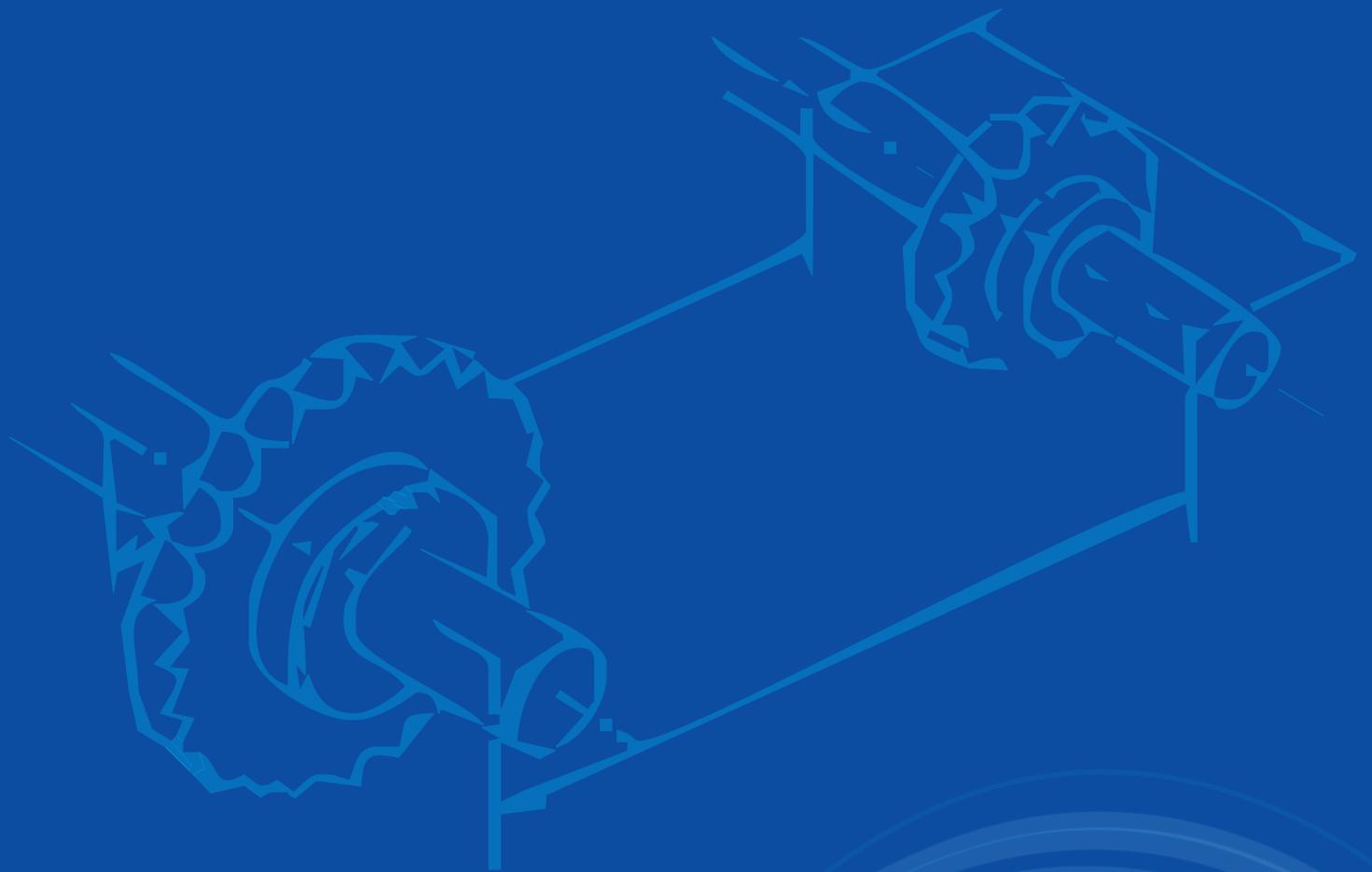


Since 1992



MAINTENANCE MANUAL



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marketing@swajit.com

"Customized Solution Provider for Industrial Chains"

Types Of Wear

A) Mechanical Wear

Under the reasonable conditions and normal atmosphere, the mechanical wear causes, the bearing surface of conveyor chain to shine brightly, hence the proper lubrication assures further enhanced life.

B) Wear due to Corrosion

Conveyor chains used in applications where acidic and alkaline chemicals are present will be subjected to corrosive as well as mechanical wear. To protect against chemical corrosion accompanying mechanical wear, the stainless steel is recommended.

C) Wear due to conveyed material

Material conveyed by chain also have an important factor. Wearing of the chain due to reciprocal friction between material and chain can be eliminated by preventing material from falling on the chain. to enhance extra protection the chain should have higher wear resistance specifications.

Note:

Avoid steam and hot water for cleaning the chain because it will cause delubricating the chain assembly, resulting in increased corrosion and wear of the chain parts and reduction of the chain life drastically.

Lubrication

- Selection of proper lubrication method & applying lubricant is necessary for prolongation of the life of chain
- Method of lubrication should be adopted depending upon the chain speed.
Mineral oil SAE 40 to 60 is recommended.
- Lubricants such as Oil or Grease should always be applied between inner & outer link plates and side facing of the chain wheel/sprockets during working.
- Frequently check the viscosity & quality of the lubricant, in order to reduce the wear characteristics of conveyor chain

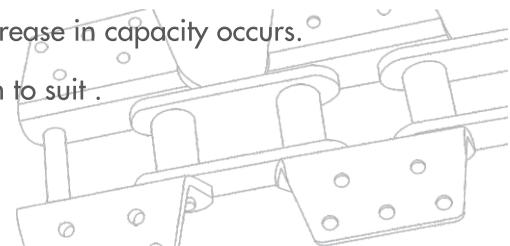
More frequent inspections and check points

- Wear on sprocket's teeth and wear on link plates it appeared that means sprockets or shafts are not properly aligned. Do not depend on wear sign alone for judging shaft and sprocket alignment, since misalignment may be detected before wear become apparent. Hence the proper alignment is very much necessary to avoid any major breakdown.
- The working faces of sprocket teeth should have a bright and polished appearance. The Scratches to grooves or change in tooth shape indicates some trouble i.e. the rollers may not be rotating due to inadequate lubrication.
- The gradual elongation above 3 % in total chain length, indicates that the chain will soon jump the sprockets. A certain increase in slack may be due to in improper lubrication, heavy shock loads or continuous over load or axle displacement or displacement of take-ups.

- Compressed air cleaning is necessary to maintain the cleanliness, to avoid the jamming in chain parts which may occur due to accumulations of dirt, foreign particles and bagasse.
- Do not use a new link as replacement in a chain, which has already been elongated by wear. Also do not use the new chain on worn out sprockets because this will reduce the chain life considerably.
- Before disassembling the chain, lubricate it with oil & run the carrier in Idle condition for 8-10 hours, so that chain parts become free, facilitating in easy disassembly.
- After dismantling the pin, bush, rollers from Carrier Chain, the same should have to be subjected to "Sand Blasting" operation to have proper cleaning.
- Simply rematching of chain components and parts to get the assembled chain is very Dangerous.
- Never go for Electroplating of heat treated chains, as it causes the hydrogen embrittlement fracture.
- Never weld the heat treated chains, as heat effect can reduce strength causing the chain to break.
- Prior to get the use of blow chart or other heat source to heat and cut the chain, be sure to remove all components of either side of heat treated area that may be affected by heat.

Carrier Chain Check Points

- Alignment of sprocket, shaft, with carrier in linear and perpendicular direction.
- Sprocket & teeth condition i.e. Machined or Not Machined.
- Hardness of sprocket teeth as well as the wear & tear of teeth.
- Material feeding position should be Central feeding & not side feeding.
- Chain elongation (whether removed any link)
- Whether Chain has elongated on one side.
- Lubrication and cleaning procedure.
- Before disassembling the Chain, lubricate with oil & run carrier in Idle Condition for 8-10 hours. So, that chain parts become free, facilitating in easy disassembly.
- Chain twist due to alignment problem caused by uneven wear and tension.
- Chain cleanliness.
- Loose chain components and chain attachments.
- Check that chain pin heads are not fouling any side plates.
- Check that material is evenly loaded across conveyor.
- Remove trash or material ingress from chain where possible.
- In case of slat and Apron conveyor, check for distorted or loose slates and rectify and replace if necessary.
- For Scraper conveyors, check that scrapers are not fouling any side of structure or deck plates.
- Ensure that, the chain used in the application is suitable, when there is increase in capacity occurs.
- Any change in the chains particular application ,may require modification to suit .
- Lubrication applied for Pin and Bushes if required.



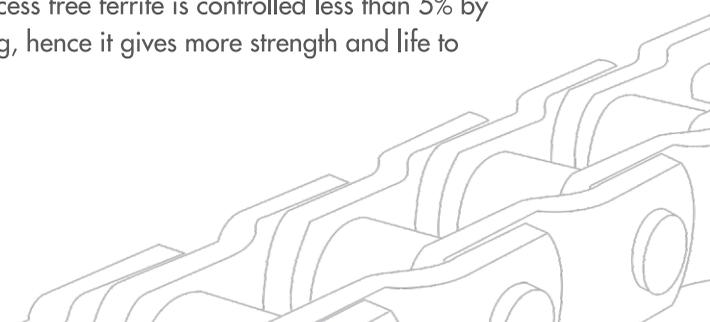
Problem Identification & Corrective Action

Problem	Potential Cause	Solution
Chain rises off from sprocket	<ul style="list-style-type: none"> • Excess chain slack. • Excess wear at the bases of sprocket teeth. • Excess chain extension. • Foreign material stuck to the bases of sprocket teeth. 	<ul style="list-style-type: none"> • Adjust the amount of slack. • Replace the sprocket. • Replace the chain. • Remove the foreign material from the bases of the teeth.
Chain separates poorly from the sprocket.	<ul style="list-style-type: none"> • Sprocket misalignment. • Excess chain slack. • Excess wear at the bases of sprocket teeth. 	<ul style="list-style-type: none"> • Adjust alignment. • Adjust the amount of slack. • Replace the sprocket.
Wear to sides of link plats and sprockets	<ul style="list-style-type: none"> • Sprocket misalignment. 	<ul style="list-style-type: none"> • Adjust alignment.
Poor chain flexure	<ul style="list-style-type: none"> • Inadequate oiling. • Foreign materials between pins and bushes. • Corrosion between and bushes. • Sprockets misalignment. 	<ul style="list-style-type: none"> • Lubricate properly. • Wash the chain to remove foreign materials, and then oil it. • Replace with an environment resistant chain series. • Adjust alignment.
Abnormal noise	<ul style="list-style-type: none"> • Chain is too taut or too loose. • Inadequate oiling. • Excess wear of sprockets and chain. • Contact with the chain case. • Damaged bearings. • Sprocket misalignment. 	<ul style="list-style-type: none"> • Adjust slack. • Lubricate properly. • Replace chain and sprockets. • Eliminate contact with the case. • Replace the bearings. • Adjust Alignment.
Chain vibration.	<ul style="list-style-type: none"> • Excess chin slack. • Excess load variation. • Excess chain speed leading to pulsation. • Chain flexes poorly at some points. • Sprocket wear. 	<ul style="list-style-type: none"> • Adjust slack. • Reduce load variation or replace chain. • Use guide stoppers to stop chain swaying. • Remove the affected points. • Replace the sprockets.
Damage to pins, bushes, rollers. Deformation of link plate holes	<ul style="list-style-type: none"> • Inadequate oiling. • jammed foreign bodies. • Corroded components. • Use with greater than allowable load. • Abnormal load action. 	<ul style="list-style-type: none"> • Lubricate properly. • Remove foreign bodies. • Replace with an environment resistant chain series. • Review chain and sprocket selections. • Eliminate the abnormal load. and review chain and sprocket selections.
Overall corrosion Corrosive Wear	<ul style="list-style-type: none"> • Corrosion due to moisture. Acid or alkali. 	<ul style="list-style-type: none"> • Replace with an environment resistant chain series.



The Salient features of SWAJIT Chains

- SWAJIT is an ISO 9001-2015 Certified Company.
- SWAJIT has all infrastructure required for manufacturing of quality chains under one roof i.e. metallurgical laboratory, press shop and state-of-art Heat Treatment facility.
- SWAJIT has achieved higher capacity breaking loads in optimum designs by using special quality Steels, proper metallurgical parameters and state of the art Heat treatment procedures. This results in reduced dead weight of chains, costly inventory and saving in lot of valuable energy.
- SWAJIT chains are manufactured with optimum hardness levels of all parts to reduce wear, tear and elongation of chains.
- Raw material is procured from reputed steel mills which confirms to International metallurgical standards.
- SWAJIT stands at par in quality with International chain manufacturer i.e Ewart, Rexnord, Jaffery, Renold, Hitachi.
- SWAJIT is regular supplier to all reputed factories in India and clients are very much satisfied with the performance of the chains.
- SWAJIT chains have given extra ordinary performance in all the critical operations where other brand chains have failed.
- SWAJIT Pins, Bushes and Rollers are strong because of specified case and core hardness .Case carbon is controlled in carburizing cycle for controlling retained austenite in microstructure with latest technology Further multiple tempering is carried out to reduce remaining retained austenite.
- SWAJIT uses induction hardened pins which are having more case depth than carburized steel which gives more abrasion resistance than the case hardened process. Induction hardening increases fatigue life of components are directly related to case depth and also get more wear resistance than carburized steel. In induction case depth is maintained between 1.5 mm to 4 mm.
- 100% grinding for pin and bushes for better fitment. Link fitting and final chain assembly on hydraulic presses hence less initial elongation.
- Link shaving, broaching and drifting give more bearing area, more contact surface and less elongation.
- SWAJIT links are hardened and toughened. In toughening process free ferrite is controlled less than 5% by keeping proper austenising temperature and sudden quenching, hence it gives more strength and life to chain than any other chains.



The Ultimate Driving Power...



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