

Proper slack "S" is determined by the following equation.

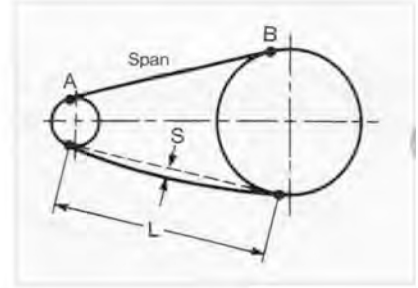
$$S = 0.02L$$

where, L is span

Adjust shaft-to-shaft distance to set proper slack "S".

In the following cases, determine slack "S" by the equation of $S \geq 0.01L$.

- Vertical arrangement
- Upper side of chain is slackened.
- Shaft-to-shaft distance exceeds 50 times pitch.
- Vibration or impact is present.
- Chain starts and stops frequently.
- Forward/reverse movements are repeated frequently.
- Speed change ratio exceeds 7:1.



Proper shaft-to-shaft distance is 30 to 50 times pitch.



CAUTIONS (Remanufacturing and additional manufacturing are prohibited.)

- ⊘ Remanufacturing and additional manufacturing of chain and related parts are prohibited. Otherwise, this will lead to chain failure. If remanufacturing or additional manufacturing is necessary, contact us.
 - Electric plating will lead to brittle breakage.
 - Welding of heat-treated chain will cause cracks or sacrifice strength.
 - Annealing of heat-treated chain will reduce strength of part.
 - Enlargement of connecting link hole and reduction in connecting pin diameter will reduce strength.

2.Operation

Check Items Before Operation

- Before operation, check if the following items are correctly set and safety cover is installed.
- If abnormal noise is caused during operation, immediately stop operation, and find cause of trouble and remedy.

Check items	Description
Engagement	Check if sprocket is engaged correctly and slack is proper.
Link connection	Check if links are connected correctly and parts are firmly seated.
Interference	Check if there is any part or equipment that interferes with chain or any part that will be shattered.
Lubricant	Check if lubrication is proper.
Safety cover	Check if proper safety cover is installed.
Peripheral equipment	Check if peripheral equipment is installed.

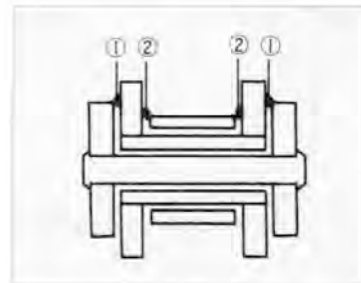
Lubrication

Roller chain lubricated with oil or grease will splash at the start of operation. To avoid splashing of lubricant on clothing and skin, stand an appropriate distance away upon start up.

- Insufficient lubrication of chain will promote wear of pins and bushings due to dry friction. This will result in elongation of chain and poor performance of chain. To ensure service life of chain, choose the right lubricant and lubrication method to meet operating requirements. For correct chain selection when no lubrication is allowed, contact us or our dealer.

Lubricating Points:

- ① Clearances between inner and outer links (to avoid elongation of chain)
- ② Clearances between rollers and inner links (to reduce wear of bushings and rollers, to avoid their breakage, and to suppress noise)



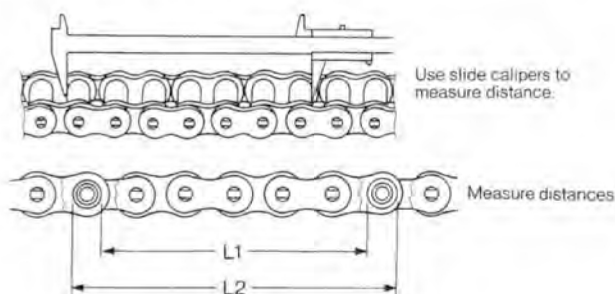
Inspection and maintenance are required to avoid trouble and keep power transmission ability.

Inspection Items and measures to Trouble

Inspection Items	Measures to Troubles
Harmful flaw or rust	Harmful flaw or rust will reduce strength. Early replacement is recommended.
Slack of chain	Adjust shaft-to-shaft distance if slack is improper. If it is found, by measuring of elongation, that service life of chain is expired, change chain
Rotation of pin (incorrect caulking position)	Possible cause is overloading. Review operating conditions. Do not use a chain with a bent pin.
Uneven wear of roller	Possible cause is poor rotation of rollers. Find cause of trouble. Change chain.
Insufficient movement of chain	Review power transmission conditions and lubrication method.
Lubrication of chain	Lubricate by correct lubrication method.

Elongation Measuring Method and Chain Replacement Timing

1. Measuring Chain Elongation



- Measure distances L1 and L2 with chain lightly loaded.
- Measure distance over 6 to 10 links to reduce measuring errors.
- Elongation of chain is determined by the following equation.

$$\text{Chain length} = \frac{L1 + L2}{2}$$

$$\text{Reference chain length} = \text{Pitch} \times \text{Number of links measured}$$

$$\text{Elongation (\%)} = \frac{\text{Chain length} - \text{Reference chain length}}{\text{Reference length}} \times 100$$

2. Chain Replacement Timing

Guideline for chain replacement, based on elongation of chain, is listed below.

Number of large sprocket teeth	Elongation (%)
60 or fewer	1.5
61 - 80	1.2
81 - 100	1.0
101 or more	0.8

- Listed data is applicable when take-up is possible, or when equipped with tensioner or idler.
- Shaft-to-shaft distance is fixed, guideline for elongation is 0.5% to 0.7%.
- When changing a chain, inspect sprockets.
Worn-out sprocket will adversely affect chain, performance.

NOTE: Service life of chains varies depending on number of sprocket teeth, lubrication, operating environment, and other conditions, even though they are the same dimensions and type.

CAUTIONS

1. Do not replace the damaged parts of a chain with new ones. In this case, change the whole chain. Also, do not install the used connecting link and parts to a new chain.
2. Do not adhere acid or alkaline liquid and highly volatile solvent to chain and sprockets, and do not use them for cleaning. If acid or alkaline liquid is accidentally adhered to chain, replace a chain with a new one. Adherence of acid or alkaline liquid will lead to brittle breakage. Use kerosene for cleaning. After cleaning, dry kerosene and apply lubricant sufficiently.

- Specifications in this bulletin are described, on condition of normal use in ordinary operating environment (-10°C to +60°C).
- For more details, contact us or our dealers.