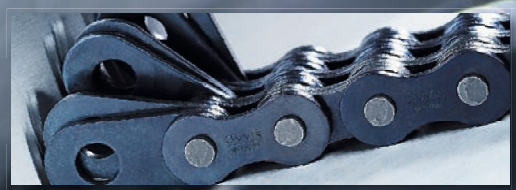

Chain guide

Regular maintenance and lubrication are preconditions for low wear and long service life of the chain drive. The maintenance and lubrication frequency, as well as the related re-lubrication, are determined by the operating conditions of the application. The iwis chain guide outlines the choice of possible chain lubrications and recommended re-lubricants. All initial lubricants are developed especially for iwis and their composition is tailored to be the best possible for the product chain. Please contact our Technical Service Team for more information regarding the maintenance and handling of chains. We will happily advise you!

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Lubricating the iwis® chains

iwis chain lubricants

OUR CHAIN LUBRICANTS - THE BEST POSSIBLE SOLUTION FOR EVERY APPLICATION.

Sufficient and effective lubrication increases the length of life of the chains several times over. The selection of the correct lubricant and the appropriate method of lubrication guarantee good reduction of wear, sufficient protection from corrosion and optional damping characteristics. Countless trials on specially developed test equipment and close collaboration with well known lubricant manufacturers make iwis your competent partner for all questions relating to chain lubrication.

All iwis chains are provided with sufficient, reliable, high quality initial lubrication in accordance with precisely stipulated procedures, which are the subject of constant monitoring, and delivered ready for installation. All the initial lubricants are developed especially for iwis and their composition is tailored to be the best possible for the chain product.

A SUMMARY OF OUR INITIAL LUBRICANTS

IP2 the proven standard lubricant with a good lubricating effect and excellent corrosion protection for applications of all kinds from -10° to +80°C.

IP3 long-lasting lubrication at higher speeds, loads and temperatures. As a consequence of its high viscosity, it is absolutely resistant to spinning off over the entire temperature range from -5° to +150°C.

IPW the handling-resistant high performance lubricating wax with very high wear protection permits significantly longer intervals between applications of lubricant. Problem-free use as a „barrier grease“ in all environments where dust and powder are present. Temperature range from -10° to +80°C.

IP4 thermally stable high temperature lubricant with good wear- and corrosion-resistance. Low evaporation rate in the temperature range from 0° to +250°C. Forms no residue at temperatures above 250°C.

IP9 the corrosion-protection for preservative use with a very low lubricant effect. Temperature range from 0° to +70°C.

IP14 dry lubricant for slow-running chain drives and low to medium loads. Stove enamel with built-in lubricant for applications from -70° to +250°C.

IP16 the lubricant for food use with good wear- and corrosion-resistance. Meets the requirements of USDA-H1 and LMBG - authorised for contact with food. Temperature range from -20° to +130°C.

IPO low temperature lubricant with optimum lubricating effect. Able to flow in the entire temperature range from -45° to +150°C.

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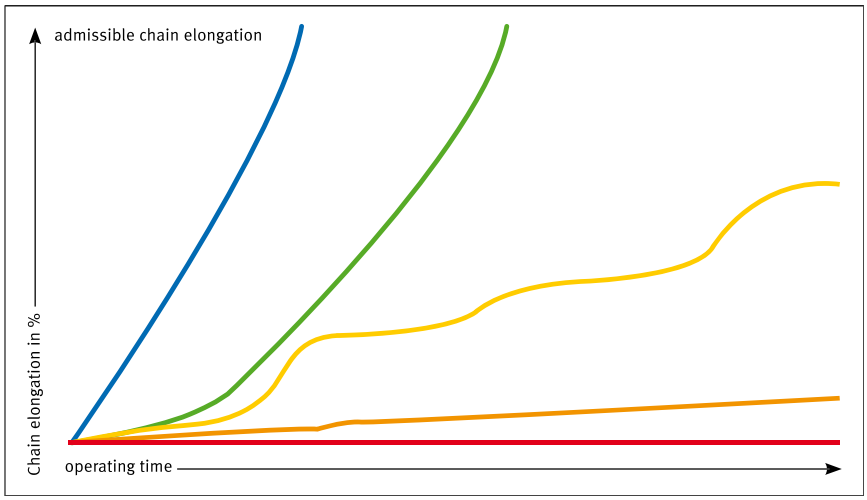
Re-lubrication of the iwis® chains

Re-lubricants

RE-LUBRICATION

The life of a chain is dependent to a decisive extent on correct and adequate topping up of the lubricant. As a consequence of the oscillating movements of the chain link, the initial lubricant is used up in the course of time depending on the operating conditions. If the lubricant is topped up regularly, the chain is mainly within the range of fluid and mixed friction. An absence of lubricant or badly selected re-lubricants cause dry friction, which leads to the formation of fretting corrosion and increased wear of the chain.

The selection of the lubricant and the correct lubrication technique is decisive for effective re-lubrication.



RECOMMENDED RE-LUBRICANTS FOR OUR INITIAL LUBRICANTS

IP2 iwis VP6 Kombi superplus (spray)
All standard commercial chain oils

IP3 iwis VP6 Kombi superplus (spray)
High performance chain oils from various manufacturers, e.g. STRUCTOVIS HD-series from Klüber Lubrication

IPW iwis VP6-Kombi superplus (spray)
High performance chain oils from various manufacturers, e.g. STRUCTOVIS HD-series from Klüber Lubrication

IP4 iwis VP6-Kombi superplus (spray)
High temperature chain oils from various manufacturers, for temperatures above 250°C with proportions of solid lubricant

IP9 iwis VP6-Kombi superplus (spray)
All conventional chain oils

IP14 iwis VP6-Kombi superplus (spray)
Chain oils containing a proportion of solid lubricant such as graphite, MOS2

IP16 chain oils approved for food use, e.g. Klüberoil UH 1-series

IPO low temperature chain oils from various manufacturers

Designation initial lubricant
Recommendation re-lubricant

RE-LUBRICANTS

should possess the following characteristics - depending on the application:

- Adhesiveness
- Compatibility with initial lubricant
- Corrosion protection
- Load-bearing capacity of lubricant film
- Ability to creep
- Lubrication of emergency running
- High viscosity and simultaneous ability to flow
- High temperature stability
- Water-repellent
- Resistance to media etc.

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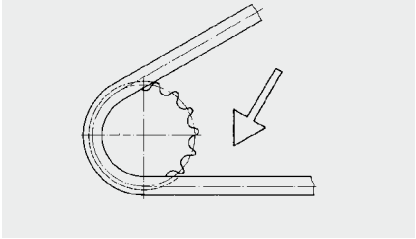
Lubricating the iwis® chains

Lubrication techniques

MANUAL LUBRICATION



Using a paint brush, oil can or spray can for slow-running chain drives. The proven VP6-Kombi superplus (spray) is distinguished by the following characteristics:

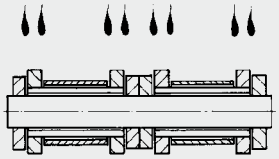
- Synthetic high performance chain lubricant
- Optimum lubricating effect and adhesion
- Excellent ability to creep
- For normal and high temperature use up to +250°C
- Excellent corrosion protection
- Also well suited to O-seal chains

RECOMMENDATIONS

The chain drive should be cleaned with a brush before the lubricant is topped up to enable the lubricant to enter. In addition the surface of the chain can be cleaned with cleaner's naphtha or petroleum. Full submersion and washing out is not recommended.

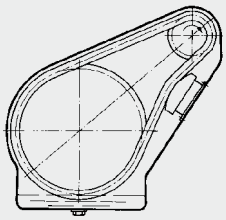
Connecting elements (for example, connecting links), when supplied separately, have only been immersion-protected against rust and must be greased upon installation. If the connecting links are supplied together with the chains, they will have been greased with the same lubricant as the chains.

DRIP LUBRICATION

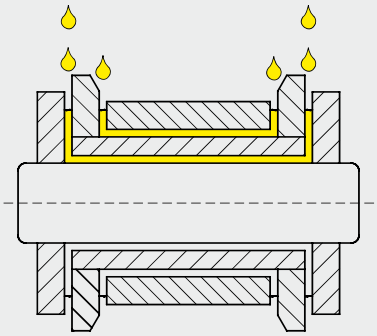


Using drip oilers, automatic lubricant feed or central lubrication units at medium chain speeds.

OIL BATH LUBRICATION



Using enclosed chain boxes and, if necessary, additional centrifugal disc for fast-running chain drives



The lubricant product must be able to penetrate into the bearing area of the chain. To guarantee this the lubricant must be applied deliberately to the gap between the inner and outer plates.

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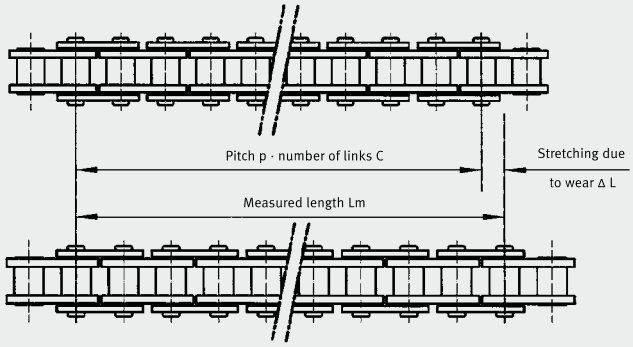
Efficient chain maintenance

Regular maintenance and lubrication are preconditions for low wear and long service life of the chain drive. Maintenance and lubrication frequency, as well as the related re-lubrication, ist determined by operating conditions (tensile forces, temperature, contamination, aggressive media).

MEASUREMENT OF STRETCHING DUE TO WEAR



$$\Delta L = \frac{Lm - (p \cdot X)}{p \cdot X} \cdot 100\ [\%]$$

MAINTENANCE

During **regular visual inspections** special attention should be paid to **stretching due to wear, tension, lubrication condition, and evidence of wear due to tracking errors.**

Checking the maximum permissible stretching due to wear:

The length of a chain is defined by the pitch p and the number of links X. In the course of time stretching due to wear occurs, and usually this can be measured without removing the chain. The difference from precise measurement with a specified measurement load is slight if measurements are conducted over the highest possible number of chain links, approximately 20 to 40.

The **chain should be replaced** at:
- max. 3 % for simple drives
- max. 2 % for high-performance drives
- max. 1 % for special applications

(synchronous operation, positioning)

Controlled **retensioning** of the chains has a very positive effect on the chain life. Extreme retensioning should be avoided just as much as excessive slack. A guideline figure would be a tension load of approx. 5 % of the actual chain pulling force. In the case of chains running in parallel both strands must be tensioned equally, at best by a common shaft for both sprockets. If no automatic chain tensioning device is available, the chain must be adjusted by hand by altering the distance between the sprocket shafts. A further possibility with long drives is to shorten the chain by removing individual links, provided that wear is relatively light. Various tools are available for dismantling and reassembling the chain. These tools are available for parallel pin and shouldered pin chains.

Before **re-lubrication** the chains and sprockets should be **cleaned** to remove obstinate contamination and to permit the lubricant to penetrate via the back of the plates. The surface of the chain can also be cleaned using an appropriate solvent.

Complete immersion and washing is not recommendet as the cleaning agent does not evaporate completely from within the chain and thus the penetration of the fresh lubricant is obstructed.

During **visual inspection** attention should be paid to evidence of chain linkplate marking and wear due to tracking errors. These are caused by misaligned sprockets or guides or by chains which are not in parallel.

Guide for alignment deviations per 100 mm axle separation:
- 0.1 mm with fast-running drives and close axle spacing;
- 0.2 mm with slow-running drives.

The sprockets should be constantly inspected and if necessary replaced. We do not recommend that new chains are used with worn sprockets.

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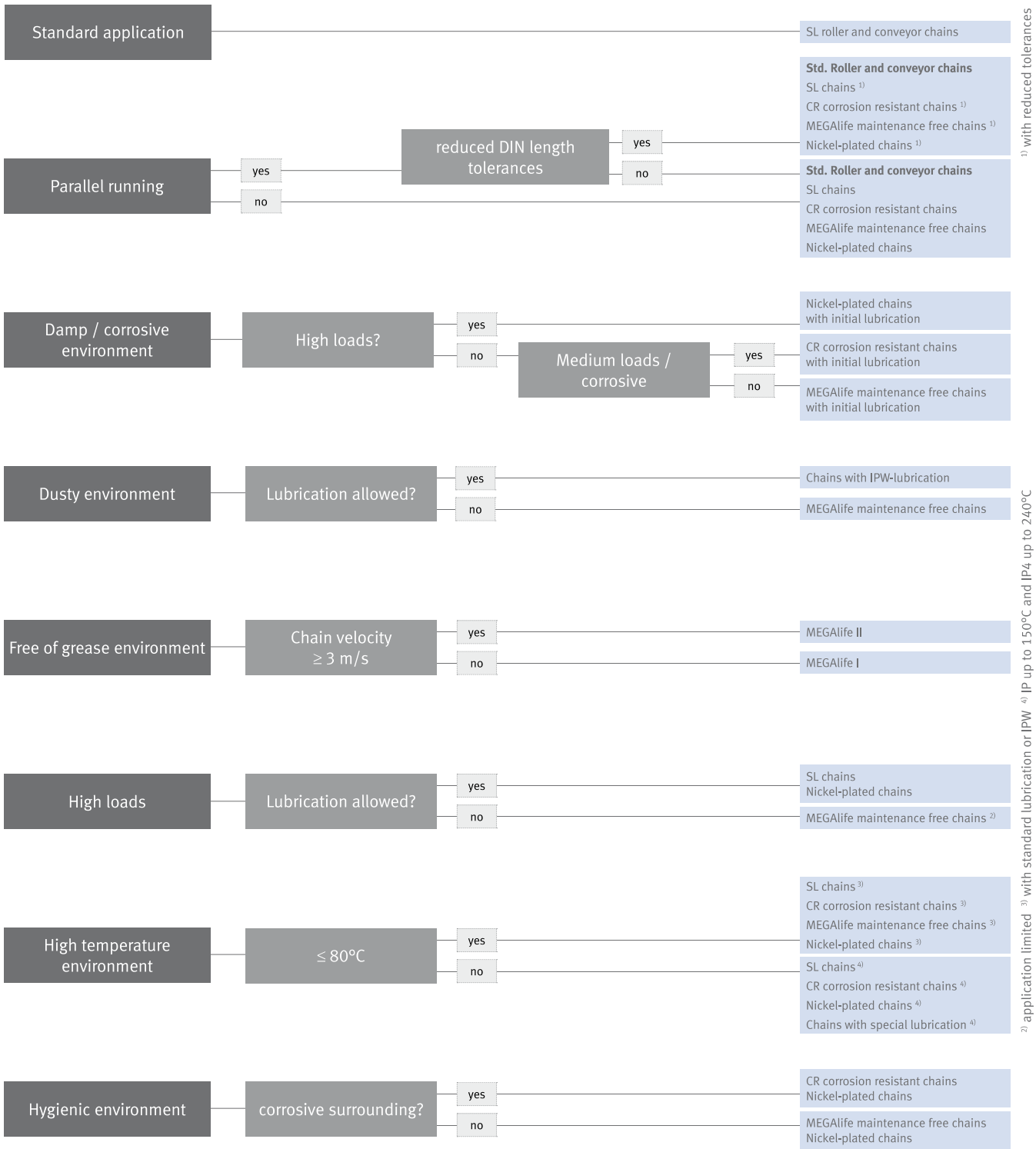
iwis® chain guideline

Which application demands which chain type?



1) with reduced tolerances

2) application limited 3) with standard lubrication or IPW 4) IP up to 150°C and IP4 up to 240°C

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iwis® chain guideline

Important information and notes

IMPORTANT DETAIL

The following guidelines support you in choosing the right chain. However, please note that each application is individual. The result should in no case serve as a basis for your order. Therefore please refer to our professional employees who are happy to submit an individual order to you. We do not assume any guarantee or liability.

FOR MORE INFORMATION TO

- SL chains
  → Page **12** and **18**
- Nickel-plated chains
  → Page **12**
- MEGAlife maintenance free chains
  → Page **30**
- CR corrosion resistant chains
  → Page **40**

CHAIN ENGINEERING PROGRAM

iwis provides you with a special PC-Software serving as support for the specification of the individual chain drive design or rather the preselection of the appropriate chain. Please ask our Customer Service Team!

CHAIN FABRICATION LENGTHS

- 5 m
- 10 m
- 10 Fuß

Adjusted lengths can either be supplied open or closed. Special lengths (e.g. on coils) are available on request and depending on chain type.

OUR CONVEYOR CHAINS

If a parallel run is necessary, iwis can manufacture and supply chain strands with precisely harmonised lengths, bundled together and marked accordingly. This is in particular important for chains with opposite cam or angle side plates.

PRICE SUPPLEMENTS:

Price supplements will be calculated for:

- adjusted lengths
- special lubrications
- reduced tolerances
- short lengths
- special coatings
- nickel-plated chains and single parts

Prices on enquiry.

CUSTOM-MADE CHAINS

Special chains made according to customer drawings are possible. Prices on enquiry. Minimum order quantity is 50 m.

MINIMUM ORDER QUANTITIES FOR CONNECTORS AND CRANKED LINKS

Chain dimensions	Inner link / Outer link / Connecting link	Cottered Link
6 mm – 3/4“	20 ea	10 ea
1“ – 1 1/4“	10 ea	10 ea
Duplex – Triplex	5 ea	5 ea
Parts over 1 1/4“	1 ea	1 ea

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iwis® Questionnaire for chain drives

Enquiry from: _____ Date: _____

Address: _____ Dealt with by: _____

Telephone: _____

DRIVE (INPUT)			
Electric, hydraulic, pneumatic combustion engines/motors (2, 4 or 6 cyls)?			
Power output?			kW
RPM?			min^{-1}
Max. torque?	at n =	min^{-1}	Nm
Continuous power or peak power?			
Speed constant, varying or impulsive?			
Operating time, cyclic operation?			
Are shock absorbing transmission-elements present (friction clutch)?			

OUTPUT			
Type of driven machine?			
RPM?			min^{-1}
Power requirement? for starting - normal running - max.			kW
Load even, varying or impulsive?			
Direction of rotation continuous or alternating? (show in diagram)			

CHAIN DRIVE			
Centre distance			mm
Does the design allow the centre distance to be modified?	±		
Possibility to provide tensioner? (adjustability, idler, chain guide)			
Could the centre distance alter in service? e.g. rear wheel suspension on a motorcycle			
Required or current ratio respectively?			
Shafts horizontal or vertical?			
Can the drive be protected against dirt and dust or can it be enclosed?			
What type of lubrication is possible? (manual, drip, oil bath, pressure)			
External factors? (temperature in °C, dust, moisture, fibres)			

CHAIN			
Chains planned or exisiting drive?			
Is the chain replacing an existing drive?			
Max. permissible chain width?			mm

CHAIN WHEELS			
No. of teeth?	z_1=	z_2=	
Max. permissible outside diameter, incl. chain?			mm
Chain wheel as a disc or with hub, predrilled or with finished bore?			

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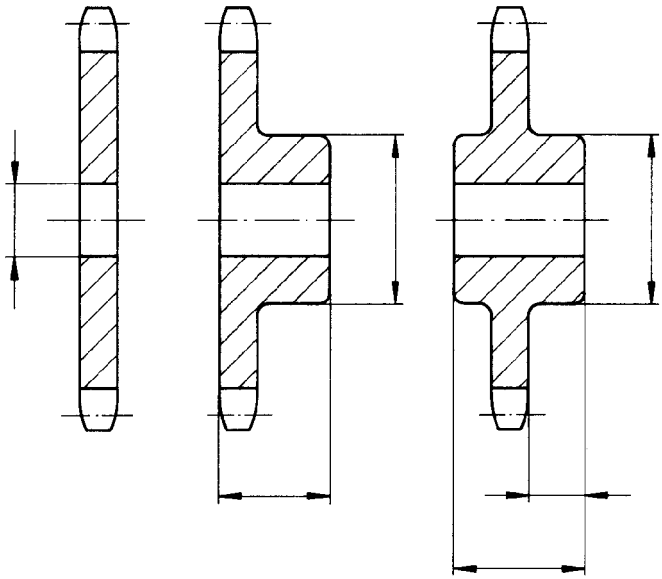
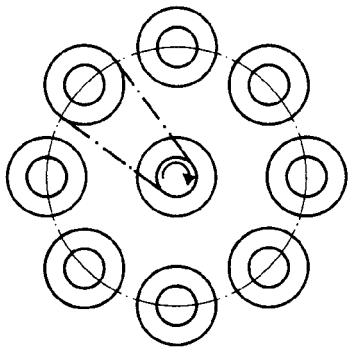
iwis® Questionnaire for chain drives

The relevant dimensions with permissible tolerances should be entered in the diagram below.





Example used:
Drive running in clockwise direction, in inclined arrangement, speed reducing ration

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Your sales representative