

Lubrication of chain depends on the working environment, temperature, chain speed and so on.

1. Influence of working environment

For open drive such as combine chain, swather chain etc., grease lubrication is recommended.

For closed drive such as walking tractor chain transmission case etc., oil lubrication is recommended.

2. Influence of temperature

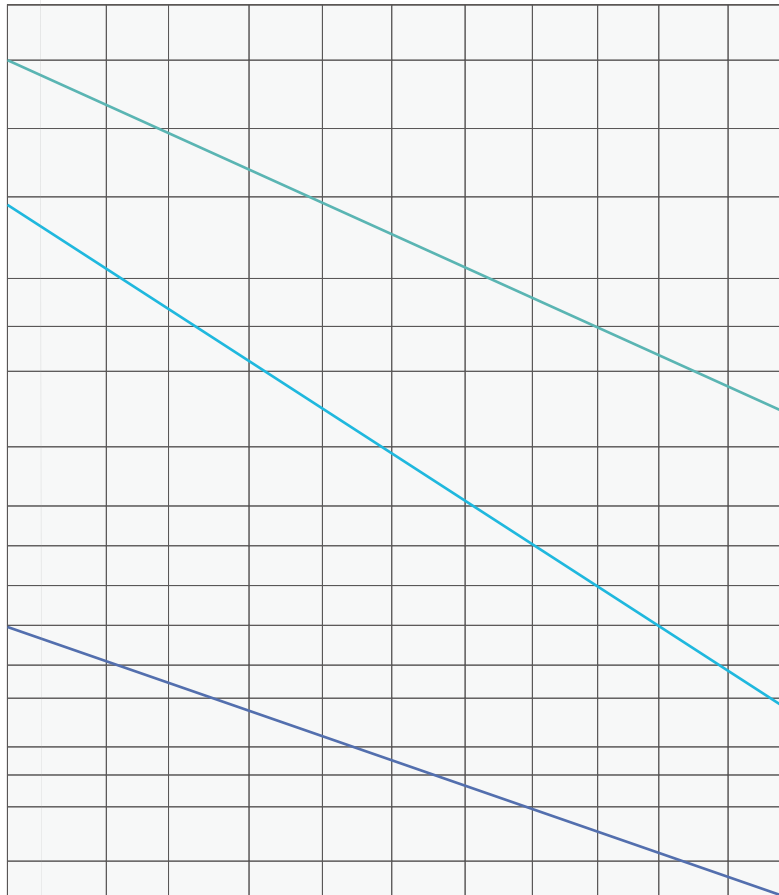
Application in the temperature range of -5%^o +60%^s recommended.

In winter, lower viscosity oil is recommended; But in summer, higher viscosity oil is recommended.

3. Influence of chain speed

The lubrication method is related to chain speed.

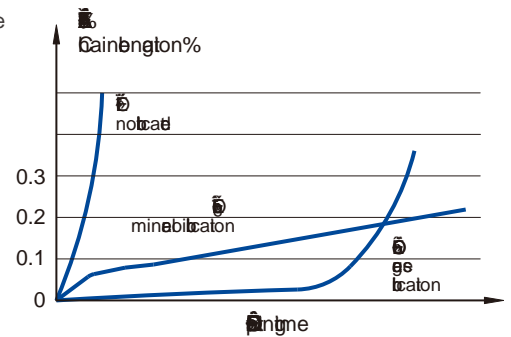
Refer to the following chart for details, please.



Lubricant

First of all, the selection of an appropriate lubricant depends on the type of lubrication.

Just as the right diagram shows, low viscosity mineral oils are particularly suitable for chain drives.



Recommended viscosity

Ambient temperature	Viscosity of lubricant

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

For higher temperatures (e.g. furnace chains) or severe operating conditions, mud spattering open-type etc. or heavy-duty low speed chains, graphite or molybdenum disulfide (MoS₂) applied either as additive or spray will improve lubrication performance.

Low-viscosity or the grease products with a drop point of 70°C are also suitable for manual lubrication. Liquidized grease may be sprayed on the chains in special conditions and chains can start running immediately after the evaporation of the volatile carrier substance.

No matter which kind of lubricants and lubrication methods choosed, the most important issue is to ensure the lubricant flow into evenly (between pin and bush, between bush and roller).

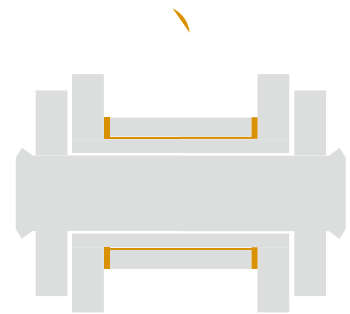


Diagram illustrating the components of a chain link assembly: pin, bush, and roller.

Selection of lubrication method

Normally, there are five lubrication methods as below:

1. Manual lubrication

This type of lubrication by means of oil can and brush, which adding lubricant into the gap between outer and inner link plate of chain loose side periodically is not very safe and therefore this type lubrication only suitable for those chains with occasional operation or for those secondary drives and low chain speeds. Sufficient lubrication should take place at least once a day (if possible once every 8 running hours). Lubricant colouration should be avoided as far as possible.

2. Drip lubrication

Drip lubrication by means of needle oilers or dripers, which is suitable for low bearing speeds. Lubricant colouration should be avoided as far as possible.

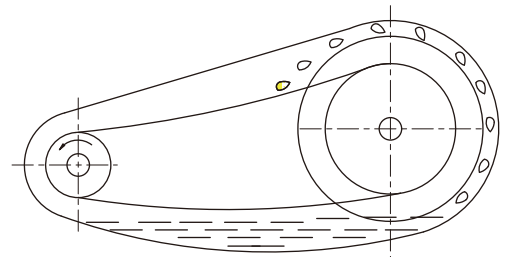
3. Oil bath lubrication (submerged lubrication)

There is just enough oil in a proper chain box for preventing the worn and elongated chain knocking against the casing wall to allow the chain plates to submerge into the bath up to the rollers or the bushings respectively. But immersion should not be too deep or too shallow. Too shallow immersion lubrication is not reliable. Too deep immersion may cause the oil to heat up and lead to early oxidation of the oil.



4. Oil-ring lubrication (splash lubrication)

With this type of lubrication, the chain operates above oil level. A disk submerging into the lower oil level, the depth is about 12.7mm-25.4mm, Peripheral velocity between min. 3m/s and max. 40m/s, normally not bigger than 12.5m/s, centrifuges oil against the casing walls from where it continuously runs down onto the chain via drip rails. The disk should be mounted on both sides of sprocket when the chain width above 127mm.



5. Force feed lubrication (pressure lubrication)

This type of lubrication is suitable for high-speed and heavy-duty type drives. Force feed lubrication is carried out to realize the circulating cooling of chains by means of oil pump and oil feeding pipe. The spray nozzles should be situated near the gearing places of chain and sprocket, and the nozzle number should be one more than the chain strands number to make them aim at the gap of each row link plate.

