

OPERATING FLUIDS**Operating Fluids - Rear Axle - All Models****1.0 GENERAL INFORMATION ON FINAL DRIVE OIL**

Final Drive oil or hypoid gear lubricant must conform with the following requirements because of the high loads which occur on the profiles of the hypoid gear teeth:

- Load carrying capacity.
- Sufficient protection against seizure.
- Good wear protection.
- Optimal friction and temperature behavior.
- Seal compatibility.
- Aging resistance.

These and other properties are already contained in brand-name hypoid gear lubricants because of the high content of EP additives (EP = extreme pressure).

OIL ADDITIVES

The factory has **not approved** oil additives for hypoid gear lubricants.

All final drives are designed in such a manner that they do not require any type of oil additives. Any type of additives is fundamentally rejected by the factory. BMW NA cannot accept any liability for follow-up damage resulting from the use of additives.

2.0 APPROVED FINAL DRIVE OILS FOR FRONT AND REAR AXLE FINAL DRIVES WITH AND WITHOUT LIMITED SLIP OR VISCOUS COUPLING

Mineral based final drive oils are no longer recommended due to the release of synthetic final drive oils for all vehicles with or without limited slip differentials.

LIMITED SLIP DIFFERENTIALS

With the introduction of the Z3 roadster a new synthetic final drive oil for all vehicles with a multi-plate limited-slip differential has been released. The new BMW final drive oil SAF-XJ will replace the old final drive oil SAF-XLS.

The SAF-XLS final drive oil is not to be used in the final drive of the Z3 roadster.

Use only the SAF-XJ in the final drive of the Z3 roadster.

NOTE: If a non-limited slip differential oil is used in a limited slip differential a whining

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or chattering sound can be heard on very tight turns and will eventually result in a failure of the differential.

DIFFERENTIAL OIL SPECIFICATION

Description	Quantity	Part Number
BMW Synthetic Final Drive Oil	55 liter drum	83 22 1 470 080
(with multi-plate Limited Slip Differential) (SAF-XJ)		

E60 M5 utilizes a multi-plate Limited Slip Differential requiring SAF XJ fluid.

Non-Limited Slip Differentials

NON-LIMITED SLIP DIFFERENTIAL OIL SPECIFICATION

Description	Quantity	Part Number
BMW Synthetic Final Drive Oil	55 liter drum	83 22 9 407 768
(without multi-plate limited slip differential, or with viscous differential lock (325iX/iXA) (SAF-XO)		

NOTE: See S.I. Bulletin B 33 01 92 for additional final drive oil info.

3.0 FINAL DRIVE OIL FOR BMW M1 MOTORSPORT COUPE

The final drive of a BMW M1 is integrated in the manual transmission and oil supply is accomplished with a mutual oil filling.

Use reputable brand SAE 80 manual transmission oil conforming with specifications MIL-L-2105 A or API-GL 4.

4.0 OIL CHANGE INTERVALS

Maintenance requirements per the vehicle's Service Booklet or the respective Service Maintenance Checklist.

Replacement final drives: same as for new vehicles.

All models as of 9/97 production are factory-filled with synthetic rear axle oil having a lifetime service rating. No oil changes are required for the life of the vehicle.

5.0 CARS WITHOUT SERVICE INDICATOR (INCLUDING BMW M1)

First oil change at 600 miles

Further oil changes at 18,000 miles

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Special Rule For BMW 530I, 528I (E 12):

1st oil change at 600 miles after final drive replacement.

2nd oil change at 4,500 miles after final drive replacement.

Further oil changes at 9,000 miles intervals, beginning at 9,000 miles.

6.0 CARS WITH SERVICE INDICATOR

Refer to Service Maintenance checklist for respective model year.

BREAK-IN PROCEDURES

Drive the car with changing engine speeds and road speeds during the first 1,200 miles/2,000 km, but never faster than 2/3rds of maximum speed in a selected gear. Avoid using full throttle and kick-down positions of the accelerator pedal during this period.

BMW M3/M5/M6 Up to 1,200 miles max. engine speed 5500 RPM

Generally avoid full-throttle position of the accelerator.

These break-in procedures are, of course, also applicable to replacement final drives.

7.0 OUTPUT SHAFTS

The joints of output shafts have permanent grease lubrication and require no servicing.

The amount of joint grease required after repairing is supplied in the " dust cover repair kit".

8.0 WHEEL BEARINGS

BALL BEARINGS E24 (SINCE 5/82), E28, E30, E31, E32 AND ALL FOLLOWING

Bearing unit is lubricated for its service life, cannot be disassembled and does not require subsequent lubrication.

GROOVED BALL BEARINGS E12, E21, E23, E24 BEFORE 5/82

Grease type: Retinax A (former BMW Part No. 81 22 9 407 710)

CRC Part No. SL 3131

9.0 DIFFERENTIAL HOUSING FINAL DRIVE COVERS AND HOUSING

On 735i/iL, 750iL, M6 and M5 (E28) models, the attaching bolts are to be installed with Hylogrip/Loctite 270 (green) thread sealant (former BMW Part No. 81 22 9 400 086).

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SEALANT SPECIFICATION

Wurth	Part No. 8932700
Loctite	Part No. 21438

See S.I. Bulletins B 33 01 89 (1869) and B 33 01 88 (1621).