

Guidance of chain transmission of

Installation.

Check

Maintenance



Drive System Troubleshooting Guide:

PROBLEM	PROBABLE CAUSE	SOLUTION
Chain climbing or jumping off the sprocket	<ul style="list-style-type: none"> ◆ The different size or standard between chain and sprocket ◆ The Elongation of the chain or the worn sprocket ◆ Foreign material build up in the sprocket tooth gaps ◆ Insufficient chain wrap ◆ Improper installation ◆ Over load 	<ul style="list-style-type: none"> ◆ Decrease the load or increase the chain size and sprocket size. ◆ The drive sprocket may not have enough teeth to absorb the working tension. ◆ If the drive can't be altered. Introduce a idler sprocket to increase the chain wrap ◆ Correct the match position between chain and sprocket ◆ Replace the correct chain and sprocket ◆ Replace the new chain and sprocket ◆ Clean the sprocket teeth
Chain elongation	<ul style="list-style-type: none"> ◆ Lubrication failure ◆ Overload ◆ The tensioning device fail 	<ul style="list-style-type: none"> ◆ Check lubrication drive configuration and loading ◆ Replace the chain and sprocket ◆ Adjust or replace it.
Excessive Noise	<ul style="list-style-type: none"> ◆ Lack lubrication ◆ Over worn chain or sprocket ◆ The bolts and nut is loose ◆ Improper installation 	<ul style="list-style-type: none"> ◆ Provide proper lubrication ◆ Replace the new chain and sprocket ◆ Fasten all bolts and nuts ◆ Correct the insulation and the alignment
The chain is poor separation from the sprocket teeth	<ul style="list-style-type: none"> ◆ Too much distance between two shafts ◆ Over slack chain ◆ Elongation chain or over worn sprocket 	<ul style="list-style-type: none"> ◆ Install an idler or tensioner. ◆ Adjust the distance between shafts

Drive System Troubleshooting Guide:

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The chain over vibrations	<ul style="list-style-type: none"> ◆ The Chain Vibrating by periodic external force caused by a combination of chain tension, distance between driven sprocket and chain speed. 	<ul style="list-style-type: none"> ◆ Adjust the effective tension by applying an initial tension or by adjusting the existing one. ◆ Replace with different size chain ◆ Install a tensioner to adjust the chain span or on the slack side. ◆ Adjust the vibration frequency with correct speed of rotation of the sprocket due to the different chain speed. ◆ The drive set should be re-set up.
The Rusting of the chain.	<ul style="list-style-type: none"> ◆ Water condensed from the air cause rust with inadequate lubrication. It also effect the joints 	<ul style="list-style-type: none"> ◆ Lubrication is used to reduce oxidation and prevent rust and to seal against dust , dirt and water . ◆ Replace the chain and sprocket
Excessive wear the inside of plate and the sides of the sprocket teeth.	<ul style="list-style-type: none"> ◆ Improper installation of chain and sprocket ◆ Wear on the top of side plate is the chain rubbing against the chaincase or some obstruction ◆ Drive misalignment 	<ul style="list-style-type: none"> ◆ Check and adjust sprocket and shafts alignment ◆ Remover source of rubbing by removing the obstruction or adding a jockey sprocket to control the slack in the chain ◆ Check and correct sprocket and shaft alignment
Improper flexible or bending of chain, tight joints.	<ul style="list-style-type: none"> ◆ Corrosion or rusting ◆ Contamination by dust ,dirt, chips ◆ Inadequate lubrication. ◆ Chain is not installed correctly ◆ Overload 	<ul style="list-style-type: none"> ◆ Install a chaincase against corrosion and rusting ◆ Proper lubrication ◆ Correct the installation ◆ Reduce the load or change the larger size chain
Pin fail	<ul style="list-style-type: none"> ◆ Overload ◆ Excessively large shock load ◆ A repetitive load greater than the fatigue limit of the pin ◆ Corrosion 	<ul style="list-style-type: none"> ◆ Reduce load to suitable the chain capacity. ◆ Reduce shock load ◆ Remove the large repetitive load or increase the size or number of chain ◆ Install a case to protect the chain or periodically clean and lubricate the chains

Drive System Troubleshooting Guide:

PROBLEM	PROBABLE CAUSE	SOLUTION
Roller or bush fails	<ul style="list-style-type: none"> ◆ Over speed causing impact on the sprocket teeth ◆ Tooth mark on the outside of the roller diameter can initiate failure. ◆ Corrosion 	<ul style="list-style-type: none"> ◆ Replace a smaller pitch chain or sprocket with more teeth. ◆ Install a case to protect the chain or periodically clean and lubricate the chains. ◆ Use the new chain
Plate fail	<ul style="list-style-type: none"> ◆ Overload ◆ Excessively large shock load ◆ Corrosion 	<ul style="list-style-type: none"> ◆ Reduce the excess load or larger the chain size. ◆ Reduce the shock load or change the heavy duty chain ◆ Install a case to protect the chain or periodically clean and lubricate the chains. Use the new chain

Chain Installation and Maintenance :

Introduction

TransVison (TV) Chain is a premium chain in the operation and maintenance of power transmission section. The follow definitive preferred methods guide results in the maximum chain life by correctly handling, adjustment, installation and maintenance..

Preparation

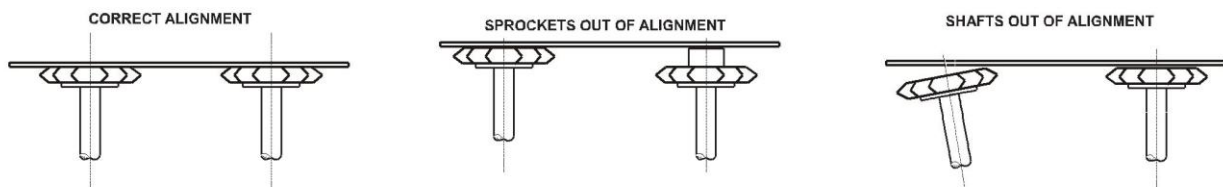
- ▲Check all equipments to ensure that are correct.
- ▲Check shafts and bearing to ensure that they are level and parallel to each other, replace or rectify if necessary.
- ▲By a spirit level and adjustable comparator bar or micrometer rectify any parallelism error present and mark a permanent datum lines for the adjustable shafts.
- ▲Place respective sprocket and shafts in approximate alignment and fit the keys in accordance with correct engineering practice. Do not finally secure keys at this stage.
- ▲Take care with the sprocket of split design, It must perfect abutting of the faces of each half, Proceed with the key fitting after the halves are finally bolted together , otherwise. The key can prevent correct assembly and subsequently result in Malgearing.

Sprocket alignment

- ▲Accurate alignment of sprocket tooth faces and shafts provides a uniform distribution of load across the entire chain width and contributes substantially to maximum drive life.



- ▲When alignment is correct within closest practical limits, drive the keys home and take a final check on sprocket alignment.



- ▲It is better that the sprocket is designed to be as close to the supporting bearings as possible.

Chain Installation and Maintenance :

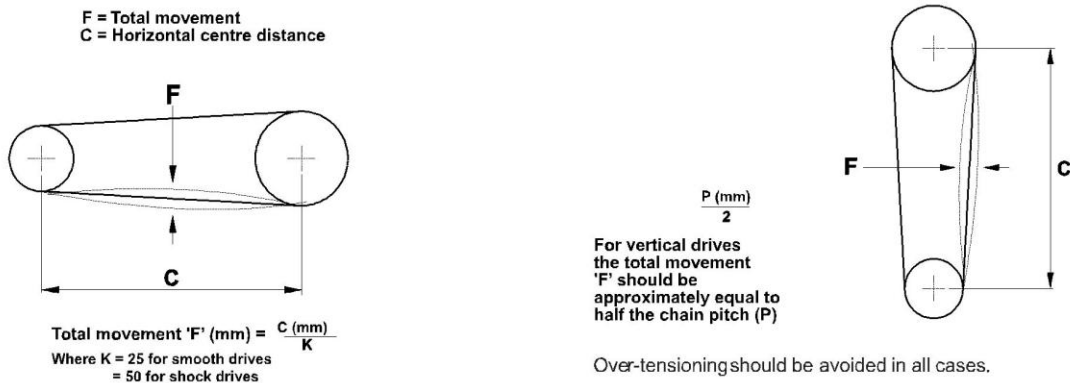
Chain installation

Before assemble the TransVision Chain. the follow should be done:

1. Cleanliness of the sprocket teeth (cement dust, weld spatter. etc.) whilst work was in progress.
2. Temporary positioning of the lower chain section if present , In restricted space , maneuvering of large sections in often simplified by using the space between shafts which will later be occupied by the chain.

To be sure that the chain is clean and free from debris and place around the sprocket, also to be sure that the chain complete match the sprocket. The joining is most easily accomplished at the mid span or the drive, drawing the chain ends together with a chain clamp or rope tackle block, ensure that the strength of the drawing tackle is sufficient to hold the chain while inserting the joining link of multiplex chain, confirm the intermediate plates are assembled, Do not detach the tackle until the link is completely assembled. When only partially inserted through inner links. The weight of the chain on release can unsupported pins.

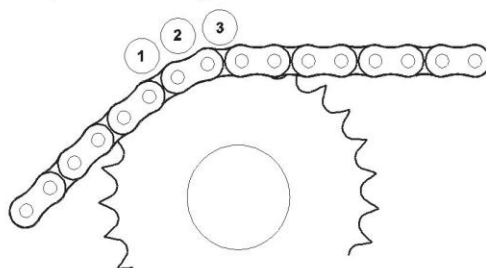
- ▲ For a chain of average centre distance about 30-60 times chain pitch correct adjustment is when the mid point of the longest span can be fully moved by hand in accordance with dimension "F" shown in the diagram followed.



Chain Adjustment

To maximize chain life. Some form of chain length adjustment must be provided, preferably by moving one of the shafts, see diagram followed, an adjustable jockey sprocket engaging with the unloaded strand of the chain is suggested if the shaft movement is impossible. Normally the jockey should have the same number of teeth as the driver sprocket or not less than the smallest sprocket and ensure the speed does not exceed the maximum ratings shown. Where necessary, several sprocket can be used on a single drive. Thereby meeting all possible needs for adjustment.

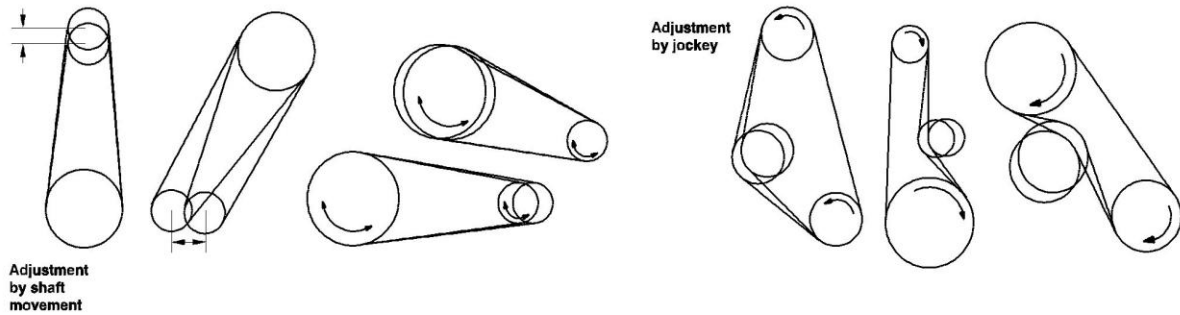
- ▲ The chain should be adjusted regularly so that one strand tight the slack strand can be moved a distance of "F" at the mid point.
- ▲ To cater for any eccentricities of the mounting , the adjustment of the chain should be tried through a complete revolution of the large sprocket.
- ▲ Adjustment is achieved either by the movement of one of the shafts or by use of the jockey sprocket. The amount of the adjustment provided by either method should be sufficient to take up chain wear amounting to two pitches or less than two percent elongation above nominal chain length.



Chain Installation and Maintenance :

When used for adjustment, a jockey should be positioned on the unloaded side of the chain, preferably nearer to the driven sprocket and gearing with the outside of the chain; It should have an initial chain lap of at least four teeth and a free length of chain not less than four pitches between it and the nearest sprocket.

▲All mountings for jockeys should be rigid and when manual adjustment is provided, the moving member must be securely locked in position after adjustments have been made.



Test Run

It is advisable to give the drive a short test run for the following reasons:

- 1) To regular oil delivery to the chain.
- 2) To eliminate any oil weeps from the chain set.
- 3) To check for any unusual noise or vibration.

Maintenance Schedule

Regular chain maintenance is important, in a correctly sized and installed drive the chain can be expected to last for 18 months.

The maintenance schedule is suggested as follows:

After 100 days

- ▲Check chain adjustment and rectify if possible:
- ▲Change oil, oil filter and clear the sump.

Annually

- ▲carry out the above checks.
- ▲Check for wear on side plates.
- ▲Check for chain elongation.
- ▲Check clean of components. Remove any accumulation of dirt or foreign materials.
- ▲Check for sprocket and shaft alignment.
- ▲Check for wear on sprockets
- ▲Check the lubrication system.
 - feed pipes are not clogged.
 - drip rate is sufficient
 - oil level is correct
 - pump is working

Protection

TransVision chain should be packed before installation. It should be lubricated TransVision chain is a precision that perform best if handled and stored in the correct condition. as the self lubrication will not stand up to outdoor condition. the lubricated chain will become contaminated with clips other materials which damage the chain and protected system.

Chain Installation and Maintenance :

Lubrication

To be correct lubricated with good quality, TransVision Chain can be protected against dirt Claps and moisture. After certain working period should be with new oil lubrication. Heavy oils and Grease are general heated to enter the chain working surface ..

The lubricant reaches the bearing pin area of the chain. Till the inner and outer plates. Preferably at the bottom strand of sprocket.

Grease lubrication

Generally. The grease lubrication is not recommended. But the follow condition should be greased:

- ▲ low speed request.
- ▲ Grease has to be heated till fluid and the chain are immersed and allowed to soak till all air bubble stop.
- ▲ The chain system should regular clean and re-greased.

Lubrication Ways

The follows is four basic way lubricating chain drives.

- 1) manual lubrication with brush
- 2) Drip lubrication
- 3) Bath lubrication
- 4) Stream lubrication

Work of Temperature

Chain temperatures above 100°C should be avoid if possible due to lubricant limitation. a way of improving the effectiveness of the lubrication and its cooling effect is to increase the oil volume and incorporate a method of external cooling for the oil.

To Measure Chain Wear

A direct measure of chain wear is the extension in excess of the nominal length of the chain and the chain wear can, therefore, by length measurement in line with the instruction given below.

▲ Lay the chain (both ends with an inner link), after anchoring it at one end on a flat surface.

Attach to the other end a turnbuckle and a spring balance suitably anchored.

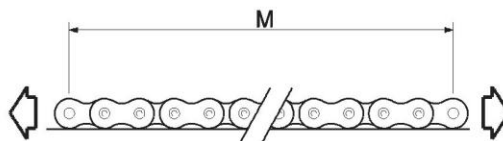
▲ apply a tension load as follows:

Simple chain: $p \times 0.77$ Newtons

Duplex chain: $p \times 1.56$ Newtons

Triplex chain: $p \times 2.33$ Newtons.

“p”: is the pitch in mm.



In the case of extended pitch chains apply a measuring load as for the equivalent short pitch Chains.

As an alternative to the use of a turnbuckle and spring balance , the chain may be hung vertically and the equivalent weight attached to the lower end.

▲ Measure length "M"(see diagram) in millimetres from which the percentage extension can be obtained from the following formula:

$$\text{Percentage extension} = \frac{M - (X \times P)}{X \times P} \times 100$$

Where X =number of pitches measured

P= pitch in mm

▲ As a general rule, the useful life chain is terminated and the chain should be replaced when percentage extension reaches 2per cent(1per cent in the case of extended pitch chains).For drives with no provision for adjustment , the rejection limit is lower ,dependent upon the speed and layout. A usual figure is between 0.7 and 1.0 per cent extension.

Chain Installation and Maintenance :

Chain Length Alterations

All drives should be designed wherever possible, with sufficient overall adjustment to ensure the use of an even number of pitches throughout the useful life of the chain. Offset links should never be used on impulsive, highly loaded or high speed chain drives.

In less arduous conditions where there is no other solution and the use of a Offset link is unavoidable.

A chain having an even number of links requires the incorporation of a Offset link to effect an alteration of one pitch.

Chain having an odd number of links incorporates a Offset link which must be removed to effect an alteration one pitch.

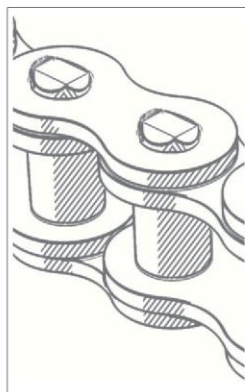
No joint which relies on a press fit for assemble should be reused after removal, A new joint should always be used.

Three type of riveted method :

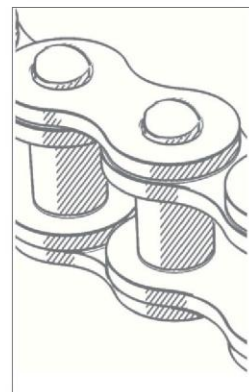
The chain pitch is up to 2.5"pitch



Two side riveted



Four side riveted



Round riveted