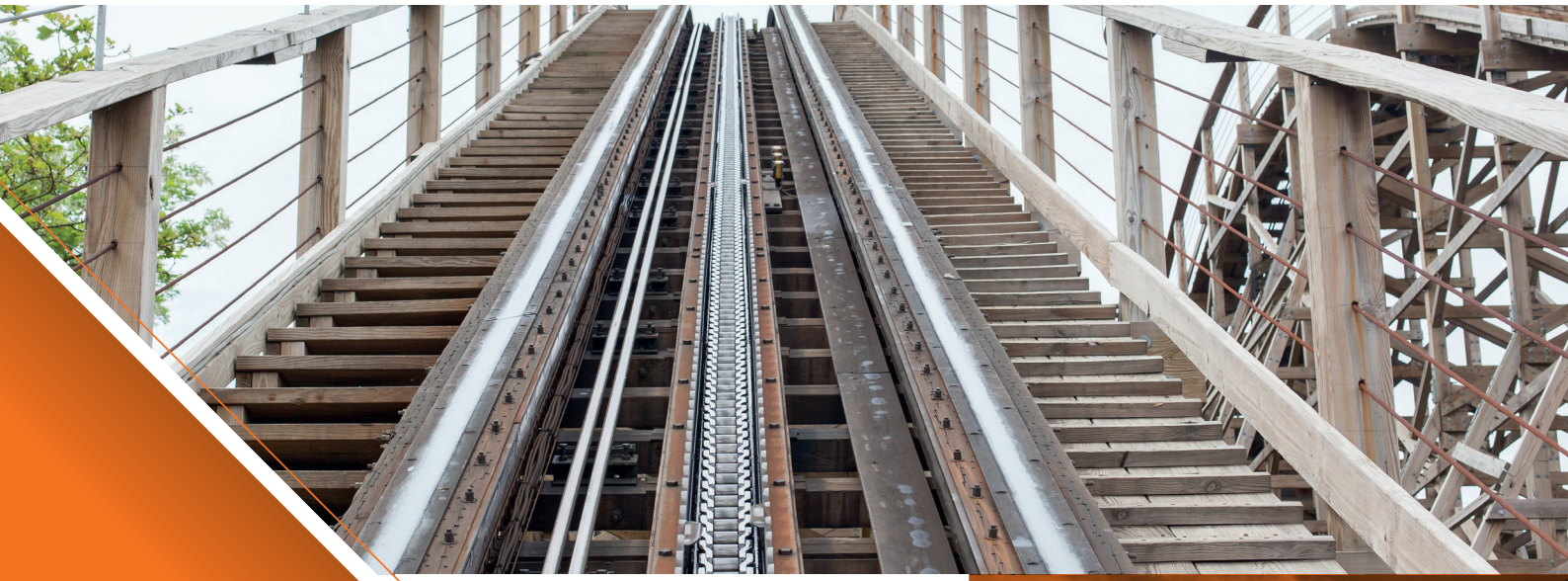
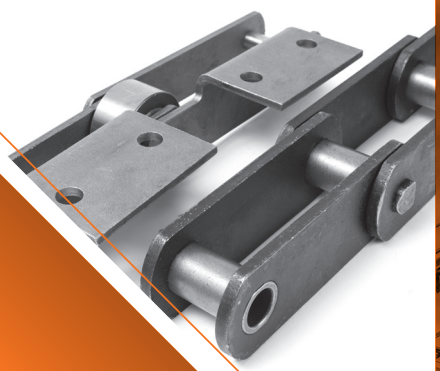
CROWN CHAINS
A Logical Link





Theme Park Chain

Installation, Maintenance and Safety Manual

The Safety First Aspect

Crown Chains Ltd.. manufacture and supply Steel Roller Conveyor Chains and the associated Chain Sprocket Chainwheels for a variety of industries and has very wide operational experiences of chains which are used in The Leisure Industry.

Safety in any environment is of paramount importance and the notes enclosed are designed to offer guidelines and recommendations for the best practice and safety in the Design, Installation and Maintenance of all chains.

In this way, Ride Designers, Manufacturers and Operators are able to share responsibilities for safe ride operation.

Chain Design

Over many years, Crown Chains Ltd.. has been involved in the design of chains for theme park rides, and is able to offer alternative patterns of chains which have proved to give extended service life in the most arduous of operating conditions.

Roller Coaster Train Haul Chains are now running in excess of 500 feet/150 metres per minute.

Water Ride Chains are being subjected to corrosion as environmental legislation dictates ever more stringent levels of water pollution control.

Crown Chains Ltd.. has designed chains for these applications, which can help to solve the problems of lubrication and can resist corrosion to the maximum.

- Raw Materials and Manufacturing Processes are carefully controlled to give reliable chain performance in the field
- ISO 9000 Certification provides full traceability for all stages of manufacture
- Chain Breaking Load Certification by Independent Test Houses can be supplied to ride manufacturers on request.

Chain Manufacture

- All Chains and Sprocket Chainwheels are produced in accordance with ISO 9000 Certification which covers the complete manufacturing process from Design to Final Goods Despatch
- All Raw Materials and Heat Treatment Processes are covered by Suppliers Own Certification
- Chains are subjected to constant inspection at all stages of manufacture and full records are kept to cover every stage of production
- Chains and associated Sprocket Chainwheels are Wrap Tested to ensure Correct Gearing prior to despatch.

Chain Type Approval

The design parameters for chains with respect to Maximum Loads, Speeds and Operating Cycles etc. are always available to original equipment manufacturers who then use all this data to confirm the suitability of a chain pattern/design for any given application.

Crown Chains Ltd.. is pleased to offer a full Chain Design and Selection Service in this respect, but the responsibility then lies with the ride maker/designer to ensure that these specified parameters are not exceeded.

Crown Chains Ltd.. is reluctant to deviate from any Type Approval Document which may be provided by a ride manufacturer and covering a specific chain design being used on a particular ride, unless there are very clear grounds for such consideration.

If the original ride maker is no longer in business or if he is reluctant to co-operate with the client in any way, then agreement must be reached between all parties as to the suitability of any new chain design before manufacture and installation takes place.

Crown Chains Ltd. will always be pleased to prepare and submit full reports on chains fitted to any rides and is pleased to work with independent engineers should any such assessment of a given situation be required.

Any such report would cover the condition of the ride/ installation, details of the chain currently in use, maintenance procedures, lubrication methods, and any other relevant information/detail relevant to the safe replacement of the original chain with a Crown Chains Ltd. equivalent product.

01845 525511
sales@crownchains.com
crownchains.com

System Design

Any chain driving system must be designed with the following objectives:

1. The main power/drive unit must be smooth in operation and correctly selected by Others for each application
2. Chains must be selected and designed to accommodate Peak Shock Loads, Friction Loads, and Dead Weight Loads
3. The associated Chain Sprocket Chainwheels must be manufactured by Crown Chains Ltd. or their design granted written approval by Crown Chains Ltd.. In the case of the latter then a full "Wrap Test"of chains and sprockets must be completed to ensure correct gearing at the sprocket teeth. Always wrap test chains and sprockets before fitting to an installation
4. If possible chains should be encased in a strong enclosure capable of containing any "Whip Lash Effect" of an overloaded chain when failing in tension
5. Lubrication of a chain is vital for its satisfactory operating/service life and performance. If possible an Automatic Lubrication System should be provided unless a Guaranteed Manual Maintenance Programme is instigated and adhered to. Full lubrication records should be kept. Adequate lubrication must be provided at all times
6. To maximize chain life, some form of Chain Length Adjustment must be provided to cater for Individual Chain Pitch Point Length Extension. This is usually achieved by means of an Adjustable Tension Device. It is essential that any such device does not impart additional excessive additional chain loads due to over-tensioning
7. When a Jockey Chainwheel is used for chain length adjustment it must be positioned on the unloaded chain strand preferable near to a driven chain sprocket chainwheel. It should have an initial chain wrap of at least three (3) teeth. The number of teeth in any Jockey Chainwheel should never be less than the smallest size of sprocket chainwheel in the complete chain circuit. There must always be a minimum of Three Free Pitches of Chain between the engagement and dis-engagement of chain on adjacent chainwheels.

Health and Safety Warning

The following precautions must be undertaken before dis-connecting and removing any chain prior to Replacement, Repair or Length Adjustment to minimize any risk of personal injury or death:

1. Always fully isolate the main power source from the drive system and "Locked Off" accordingly
2. Always wear Safety Glasses and any appropriate Protective Clothing i,e Hats, Gloves and Safety Shoes as the circumstances may dictate
3. Always ensure that any Local Site Work Legislation or Specific/Detailed Client Instructions are fully adhered to
4. Always ensure that all tools used are in good working condition and order, and that they are used in the proper manner
5. Loosen any Chain Tensioning Device before starting work on the chain system
6. Never attempt to work on any chain system unless the complete drive layout is fully understood and the relationship between all associated components in the system can be identified
7. Never re-use any Discarded Chain Link Assemblies, Damaged Chain or any Loose Chain Components.

Back Up Systems

Crown Chains Ltd. is not responsible for Personal Injury, Death or Damage to Property or Third Parties etc. to the extent that it would not have happened had an adequate Back Up System been in place.

Ordering Procedures

Chain and Chain Sprocket Chainwheels which are to be used in The Leisure Industry should be clearly designated as such on any Order/Procurement Document and any Specific Inspection Requirements clearly indicated. If product is to be stored for any length of time before being put into service, it may require to be treated with Additional Corrosion Resistant Lubrication.

Chain Extension/Elongation

Crown Chains Ltd. is often asked to assess when the useful life of a mechanical handling chain has ended.

Assuming that chain and sprocket wheel alignment are correct, chain life is directly dependant on the amount of wear/ elongation which can be accommodated by the depth of case hardening/heat treatment on the Chain Bearing Pin Body and Chain Bush/Barrel Bore.

It could be argued that the greater the depth of heat treatment to these chain component interfaces, the greater the potential chain operating life.

Two points however govern this, one being that it is essential to maintain a certain degree of ductility in the core of the components to prevent brittle fracture and the second being the ability of the chain sprocket tooth form to accommodate a limited amount of chain length extension.

For most commonly encountered chain in the leisure industry the heat treatment depths for chain components will be of the order of 0.040"/1.00mm. Chain wear will only take place during articulation of the chain bearing pin within the chain bush/ barrel bore as the chain engages and dis-engages with the sprocket tooth on the loaded/driving strand.

Adjustment to cater for wear/elongation is normally provided and is based on the following formula:

Total Adjustment on Chain Centre Distance = Number of Chain Links/Pitches in One Complete Chain Circuit x Factor "Y" (See below)

Factor "Y" = Case Depth of Component = 0.040"/1.00mm

Applying the above formula is simple and based, for example, on a Chain Length of 392 pitches in a full circuit, the following will result:

Total Adjustment in Inches = 392 x 0.040" = 15.68 inches

Total Adjustment in Millimetres – 392 x 1.00 = 392mm

When the chain has reached this adjustment level it should immediately be replaced.

Should any further confirmation of wear be needed, a visual examination of the Chain Bearing Pin Body and Chain Bush Bore will clearly indicate that wear has taken place on both these components. Rapid chain length extension takes place when heat treatment has been worn away.

Normally Heat Treatment Hardness Values are in the region of Rockwell 60 "C" Scale – Brinell 600.

If any chain component has a hardness value which is lower than this figure, then the condition of the chain is suspect.

Whilst the wear on the chain bearing pin and bush are considered to be the main criteria, consideration should also be given to Roller Bore Wear. This wear has no effect on Chain Length Extension but it can give rise to Tooth Flank Wear on sprocket chainwheels. This can cause mal-gearing and the chain may start to climb out of the sprocket teeth, which then exerts additional loads within the chain circuit.

Assessment of Roller Bore Wear can usually be made by viewing the chain as it engages with the sprocket chainwheel teeth. If there is a significant rise of the chain roller as it engages the tooth, then a further check must be made by manually examining the clearances when the chain has stopped.

For chains which are used in the leisure industry w expect the original clearance between the Chain Roller Bore and Bush/ Barrel Outside Diameter to be 0.080"/2.00mm . This clearance is not as critical as the relationship between the Chain Bearing Pin and Chain Bush/Barrel Bore. In our opinion when this clearance reaches approx. 0.20"/5.00mm it can cause mal-gearing in the longer term.

To reduce chain wear to an absolute minimum, adequate lubrication is essential and this must be directed at the component faces which dictate chain extension. These as above are the Bearing Pin and Bush/Barrel Interface and Roller Bore.

Penetration of lubricant to these areas is vital and whilst appreciating that oils and greases are difficult and expensive to apply correctly and in the right quantities, lubrication of the Chain Side Linkplates should be avoided wherever possible. If an excessive build up of oil/grease takes place on the chain linkplates, this can prevent the ingress of lubricant to the internal load carrying faces of the chain. Equally important is the use of Non-Carbonising Oils which do not produce a build up of debris in/on the chain.

Specialist advice should be taken on all aspects of lubrication from the appropriate sources.

Tensioning of Conveyor and Elevator Chain

It is essential that chains are tensioned sufficiently to take up the clearances between the chain bearing pins and chain bushes/barrels. Excessive tensioning will produce an increased rate of chain wear and in extreme cases could even wear out a chain within a few weeks. Insufficient tensioning is not so serious but will cause Noisy Running and some increase of wear particularly at higher running speeds.

An experienced chain engineer will probably rely on his own judgment of the tension imparted into a chain by the Take Up Screws of the Tensioning Mechanism and then check his setting by lifting the chain away from the support tracking at the mid point of each chain strand. A typical amount of lift would amount to 1.00% of the chain strand centre distance i.e. on a 20 metre chain strand the lift would be approx 200mm.

However such a check runs into problems when the weight of any chain is considerable. In such cases a method which can be adopted is to check the Catenary/Free Hanging Sag over a known length of unsupported chain as might occur at the end of a horizontal section of chain tracking and the slack side of the adjacent chain sprocket wheel. Any slack chain will be concentrated in this section by briefly turning the system over using the main drive system. It may be necessary to remove a short section of chain support tracking to obtain a reasonable unsupported chain strand section say 2 metres/6ft. Approximate values for Minimum Chain Sag which are required at different values of unsupported chain length are listed below:

Unsupported Chain Length	Catenary Sag at Centre
1.00 metres	20mm/1.000"
1.50 metres	40mm/2.000"
2.20 metres	70mm/3.000"
2.50 metres	110mm/4.000"
3.00 metres	160mm/6.000"

When a new chain is installed the "Take Up" should be adjusted after about 10 hours, 30 hours and 100 hours of running service. After that the chains should be inspected every 3 months.

The tensioning of chain when running in the Vertical Plane is rather different and actually more critical since the mass of the chain will itself take up the clearances between the chain stud and bush/barrel. A the chain wears and extends in lengths however it will start to "Drop Away" from the Bottom Chainwheel and Mal-gearing can easily result. Generally speaking these chain layouts tend to "Self Tension", indeed some Vertical Elevator Systems include Floating Tailshafts where chain tension is solely dependant on Chain Mass. As a guide, Chain Deflection at the mid pint of each chain strand is approx. 1.00% of the chain centre distance.

Twin Strand Chain Systems must be matched for equal chain tension.

Typical Maintenance Schedule

Weekly

- Check Lubrication and Lubricate if necessary.

For The First Month of Commissioning

- Check Chain Length Take Up at Adjustment Position and Tension Up if necessary
- Check for Unusual Wear, Locate Cause and Rectify NOTE: This is usually Sprocket Alignment.

After Three Months

- Check Chain Adjustment and Tension as necessary
- Change Oil, Oil Filter and Clean Out Sump if Automatic Lubrication System is being used
- Check for any unusual wear pattern, locate cause and rectify as appropriate to prevent further chain damage.

Every Three Months

- As above.

Annually

- Carry out all the above
- Check for wear marks on chain side linkplates
- Check for pitch elongation
- Remove all accumulated dirt etc. from the chain
- Check shaft and sprocket alignment
- Check sprocket teeth for wear
- Check lubrication system (if fitted), drain out old residual oil, flush out and refill with new oil
- Complete a full visual examination of Chain, Sprocket and Drive System
- Complete a Full Lubrication of the chain
- For Grease Lubricated Chains, clean grease must be applied at every chain pitch point and pumped through each chain joint until clean new grease exits.

Lubrication

In commenting on Chain Lubrication, the Chain Maker must only specify the broadest of parameters for Lubrication Products, since many organisations/companies have contract agreements with suppliers of Oils and Greases etc. Every product manufacturer has many versions of lubricant, most of which are completely satisfactory for use with Chains.

For standard designs of Mechanical Handling Chains used on park rides and attractions where Water Pollution is not a problem, a Conventional Multi Viscosity Mineral Oil SAE 10W/40 (private petrol engine motor vehicle sump oil) which contains Anti Froth, Detergent and High Pressure Additives will prove to be completely satisfactory.

For applications where the chain is in contact with Water – Log Flume, Rapid River and Splash Rides, then every lubrication manufacturer/supplier will include a suitable lubricant in his product range.

When considering this subject and seeking advice, it is well to remember that any design/pattern of chain includes nothing more than a series of Plain Stub/Bush (Barrel) Bearings which have wide operating clearances.

In terms which relate to Conventional Bearing Operating Speeds, most chains are running at quite low velocities, include limited articulation of chain joints and are not subjected to extremes of application – Heat, Dirt and Heavy Shock Loads. Consequently many lubricants, which contain sophisticated additives to counter the effects of such conditions, may be considered to be un-necessarily complex in their formulation.

CORRECT INSTALLATION AND MAINTENANCE OF ALL CHAINS CAN INCREASE CHAIN LIFE AND SAVE MONEY

Installation of New Chain

The method if installation of all new chains is basically the same, but can be affected by Local Site Conditions and The Condition of Existing Chain on the Equipment in question.

Situation No.1 – Fitting New Chain where Existing Chain Exists

These are installations where it is not required to change Sprocket Chainwheels and where there is not expected to be any repair/maintenance work carried out on Chain Support Tracking or Fabricated Structure etc.

Here new chain can be fitted as old chain is removed. Chain Tension should be removed by "Backing Off" the Chain Tensioning Device to give the maximum possible Chain Slack in the circuit.

The chain should be broken at a convenient position where work can be carried out safely and easily. The chain may be split at a Master/Connecting Link. Alternatively it may be necessary to Grind Away the Two Adjacent Projecting Bearing Pin Heads of a Chain Outer Link.

The chain Outer Link Sidebar may then be "Drifted Off" and the chain split.

The old Chain Outer Link must be immediately scrapped to avoid any possibility of it being wrongly re-introduced into the new chain at a later stage of the work.

Handling Lengths of New Chain can then be attached to the existing chain using New Master Links. Care must be taken to ensure the correct orientation of the new chain if this is applicable.

When each Handling Length of New Chain has been correctly connected up, the Main Drive is then used to "Inch" the system onwards to undertake the same procedure with the next new chain length.

Thus old chain is disconnected and scrapped as new chain is installed.

See later notes for the correct riveting procedure for Outer Rivet Connecting Links.

Situation No.2 – Fitting New Chain to New Installations

This situation is largely dictated to by local conditions.

However wherever possible new chain should be installed from the Take Up/Tail End of the installation and Pulled Up to the Main Drive Shaft by external mechanism such as Block and Tackle or Winch Device.

When sufficient chain has been fitted to reach the Main Drive Sprocket, then the chain may be pulled around the circuit again using the Main Motor Drive System.

General Practice for Installation and Assembly Work

- All Power Supply to the system must be isolated in full accordance with Health & Safety Legislation
- Make sure that the correct chain and all other components are to hand before breaking the old chain down
- Check that there is sufficient quantity of chain for the new installation to be completed
- All Chain Sprocket Chainwheels must be locked in position. This is particularly important on Inclined Systems
- All tension must be taken out of the chain so every link/pitch is loose
- Ensure that the existing chain is fully secured on both sides at the position where it is to be broken/split
- Do not under any circumstances Grind Bearing Pin Shoulders or Relieve Link Plate Holes to ease the assembly of new Master/Connecting Links
- Do not apply heat to Bearing Pin Ends of Linkplates to help assembly. This practice can damage the critical interference fits between mating chain components
- Always apply practical safety measures at every stage of work.

Reconnecting the Chain

Solid Bearing Pin Connectors

- Secure the chain on both sides at the position of work
- Where applicable apply lubricant to Chain Bearing Pin Body and Chain Bush/Barrel Bore
- Introduce new Link into adjacent Chain Pitch Points
- Position Loose Chainplate over Bearing Pin Shoulder/End Projection and support the Back Face of the chain with a solid object to give full support
- Force the Loose Chainplate onto each Chain Bearing Pin at equal rates using a Hammer and Hollow Punch or Hydraulic Press for large sizes of chain
- Apply Locknut, Circlip, Split Pin or Rivet Bearing Pin Shoulder End (See below)
- Check that the joint fully articulates. If tight, a light blow on the back end of the Chain Bearing Pin will usually free the joint.

Riveting Solid Chain Bearing Pins

To correctly rivet a Solid Chain Bearing Pin, the chain must be supported on the opposite end against the force of riveting. If the Bearing Pin is of small diameter, then a couple of sharp blows with a hammer should suffice to complete the rivet operation and swage out the bearing pinhead for full chain security.

On larger diameter Chain Bearing Pins the above will not be adequate for full chain security.

It is necessary to work around the Bearing Pin End to using a hammer to ensure that Full Rivet Spread is achieved.

Take great care not to damage the Chain Linkplates.

Alternatively work round the Bearing Pin Head with a small Pneumatic or Hydraulic Hammer/Press.

ALWAYS USE THE PATTERN/STYLE OF FACTORY RIVETED BEARING PINS AS AN EXAMPLE WHEN HAND RIVETING CHAIN

Assembly of Solid Bearing Screwed Pattern Master Links

Chain Master Links which incorporate a Screw Thread and Locknut Fixing, should be assembled generally as follows:

- Secure the chain on both ends at the position of work
- Where applicable apply lubricant to Chain Bearing Pin Body and Threaded End Section
- Introduce new link into adjacent chain pitch points
- Position Loose Chainplate over Threaded Bearing Pin End Section and support the Back Face of the chain with a solid object to give support
- The Loose Chain Linkplate should be a Light Tap Fit on each bearing pin end projection and the Linkplate should then be lightly tapped up to the Shoulder of the pin in equal measure
- Introduce the Locknuts to the Screwed End Section of the bearing pin and lightly tighten
- Use a Torque Wrench to fully secure the locknuts
- Do **NOT** use the Screwed Locknut to position the linkplate against the bearing pin shoulder. The Locknut is **ONLY** used to secure the linkplate after assembly as above
- The following are Correct Setting Torque Figures for Thread Sizes as listed. For other screw thread diameters please enquire or seek local additional information:

Thread Size	Tightening Torque Nm	Tightening Torque lbs.Ins
M4 – 0.1875"	3.00Nm	26.553 lbs.ins
M6 – 0.250"	10.00Nm	88.510 lbs.ins
M8 – 0.3125"	25.00Nm	221.270 lbs.ins
M10 – 0.375"	50.00Nm	442.540 lbs.ins
M12 – 0.500"	94.00Nm	831.975 lbs.ins
M16 – 0.625"	225.00Nm	1991.430 lbs.ins
M20 – 0.750"	430.00Nm	3805.844 lbs.ins
M22 – 0.875"	630.00Nm	5576.000 lbs.ins
M25 – 1.00"	774.00Nm	6850.192 lbs.ins

- Check Chain Joint for full articulation after final assembly

Chain Take Up and Adjustment

When the chain has been fully installed and inspected, complete with any fixtures which may be fitted to it, the site must be cleared and all safety locks/fixtures removed.

The circuit should be physically examined for any obstructions and the chain given a visual inspection to check that all chain joints have been correctly assembled.

The chain will now need to be adjusted to take slack from the system. This is the Take Up Clearance at each Chain Pitch Point.

Run the chain for a short period of time at the slowest possible drive speed if this is possible.

Allow the chain to complete two complete chain circuits.

Apply Initial Chain Adjustment at the Chain Tension Device and run the chain again for two complete circuits.

Check the chain tension again and adjust as necessary.

Repeat as above until satisfactory chain tensioning is achieved.

It is important not to over tension the chain.

Check that all Chain Sprocket Shafts are square and adjust the tensioning screws at an equal rate with a few turns at a time. Fully tighten up all Locknuts before running the chain.

Once the chain system has been set up it should be run continuously for 5 hours to allow the chain to "Bed In" and the Bearing Surfaces to settle down/bed in.

Apply lubricant as necessary and re-check everything before commissioning is completed.

Chain Fault Finding

There can be many reasons why chain and sprocket installations of any type can give difficulties in service and we can only list a small number of suggestions when operating problems occur.

FAULT	CAUSE	REMEDY
Fractured Chain Bush/Barrel	Chain speed too high	Chain of shorter pitch but equivalent strength
	Heavy shock loads	Investigate to reduce shock loads
	Corrosion pitting	Consider using special material or improve lubrication
Roller Flatting due to Skidding	Too lightly loaded system	Increase load within limit of chain
	Heavy load where friction between bush and roller bore overcomes lever friction effect of friction at roller periphery	Increase chain size if no reduction possible
	Excessive lubricant on chain track	Clean tracking
	Canting over of chain on track	Investigate
Tight Chain Joints	Material packed in chain	Clean and re-lube
	Frozen/seized chain	Clean and re-lube
	Incorrect lubricant	Clean and re-lube
	Corrosion	Investigate
	Mal-alignment	Check structure
Fractured Chain Plates	Overload above maximum chain working capacity	Investigate for foreign object causing jams
Fractured Bearing Pin	Overload above maximum chain working capacity	Investigate for foreign object causing jams
Elongated Link Plate Holes		Check Setting of any Chain Overload Device if fitted. Check for any Obstruction in Chain, Drive System Sprocket Teeth or Circuit. Check power consumption
Loose or Damaged Chain Attachments/ Brackets	High unit shock loads	Investigate
	Incorrect assembly of slats/carrier assemblies	Re-align to ensure correct phasing
	Twisted chain causing flexing and cross chain loads	Care at assembly
Excessive Roller Bore Wear	High unit load	Distribute load
	Twisted slats/carriers	Investigate
	Unsatisfactory lubrication	Improve lubing

FAULT	CAUSE	REMEDY
Excessive Noise	Mis-alignment of chain tracking	Check all structure alignments
	Too little or too much chain slack	Re-tension chain
	High speed	Use shorter chain pitch size
	Chain sprocket wheels worn	Replace
	In-effective lubrication	Lubricate correctly
	Damaged/incorrectly positioned chain tracking	Investigate and adjust as necessary
Uneven Running	"Stick slip"/hunting	See roller flatting check drive for adequate capacity
	Polygonal action of closely spaced sprockets in a complex circuit	Increase sprocket chainwheel centres or reposition wheels
	High friction at idler sprockets	Lubricate or fit low friction bearings
	Polygonal action at drive chainwheel	Use larger diameter sprocket
Chain Whip	Excessive slack	Adjust correctly
	Worn tooth form	Replace chainwheel
	Long unsupported chain strands	Fully guide return chain strand
Chain Clings to Sprocket Teeth	Incorrect tooth form	Replace
	Worn tooth form	Replace
	Heavy tacky lubricant	Clean and re-lube
	Stiff chain joints	See chain assembly procedures
Chain Climbs Sprocket Teeth	Excessive tooth form wear	Replace
	Build up of excessive chain slack	Adjust chain
	Chain elongation	Replace chain
	Severe overloads	Investigate
	Material packing between chain and tooth root	Remove obstruction

General Inspection Procedures

- Place spirit level on all shafts for accuracy of horizontal settings
- Check visually for squareness
- Rotate shafts through 90 degrees and inspect again
- Release any Chain Tension Weights or remove Tension Loads. Disconnect chain from Headshaft Sprockets, place Bar across chain sprocket tooth root and check alignment using a spirit level to sight against the shaft
- Use Diagonal Cross Wires to ensure squareness of twin chain strand sprockets
- Record any Rubbing Marks made by the Inside Face of the Chain Side Linkplates on the Sprocket Tooth Flanks. This indicates position and severity of mis-alignment
- In Twin Strand Chain Systems, ensure that One Tailshaft Sprocket is Free Running to prevent Chain "Wind Up".

General Notes

- Fully lubricate chain on a weekly basis or daily if exposed to bad weather, corrosive chemicals or adverse operating conditions
- Always run chains during the "Closed Season" to prevent partial seizure of chain joints
- Do not attempt to run chains which may be frozen up during winter months
- To un-seize chain joints use Diesel Fuel Oil or any Proprietary Oil Penetrating Product to penetrate the chain joint, before applying any force
- Never hammer chain joints to free them off. The integrity of the chain will be destroyed and the chain could physically collapse.

Disclaimer

Crown Chains Ltd.. cannot be held responsible in any way for Damage to Property, Personal Injury or Death to the extent that it would not have been caused had all the precautions listed in this document been taken.

Quality Control

All Chains and Sprockets supplied by Crown Chains Ltd. are supplied complete with fully detailed Quality Control Documents as part of the Contract of Supply. All stages of product manufacture are fully detailed – material specifications and heat treatment values etc. Crown Chains Ltd. will file copies of such documents for a period of five (5) years from delivery.

Health and Safety Executive

Full compliance with all UK Health & Safety Executive rules, regulations and documented information is essential. The responsibility for adherence to such regulations etc. is the sole obligation and instruction of the Park / Attraction Owner and / or any Ride / Attraction Operatives.

Crown Chains Ltd. will provide copies of all documentation relating to Procurement Procedures for any Contact of Supply.

All Chain and Sprocket Supply Contracts will include fully detailed Quality Control Records copies of which will be held on file by Crown Chains Ltd. for a period of five (5) years.

Booklet Photography

The images used in this booklet are Shutterstock stock photography and are used for illustrative purposes only.

CROWN CHAINS

Crown Chains Limited are based in Thirsk, North Yorkshire and we are manufacturers and suppliers of special application conveyor and elevator chains and are the UK distributor for MCV Vigano, Italy.

Striving for excellence, having a mutual passion for the product and with over 50 years of unrivalled know-how, Crown Chains is your logical link for a primary European manufactured product.

We are committed to providing exceptional customer service, product quality and reliability. Our supply partners are trusted organisations with products conforming to ISO9000 (ISO9001:2008) ensuring continuous monitoring of every component in each stage of the manufacturing process.

It's our job to supply you with chain and complementary products that perform successfully and consistently in your manufacturing or processing environment and our attention to detail will ensure all products supplied will be compliant and offer the best value for money.

You can rely on Crown Chains for the supply of cast link chains, welded steel chains, engineered steel conveyor and elevator chains, drag chains, forged fork link chains, round link through hardened and case-hardened chains and sprockets to suit. Our people are well known in the industry with a solid track record in providing technical consulting and specification services on an unlimited number of chain types in a wide range of materials.

We have a product for all handling processes, so call on our matchless expertise.

Crown Chains Limited
Unit G Lumley Close,
Thirsk Industrial Park
Thirsk YO7 3TD

01845 525511
sales@crownchains.com
crownchains.com

UK official distributor for MCV

MCV
To link for passion