



Fig. 1: Identifying BMW Group Fuel System Cleaner Plus Bottle
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: BMW Group Fuel System Cleaner Plus is the only BMW approved in tank additive. Using non approved fluids or tools can lead to premature component failure and will not be covered under Warranty.

WARRANTY INFORMATION

Because carbon deposit build-up is related to fuel quality, it cannot be considered as a defect in vehicle's materials or workmanship. Consequently, usage of BMW Group Fuel System Cleaner Plus is not covered under the terms of the BMW New Vehicle Limited Warranty or maintenance plan.

3.0 FUEL INJECTION AND INDUCTION SYSTEM CLEANER CONCENTRATE

Fuel Injector and Induction System Cleaner

Concentrate

PN 82 14 0 428 376

1 bottle, 16 fl. oz.



S13 07 U13

Fig. 2: Identifying Fuel Injector And Induction System Cleaner Bottle
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: BMW Group Fuel Injector and Induction System Cleaner is the only BMW approved fluid that can be used to clean the fuel injection system, induction system and combustion chamber. Using non approved fluids or tools can lead to premature component failure and will not be covered under Warranty.

4.0 FUELS FOR DIESEL M21 ENGINES (US MODEL 524TD ONLY)

Diesel fuel is obtained from distilled crude oil. The distilling process is highly complicated, involving precise control of temperatures and pressures. The diesel fuel quality will vary depending on the refining process and the crude oil source.

BMW of North America LLC recommends using automotive diesel Fuel No. 2 with a minimum octane rating of 45 for use in the BMW 524td. Never use other fuels such as marine fuel or heating oil, since these fuels do not have the appropriate additives or octane values.

The octane number is a measure of the fuel's ignition quality, which influences both the ease of starting and combustion stability.

A high octane number diesel fuel promotes spontaneous burning of the fuel, which is beneficial in a diesel.

Factors which are important qualities of diesel fuel are the Cloud Point (the temperature at which wax forms in diesel fuel) and the Pour Point (the temperature at which fuel stops flowing). These qualities become very important during low temperature operation. As the temperature drops, wax can sometimes form in the fuel tank, fuel lines and/or fuel filter. If this occurs, the fuel supply lines will become clogged and resulting hard starting and rough running problems.

Temperatures below 20°F (-7°C) are critical to the formation of wax crystals. The following guidelines should solve any cold weather problems which may arise:

NOTE: BMW 524td's are equipped with an integral fuel heater, pre-delivery fuel pump, large capacity fuel filter/water separator, and block heater for cold weather operation which should be sufficient for all but the most extreme cold weather.

If outside temperature is above 20°F (-7°C):

*Use Diesel Fuel No. 2

If outside temperature is below 20°F (-7°C):

- Diesel Fuel No. 1, if available, should be used.
- Customers should ask if diesel fuel is winterized.
- Diesel Fuel Flow Improver can be added to diesel fuel No. 2 to lower the Cloud Point of the fuel.

NOTE: 1. 100 ml can of additive will treat 1 tank full of diesel fuel; additional quantities will not lower the Cloud Point any further.

Diesel Fuel Flow Improver - Wurth Part No. 893532 (former BMW Part No. 81 22 9 407 289)

- Diesel Fuel No. 2 can be mixed with kerosene in the proportions shown on the graph. Engine performance will be reduced with more than a 50% mixture of kerosene.

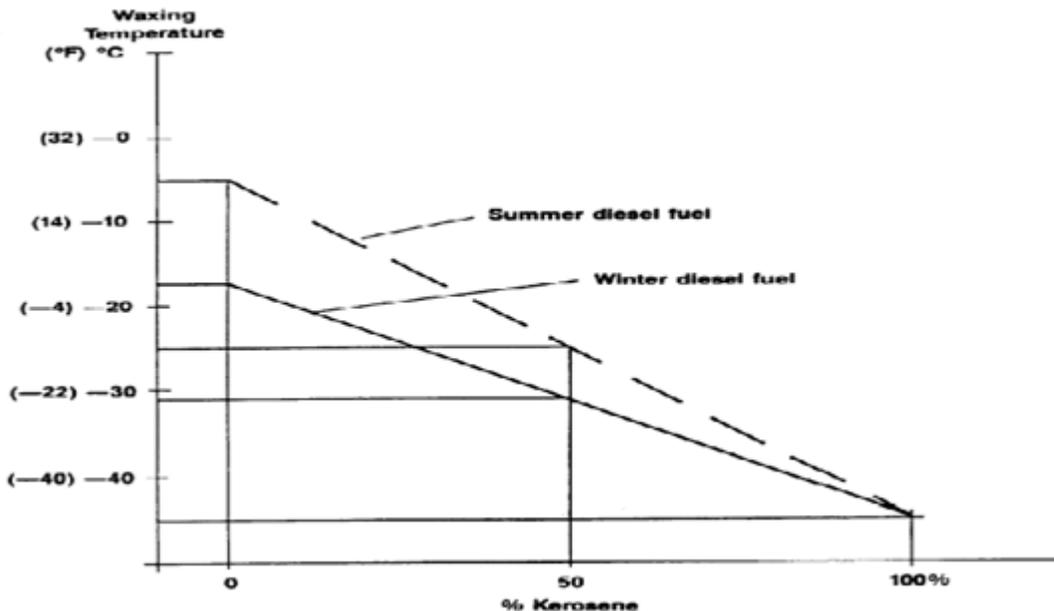


Fig. 3: Diesel Fuel Flow Temperature Graph
Courtesy of BMW OF NORTH AMERICA, INC.

- Significant improvement in operation can be achieved by using a combination of both kerosene and the diesel fuel flow improver since the kerosene lowers the point at which the wax formation occurs and the

additive modifies the structure of the wax crystals for better flow.

5.0 FUELS FOR DIESEL M57 D30 T2 US ENGINE

Diesel fuel is obtained from distilled crude oil. The distilling process is highly complicated, involving precise control of temperatures and pressures. The diesel fuel quality will vary depending on the refining process and the crude oil source.

BMW of North America LLC recommends using automotive diesel with a minimum octane rating of 51 in the E90 335D and E70 X5 3.0D. Never use other fuels such as marine fuel or heating oil, since these fuels do not have the appropriate additives or octane values. The octane number is a measure of the fuel's ignition quality, which influences both the ease of starting and combustion stability. A high octane number diesel fuel promotes spontaneous burning of the fuel, which is beneficial in a diesel engine.

The only fuel approved is Ultra-Low Sulfur highway Diesel. ULSD contains a maximum of 15 parts per million (ppm) of sulfur. Low-sulfur diesel (LSD) should never be used, because it contains a much higher concentration of sulfur (up to 500 ppm), which can damage the diesel particulate filter (DPF) as well as increase exhaust emissions.

ULSD dispensing pumps are labeled accordingly:



Fig. 4: Identifying Ultra-Low Sulfur Highway Diesel Label
Courtesy of BMW OF NORTH AMERICA, INC.

"B5" Biodiesel that consists of a maximum of 5% is approved for use.

The fuel filler neck has been designed with a misfueling feature that only allows the larger diameter diesel fuel filler nozzle to be inserted. The smaller diameter nozzle found on unleaded gasoline pumps cannot be inserted. Nevertheless, if any other fuel (i. e., biodiesel rated at B10 or higher, gasoline, or kerosene) has mistakenly been filled, do not start the engine, not even to move the car away from the fuel pump! Serious damage to the engine can result.

For cold weather operation, filling stations may use "winter diesel", which is an approved blend of ultra-low sulfur kerosene with ULSD. Such a blend will help prevent the diesel fuel from gelling at temperatures below approx. 20A°F. Factors which are important qualities of diesel fuel are the Cloud Point (the temperature at

which wax forms in diesel fuel) and the Pour Point (the temperature at which fuel stops flowing). These qualities become very important during low temperature operation. As the temperature drops, wax can sometimes form in the fuel tank, fuel lines and/or fuel filter. If this occurs, the fuel supply lines will become clogged and resulting hard starting and rough running problems.

DIESEL MISFUELING PROTECTION BYPASS ADAPTER

BMW Advanced Diesel vehicles are equipped with a fuel-filler neck that incorporates a misfueling protection system, to prevent gasoline from being mistakenly pumped into the vehicle. If the vehicle is started with gasoline in the fuel tank, internal engine damage will occur.

Only fuel nozzles of the recommended diameter for diesel passenger vehicles can be inserted into the filler neck. Most diesel fuel stations have fuel nozzles with the recommended diameter fitted to their passenger vehicle diesel fuel pumps. Unfortunately in some locations, fuel nozzles of different diameters may have been fitted to passenger vehicle diesel fuel pumps.

The DMBA (1) will enable refueling of the vehicle in emergency circumstances where the fuel station is using the approved Ultra-Low Sulfur Diesel (ULSD), but has a non-standard sized filling nozzle (i. e. gasoline nozzles have a smaller, 21mm diameter), or when using a larger diesel nozzle intended for use on commercial vehicles.

NOTE: Insert the DMBA into the filler neck so that the offset section is up.

ULSD has a maximum sulfur content of 15 parts per million (ppm) and is labeled accordingly on the fuel pump.

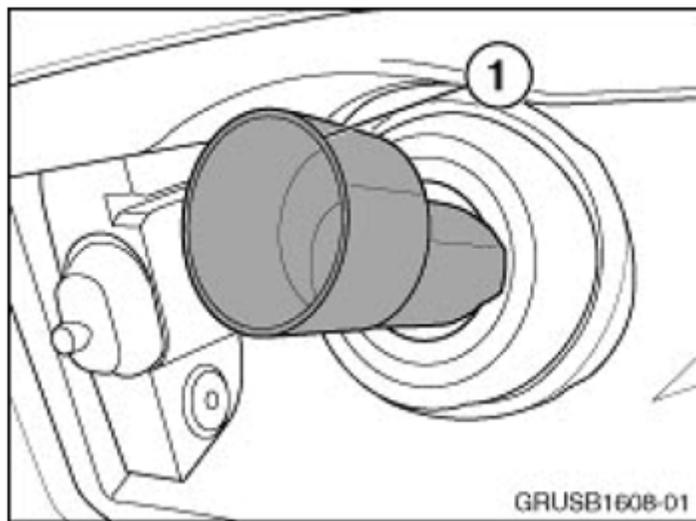


Fig. 5: Identifying DMBA

Courtesy of BMW OF NORTH AMERICA, INC.

6.0 OTHER FLUIDS

The throttle body assembly of M42 engines in E36 vehicles produced from 1/94-6/94 are to be lubricated with

2012 BMW 528xi

ENGINE Fuel System Operating Fluids

Optimoly

Paste TA Spray, BMW Part No. 83 23 1 468 932.