

# TECHNI/TIPS

A Publication of the Lubrication Engineers Technical Department

LEADERS IN LUBRICANTS

NUMBER 51

## EXPLANATION OF CURRENT API-SAE ENGINE OIL SERVICE CLASSIFICATIONS

Automotive and engine manufacturers include these designations in their Owner/Operator Manuals. The following Engine Service Classifications are guides to selecting proper oils for different engine designs and service conditions.

### S – Service

- SA – Utility Gasoline Engine Service – OBSOLETE**
- SB – Minimum Duty Gasoline Engine Service – OBSOLETE**
- SC – 1964 Gasoline Engine Warranty Service – OBSOLETE**
- SD – 1968 Gasoline Engine Warranty Maintenance Service – OBSOLETE**
- SE – 1972 Gasoline Engine Warranty Maintenance Service – OBSOLETE**
- SF – 1980 Gasoline Engine Warranty Maintenance Service – OBSOLETE**

**SG – 1989 Gasoline Engine Warranty Maintenance Service** – Service typical of gasoline engines in cars, vans and light trucks, beginning with the 1989 model year operating under manufacturers' recommended maintenance procedures. Provides improved control of engine deposits, oil oxidation, sludging and engine wear relative to previous categories. Rust and bearing corrosion limits are the same as SF oils. May be used where SF, SE, SF/CC or SE/CC is recommended. All of LE's MONOLEC Engine Oils exceed this classification.

**SH – 1994 Gasoline Engine Service** – Category SH was adopted in 1992 to describe engine oil first mandated in 1993. It is for use in service typical of gasoline engines in present and earlier passenger cars, vans and light trucks operating under vehicle manufacturers' recommended maintenance procedures. Engine oils developed for this category provide performance exceeding minimum requirements of API Service Category SG, which it is intended to replace, in the areas of deposit control, oil oxidation, wear, rust and corrosion. They may be used where API Service Category SG and earlier categories are recommended.

**SJ – 1996 Gasoline Engine Service** – Category SJ was adopted in 1996 and became mandatory in 1997, superseding API rating SH for gasoline only engine oils. It addresses improved performance in compatibility for catalytic converters, volatility, high temperature deposits and low temperature pumpability. Usual SJ viscosities include 0W-20, 5W-20, 5W-30 and 10W-30. SAE 15W-40 viscosity is allowed but does not have to meet the phosphorus limit for catalyst compatibility since it is usually a heavy-duty diesel oil. LE's 8800 MONOLEC ULTRA and 8410-8450 MONOLEC GFS meet the API SJ category requirements.

**SL – 2001 Gasoline Engine Service** – Category SL was adopted to describe engine oils for use in 2001. It is for use in service typical of gasoline engines in present and earlier passenger cars, sport utility vehicles, vans and light trucks operating under vehicle manufacturers' recommended maintenance procedures. They may be used where API Service Category SJ and earlier categories are recommended. LE's 8530 MONOLEC SPB and 8888 MONOLEC EGR Plus Engine Oils exceed this classification.

**SM – 2004 Gasoline Engine Service** – For all automotive engines currently in use. Introduced in 2004, SM oils are designed to provide improved oxidation resistance, improved deposit protection, better wear protection, and better low-temperature performance over the life of the oil. Some SM oils may also meet the latest ILSAC specification and/or qualify as Energy Conserving. LE's 8530 MONOLEC SPB, 8800 MONOLEC ULTRA and 8888 MONOLEC EGR Engine Oils meet API SM requirements. Additionally, 8530 MONOLEC SPB Engine Oil is SM energy conserving and ILSAC GF-4 rated.

## C - Commercial

**CC – Moderate Duty Diesel and Gasoline Engine Service – OBSOLETE**

**CD – Severe Duty Diesel Engine Service – OBSOLETE**

**CD-II – Severe Duty Two-Cycle Diesel Engine Service – OBSOLETE**

**CE – Very Severe Diesel Engine Service – OBSOLETE**

**CF-4 – Severe Diesel Engine Service** – CF-4 is designed to replace the CE engine oil classification. CF-4 designates oils with additive packages for protecting high speed, low emission, four stroke diesels in heavy duty on-highway applications. Requirements for CF-4 oils include greater oxidation resistance, high activity detergents and dispersants to prevent sludging and deposits. Oil consumption requirements have also been stiffened. CF-4 oils supersede CD and CE oils and may be used where these service classifications are recommended. LE's 8800 MONOLEC ULTRA Engine Oil and LE's 8130 MONOLEC ULTRA-BLEND Engine Oil exceed API CF-4 rating.

**CF – Indirect Injected Diesel Engine Service** – Service typical of indirect injected diesel engines and other diesel engines that use a broad range of fuel types, including those using fuel with sulfur content above 0.5%. Requirements include control of piston deposits, wear and bearing corrosion. Engines may be naturally aspirated, turbocharged or supercharged. CF rated oils may be used when API CD oils are called for. LE's 8800 MONOLEC ULTRA Engine Oil, LE's 8130 MONOLEC ULTRA-BLEND and LE's MONOLEC GFS Engine Oil meet the CF requirements.

**CF-2 – Severe Duty Two-Stroke Cycle Diesel Engine Service** – Service typical of two-stroke cycle diesel engines requiring highly effective control of wear and deposits. Oils designed for this service demonstrate improved performance over API CD-II oils and can be used wherever API CD-II oils are recommended.

**CG-4 – 1994 Diesel Engine Service** – CG-4 is intended to address engine wear and deposit issues linked to fuel specifications and engine designs that are required to accommodate 1994 EPA emissions regulations. CG-4 oils exceed the requirements of the API CF-4 service category and replace CF-4. These oils are particularly suited to on-highway, heavy duty truck applications. When combined with the appropriate "S" category, they can also be used in gasoline and diesel powered personal vehicles -- i.e., automobiles, light trucks and vans-when recommended by the vehicle or engine manufacturer. LE's 8800 MONOLEC ULTRA and LE's 8130 MONOLEC ULTRA-BLEND Engines Oils meet CG-4 specifications.

**CH-4 – 1998 Reduced Emission Diesel Engine Service** – The CH-4 category is intended to address the requirements for high-speed, four stroke diesel engines to meet 1998 exhaust emission standards. CH-4 oils are specifically compounded for use with diesel fuels containing up to 0.5% sulfur. They can also be used in gasoline engines when combined with the appropriate "S" category when the vehicle or engine manufacturer recommends. CH-4 oils can replace those rated CD, CE, CF-4, and CG-4. LE's 8800 MONOLEC ULTRA meets the CH-4 specification and is rated API CH-4, CF, CF-2/SM.

**CI-4 – 2002 Severe-Duty Diesel Engine Service** – The API CI-4 Service category describes oils for use in those high-speed, four-stroke cycle diesel engines designed to meet 2004 exhaust emission standards, to be implemented October 2002. These oils are compounded for use in all applications with diesel fuels ranging in sulfur content up to 0.05% by weight. These oils are especially effective at sustaining engine durability where Exhaust Gas Recirculation (EGR) and other exhaust emission componentry may be used. Optimum protection is provided for control of corrosive wear tendencies, low and high temperature stability, soot handling properties, piston deposit control, valvetrain wear, oxidative thickening, foaming and viscosity loss due to shear. API CI-4 oils can effectively lubricate engines calling for API CH-4, CG-4 and CF-4 Service Categories. LE's 8888 MONOLEC EGR Plus Engine Oil meets the CI-4 and CI-4 Plus specification.

**CJ-4 – 2006 Heavy Duty Diesel Engine Service; Exhaust Aftertreatment** – Introduced in 2006. For high-speed, four-stroke engines designed to meet 2007 model year on-highway exhaust emission standards. CJ-4 oils are compounded for use in all applications with diesel fuels ranging in sulfur content up to 500 ppm (0.05% by weight). However, use of these oils with greater than 15 ppm (0.0015% by weight) sulfur fuel may impact exhaust aftertreatment system durability and/or oil drain interval. CJ-4 oils are effective at sustaining emission control system durability where particulate filters and other advanced aftertreatment systems are used. Optimum protection is provided for control of catalyst poisoning, particulate filter blocking, engine wear, piston deposits, low and high temperature stability, soot handling properties, oxidative thickening, foaming, and viscosity loss due to shear. API CJ-4 oils exceed the performance criteria of API CI-4 with CI-4 PLUS, CI-4, CH-4, CG-4, and CF-4 and can effectively lubricate engines calling for those API Service Categories. When using CJ-4 oil with higher than 15 ppm sulfur fuel, consult the engine manufacturer for service interval. 8800 MONOLEC ULTRA Engine Oils meet the API CJ-4 specification.



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