

Technical Instruction 5424

Lubricants

Table of Contents

1.	Remarks	2
2.	Scope	2
3.	Approved Engine Oils.....	2
4.	Engine Oil Consumption.....	5
5.	Oil Change Intervals.....	5
6.	Take an Oil Sample.....	6
7.	Change the Type of Oil.....	7
8.	Recurring Used Oil Analyses.....	7
9.	Refill Engine Oil.....	7
10.	Turbine Oil for the Gas Turbine	7
10.1	Examine Oil Level.....	7
10.2	Change Intervals for Turbine Oil / Filter Element.....	8
10.3	Take an Oil Sample	8
10.4	Empty Drain Can	8
11.	Engine Oil Ordering Address.....	8

1. Remarks

This technical instruction covers the approved engine oils and the required oil change intervals.

2. Scope

This guideline applies to all of TEDOM SCHNELL GmbH and all its service partners, customers, and their technical service providers.

3. Approved Engine Oils

The following table lists all the approved lube oils needed to deliver on the ProRata quality promise.

SCHNELL PROTECT OIL SAE40 CAN BE MIXED WITH TECTROL METHAFLEXX ZS PLUS.

SCHNELL ACTIVEPRO OIL cannot be mixed with the above engine oils.

The following engine oils can be used in all engines built in or after 2005:

Genset Model	Pilot Fuel Biodiesel	Pilot Fuel Veg. Oil	Pilot Fuel Heating Oil	Vegetable Oil *	Operation with Oxidation Catalytic Converter
ES0406, ES04010	<p>SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS</p> <p>SCHNELL ACTIVEPRO OIL</p>	<p>SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS</p> <p>SCHNELL ACTIVEPRO OIL</p>	<p>SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS</p> <p>SCHNELL ACTIVEPRO OIL</p>	<p>SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS</p> <p>SCHNELL ACTIVEPRO OIL</p>	
ES0506, ES05010					
ES06006, ES06010					
ES0756, ES07510					
ES1107					
ES1307					
ES1507					
ES1709					
ES1807					
ES2507					
ES2657(TC), ES2659GT					
ES2907					
ES3407					
ZS180-V5	<p>SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS</p> <p>SCHNELL ACTIVEPRO OIL</p>	<p>SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS</p> <p>SCHNELL ACTIVEPRO OIL</p>	<p>SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS</p> <p>SCHNELL ACTIVEPRO OIL</p>	<p>SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS</p> <p>SCHNELL ACTIVEPRO OIL</p>	<p>SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS</p> <p>SCHNELL ACTIVEPRO OIL</p>
ZS250-V5					
ZS265TC-V5					
ZS265GT-V5					

Vegetable oil * : The pilot injection genset is operated exclusively with vegetable oil, without biogas.

Approved Engine Oils

Genset Model	Pilot Fuel Biodiesel	Pilot Fuel Veg. Oil	Pilot Fuel Heating Oil	Vegetable Oil *	Operation with Oxidation Catalytic Converter
4R12.1B	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS	----	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS
6R12.1B					
5R18.1B					
6R20.1B / 6R20.2B 6R21.1B 6R20.1H	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS SCHNELL ACTIVEPRO OIL	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS SCHNELL ACTIVEPRO OIL	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS SCHNELL ACTIVEPRO OIL	----	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS SCHNELL ACTIVEPRO OIL
6R41.1B	TECTROL METHAFLEXX ZS PLUS	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS SCHNELL ACTIVEPRO OIL	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS SCHNELL ACTIVEPRO OIL	----	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS SCHNELL ACTIVEPRO OIL

The following gensets are operated without pilot fuel.

5R18.1BO / Flexi 180	SCHNELL PROTECT OIL SAE40 or TECTROL METHAFLEXX ZS PLUS SCHNELL ACTIVEPRO OIL
6R20.1BO / 6R20.2BO / 6R20.3BO / 6R21.1BO / KSC6R21BO / Flexi 265	
8V20.1BO / 8V20BO / KSC8V20BO / Flexi 350	
L4R20.1BO / L6R20.1BO L8V21.1BO / L12V21.1BO L4R20.1NO / L6R20.1NO L8V21.1NO / L12V21.1NO KL12V21BO / Flexi 530	SCHNELL PROTECT OIL SAE40 SCHNELL ACTIVEPRO OIL
MTU 8V4000 GS MTU 12V4000 GS MTU 16V4000 GS MTU 20V4000 GS	SCHNELL PROTECT OIL SAE40 SCHNELL ACTIVEPRO OIL

Legend: B = biogas pilot-injection engine / BO = biogas spark-ignited engine / NO = natural gas spark-ignited engine / H = syngas pilot-injection engine

4. Engine Oil Consumption

Oil consumption varies depending on a wide range of factors, including coolant temperature, mechanical features, current maintenance condition, gas quality, operating mode, etc. but should not exceed 0.4 g/kWh in continuous operation at full load.

5. Oil Change Intervals

Oil change intervals vary depending on gas quality, lube oil quality, environmental conditions and engine operation. For that reason, oil change intervals should be specifically calculated and regularly reconfirmed for each engine by analyzing used oil on an ongoing basis.

We specifically recommend changing the oil based on the results of timely oil analyses.

NOTE

See Chapter “Change the Type of Oil” when changing oil types.

Pilot-Injection Gensets That Use Biodiesel or Heating Oil as a Pilot Fuel

Oil change	Operating hours
1. Oil change after commissioning or engine overhaul	300 h
2. Oil change after another	600 h
Subsequent oil changes based on oil analysis (after approx. 600 h)	

Oil change intervals may be extended if operating conditions are favorable and oil analysis results are good.

→ Perform used oil analyses periodically after each second or third oil change depending on the laboratory results.

Pilot Injection Gensets That Use Vegetable Oil as a Pilot Fuel

Oil change	Operating hours
1. Oil change after commissioning or engine overhaul	150 h
2. Oil change after another	300 h
Subsequent oil changes based on oil analysis (after approx. 300 h)	

Oil change intervals may be extended if operating conditions are favorable and oil analysis results are good.

- Perform used oil analyses periodically after each second or third oil change depending on the laboratory results.

Spark-Ignited Gas Gensets

Oil change	Operating hours
1. Oil change after commissioning or engine overhaul	300 h
2. Oil change after another	600 h
Subsequent oil changes based on oil analysis (after approx. 600 h)	

Oil change intervals may be extended if operating conditions are favorable and oil analysis results are good.

- Perform used oil analyses periodically after each second or third oil change depending on the laboratory results.

All information assumes that the engines run continuously under the stipulated operating conditions. Oil changes and used oil analyses must be performed more frequently in heat-driven operation.

Please note: oil change intervals vary depending on gas quality, operating and environmental conditions and the results of used oil analyses.

The limits for the used oil analyses are defined in separate limit value tables.

6. Take an Oil Sample

When taking samples of used oil, you must first drain around 0.5 liters at the drain cock before taking the actual sample. The samples should only be taken from the drain cock and not from the used oil tank.

7. Change the Type of Oil

If you switch to or from SCHNELL ACTIVEPRO OIL, the new oil may loosen old deposits.

NOTE

We recommend flushing the engine oil if you change the type of engine oil.

- 1 Drain the engine oil and change the oil filter.
- 2 Pour in fresh oil.
- 3 Run the unit for 170 operating hours.
- 4 Change oil and filter.
- 5 Run the unit for 300 operating hours.
- 6 Perform a used oil analysis.
- 7 Perform a used oil analysis after the oil change.

8. Recurring Used Oil Analyses

Analysis reports describe past conditions. These conditions may change before the owner receives the information. To obtain a meaningful trend analysis, the owner must regularly send in oil samples for analysis. The appropriate intervals must be based on the latest analysis result.

9. Refill Engine Oil

Refill consumed engine oil frequently – daily, if possible – with new oil. This maintains an adequate reserve to handle fluctuations in fuel, operating and environmental conditions.

SCHNELL PROTECT OIL SAE40 CAN BE MIXED WITH TECTROL METHAFLEXX ZS PLUS.

SCHNELL ACTIVEPRO OIL must not be added to the above engine oils. Likewise, the above engine oils must not be added to SCHNELL ACTIVEPRO OIL.

10. Turbine Oil for the Gas Turbine

The gas turbine must be run with **MOBIL SHC 824** from Exxon Mobil. This is a fully synthetic turbine oil for the lubrication of stationary gas turbines. This applies to all TEDOM SCHNELL pilot injection units with gas turbines.

10.1 Examine Oil Level

Examine the oil level on the sight glass of the gas turbine's oil tank every day. If necessary, refill turbine oil through the venting lid opening.

10.2 Change Intervals for Turbine Oil / Filter Element

Take an oil sample every 3,600 operating hours and send it to TEDOM SCHNELL GmbH for a laboratory analysis. Depending on the analysis findings, you will either have to perform a complete oil change or only change the filter element.

10.3 Take an Oil Sample

Take the oil sample before you change the filter and after the engine has been running for at least 30 minutes. The oil should be hot.

Flush the system for approx. 60 seconds. In other words, connect the drain hose to the sampling valve and run the oil back into the tank through the venting lid opening. Take the oil sample from the sampling valve while the engine is running. Use clean 250 ml plastic bottles.

10.4 Empty Drain Can

A water-oil mixture collects in the drain can after the gas turbine has run for a while. You can see the fill level of the drain can on the indicator tube. Empty the tank weekly.

Please notify TEDOM SCHNELL Customer Service if more than 500 ml is collected per week. (A gasket may be defective.)

11. Engine Oil Ordering Address

info@tedom-schnell.de