



ALL FOR YOUR SERVICE NEEDS!



Chain installation and maintenance

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contents

1.	To prepare	2
2.	Alignment of inspection	2
3.	Installation of chain	3
4.	Debugging	3
5.	Trial run	3
6.	Maintenance schedule	3
7.	Regular maintenance	3
8.	Protection of chain	4
9.	lubrication	4
10.	The use of grease	5
11.	Abnormal surrounding environment	5
12.	Environmental Factors	6
	Effect of temperature	6
	Chemical solution or water vapor	6
	abrasive	6
	Impulse/impact load	6
13.	Measure the wear of the chain	7
14.	Fizurik wear measuring ruler	7
15.	Riveted chain	8
16.	Pair of chains	9

Chain installation and maintenance

1. To prepare

Check equipment to ensure all requirements are correct (e.g. gear gear, block, calibration method).

Check axle and bearings for condition and rigidity, especially at present for required services. Replace or straighten as needed.

The drive device/drive shaft/sprocket shall be inspected to ensure that it is level, parallel or square with any sliding surface or bearing.

A level meter and adjustable micrometer may be used between the axles at each end of the transmission. Correct any parallel errors in the field.

Align the sprocket or axles roughly and secure the keys according to correct engineering practices. Do not completely secure the key during this period.

Be sure to pay attention to the butt structure of the sprocket to ensure that all half sides of the sprocket perfectly butt. Once the halves of the sprocket are finally joined together, the keys are secured, otherwise the keys will prevent proper assembly and eventually result in a poor bite.

Ensure that the head of the key does not protrude beyond the width of any housing, guard or guide groove.

2. Alignment of inspection

The precise alignment of the axle, block and sprocket tooth surfaces provides even load distribution throughout the chain and fundamentally helps the chain achieve maximum service life.

If possible, use a ruler in different positions to check its swing. Especially for chains with longer center distance, it is best to replace the ruler with nylon wire or similar wire to check it.



3. Installation of chain

If the front end of the shaft is floating, it should be adjusted appropriately, and the floating center should have an appropriate range.

If the alignment is correct within the minimum practical limits, then the key is pressed and a final check is made.

If a block is used, it should be checked to see if the chain is properly positioned between the two equidistant flanges.

The pin should not rub against the pulley flange.

If the cleanliness of the sprocket tooth surface and the pulley work area is not taken care of, especially if there is a lot of abrasive material (cement dust, welding splash, etc.) during the work process, then the Renold chain cannot be installed in this system.

Ensure that the chain is clean, free of debris and placed around the sprocket or pulley set, paying attention to the matching number of pairs. Make sure the block is strong enough to support the chain. The chain weight is listed in the Renold catalog. Do not remove any pulleys until the chain is fully assembled.

Do not paint the chain as this will affect the penetration of the lubricant.

4. Debugging

After the chain is installed, ensure that all fasteners are screwed. Perform any possible debugging operations to ensure that all chain loads are balanced.

5. Trial run

A simple trial run of the system is recommended for the following reasons:

- Check for proper operation
- Ensure that there is no cross binding and that all chains are load balanced
- Check for any unusual noises or vibrations.

6. Maintenance schedule

Regular maintenance is essential if the chain is to reach its maximum service life. If in use, the chain can be used for about 6000 hours or 3 years, whichever is shorter.

You are advised to perform maintenance according to the following maintenance schedule.

7. Regular maintenance

- Check the chain adjustment device/load distribution and correct if necessary
- Check the smooth operation in both lift and fall directions under load

- Check for wear on the side panels (up to 5% of board height)
- Check for signs of distortion or lateral arcuation
- Check the extension of the chain
(F LT chain Max is 3%, roller chain Max is 2%).
- Check for rotating or protruding pins
- Check the cleanliness of parts
- Check that the axle, sprocket, or block are aligned
- Check for wear on the sprocket or pulley block
- Check the condition of the lubricant
- Lubricate as needed
- Check the lubrication system on site

The frequency of maintenance inspection depends on environmental conditions such as site humidity, temperature range, corrosive gases and mixed abrasives. On-site vibration or overloading can also reduce service life, requiring increased frequency of regular inspections. Maintain it at least every six months

Carry out the above checks and procedures throughout the chain. If there is a part of the chain that cannot be inspected, it should be removed and replaced according to the manufacturer's instructions.

8. Protection of chain

fizurik new chains should remain in their original packaging until installation. fizurik chains are lubricated at the factory, but should not be exposed to outdoor conditions for long periods of time, especially in salty air.

If not protected, the lubricated chain can get mixed with sand and other things, which can damage the chain.

9. Lubrication

fizurik chains should be protected from dust and moisture and lubricated with a high quality, alkali free petroleum lubricant. As mentioned above, the chain needs to be oiled regularly. Heavy oils and lubricating oils are generally too stiff to enter the working surface of the chain and therefore cannot be used.

Care must be taken to ensure that the lubricant can penetrate the bearing area of the chain, this can be achieved by pouring the oil directly into the gap between the inner and outer chain plates. The correct lubricant viscosity for various ambient temperatures is given below

T ^{°C}	SAE	BS4231
-5 to +5	20	46 to 68 100
5 to 40	30	150 to 220
40 to 50	40	320
50 to 60	50	

In these temperature ranges, multigrade SAE 20/50 lubricants are suitable for most applications.

10. The use of grease

As mentioned above, grease is not recommended. However, if it is necessary to use grease, it should be noted that a grease coated on the outer surface of the chain will only seal the bearing surface, and the grease entering the bearing will not have any effect. This can cause early failures. So the grease must be heated until it becomes a liquid, and the chain can be put into it when all the bubbles no longer increase. If this method is used, the gaps must be cleaned and re-lubricated regularly according to the load conditions in the lifting system.

11. Abnormal surrounding environment

For temperatures up to 250 degrees Celsius, dry lubricants such as colloidal graphite or MoS₂ in petroleum solvents or polyalkyl glycol oil carriers are most suitable.

On the contrary, at a low temperature of -5 to 40 degrees Celsius, extremely low temperature grease and the resulting dilute lubricating oil are needed. Lubrication oil suppliers will advise accordingly.

Method of lubrication

There are two basic ways to lubricate a lift system.

- Method 1: Manual lubrication

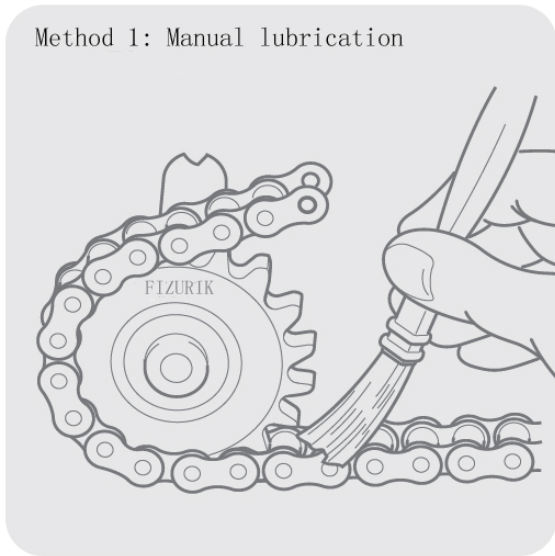
Use a brush or oil can to grease regularly, preferably every 8 hours of operation. The amount and frequency of oiling should be sufficient to maintain the humidity of the chain and allow clean lubricant to penetrate the joint of the chain.

The use of aerosol lubricants may satisfy certain requirements, but it is important to note that aerosol lubricants should be of the type that may be applied, such as those supplied by Renold. This type of lubricant is able to penetrate the gap between the pin/sleeve/roller, preventing drips or outflows when the chain is stationary and drips into the chain when it is running.

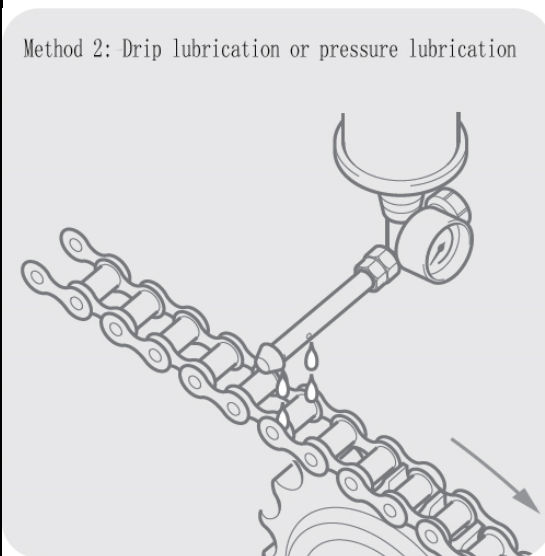
- Method 2: Drip lubrication or pressure lubrication

An oiler is used to inject oil droplets or steam directly into the space between the edges of the chain plate. The amount and frequency of oiling should be sufficient to allow the lubricant to penetrate the chain joints

Method 1: Manual lubrication



Method 2: Drip lubrication or pressure lubrication



12. Environmental Factors

Effect of temperature

An important factor to control in the drivetrain is chain temperature. Depending on the degree of service and durability of the transmission, special attention may be required to the lubrication method.

Although chains are generally able to withstand temperatures up to 250 degrees Celsius in some environments, due to lubricant limitations, chain temperatures above 100 degrees Celsius should be avoided whenever possible.

Low temperatures create brittleness that reduces the strength of the chain, as condensed water is produced in and out of the freezer.

Chemical solution or water vapor

Corrosion of the chain components by chemical solutions or steam can cause subtle cracks in the chain, resulting in obvious failure due to continuous deterioration.

abrasive

Abrasives accelerate wear and are difficult to detect in the early stages.

Impulse/impact load

The impulse/impact load can cause premature fatigue failure of the pin and chain plate.

All of these conditions can make the life of the chain unpredictable. For this reason, it is important to closely monitor the performance of the chain before a proper maintenance plan is completed.

13. Measure the wear of the chain

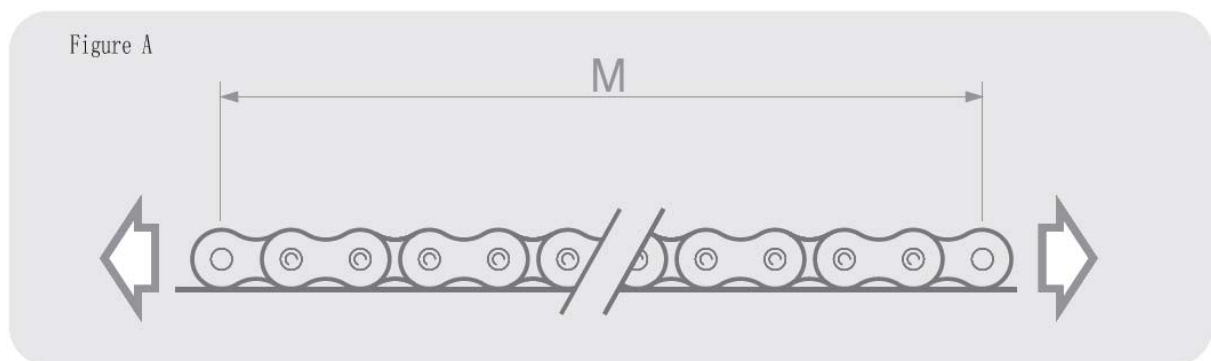
The wear degree of the chain can be determined by measuring the length of the chain as follows: Place the chain on a smooth surface, secure one end, then tie the other end to a turnbuckle and a properly secured spring scale.

A tension load of about 5% of the broken load of the chain is applied to the chain through the turnbuckle.

By choosing to use a turnbuckle or spring scale, the chain in place can be measured by the calibrated weight in the lifting system.

- The measured length "M" (see Figure A) is expressed in millimeters and the elongation is obtained by the following equation:

$$\text{Ratio of elongation} = \frac{M - (X \times P)}{X \times P} \times 100$$



Here X is equal to the number of pitches measured

P= Pitch (expressed in millimeters)

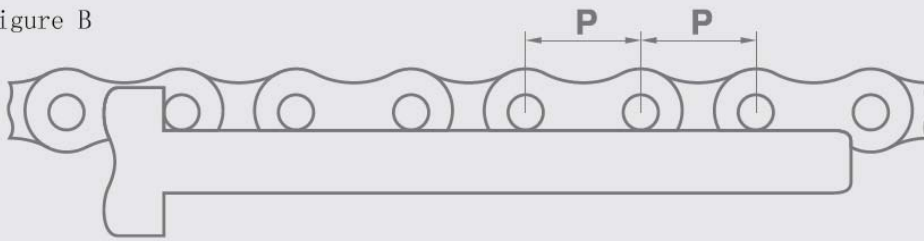
- In general, when elongation reaches 2% (1% for extended pitch chains), the chain has expired and should be replaced. If no tuning is done in operation, the replacement limit is lower, depending on the speed and layout. The average elongation is 0.7 percent to 1 percent.

It is not accurate to determine the elongation of a new chain by measuring the ratio of its total length to its calibrated length. Be sure to check the full length of the worn chain and then measure the part of the chain that has been visibly worn. In general, maximum wear occurs on the part of the chain that is engaged under load, such as when the chain is passed over a sprocket or pulley.

14. Fizurik wear measuring ruler

For most chain pitch sizes, it is simple to use the Fizurik wear gauge (see Figure B).

Figure B

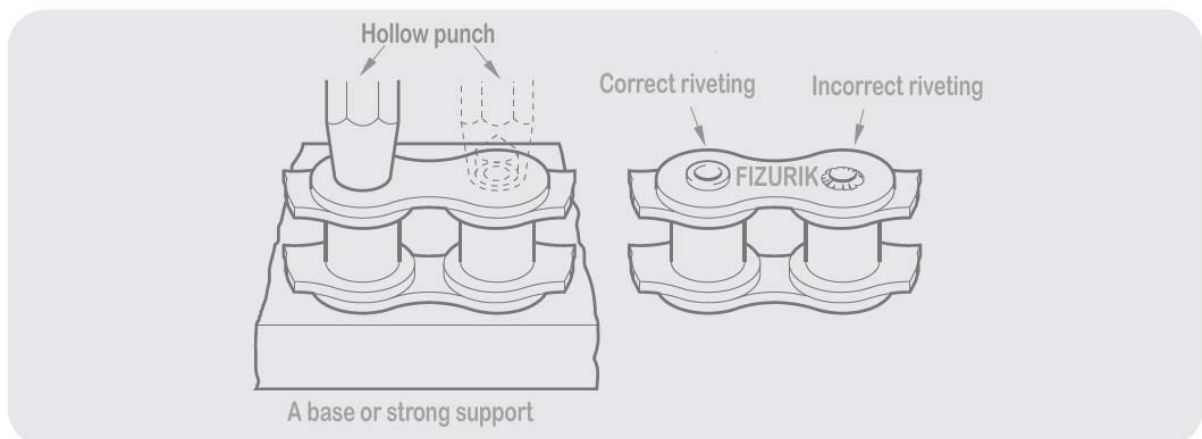


When the center of the pin reaches or exceeds the indicated point, note that the chain needs to be replaced

15. Riveted chain

Roller chain pitch less than 63.5 mm (2.5 in)

- Pin the outer link of the chain (link No. 107) into the inner link to join together. If it is a multi-row chain, the middle chain plate needs to be installed at the same time.
- Support for the outer chain link (No. 107 chain link) is required while the separate outer chain plate is installed. In this way there is a pressure fit and a hollow punch is used to punch each pin separately to apply this force to the pin. Then the chain plate is fixed in the adjacent chain joint, the outer chain plate spacing is the same position.
- Continue to support the outer chain joint (No. 107 chain joint), riveting the end of the pin shaft, after riveting the end of the pin shaft should be similar to the adjacent pin shaft. The force required to extend the end of the pin shaft will vary with the pitch of the chain. Excess riveting force should be avoided. Except for the need to engage the tail chain in place, the work shall be performed on a base seat.
- Check that the newly installed links rotate freely.



16. Pair of chains

Any application where two or more rows of chains need to work side by side can benefit from the special pairing process. These processes apply only to roller chains and are summarized as follows:

Length matching

The chain can be accurately measured from 3m to 8m in length, and the chain can be selected to calculate the uniformity of the full length of a double (or multiple) row.

Match of pitch

The chain pitch matching may consist of short joints approximately 0.3m to 0.6m in length, which can be graded and joined together to calculate the size and total length between the pitch more accurately.

Color coding

The above two methods are available only in the factory, but it is possible to accept coded chains to calculate graded length tolerances in the range of 0 to +0.15% of demarcated manufacturing limits.

For further information, please contact Fizurik