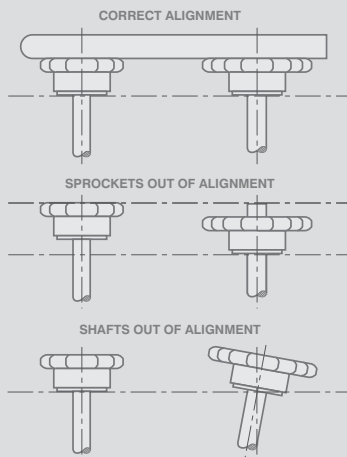


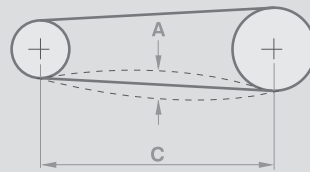
Making your chain run for longer

Effective chain maintenance advice from Renold Jeffrey

Sprocket alignment



Chain tensioning



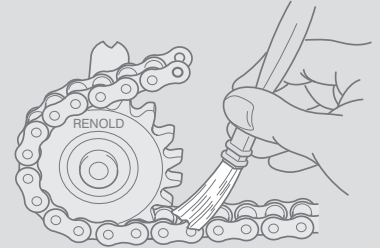
$$\text{Total movement 'A'} = \frac{C}{K}$$

Where K = 25 for smooth drives
= 50 for shock drives

A = Total movement
C = Horizontal centre distance

The chain should be adjusted regularly so that, with one strand tight, the slack strand can be moved a distance "A" at the midpoint

Lubrication

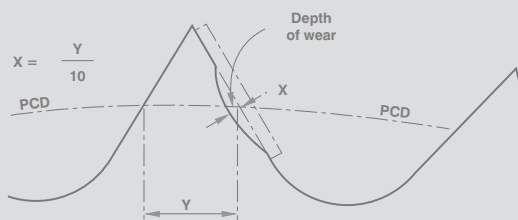


The table below indicates the correct lubricant viscosity for various ambient temperatures.

Ambient Temperature Fahrenheit	Lubricant SAE	Rating BS4231
23 to 41	20	46 to 68
41 to 104	30	100
104 to 122	40	150 to 220
122 to 140	50	320

For the majority of applications in the above temperature range, a multigrade SAE 20/50 oil would be suitable.

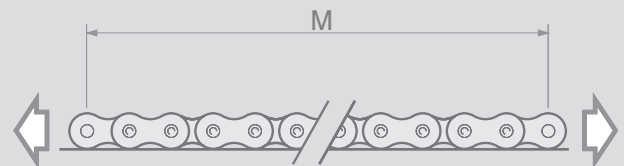
Sprocket wear



If the depth of this wear 'x' has reached an amount equal to 10% of the 'y' dimension, then steps should be taken to replace the sprocket.

Running new chain on sprockets having this amount of tooth wear will cause rapid chain wear.

Measuring chain wear



Roller chain at 2% elongation is now out of pitch and will rapidly wear new sprockets. Measure a manageable length of pitches pulled or hung with a weight for a total length and add 2%.

For more information on Renold chain
call today at **(800) 251-9012**

**RENOLD
JEFFREY**
Advancing Chain Technology

Troubleshooter

Fretting



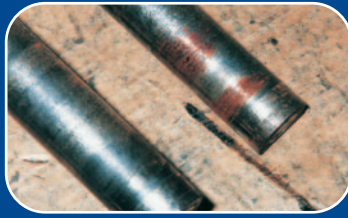
Application
Tilt tray sorter chain used in baggage handling in the baggage hall of a major airport.

Failure mode
Chain pins and bi-planar block show scoring and heavy red deposit indicating fretting corrosion.

Diagnosis
Fretting corrosion caused by marginal lubrication, where the lubricant present is insufficient to prevent the asperities on each component rubbing together.

Solution
Every pin should be removed and all traces of abrasive red oxide removed. The chain should then be operated in an improved lubrication regime.

Galling & fretting corrosion



Application
Chain used for a lifting application.

Failure mode
Galling and fretting corrosion.

Diagnosis
The chain being under constant loading at high bearing pressure has resulted in the lubricant being squeezed out between the pin and

bushing bore. This created a metal to metal contact resulting in a slight galling of the surfaces and the oxidization of the microscopic particles, giving the red oxide deposit. A typical example of fretting corrosion.

Solution
More frequent lubrication schedule to be introduced.

Abrasion



Application
Simple transmission chain drive.

Failure mode
Rubbing wear on the face of the side plates, the end of the side plates and the pin end.

Diagnosis
The chain has been rubbing against some fixed point on

the circuit. From the wear pattern it seems likely that the chain has worn a groove in the fixture, probably initiated by the harder pin ends.

Solution
Realign the chain drive before the damage to the chain becomes too serious and the chain has to be scrapped.

Lubrication & alignment



Application
1" pitch double strand chain driving a flywheel on a 400 Ton press.

Failure mode
Excessive wear. Chain jumping teeth causing tooth rounding.

Diagnosis
Examination of the chain showed no lubrication had

been applied in the 6 months service life. The loads involved require a minimum of oil sump lubrication. In addition to this the center distance was higher than recommended and the sprockets were out of line.

Solution
Use Renold Syno chain or improve the lubrication method. Consider hardening the driver teeth. Correct the drive alignment.

Corrosion



Application
Chain drive used on a barrelling machine.

Failure mode
Corrosion.

Diagnosis
This chain has been used in an environment with water contamination. The chain has not been regularly lubricated

and external parts have gradually corroded until the rollers seized. The chain has then proceeded to wear heavily on the rollers.

Solution
Use Renold Hydro-Service chain or protect your chain from water. Increase degree of maintenance lubrication.

Galling



Application
3.5" pitch chain used on a marine diesel engine.

Failure mode
Severe galling due to high bearing pressures and lack of lubrication between articulating surfaces resulting in surfaces fusing together.

Diagnosis
Lubrication pump failure resulted in surfaces fusing together under high bearing pressure. This galling process is also referred to as 'micro welding'.

Solution
Ensure adequate means of lubrication.

Overload



Application
Double strand roller chain used in severe overload situation.

Failure mode
Severe damage to roller chain pin and collapse of the chain bushing.

Diagnosis
Excessive overload on the chain led to the collapse of the bushing and damage to the pin.

Solution
Correctly size the chain for the application.

No failure



Application
24,000 lb breaking load hollow pin.

Failure mode
None.

Diagnosis
A correctly lubricated component.

Wear



Application
1.5" pitch double strand chain.

Failure mode
Pin bearing areas worn. Note position of intermediate plates is clearly visible.

Diagnosis
Over a long period of time the pins have gradually worn until the chain elongation has reached 2%.

Solution
Monitor chain extension regularly.

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