ADDINOL Guideway oils XG 32, XG 68 and XG 220 for the application in heavy loaded tool machines

GERMAN QUALITY

ADDINOL Guideway oils XG 32, XG 68 and XG 220 are based on high-quality mineral oil raffinates and a special additive package which is free of zinc. They master the high demands typical of applications on horizontal and vertical slide- and guideways as well as medium and high loads.

- ✓ preferred for the application in tool machines
- ✓ fit for guideways coated with plastics
- ✓ can also be used for the lubrication of hydraulics and gears
- ✓ DIN 51502 (CGLP), DIN 51524-2 (HLP), DIN 51517-3 (CLP), ISO 6743/4 (HG-oils), ISO 6743/13 (G-oils)

These are your practical benefits:

- ✓ stable lubricating film also under the impact of coolants and water
- ✓ excellent demulsibility ensuring a quick and quantitative separation when introduced into the coolant circuit
- ✓ contributes to prolonged operating lives
- ✓ high quality of work pieces achieved by smooth run of the units without jerks and jolts (anti-stick-slip-effect)
- ✓ longer machine lifetimes thanks to reliable protection against rust and corrosion
- ✓ clean guideways, without sticky residues or deposits
- ✓ made also for high loads
- ✓ zinc-free additivation for easy disposal (no shares of zinc in sewage after emulsion cracking)
- ✓ free of silicone

Characteristic values	Test conditions	Unit	XG 32	XG 68	XG 220	Tested acc. to
Viscosity at	40°C	mm²/s	31	68	220	ASTM D 7042
	100°C	mm²/s	5.3	8.9	18.6	
ISO Viscosity grade			32	68	220	DIN 51512
Flash point	COC	°C	234	250	260	DIN EN 2592
Pour point		°C	-32	-26	-22	ASTM D 7346
Corrosion category on steel	Method B	Corrosion degree	passed			DIN ISO 7120
Corrosion category on copper	at 100°C, 3h	Corrosion degree	max. 1			DIN ISO 2160
FZG-Test		Load stage	>12			DIN ISO 14635-1
Anti-Stick-Slip Behaviour		1.25 MPa	free of slip-stick			In-house test

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Industry places enormous requirements on modern tool machines – ever rising rates, highest precision and continuous performance increase are being called for day in, day out. Lubricants applied in this field are not only exposed to high loads – they are also required to deliver their performance under the impact of water miscible coolants and over maximum service lives reliably.

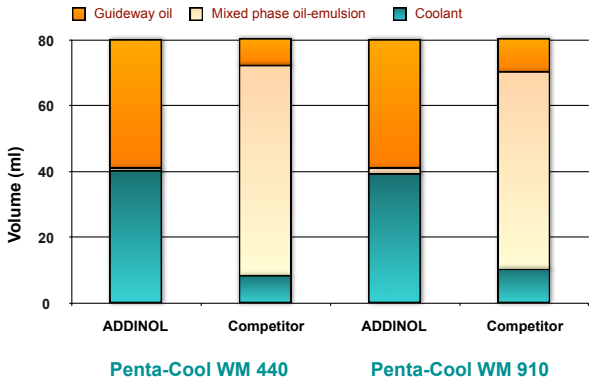
The smooth and harmonious run of the sledges on the guideways is of utmost importance. Stick-slip-effects, which often occur when sliding friction supersedes sticking friction, must be prevented or reduced significantly by the help of guideway oils. Otherwise the work pieces' quality might be impaired directly. Furthermore, the operation must not be disturbed by rust, corrosion or deposits on the guideways.

ADDINOL Guideway oils XG 32, XG 68 and XG 220 master the special challenges in tool machines:

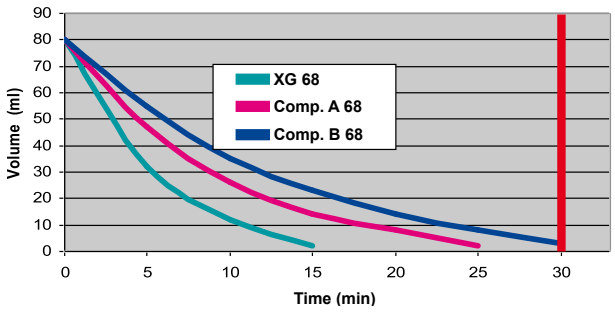
Excellent demulsibility

During the operation of the tool machine the usually water miscible coolant absorbs some guideway oil inevitably. To prevent negative effects on the emulsions' quality and the lubricating film on the guideway, quick and quantitative separation is necessary. If the guideway oil does not possess good demulsifying properties, the flushing effect of the polluted coolant decreases significantly. Its resistance against the growth of bacteria decreases as well. The coolant needs to be replaced earlier.

ADDINOL Guideway oils XG achieve a quantitative demulsification already after five minutes. They can be skimmed from the surface of the coolant by the help of respective skimming devices. The excellent demulsifying properties of ADDINOL Guideway oils XG ensure the efficiency of guideway oil and coolant over long periods. There are almost no mixed phases formed between coolant and emulsion.



Demulsibility (DIN ISO 6614) of a mixture of 40 ml guideway oil (ISO VG 68) and 40 ml coolant (5%) – after 5 minutes



Water separation of guideway oils (according to DIN 51524-2: maximum allowed 30 min)

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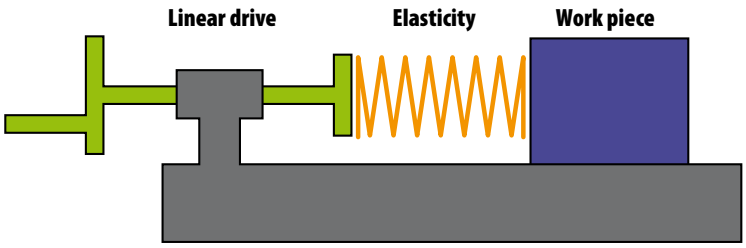
Efficient anti-stick-slip behaviour

The lubrication of guideways means a challenge to every lubricant manufacturer. The components which need to be lubricated do not move in a simple rotating motion, as for instance with sliding bearings, but linearly in both directions at a defined work cycle and a certain speed. This process can be compared to the movement of a large gun on a carriage. After each stop of the sledge immediate movement is called for again. However, this movement is not necessarily as smooth as required as the sledge needs to overcome a resistance which is relatively high. At this point sticking friction prevents the movement of the sledge initially. Only if the driving power of the sledge exceeds sticking friction it accelerates. Sliding friction takes the place of sticking friction which in turn decreases at the end of the slideway. The slide stops and the cycle starts anew, only in the other direction. This means, sticking and sliding friction take turns constantly.

If the effect of sticking friction exceeds sliding friction, the slide moves jerkily and the so-called slip-stick-effect occurs which has negative effects especially for small, precise movements. If the sledge with the work piece or tool does not move in a smooth and controlled manner the processing quality is impaired considerably.

Only lubricants especially developed for these applications can remedy these problems and reduce unwanted stick-slip-effects to a minimum. ADDINOL Guideway oils XG contain innovative additives to improve friction characteristics. They master sliding friction and ensure starts without jerks, a harmonious transition into full motion and smooth sliding even for heavy work pieces.



Model Stick-slip-effect

Zinc-free additivation

By using special zinc-free additives a high chemical stability is achieved which means that Guideway oils XG oils are efficient over long periods. In addition, additives guarantee excellent load-carrying capacity and are active against wear. For the disposal of water miscible coolants it is important that they do not contain zinc. Mostly, emulsions undergo a special conditioning today where water phase and oil phase are separated. If the emulsion is loaded with fractions of zinc-containing guideway oil, the separated water phase is also polluted with zinc. This share of zinc must be removed in an elaborate procedure before the water can be reused. Thanks to their zinc-free additivation emulsions can be disposed of economically and without any problems when using ADDINOL Guideway oils XG.

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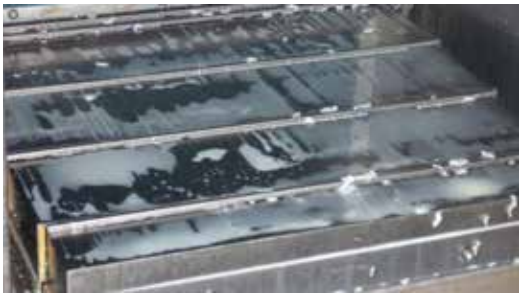
Reliable protection against rust and corrosion

ADDINOL Guideway oils of the XG range are based on high-quality mineral oil raffinates and carefully selected, zinc-free additives. In practice these prevent the formation of sticky residues, stains and rust on the guideways efficiently. This is of particular importance for the trouble-free and undisturbed run of the machines.



Picture: Clean guideways – no corrosion, no sticky residues of oil-emulsion

Corrosion category on copper (DIN ISO 2160)

ADDINOL XG 32, 150 °C, 3h: 1B

ADDINOL XG 68, 150 °C, 3h: 1B

ADDINOL XG 220, 150 °C, 3h: 1B

Tips for practice

- With older guideways there often occurs a relatively strong mixing of guideway oils and coolants. To stop this, a counselling with the service of the machine manufacturer might be worthwhile. Often the problem is solved by adjusting lubricating cycles or resetting the impulse for the lubricator. The change to a higher viscosity grade of the guideway oil might be helpful as well. ADDINOL Guideway oils XG are available in various viscosities.
- In order to keep the effort for disposal at a minimum, one should not only use zinc-free guideway oils but also zinc-free hydraulic oils, as for instance ADDINOL Hydraulic oil HLP AF or HLPD since leakages cannot be excluded.
- Make use of the excellent demulsibility of the ADDINOL Guideway oils XG and remove the separated oil from the coolant regularly by the help of skimming devices or coalescence separators.

Disc separator

ADDINOL Lube Oil GmbH
High-Performance Lubricants
Am Haupttor, 06237 Leuna/Germany
Phone: +49 (0) 3461 / 845 - 111
Fax: +49 (0) 3461 / 845 - 555
E-Mail: info@addinol.de
web: www.addinol.de