



iwis ketten
Joh. Winklhofer & Söhne GmbH & Co. KG
bewegen die welt

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Lubricating
the chains

JWTS

gallon
INDUSTRIAL TECHNOLOGY

Lubricating the chains

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.

IWIS chain lubricants - the best possible solution for every application.

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.

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A summary of IWIS 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	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.	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.
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.	IP4	thermally stable high temperature lubricant with good wear- and corrosion-resistance. Low evaporation rate in the temperature range from -15° to +250°C. Forms no residue at temperatures above from 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.
		IP9	the corrosion-protection for preservative use with a very low lubricant effect. Temperature range from 0° to +70°C.	IPO	low temperature lubricant with optimum lubricating effect. Able to flow in the entire temperature range from -50° to +80°C

Lubricating the chains

Re-lubrication

The life of a chain is dependent to a decisive extent on correct and adequate topping up of the lubricant.

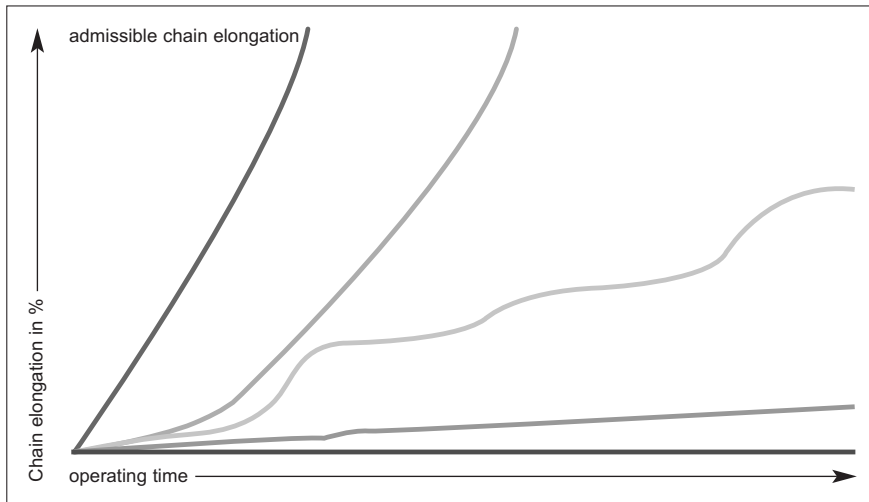
As a consequence of the oscillating movements of the chain link,

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 on the chain.

- Dry running: Chain without initial and top-up lubrication
- Initial lubrication without top-up
- Top-up interval too long: occasional dry-running
- Incorrect top-up
- Optimum re-lubrication

The selection of the lubricant and the correct lubrication technique is decisive for effective top-up lubrication



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.

Recommended re-lubricants for IWIS initial lubricants

IP2	IWIS VP6 Kombi superplus (spray) All standard commercial chain oils.	IPW	IWIS VP6-Kombi superplus (spray) High performance chain oils from various manufacturers, e.g. STRUCTOVIS HD-series from Klüber Lubrication	IP9	IWIS VP6-Kombi superplus (spray) All conventional chain oils
IP3	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.	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

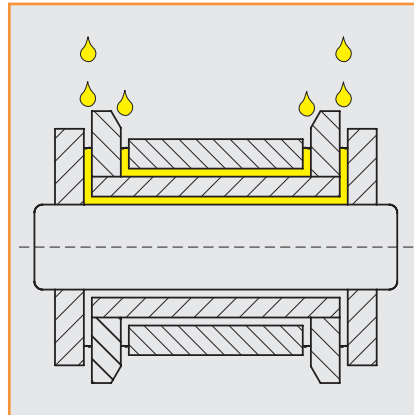
■ Recommendation re-lubricant

Lubricating the chains

Lubrication techniques

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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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

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

Recommendations

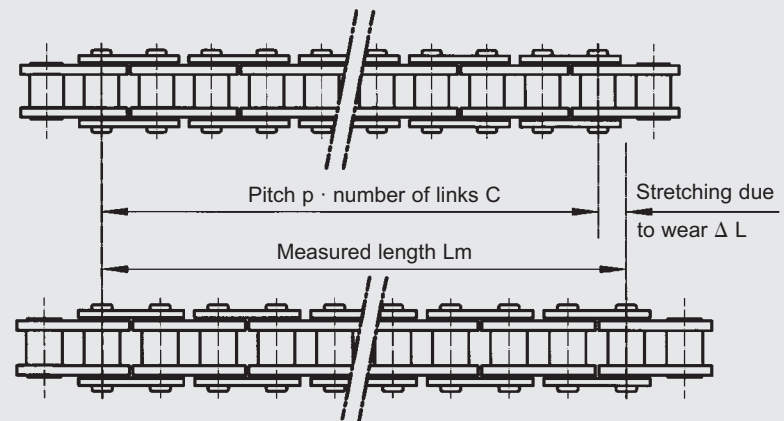
The chain drive should be cleaned with a brush before the lubricant is topped up to enable the lubricant to enter. In addition the surface of the chain can be cleaned with cleaner's naphtha or petroleum. Full submersion and washing out is not recommended.

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.

Maintenance of chain drives

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 relubrication, is determined by operating conditions (tensile forces, temperature, contamination, aggressive media).

Measurement of stretching due to wear



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

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 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 **relubrication** 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 appro-

appropriate solvent. Complete immersion and washing is not recommended 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.