



WORKHORSE CUSTOM CHASSIS SERVICE BULLETIN

BULLETIN NO: 60601-I

BULLETIN TYPE: Information

SUBJECT: Stanadyne Pump Diesel Fuel Additive

MODELS: All 6.5L Diesel Engines With Stanadyne Injection Pump

On June 1st, 2006 the EPA set a new standard for sulfur content in diesel fuel sold in the United States for on road applications. This results in a new description for diesel fuel as ULSD or Ultra-Low Sulfur Diesel. ULSD has an allowable sulfur content of up to 15 ppm (parts per million) which is considerably lower than the previous standard of 500 ppm for Low Sulfur Diesel or LSD. Because of the ruling all refiners were required to produce 80% of their diesel fuel output as ULSD, and retailers were required to label the diesel fuel with EPA authorized language disclosing the sulfur content and fuel type.

Sulfur acts as a lubricant in diesel and there is going to be a natural corresponding drop in lubricity. The decrease in lubricity causes a minor decrease of useful energy from the fuel and may result in reduced fuel economy. For engine components and the fuel injection pump the decrease in lubricity could result in premature wear and part replacement. Leaks at the o-ring sealing joints could also occur due to the new chemical makeup of the ULSD (This happened 1993 and early 1994 when sulfur was reduced from 3000-4000 ppm to 500 ppm for LSD). The lower sulfur content would cause the o-rings to shrink. O-rings would have to be replaced, but once replaced leaks rarely reoccurred.

There is a solution. Additives can be mixed into ULSD to boost its lubricity and fuel economy characteristics. These additives have to be added every time the vehicle is filled up with fuel. There are many additives on the market. Stanadyne and Workhorse recommend the use of Stanadyne Performance Formula or Stanadyne Lubricity Formula.

Workhorse recommends the Performance additive for most customers. Independent tests miles per gallon (MPG) gains of up to 9.6% with its use. If these gains are achieved, the product pays for itself. No MPG test results are available for the Lubricity additive at this time. If significant wear is noted in your engine the Lubricity formula is superior to the Performance formula in providing lubrication. Workhorse Parts store both products.

<u>Part Number</u>	<u>Description</u>
W8005009	Case of 12 pints of Stanadyne Performance Formula fuel Additive (One pint of Performance additive treats 60 gallons of fuel)
W8005016	Case of 12 pints of Stanadyne Lubricity Formula fuel Additive (One pint of Lubricity additive treats 120 gallons of fuel)

Stanadyne diesel fuel additives are the only ones in the world that are:

- Made by a fuel injection systems manufacturer
- Tested and approved by major diesel engine and vehicle manufacturers
- Proven to perform best in independent tests

Stanadyne diesel fuel additives protect and improve the performance of all diesel fuel injection systems, including:

- High pressure common rail
- Unit Injectors
- Rotary distributor pumps
- In-line pumps

All Stanadyne diesel fuel additives are suitable for use with all types of on or off-road diesel fuels, including:

- Ultra Low Sulfur Diesel (ULSD)
- Bio Diesel (up to B5, or 5% bio content)

Stanadyne fuel additives are safe for use with:

- Catalytic converters
- Exhaust particulate filters

Stanadyne diesel fuel additives comply with federal low sulfur content requirements for use in diesel motor vehicles and non-road engines.

Stanadyne additives are recommended for use in all model year 2007 and later highway diesel vehicles and engines.



STANADYNE®

*A Leader In
Diesel Fuel Management Technology*

Stanadyne Corporation

92 Deerfield Road, Windsor, CT 06095, USA

Tel: (860) 525-0821 • Fax: (860) 683-4587

Customer Support Toll Free Number: 1-800-842-2496

www.stanadyne.com

STANADYNE®

Diesel Fuel Additives



Stanadyne is a leading manufacturer of diesel:

- *Fuel Injection Pumps*
- *Injectors*
- *Fuel Filters*
- *Water Separators*
- *Fuel Additives*



Performance Formula®

- **The premium all-season, multi-function diesel fuel additive, designed to tackle virtually any diesel fuel related problem**
- **Meets all fuel system requirements**
- **Approved by Original Equipment Manufacturers (OEMs)**
- **Cold Weather Protection** - reduces diesel pour point up to 40°F (22°C), and cold filter plug point by up to 25°F (13°C), depending on base fuel
- **Hot Weather Protection** - lubricants and cetane improver help when fuel is hot and “thin”
- **Increases Horsepower** - with up to 5 point cetane gain to improve combustion, resulting in better acceleration, power and torque
- **Reduces Fuel Consumption** - independent tests show gains up to 9.6% in MPG
- **Easier and Faster Starting** - in all conditions
- **Reduces Smoke and Particulate Emissions** - and is suitable for ultra low sulfur diesel
- **Cleans and Protects** - detergents and deposit modifiers help protect injection pumps, injectors, nozzles, etc.
- **Reduces Wear** - lubricity improvers restore lubricity to ultra low sulfur and other low lubricity diesel fuels
- **Stabilizes Fuel** - antioxidants keep fuel fresher
- **Contains No Alcohol** - avoids corrosion and accelerated wear
- **Helps Remove Water** - special demulsifiers cause tiny water droplets to come out of suspension/emulsion, so the filter/separator can more effectively remove water
- **Specially Formulated** for use with ultra low sulfur diesel fuel
- **Can be used with Bio Diesel Fuel** (up to B5, or 5% bio content)

Size	8 Oz. (235 ml)	Pint (470 ml)	1/2 Gallon (1.9 L)	5 Gallons (19 L)	55 Gallons (208 L)
Part Number	38564	38565	38566	38567	38568
Package Quantity	24	12	6	1	1
Treatment (1:500)	30 gal. (120 L)	60 gal. (235 L)	250 gal. (950 L)	2,500 gal. (9,500 L)	27,500 gal. (104,000 L)

Add Stanadyne Additives to tank before filling with diesel fuel to ensure thorough mixing. Tighten additive cap securely after use and store upright. Store above 32°F (0°C).

All Stanadyne Diesel Fuel Additives can be blended with each other and “double-dosing” is not damaging — although it may not provide twice the benefit. Where engine and vehicle Original Equipment Manufacturers (OEMs) have approved Stanadyne, most of them recommend Stanadyne Performance Formula, which should be used at every refueling year-round to ensure protection against fuel related problems and to maximize performance.

For further information or to request a Material Safety Data Sheet call Stanadyne Corporation 1-800-842-2496 or visit www.stanadyne.com



Lubricity Formula™

- Extra strength lubricity improver for use with very dry or “winter blend” fuels such as, jet fuel, kerosene or #1 diesel
- Approved by Original Equipment Manufacturers (OEMs)
- Five times more lubricant than other additives
- Recommended where excessive wear is a problem
- Cleans and protects injectors and all fuel systems components
- Demulsifies water for filter/separator efficiency
- Keeps fuel fresher
- Contains no alcohol
- Specially formulated for ultra low sulfur diesel
- Can be used with bio diesel (up to B5, or 5% bio content)

Size	8 oz. (235 ml)	Pint (470 ml)	1/2 Gallon (1.9 L)	5 Gallons (19 L)	55 Gallons (208 L)
Part Number	38559*	38560	38561	38562	38563
Package Quantity	24	12	1	1	1
Treatment (1:1000)	15 gal.* (60 L*)	125 gal. (470 L)	500 gal. (1,900 L)	5,000 gal. (19,200 L)	55,000 gal. (208,000 L)

*Special formulation ratio for 8 oz. application.



Winter 1000®

- Economic cold weather protection
- Fuel Gelling Protection - pour point reduced by as much as 40°F (22°C), depending on base fuel
- Reduces ice formation of water in fuel
- Contains no alcohol
- Specially formulated for ultra low sulfur diesel
- Can be used with bio diesel (up to B5, or 5% bio content)

Size	Pint (470 ml)	5 Gallons (19 L)	55 Gallons (208L)
Part Number	38574	38575	38576
Package Quantity	12	1	1
Treatment (1:1000)	125 gal. (470 L)	5,000 gal. (19,200 L)	55,000 gal. (208,000 L)



Performance Formula® Junior

- Lower cost alternative to Performance Formula without cold weather protection or cetane improver
- Economical
- Cleans and protects injectors and all fuel systems components
- Improves lubricity
- Demulsifies water for filter/separator efficiency
- Keeps fuel fresher
- Contains no alcohol
- Specially formulated for ultra low sulfur diesel
- Can be used with bio diesel (up to B5, or 5% bio content)

Size	8 Oz. (235 ml)	Pint (470 ml)	1/2 Gallon (1.9 L)	5 Gallons (19 L)	55 Gallons (208 L)
Part Number	38569	38570	38571	38572	38573
Package Quantity	24	12	6	1	1
Treatment (1:1000)	60 gal. (240 L)	125 gal. (470 L)	500 gal. (1,900 L)	5,000 gal. (19,200 L)	55,000 gal. (208,000 L)



Gasoline Engine Injector Cleaner and Conditioner

- For all gasoline engines
- Improves performance
- Cleans injectors
- Reduces wear
- Contains no alcohol

Size	8 oz. (235 ml)	55 Gallons (208 L)
Part Number	38557	38558
Package Quantity	24	1
Treatment (1:200)	12 gal. (46 L)	11,000 gal. (41,600 L)

Bulk Treatment Available for All Products

- For storage tanks

5 Gallons (19 L)
55 Gallons (208 L)

See product description for appropriate part number and treatment ratios.



Stanadyne Diesel Fuel Additives

	PERFORMANCE FORMULA®	LUBRICITY FORMULA™	PERFORMANCE FORMULA® JUNIOR	WINTER 1000® FORMULA
Compatible with all Diesel Fuels For use with ultra low sulfur diesel and bio diesel (up to B5, or 5% bio content)	●	●	●	●
Approved by Original Equipment Manufacturers (OEMs)	●	●		
Wax Modifier - Pour Point Depressant Lowers temperature at which fuel will pour by up to 40°F (22°C)	●			●
Wax Dispersant (patented) Keeps wax crystals evenly distributed	●			●
Alcohol-Free Avoids harmful corrosion and accelerated wear caused by alcohol use	●	●	●	●
Freeze Depressant Lowers freeze-point of water in fuel	●			●
Deposit Modifier Softens hard deposits allowing for their removal. Exceeds Cummins L10 test for cleanliness	●	●	●	
Detergent Cleans existing deposits and prevents additional build-up	●	●	●	
Lubricant Coats internal parts of fuel system to allow better fuel flow and less friction	●	●	●	
Corrosion Inhibitor Protects fuel injection parts from rust and corrosion	●	●	●	
Water Demulsifier Causes water to come out of emulsion/suspension so Filter/Separator can remove it	●	●	●	
Antioxidant Fights formation of corrosion and rust. Keeps fuel fresher	●	●	●	
Cetane Improver Improves power, reduces emissions, faster start-ups, smoother idling and acceleration	●			
Highly Concentrated Lubricant For use in fuels with very poor lubricating properties		●		
Treatment Ratio	1:500	1:1000	1:1000	1:1000