



CITGO® Pacemaker® Gas Engine Oil 1900XL Series

OVERVIEW



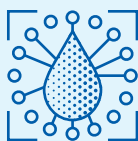
- Next-generation, premium-performance low ash and low phosphorus lubricant for stoichiometric and lean-burn stationary natural gas engines. Designed for highly loaded 4-cycle natural gas engines operating under severe conditions.
- Provides premium performance versus older technology lubricants in the high-nitration conditions typically found in stoichiometric engine operation.
- Meets rigorous demands of modern natural gas engines operating in a variety of natural gas fuel qualities.

FEATURES & BENEFITS



- Exceptional resistance to oxidation and nitration.
- Extended oil drain interval capability, up to twice the intervals of other premium oils operating in severe conditions. Reduced downtime and lubrication cost help maximize production and lower operating cost.
- Exceptional deposit control and protection against piston scuffing and ring and liner wear.
- TBN retention to neutralize combustion acids from sour gas.
- Minimized valve recession for longer head life.
- Improved TAN control.
- Catalyst-compatible.

APPLICATIONS



- Suitable for a wide range of engines operating on virtually any variation of natural gas or synthetic gas, gas from digester or landfill sources, or fuels containing low levels of sulfur and chlorofluorocarbons (CFC). Note: In high CFC / sour gas applications, an oil with higher base reserve may be required.
- CITGO Pacemaker Gas Engine Oil 1900XL series exhibits superior low temperature properties, compared with other monograde oils. It is particularly well suited for applications where improved low temperature fluidity is needed, but monograde oil is recommended by the engine manufacturer.

Recommended for high- and medium-speed 4-cycle engines manufactured by:

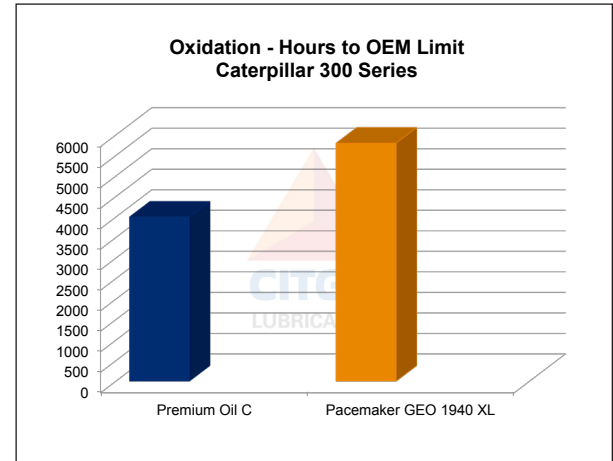
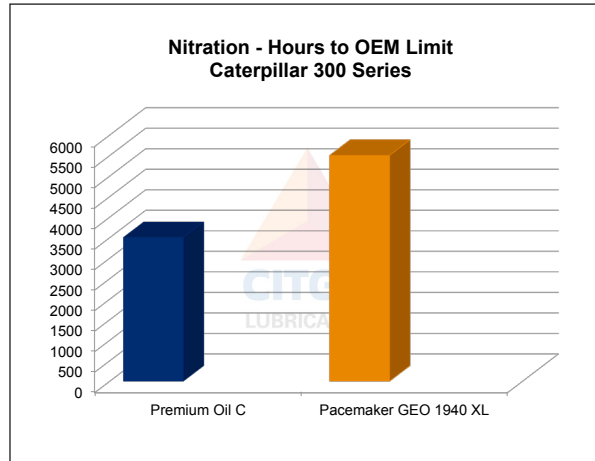
- | | |
|---------------|--|
| • Caterpillar | • Worthington (low-speed engines) |
| • Waukesha | • Cooper-Bessemer (low-speed engines) |
| • Superior | • Cummins |
| • Jenbacher | • Dresser-Rand (Categories I, II, III) |
| • Wärtsilä | |
- Pacemaker GEO 1940XL is endorsed by Caterpillar for use in CAT MaK G16CM34.
 - Consult equipment manufacturer for proper lubricant selection.

APPLICATIONS

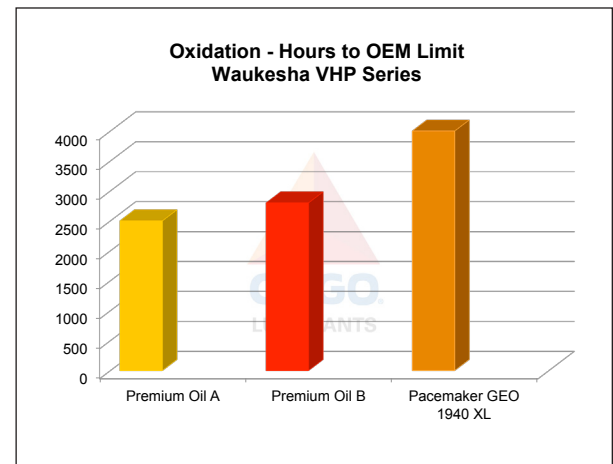
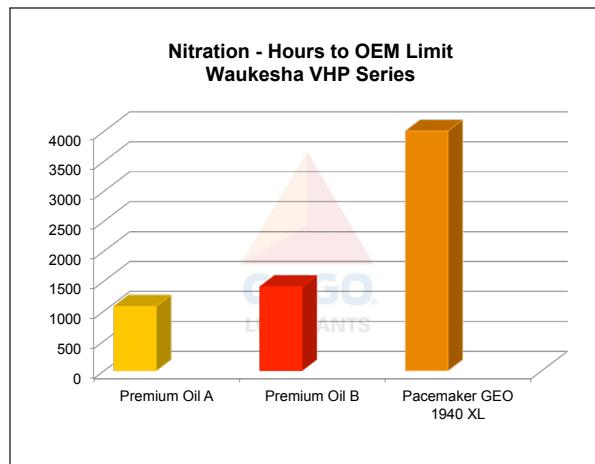


Proven in Severe Service

Caterpillar 300 Series and Waukesha VHP Series stoichiometric engines are historically severe in nitration. In field operation, results show CITGO Pacemaker GEO 1940 XL delivered up to 200% longer engine oil life compared to other premium oils.

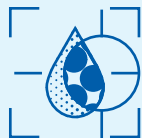


Caterpillar 300 Series Stoichiometric Engines



Waukesha VHP Series Stoichiometric Engines

PROPERTIES



Typical Properties for CITGO Pacemaker Gas Engine Oil 1900XL Series:

Product Name	1915XL	1930XL	1940XL
SAE Grade	15W-40	30	40
Material Code	632091001	632090001	632085001
Gravity, ASTM D4052, °API	31	29	28.5
Pounds Per Gallon	7.25	7.34	7.37
Viscosity ASTM D445			
cSt at 40°C	103.9	97.7	126.7
cSt at 100°C	13.9	11.5	13.6
Viscosity Index, ASTM D2270	139	106	103
Pour Point, ASTM D97, °F (°C)	-39 (-38)	-36 (-33)	-33 (-36)
Color, ASTM D1500	L4.0	L4.0	L4.0
Sulfated Ash, ASTM D874, m%	0.5	0.5	0.5
Total Base No., ASTM D2896, mg KOH/g	5.09	5.09	5.09
Total Acid No., ASTM D664, mg KOH/g	0.8	0.8	0.8
Phosphorus, ppm	280	280	280

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