.

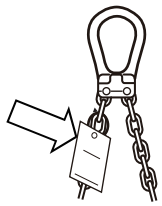
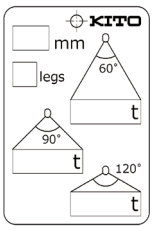
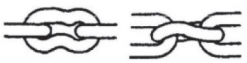
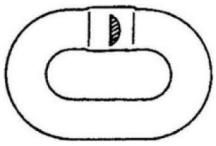
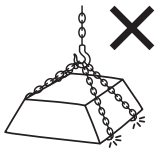
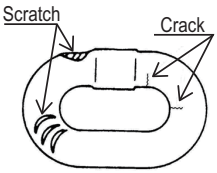
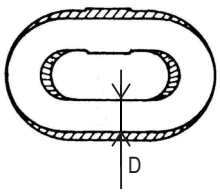
▌Establish the operation standards and inspection standards that suit your work environment by referring to “(2) Periodic inspection” on page 12 and the subsequent pages, and carry out periodic inspections.

▌Specify sling management numbers to manage them with a ledger.

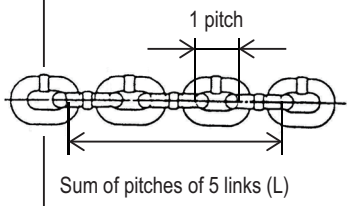
▌When discarding the product, comply with the ordinance of local goverment or the business entity.

5. Discarding the Product

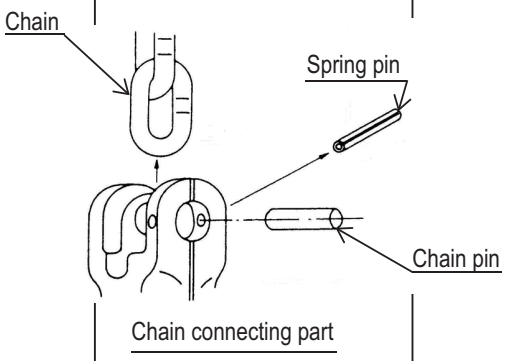
▌When discarding the product, comply with the ordinance of local goverment or the business entity.

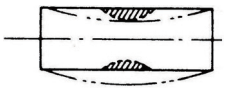
Item	Check method	Service limit or criteria
1. Chain (1) Sling tag 	– Visual check & point caliper –  Sling tag	・The sling with no sling tag is not acceptable. ・If the characters of the sling tag are unclear, replace it by a new one. **⚠DANGER** **The working load limit of the sling is marked on the sling tag. The sling with no sling tag is not acceptable.**
(2) Deformation		**⚠CAUTION** **In case of direct slinging, check elaborately the contact parts of the chain and suspended load. The following chains are not acceptable.** ・Those deformed more than 10% of the chain diameter ・Those with even one link deformed beyond the service limit  Avoid twisting. Otherwise, the chain may deform.
(3) Flaw (Contact damage, crack)	a) Scratch on the weld zone 	・The service limit is 1.0 mm deep for the scratch on the weld zone.  Be sure to apply pads to the sharp edges.
	b) Scratch on the non-weld zone  (Through visual check)	・The service limit is 1.5 mm deep for the scratch on the shoulder, etc. ・Do not use the cracked chain. ・It is recommended to check for fine cracks by a dye penetrant test or other means.
(4) Wear	(Measure the chain diameter (D) with point caliper.)  	・Chains worn more than 10% of the chain diameter (D)

Working load limit (t)	Chain diameter (D) mm	
	Standard	Limit
1.1	6.0	5.4
1.5	7.0	6.3
2.0	8.0	7.2
3.2	10.0	9.0
5.2	13.0	11.7
8.0	16.0	14.4
12.5	20.0	18.0

Item	Check method	Service limit or criteria
(5) Elongation	Measure 5 links.  Sum of pitches of 5 links (L)	
(6) Corrosion		・Chains with deep corrosion ・Chains whose connecting part with the fitting does not rotate smoothly due to corrosion
2. Chain pin	– Disassembly check, visual check & slide caliper –	⚠DANGER **Reassemble correctly according to the Assembly Manual. When reassembling, replace the spring pin with new one.**
(1) Deformation	(Visual check)	• In case deformation is visually detectable, the chain pin has exceeded the service limit.
(2) Wear		
(3) Corrosion	(Visual check)	Caution: 20-mm chain pin applicable codes VP2200K: VA2200・VB2200・VC2200 VD22016・VE2200・VN2200 VR2200・VSL3200 VPA20: VGG20 ・Those with deep corrosion ・Those with the fitting or hook not rotating smoothly due to corrosion

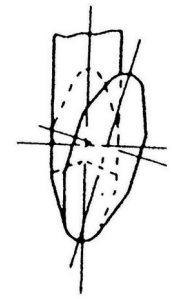
Chain diameter (mm)	Sum of pitches of 5 links (L) mm	
	Standard	Limit
6.0	91.0	95.6
7.0	106.0	111.3
8.0	121.5	127.6
10.0	151.5	159.1
13.0	197.0	206.9
16.0	240.0	252.0
20.0	300.0	315.0





Chain diameter (mm)	Chain pin diameter (d) mm		Code of chain pin kit
	Standard	Limit	
6.0	7.5	7.2	VP2060K・VPA06
7.0	9.0	8.6	VP2070K・VPA07
8.0	10.0	9.6	VP2080K・VPA08
10.0	13.0	12.5	VP2100K・VPA10
13.0	16.0	15.4	VP2130K・VPA13
16.0	21.0	20.2	VP2160K・VPA16
20.0	24.0	23.0	VP2200K
	25.0	24.0	VPA20
(20.0)	32.0	30.7	VP2250

Item	Check method	Service limit or criteria
(4) Spring pin		**⚠ CAUTION** **When replacing the chain, replace the chain pin as well.** **⚠ CAUTION** **When reassembling, replace the spring pin with new one.**
3. Hooks and clevis master links (1) Deformation and wear	– Visual check & vernier caliper – (Visual check)	・ They should not be dropped or damaged. ・ The hook latch must not be dropped or damaged. **⚠ CAUTION** **Upon purchase, measure at their respective measurement positions and carry out inspection with reference to those measured values.**
Sling hook VSR/HSR VSL4/HTL4 HTL005	(Measured with calipers)	・ Those with visually detectable deformation such as twist have exceeded the service limit.

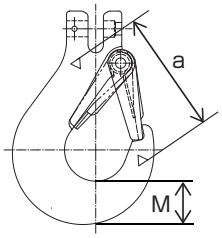


Item	Limit
Hook opening	Over the reference value
Deformation	More than 5% of the reference value
Wear	More than 5% of the reference value

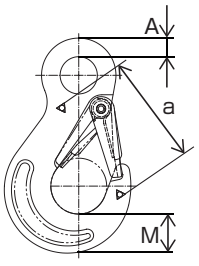
・ The nominal reference values are indicated for the respective parts for your information, but note that there are slight dimensional errors because of forging heat treatment.
・ Those with visually detectable deformation have already exceeded the service limit.

Dimension measurement position	M (mm)	A (mm)	emboss a (mm)
Reference value	Upon purchase, enter the measured value of the respective dimension measurement positions.		
Limit value	Reference value x 0.95		Reference value

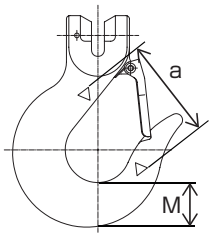
* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.



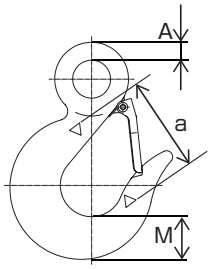
Sling hook VSR



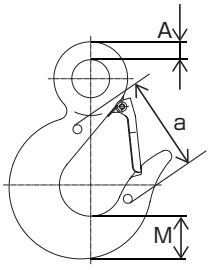
Sling hook HSR



Sling hook VSL4

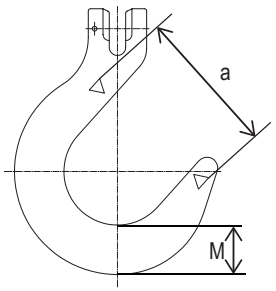


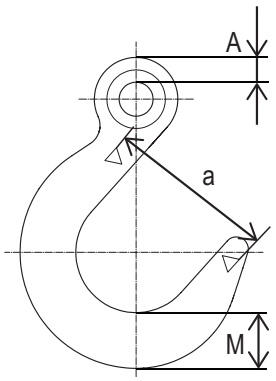
Sling hook HTL4



Sling hook HTL005

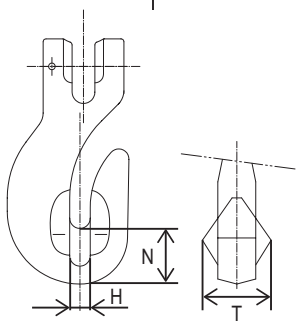
Chain diameter (mm)	Code	Nominal reference values (mm)		
		M	A	Emboss a
6.0	VSR06	21.0	-	58.8
6.0	HSR06	21.0	10.0	59.0
6.0	VSL4060・HTL4060	24.5	10.0	54.0
6.0	HTL005	17.0	7.0	42.0
7.0	VSL4070	30.0	12.5	61.5
8.0	VSL4080・HTL4080	30.0	12.5	61.5
10.0	VSL4100・HTL4100	37.5	16.0	71.5
13.0	VSL4130・HTL4130	47.5	20.0	82.5
16.0	VSL4160・HTL4160	60.0	25.0	99.0
20.0	VSL4200・HTL4200	75.0	32.0	124.0

<table>
<tr><th>Item</th><th>Check method</th><th>Service limit or criteria</th></tr>
<tr><td>Foundry hook VSF</td><td> 

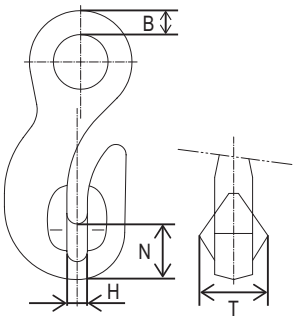
Foundry hook VSF</td><td>・Those with visually detectable deformation such as twist have exceeded the service limit.
<table>
<tr><td>Dimension measurement position</td><td>M (mm)</td><td>Emboss a (mm)</td></tr>
<tr><td>Reference value</td><td colspan="2">Upon purchase, enter the measured value of the respective dimension measurement positions.</td></tr>
<tr><td>Limit value</td><td>Reference value x 0.95</td><td>Reference value</td></tr>
</table>
* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.
<table>
<tr><td rowspan="2">Chain diameter (mm)</td><td rowspan="2">Code</td><td colspan="2">Nominal reference values (mm)</td></tr>
<tr><td>M</td><td>Emboss a</td></tr>
<tr><td>6.0</td><td>VSF06</td><td>26.0</td><td>73.0</td></tr>
<tr><td>7.0</td><td>VSF07</td><td rowspan="2">31.0</td><td rowspan="2">87.0</td></tr>
<tr><td>8.0</td><td>VSF08</td></tr>
<tr><td>10.0</td><td>VSF10</td><td>36.0</td><td>103.0</td></tr>
<tr><td>13.0</td><td>VSF13</td><td>43.0</td><td>117.0</td></tr>
<tr><td>16.0</td><td>VSF16</td><td>50.5</td><td>134.0</td></tr>
</table></td></tr>
<tr><td>Foundry hook HSF</td><td> 

Foundry hook HSF</td><td>Those with visually detectable deformation such as twist have exceeded the service limit.
<table>
<tr><td>Dimension measurement position</td><td>M (mm)</td><td>A (mm)</td><td>Emboss a (mm)</td></tr>
<tr><td>Reference value</td><td colspan="3">Upon purchase, enter the measured value of the respective dimension measurement positions.</td></tr>
<tr><td>Limit value</td><td colspan="2">Reference value x 0.95</td><td>Reference value</td></tr>
</table>
* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.
<table>
<tr><td rowspan="2">Chain diameter (mm)</td><td rowspan="2">Code</td><td colspan="3">Nominal reference values (mm)</td></tr>
<tr><td>M</td><td>A</td><td>Emboss a</td></tr>
<tr><td>6.0</td><td>HSF06</td><td>26.0</td><td>11.0</td><td>73.0</td></tr>
<tr><td>7.0</td><td rowspan="2">HSF08</td><td rowspan="2">31.0</td><td rowspan="2">13.5</td><td rowspan="2">87.0</td></tr>
<tr><td>8.0</td></tr>
<tr><td>10.0</td><td>HSF10</td><td>36.0</td><td>16.0</td><td>103.0</td></tr>
<tr><td>13.0</td><td>HSF13</td><td>43.0</td><td>19.0</td><td>117.0</td></tr>
<tr><td>16.0</td><td>HSF16</td><td>50.0</td><td>24.0</td><td>134.0</td></tr>
<tr><td>20.0</td><td>HSF20</td><td>61.0</td><td>27.0</td><td>157.0</td></tr>
</table></td></tr>
</table>

Item	Check method	Service limit or criteria
Grab hook VGG/HGG		・Those with visually detectable deformation such as twist have exceeded the service limit.



Grab hook VGG



Grab hook HGG

Dimension measurement position	N (mm)	B (mm)	T (mm)	H (mm)
Reference value	Upon purchase, enter the measured value of the respective dimension measurement positions.			
Limit value	Reference value x 0.95			Reference value x 1.05

* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.

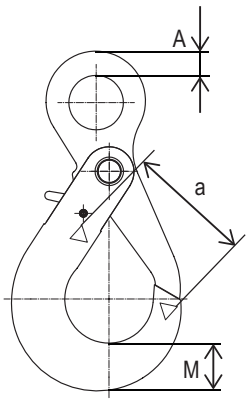
Grab hook VGG

Chain diameter (mm)	Code	Nominal reference values (mm)		
		N	T	H
6.0	VGG06	17.6	27.0	8.1
7.0	VGG07	23.5	36.4	10.5
8.0	VGG08	23.5	36.4	10.5
10.0	VGG10	29.4	45.3	13.5
13.0	VGG13	39.2	58.9	15.5
16.0	VGG16	45.8	70.0	20.0
20.0	VGG20	57.4	87.6	25.0

Grab hook HGG

Chain diameter (mm)	Code	Nominal reference values (mm)			
		N	B	T	H
6.0	HGG06	17.6	10.3	27.2	8.1
7.0	HGG08	24.4	13.6	36.2	9.0
8.0					
10.0	HGG10	29.4	16.0	45.3	13.5
13.0	HGG13	39.2	20.0	58.8	15.5
16.0	HGG16	46.0	27.1	70.1	20.0
20.0	HGG20	57.4	33.0	87.6	25.0

Self locking hook HJJ



Self locking hook HJJ

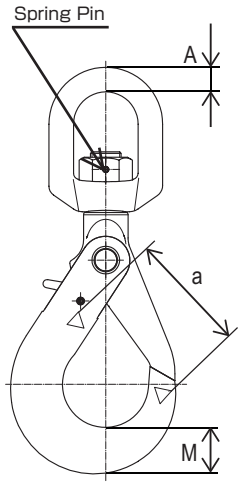
・Those with visually detectable deformation such as twist have exceeded the service limit.

Dimension measurement position	M (mm)	A (mm)	Emboss a (mm)
Reference value	Upon purchase, enter the measured value of the respective dimension measurement positions.		
Limit value	Reference value x 0.95		Reference value

* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.

Chain diameter (mm)	Code	Nominal reference values (mm)		
		M	A	Emboss a
6.0	HJJ06	20.5	12.0	46.5
7.0	HJJ08	26.0	12.0	59.0
8.0				
10.0	HJJ10	30.0	15.0	75.5
13.0	HJJ13	40.0	20.0	84.0
16.0	HJJ16	50.0	27.0	116.0

Swivel hook HJK



Swivel hook HJK

Chain diameter (mm)	Code	Nominal reference values (mm)		
		M	A	Emboss a
6.0	HJK06	20.5	13.0	46.5
7.0	HJK08	26.0	13.0	59.0
8.0				
10.0	HJK10	30.0	16.0	75.5
13.0	HJK13	40.0	22.0	84.0

・Check the threaded part with a “not-go thread ring gauge” (JIS B0251-6gNR).

Chain diameter (mm)	Code	Thread size	Pitch (mm)
6.0	HJK06	M16	2.0
7.0	HJK08	M16	2.0
8.0			
10.0	HJK10	M20	2.5
13.0	HJK13	M24	3.0

・Do not use those with cracked threads or a swivel not rotating smoothly.
・The spring pin should be free from breakage, etc. If defective, replace it with new one.

Clevis master link/ Master link

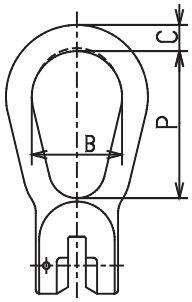
・Those with visually detectable deformation such as twist have exceeded the service limit.

Dimension measurement position	P (mm)	B (mm)	C (mm)
Reference value	Upon purchase, enter the measured value of the respective dimension measurement positions.		
Limit value	Reference value x 1.05	Reference value x 0.95	Reference value x 0.9

* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.

Item	Check method	Service limit or criteria

Clevis master link VE

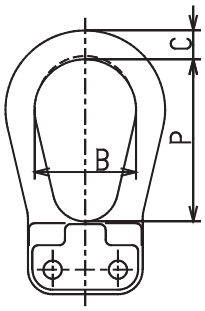


Clevis master link VE

Chain diameter (mm)	Code	Nominal reference values (mm)		
		P	B	C
6.0	VE2060	90	56	11.5
7.0	VE2070	100	63	14
8.0	VE2080	100	63	14
10.0	VE2100	110	71	17
13.0	VE2130	125	80	21
16.0	VE2160	145	90	26
20.0	VE2200	180	112	32

S: Single, D: Double, T: Triple, Q: Quadruple

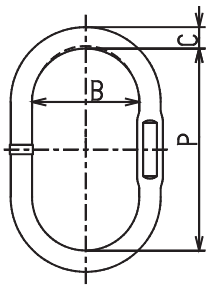
Clevis master link VD



Clevis master link VD

D	T, Q	Code	Nominal reference values (mm)		
			P	B	C
6.0	—	VD206	100	63	14
7.0	6.0	VD20706	110	71	17
8.0	7.0	VD20807	110	71	17
10.0	8.0	VD21008	125	80	21
13.0	10.0	VD21310	140	90	26
16.0	13.0	VD21613	180	112	32
20.0	16.0	VD22016	225	140	40
—	20.0	VD20020	280	180	50

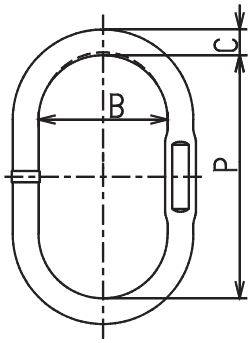
Master link HMM



Master link HMM

Chain diameter (mm)			Code	Nominal reference values (mm)		
S	D	T		P	B	C
6.0	-	-	HMM0706	110	60	13.5
7.0	6.0	-				
8.0	7.0	6.0	HMM0807	110	60	16
10.0	8.0	7.0	HMM1008	135	75	19
13.0	10.0	8.0	HMM1310	160	90	23
16.0	13.0	10.0	HMM1613	180	100	27
20.0	16.0	13.0	HMM2016	200	110	33
-	20.0	16.0	HMM2220	275	150	38

Master link HMG



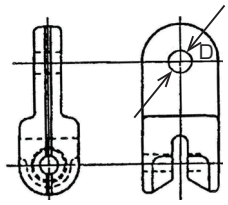
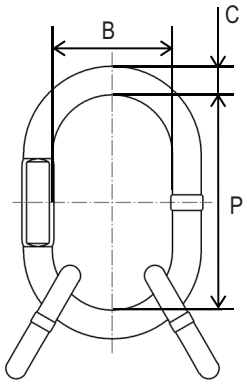
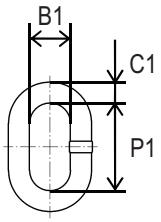
Master link HMG

Chain diameter (mm)			Code	Nominal reference values (mm)		
S	D	T		P	B	C
6.0	-	-	HMG0807	225	112	17
7.0	-	-				
-	6.0	-				
8.0	7.0	6.0				
10.0	8.0	7.0	HMG1008	225	112	20
13.0	10.0	8.0	HMG1310	225	112	23

Master link HMH

Master link HMH

Chain diameter (mm)			Code	Nominal reference values (mm)		
S	D	T		P	B	C
16	13	10	HMH1613	340	180	36
20	16	13	HMH2016	340	180	40

Item	Check method	Service limit or criteria
Single connector VA, Dual connector VB		
Master link with sub links HMF	  Sub link	

Dimension measurement position	D (mm)
Reference value	Upon purchase, enter the measured value of the respective dimension measurement positions.
Limit value	Reference value x 1.05

* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.

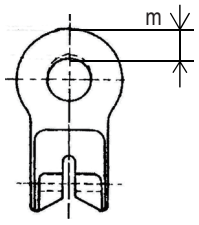
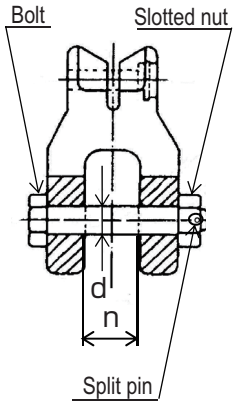
Chain diameter (mm)	Code	D (mm) Nominal reference values
6.0	VA2060・VB2060	9.2
7.0	VA2070・VB2070	10.2
8.0	VA2080・VB2080	13.2
10.0	VA2100・VB2100	16.2
13.0	VA2130・VB2130	21.2
16.0	VA2160・VB2160	24.2
20.0	VA2200・VB2200	32.2

- Those with visually detectable deformation such as twist have exceeded the service limit.

Dimension measurement position	P, P1 (mm)	B, B1 (mm)	C, C1 (mm)
Reference value	Upon purchase, enter the measured value of the respective dimension measurement positions.		
Limit value	Reference value x 1.05	Reference value x 0.95	Reference value x 0.9

* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.

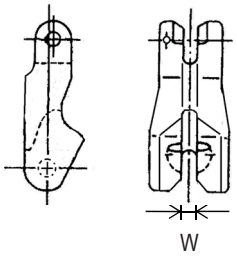
Chain diameter (mm)	Code	Nominal reference values (mm)					
		P	B	C	P1	B1	C1
6.0	HMF07	135	75	19	60	38	13.5
7.0							
8.0	HMF08	160	90	23	70	34	16
10.0	HMF10	180	100	27	85	40	20
13.0	HMF13	200	110	33	115	50	23
16.0	HMF16	275	150	38	140	65	27
20.0	HMF20	350	190	50	150	70	33

<table>
<tr><th>Item</th><th>Check method</th><th>Service limit or criteria</th></tr>
<tr><td>Single connector VC</td><td> 
</td><td>
<table>
<tr><td>Dimension measurement position</td><td>D (mm)</td></tr>
<tr><td>Reference value</td><td>Upon purchase, enter the measured value of the respective dimension measurement positions.</td></tr>
<tr><td>Limit value</td><td>Reference value x 1.05</td></tr>
</table>
* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.
<table>
<tr><th>Chain diameter (mm)</th><th>Code</th><th>Nominal reference values m (mm)</th></tr>
<tr><td>6.0</td><td>VC2060</td><td>12.5</td></tr>
<tr><td>7.0</td><td>VC2070</td><td>16</td></tr>
<tr><td>8.0</td><td>VC2080</td><td>16</td></tr>
<tr><td>10.0</td><td>VC2100</td><td>20</td></tr>
<tr><td>13.0</td><td>VC2130</td><td>25</td></tr>
<tr><td>16.0</td><td>VC2160</td><td>32</td></tr>
<tr><td>20.0</td><td>VC2200</td><td>40</td></tr>
</table>
</td></tr>
<tr><td>Shackle VN</td><td> 
</td><td>
・ Those with visually detectable bolt deformation have exceeded the service limit.

⚠CAUTION When reassembling, replace the split pin with new one.
<table>
<tr><td>Dimension measurement position</td><td>Bolt diameter d (mm)</td><td>n (mm)</td></tr>
<tr><td>Reference value</td><td colspan="2">Upon purchase, enter the measured value of the respective dimension measurement positions.</td></tr>
<tr><td>Limit value</td><td>Reference value x 0.95</td><td>Lower-limit value: Reference value
Upper-limit value: Reference value x 1.05</td></tr>
</table>
* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.
<table>
<tr><th rowspan="2">Chain diameter (mm)</th><th rowspan="2">Code</th><th colspan="2">Nominal reference values (mm)</th></tr>
<tr><th>Bolt diameter d</th><th>n</th></tr>
<tr><td>6.0</td><td>VN2060</td><td>14</td><td>28.0</td></tr>
<tr><td>7.0</td><td>VN2070</td><td>17</td><td>32.0</td></tr>
<tr><td>8.0</td><td>VN2080</td><td>17</td><td>32.0</td></tr>
<tr><td>10.0</td><td>VN2100</td><td>20</td><td>36.0</td></tr>
<tr><td>13.0</td><td>VN2130</td><td>25</td><td>45.0</td></tr>
<tr><td>16.0</td><td>VN2160</td><td>32</td><td>56.0</td></tr>
<tr><td>20.0</td><td>VN2200</td><td>40</td><td>71.0</td></tr>
</table>
</td></tr>
</table>

Item	Check method	Service limit or criteria

Shortening clutch VWW

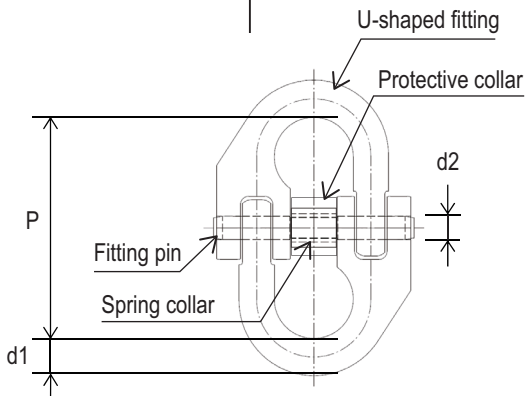


Dimension measurement position	W (mm)
Reference value	Upon purchase, enter the measured value of the respective dimension measurement positions.
Limit value	Lower-limit value: Reference value Upper-limit value: Reference value x 1.05

* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.

Chain diameter (mm)	Code	Nominal reference values (mm)
		W
6.0	VWW06	7.2
7.0	VWW07	9.5
8.0	VWW08	9.5
10.0	VWW10	12.0
13.0	VWW13	15.0
16.0	VWW16	18.0

Hi-coupling HCC



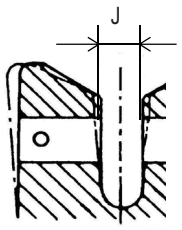
- Those with 0.5 mm or deeper contact damage on the U-shaped fitting have exceeded the service limit.
- Those with loose spring collar and fitting pin coming off have exceeded the service limit.

⚠CAUTION **When reassembling, replace the spring collar and protective collar with new one.**

Dimension measurement position	d1 (mm)	Fitting Pin d2 (mm)	P (mm)
Reference value	Upon purchase, enter the measured value of the respective dimension measurement positions.		
Limit value	Reference value x 0.95		Reference value x 1.05

* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.

Chain diameter (mm)	Code	Nominal reference values (mm)		
		d_1	d_2	P
6.0	HC3060	8.0	4.8	48.0
7.0	HC3070	9.4	5.6	55.0
8.0	HC3080	10.6	6.6	63.0
10.0	HC3100	13.1	8.0	96.0
13.0	HC3130	16.8	10.4	96.0
16.0	HC3160	20.0	12.8	118.0
20.0	HC3200	25.0	16.0	142.0

<table>
<tr><th>Item</th><th>Check method</th><th>Service limit or criteria</th></tr>
<tr><td>Common to each fitting
(Chain connecting part)</td><td> 
</td><td>
<table>
<tr><td>Dimension measurement position</td><td>J (mm)</td></tr>
<tr><td>Reference value</td><td>Upon purchase, enter the measured value of the respective dimension measurement positions.</td></tr>
<tr><td>Limit value</td><td>Lower-limit value: Reference value
Upper-limit value: Reference value x 1.05</td></tr>
</table>
* Before using the chain sling, prepare a list of measured values of each part.
* The following table lists the nominal reference values of the respective codes for your information.
<table>
<tr><td rowspan="2">Chain diameter (mm)</td><td colspan="3">Nominal reference values J (mm)</td></tr>
<tr><td colspan="3">Code</td></tr>
<tr><td></td><td>VA•VB•VC•VD
VE•VN•VR•VSL4</td><td>VSF•VWW
VSR</td><td>VGG</td></tr>
<tr><td>6.0</td><td>6.7</td><td>7.2</td><td>7.2</td></tr>
<tr><td>7.0</td><td>7.8</td><td>9.5</td><td>9.5</td></tr>
<tr><td>8.0</td><td>8.9</td><td>9.5</td><td>9.5</td></tr>
<tr><td>10.0</td><td>11.1</td><td>12</td><td>12</td></tr>
<tr><td>13.0</td><td>14.3</td><td>15</td><td>15</td></tr>
<tr><td>16.0</td><td>18</td><td>18</td><td>18</td></tr>
<tr><td>20.0</td><td>22.5</td><td>-</td><td>23</td></tr>
<tr><td>20.0 (For T, Q)</td><td>28</td><td>-</td><td>-</td></tr>
</table>
</td></tr>
<tr><td>(2) Flaw</td><td>(Thorough visual check)</td><td>・Do not use cracked ones.
・It is recommended to check for fine cracks by a magnetic particle test, color check, and so on.</td></tr>
<tr><td>(3) Assembly state</td><td></td><td>・The chain, chain pin, spring pin, etc. have to be assembled correctly.

⚠ CAUTION Upon reassembly, replace the spring pin with new one.</td></tr>
<tr><td>(4) Activation</td><td>(Activate)</td><td>・The chain connecting part should rotate smoothly.
・The hook latch should be opened and closed smoothly.
・The triggers of the swivel hook and self locking hook should work smoothly.
・The latch of the shortening clutch should work smoothly.</td></tr>
</table>

KITO Chain Sling 100 (S5 Model)
Periodic Inspection Sheet (Sample)

■ The “Safety Ordinance for Cranes” obligates inspection of slings as well as that of the crane. This inspection sheet is a sample based on KITO Periodic Inspection Standard Manual. Decide the inspection items suitable to your working environment and conditions.

Code	Working load limit	Chain size	Management No.	Service starting date	Work site	Inspection history

■ Inspection result indication method: ○ = Good, △ = Replace next time (adjust), × = Defective. Replace (adjust)

■ Never use the product which was found “defective” as a result of inspection. Ask the maintenance engineer for repair immediately or consult KITO.

Objective	Category	Component	Inspection item (Measurement position, limit value)	Inspection date						Remedy
Periodic inspection	Chain	Sling tag	Presence, Blur of characters							
			Deformation							
			Flaw (visual check, penetrant test)							
			Wear (limit value)							
			Elongation (limit value)							
			Corrosion							
	Chain pin & fitting pin		Deformation							
			Wear (limit value)							
			Corrosion							
		Once the spring pin, spring collar and protective collar are used, they are not reusable for reassembly.								
	Top fitting		Deformation							
			Wear (limit value)							
			Flaw (visual check, penetrant test)							
			Jointing state							
	Bottom fitting		Deformation (limit value)							
			Wear (limit value)							
			Flaw (visual check, penetrant test)							
			Jointing state							

Performed by	Inspector							
Checked by	Chief maintenance engineer							

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