



LUBRICATION

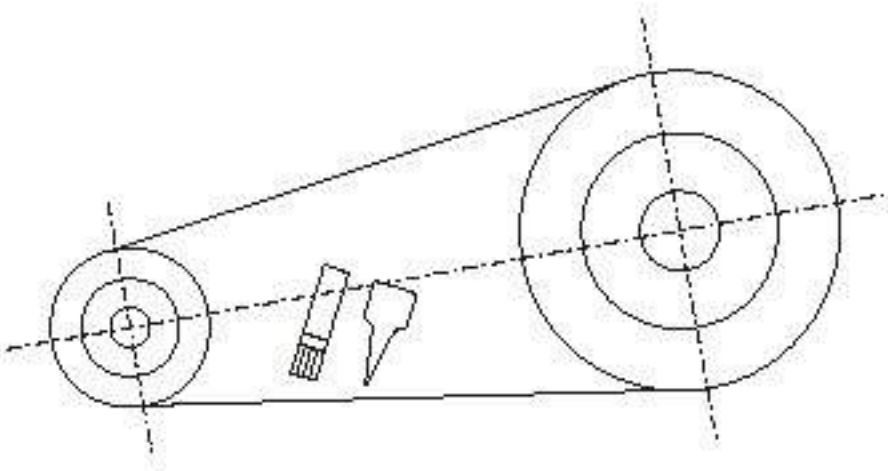
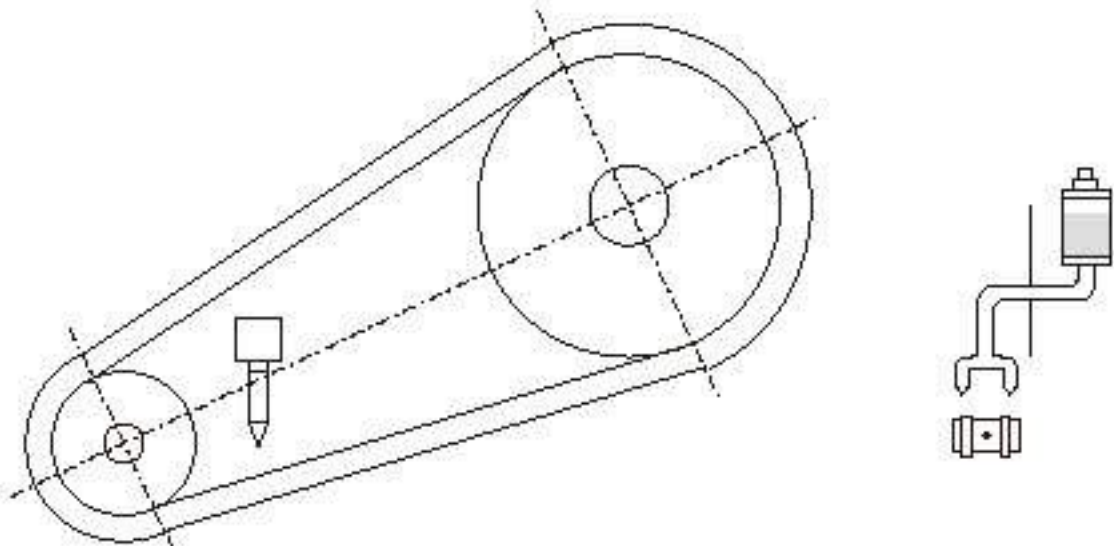
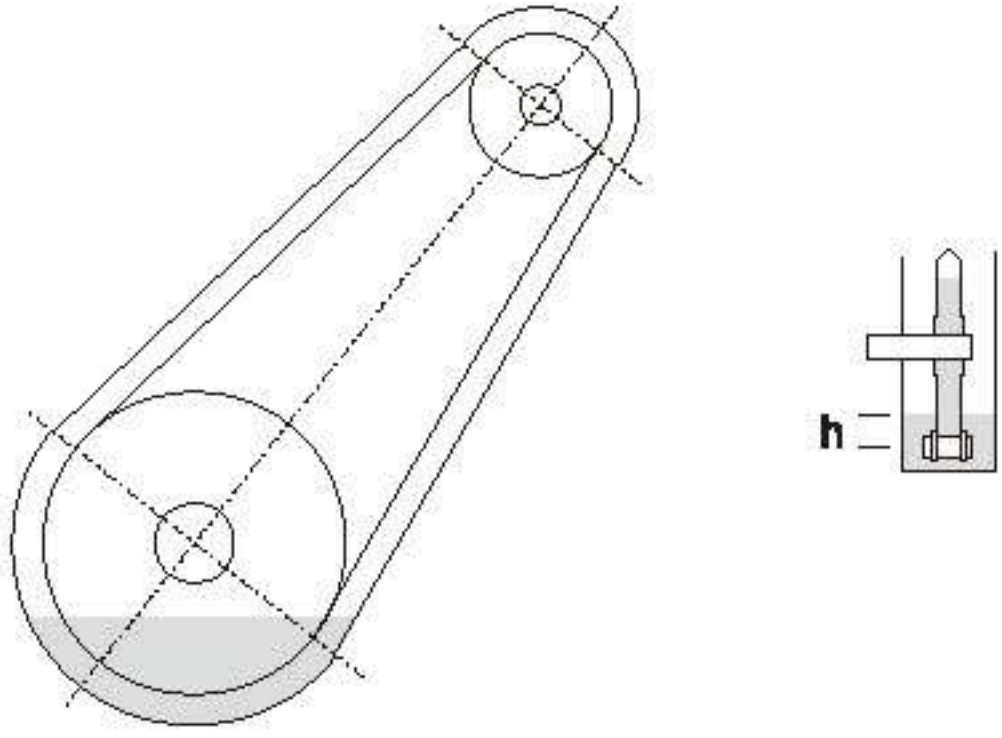
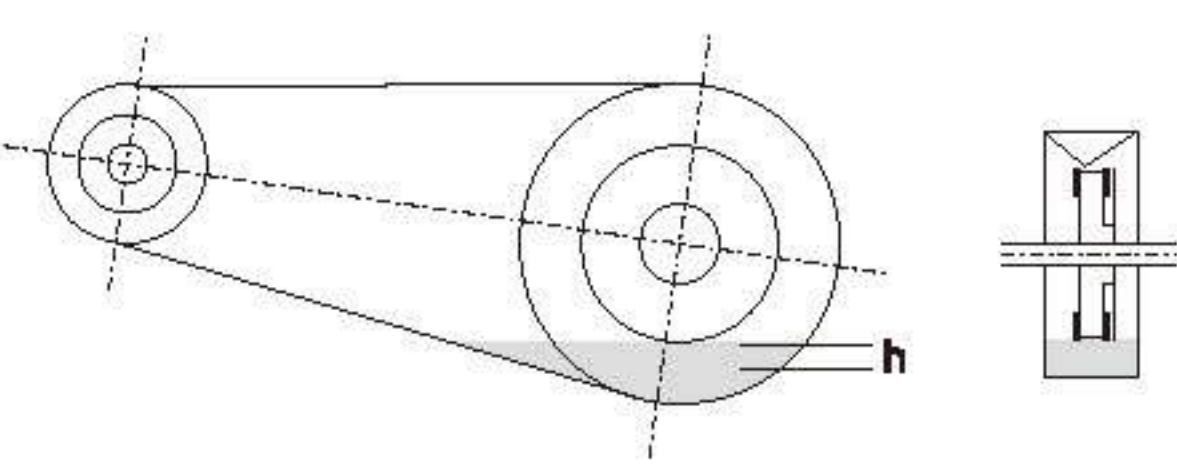
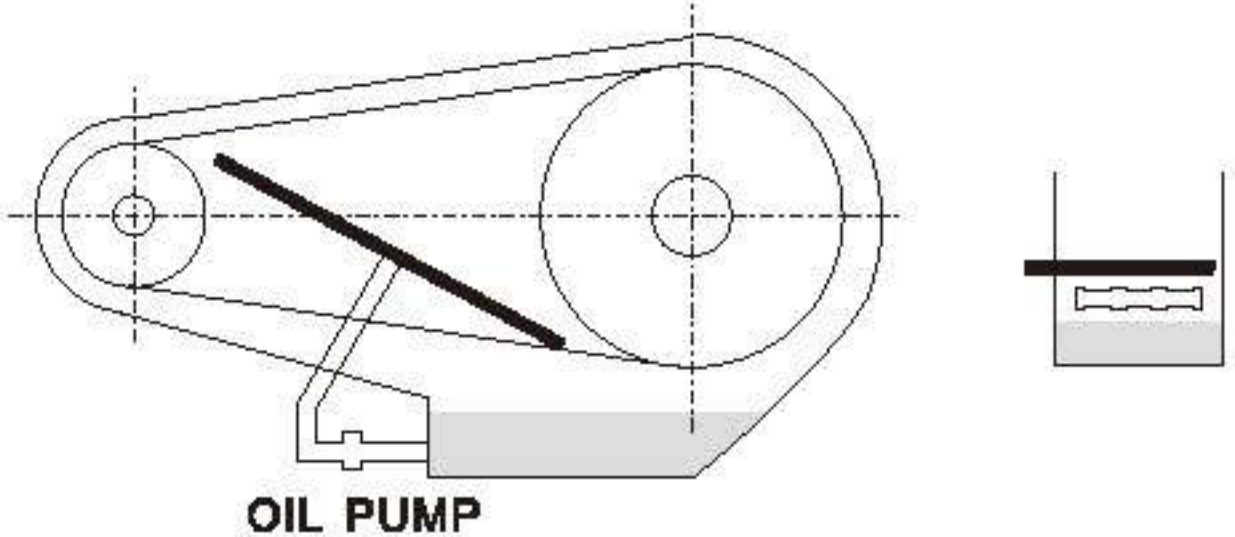
Proper lubrication of roller chains is a very important factor in getting their best possible performance and longer life-time. No matter how well a transmission system is designed, if it is not properly lubricated, its service life will be shortened.

Abrasion between the pin and bushing causes roller chains to stretch. Therefore, the parts should be well lubricated. The gap between the pin-link plate and roller-link plate on the slack side of the chain should be filled with lubricant. The oil forms a film which minimizes wear of the pin and bushing, thus increasing the chain service life. It also reduces noises and acts as coolant when chain runs at high speeds.

POINTS OF LUBRICATION

- 1) Fill and change oil periodically.
- 2) Generally, heavy oil and grease are not suitable as a lubricant.
- 3) Avoid mix of oil with another kind or other maker's.
- 4) Adequate lubrication quantity is also essential for a chain's longer service life.

Method and amount of lubrication

TYPE	Method	Amount
A	 Apply oil with a brush or spout can aiming at clearance between pins and roller links on the slack side of chain in operate.	Periodically to keep chain joints from drying (generally about every 8 hours)
	 Drip lubrication Use simple casing and apply oil drops from a drip cup.	At a rate of 5 to 20 drops per minute for each strand of chain, the highest the speed the more the drops per minute.
B	 Oil bath lubrication Chain runs through an oil reservoir kept in leak-Proof casing.	Too much oil kept in reservoir (if h dimension is too high) can generate heat in oil and deteriorate its quality, therefore oil level should be kept in such a way as to maintain h dimension to be about 6 to 12mm.
	 Slinger disc lubrication Oil disc mounted on lower sprocket picks up oil from the oil reservoir kept in leak-proof casing and splashes it on chain. Disc should run at rim speed of more than 200 meters per minute. If chain width exceeds 125mm, oil disc should be used on both sides of chain.	Oil level should be kept lower than chain lowest point to maintain h dimension to be about 12 to 25 mm.
C	 Forced lubrication Oil pump is used to force continuous spray of oil after cooling to chain within a leak-proof casing. No. of spray oil holes should be N+1 if the number of chain strand is N.	

In all types of lubrication, roller chain should be cleaned periodically using light oil or gasoline. In order to see if lubrication is performed satisfactorily, remove chain from drive and check its pin and bushing. If pin and bushing show flaking or being colored to red or dark brown, poor lubrication generally exists.

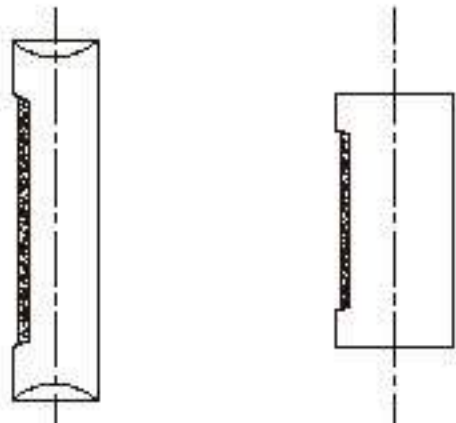
RECOMMENDED OIL

Only high quality oil should be used to lubricate the roller chain. Neither heavy oil nor grease is suitable. The viscosity of the oil used will depend on the chain size, chain speed and ambient temperature. The lubricants recommended for specific temperature ranges are given in the following table :

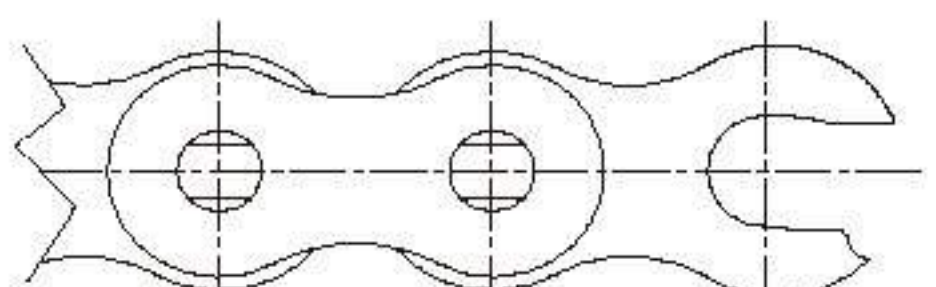
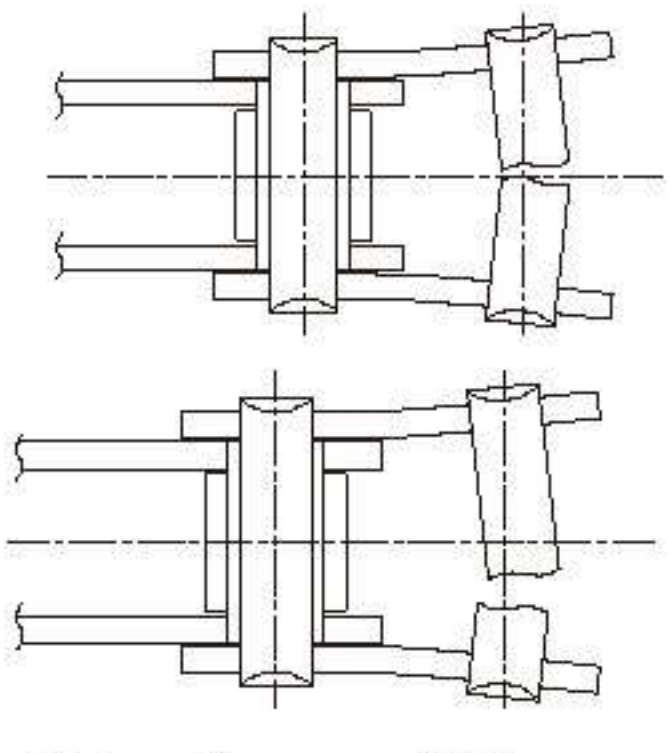
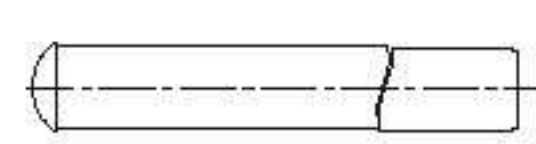
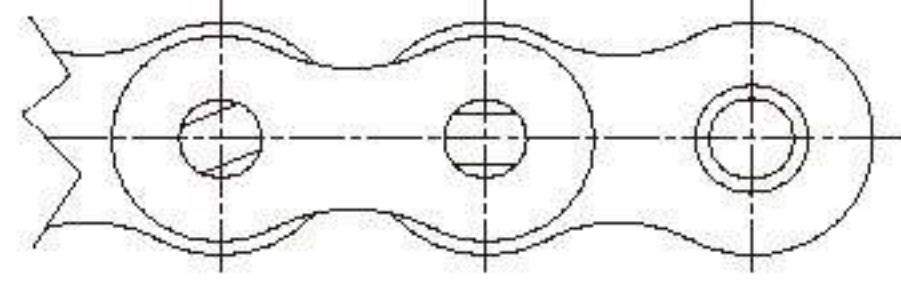
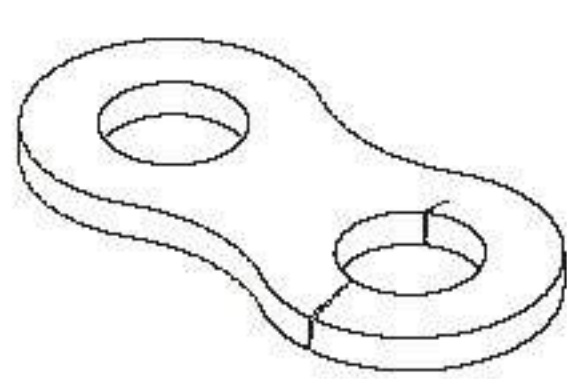
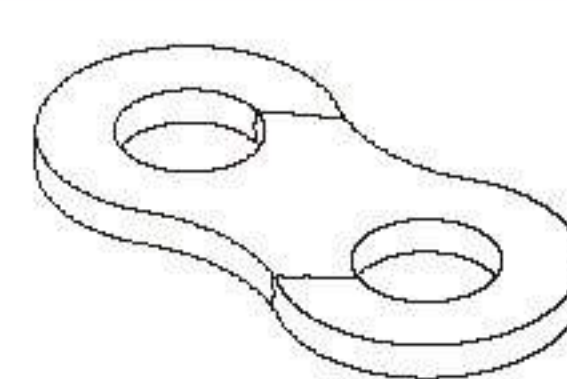
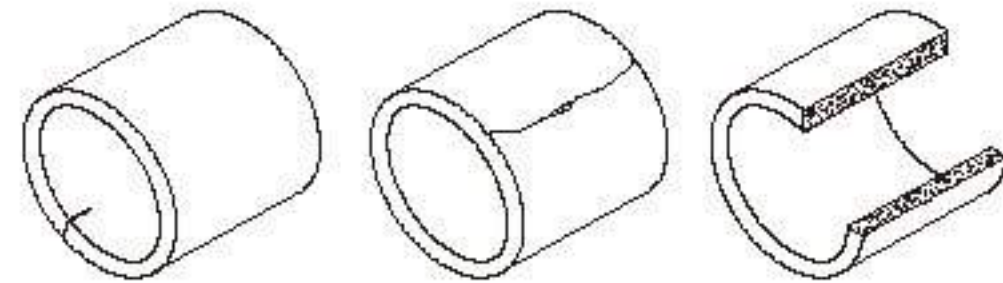
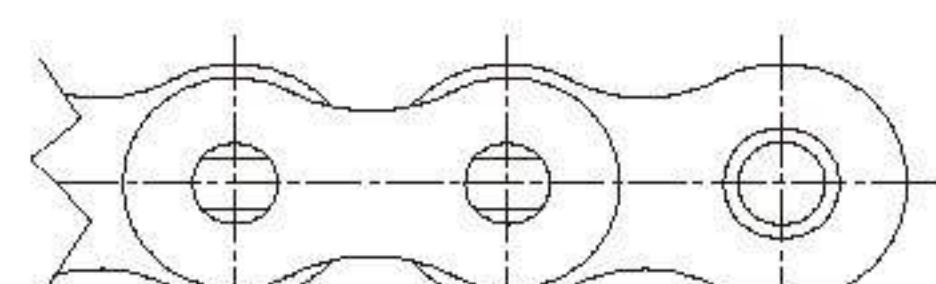
Chain No.	Temperature [°C]							
	-10~0	0~40	40~50	50~60	-10~0	0~40	40~50	50~60
Lubrication Type	TYPE A.B				TYPE C			
50 or less	SAE 10	SAE 20	SAE 30	SAE 40	SAE 10	SAE 20	SAE 30	SAE 40
60 ~ 80	SAE 20	SAE 30	SAE 40	SAE 50	SAE 10	SAE 20	SAE 30	SAE 40
100	SAE 20	SAE 30	SAE 40	SAE 50	SAE 20	SAE 30	SAE 40	SAE 50
120 or more	SAE 30	SAE 40	SAE 50	SAE 50	SAE 20	SAE 30	SAE 40	SAE 50

TROUBLE SHOOTING HINTS

Possible caused of troubles are summarized below. The solution hints are answers to trouble-free operations and optimum drives you would need.

Problem	Possible Causes	Suggested Remedy
Excessive Noise	● Mis-alignment of sprockets ● Too little or too much slack ● Chain obstruction ● Loose chain guard or bearing ● Inadequate lubrication or non-lubrication ● Chain pitch size too large	● Re-align sprockets and shafts ● Adjust centers or take-up ● Inspect and remove obstruction ● Tighten bolts and check bearings ● Lubricate properly ● Check chain drive recommendation
Chain Vibration	● Excessive chain slack ● Center distance too long ● Stiff links	● Adjust chain tensioner ● Install idler ● Lubricate or replace chain
Wear inside link plate and one side of sprocket teeth	● Mis-alignment	● Realign sprockets and shafts ● Replace chain and sprockets if necessary
 Pin Bushing Galling	● Overload ● Inadequate lubrication	● Proper lubrication ● Replace chain when elongation exceeds functional limits

TROUBLE SHOOTING HINTS

Problem	Possible Causes	Suggested Remedy
Chain gets stiff	● Inadequate lubrication ● Corrosion ● Excessive load ● Mis-alignment	● Clean and establish correct lubrication ● Replace with anti-corrosion chain ● Reduce load or replace with suitable strength chain ● Re-align sprockets and shafts
Chain climb sprockets	● Excessive chain slack ● Inadequate lubrication ● Overload	● Install tensioner if necessary ● Reduce load or replace with suitable strength chain
 Fractured Plate	● Extreme overload	● Inspect the drive to determine the cause of high load
 Broken Pins	● Extreme overload	● Inspect the drive to determine the cause of high load
 Broken Offset Link Pins	● Overload	● One-pitch offset-links are not recommended ● Redesign drive using a higher capacity chain
 Turn Pins	● Overload ● Inadequate lubrication	● Replace chain as soon as possible ● Reduce shock load or install stronger chain ● Lubricate properly
 Fatigue Failure	● Extreme overload	● Inspect the drive to determine the cause of high load ● Redesign drive using a higher capacity chain
 Cracking	● Stress corrosion cracking	● Protect the chain from corrosion ● Install anti-corrosive chains
 Broken Rollers	● Foreign material between chain and sprocket tooth ● Fatigue failure	● Shield drive from foreign matter ● Redesign chain speed and load
 Worn Plates	● Bottom of plates worn due to rubbing on guides	● Chain should be replaced when wear over 5% of the plates height