

SHELL ROTELLA®

OEM HDEO Viscosity Guide



ENGINE OEM	ENGINE OIL VISCOSITY RECOMMENDATIONS
CATERPILLAR	Recommends SAE 15W-40 oils when ambient temperature is above 15°F and below 122°F. Recommends SAE 10W-30 oils meeting ECF-3 in C-7/C-9 engines when the ambient temperature is above 0°F and below 104°F.
CUMMINS	Primary recommendation is for SAE 15W-40 oils for normal operation at ambient temperatures above 5°F. Allows the use of SAE 10W-30 oils if the oil meets CES 20086 (API CK-4). SAE 10W-30 is NOT recommended in DOHC engines (2000 – 2009 ISX engines)
DDC – MB	<p>Detroit Diesel viscosity for ambient temperatures: 15W-40 above 10°C (14°F) 10W-30 or 10W-40 above -20°C (-4°F) 5W-30 or 5W-40 above -25°C (-13°C)</p> <p>Specification 93K223 (FA-4) is allowed in only: GHG17 – (DD13/DD15/DD16) GHG13 – (DD13/DD15/DD16) EPA10 – (DD13/DD15/DD16)</p> <p>Specification 93K222 (CK-4) engine oil allowed for use in all Detroit™ engines: GHG17 – (DD13/DD15/DD16) GHG13 – (DD13/DD15/DD16) EPA10 – (DD13/DD15/DD16) EPA 07 – (DD13/DD15/DD16) Series 60 MBE 900 MBE 4000</p>
NAVISTAR Small Displacement	<p>MaxxForce 7, DT, 9, 10: Allows SAE 10W-30 oils in ambient operating temperatures not to exceed 50°F. Recommended fuel economy oil is SAE 5W-40. If SAE 10W-30 oil is used Navistar recommends oil analysis be used to maintain fuel dilution under 5%.</p> <p>Navistar N9, N10: API CK-4, CJ-4 2010 and beyond:</p>
NAVISTAR Large Displacement	<p>2013 EPA Maxx Force 11, 13, 15: Allows 10W-30 in ambient operating temperatures up to 90°F. Recommended fuel economy oil is SAE 5W-40. If SAE 10W-30 oil is used Navistar recommends oil analysis be used to maintain fuel dilution under 5%</p>

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NAVISTAR Large Displacement (continued)		<p>2015 N-13 (745): API CK-4, CJ-4</p> <p>SAE VISCOSITY GRADES</p> <p>Expected Ambient Temperature ranges (°F/°C):</p> <ul style="list-style-type: none"> 15W-40: 20°F to 120°F (-6°C to 48°C) 10W-30: 0°F to 110°F (-18°C to 43°C) 5W-30: -10°F to 100°F (-23°C to 38°C) 5W-40: -10°F to 120°F (-23°C to 48°C) 0W-30, 0W-40: -30°F to 50°F (-34°C to 10°C)
		<p>2017 A-26 (786): API CK-4, FA-4</p> <p>SAE VISCOSITY GRADES</p> <p>Expected Ambient Temperature ranges (°F/°C):</p> <ul style="list-style-type: none"> 15W-40: 20°F to 120°F (-6°C to 48°C) 10W-30: 0°F to 110°F (-18°C to 43°C) 5W-30: -10°F to 100°F (-23°C to 38°C) 5W-40: -10°F to 120°F (-23°C to 48°C) 0W-30, 0W-40: -30°F to 50°F (-34°C to 10°C)
PACCAR	<p>PACCAR recommends the use of high quality SAE 10W-30 API CK-4 heavy-duty engine oil. The primary PACCAR recommendation is for the use of 10W-30 multigrade lubricating oil for normal operation at ambient temperatures above 5°F (-15°C). For ambient temperatures below 5°F (-15°C) SAE 5W-30 may be used, provided it meets API CK-4 oil specifications and biodiesel or biodiesel blended fuel is not used as fuel for the engine.</p> <p>API CK-4 10W-30 above -15°C (5°F) API CK-4 5W-30 below -15°C (5°F) API CK-4 5W-40 below -15°C (5°F)</p>	
Volvo/Mack	<p>10W-30 oils are recommended (factory fill); however, 15W-40, 5W-40 and 5W-30 are also supported as long as they meet the requisite VDS/EOS 4.5 specs</p>	

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OEM HDEO Drain Interval Guide



ENGINE OEM	Recommended Maximum Oil Drain Interval In Miles		
	LIGHT DUTY	NORMAL DUTY	SEVERE DUTY
Caterpillar¹			
C-13, C-11 ACERT	40,000	30,000	20,000
3406E, C-15, C-16	40,000	30,000	20,000
C-10, C-12	25,000	20,000	15,000
3126 – deep oil sump	18,000	15,000	10,000
3126 – shallow oil sump	13,200	11,000	6,800
Cummins²			
X15 (EPA 2017)	50,000 (Up to 80,000 w/Cummins Oil Guard)	35,000	25,000
ISX 11.9L, 15L (EPA 2010)	35,000	25,000	15,000
ISL, ISB, ISC (EPA 2010)		20,000	
ISX, ISM (EPA 2007)	35,000	25,000	15,000
ISX, ISM (Pre 2007 EGR)	35,000	25,000	15,000
ISX, Signature 600	50,000	40,000	20,000
N14 Plus	45,000	35,000	20,000
M11 Plus	55,000	45,000	27,500
ISM – non-wastegated	45,000	35,000	20,000
ISM – wastegated	30,000	20,000	12,500
ISXG – Extended Drains (0.8-0.9% Ash)		25,000	
ISXG – Normal Drains (0.4-0.7% Ash)		15,000	

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		LIGHT DUTY	NORMAL DUTY	SEVERE DUTY
Detroit Diesel³				
Detroit Diesel Service Application	Highly Efficient Long Haul (>7.0 MPG)*	Long Haul (6.0-6.9 MPG)*	Short Haul (5.1-5.9 MPG)*	Severe (<5.0 MPG)*
DD13 (EPA 2007*, EPA 2010, GHG 2014, GHG 2017) Using 93K222 (CK-4) or 93K223 (FA-4) oils	65,000	55,000	40,000	35,000
DD15 (EPA 2007, EPA 2010, GHG 2014, GHG 2017) Using 93K222 (CK-4) or 93K223* (FA-4) oils	75,000	60,000	45,000	35,000
DD16 (EPA 2007, EPA 2010, GHG 2014, GHG 2017) Using 93K222 (CK-4) or 93K223* (FA-4) oils	–	55,000	40,000	35,000
*93K223 (FA-4) oils not allowed for EPA 2007 engines, use 93K222 for extended drains above.				
DD13, DD15, DD16 (EPA 2007, EPA 2010, GHG 2014) Using 93K218 (CJ-4)		50,000	35,000	25,000
Series 60 (EPA 2007)		30,000	20,000	15,000
Series 60 (Pre EPA 2007 – EGR using 93K218 engine oil)			22,500	
Series 50, 55, 60 Pre EPA 2007 (EGR)		15,000	12,000	6,000
DDC Series 50G and 60G Natural Gas Engines – Long Haul			15,000	
DDC Series 50G and 60G Natural Gas Engines – Short Haul			6,000	
DDC Series 30G Natural Gas Engines – Short Haul			8,000	
International⁴				
International Service Application:		>6.5 mpg	5.5-6.5 mpg	<5.5 mpg
A26		50,000	30,000	20,000
Regional and Line Haul Applications: ^{4A}				
MaxxForce 11L and 13L (EPA 2010) with Centrifuge Filters		40,000	2,000,040,000	18,000
Regional and Line Haul Applications: ^{4A} MaxxForce 11L and 13L (EPA 2010) without Centrifuge Filters		35,000	1,500,035,000	15,000
MaxxForce 11L, 13L Big Bores (EPA 2007) ^{4B}			25,000	15,000
MaxxForce 9, 10 (EPA 2010)			15,000	
MaxxForce DT (EPA 2010)			15,000	
MaxxForce 7 (EPA 2010)			10,000	
DT 466, DT 570, HT 570, DT 466E, DT 530, HT 530 (EPA 2007)			550 hrs/2,100 gal fuel	
VT 365			550 hrs/2,100 gal fuel	
T444E			10,000	



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Mack⁵			
Mack Service Application: (If idle time is greater than 30%, use the next lower drain interval.)	Long Haul Greater than 6 mpg <39 L/100km	Regional Haul Greater than 5 mpg <50 L/100km	Heavy Haul Less than 5 mpg >50 L/100km
MP7, MP8, MP10 Engines EPA 2010 compliant engines and newer			
Engine Oil & Filters, Fuel Filters VDS-4 and EO-O Premium Plus quality If idle time greater than 30%, use the next lower drain interval.	45,000	35,000	25,000
With 52 L (55 qts.) Oil Pan Capacity (MP10 only) VDS-4 and EO-O Premium Plus quality If idle time is greater than 30%, use the next lower drain interval.	50,000	45,000	35,000
Other			
ASET™ AI and AMI		5,000	4,000
Pre-2002 Class 8 Engines	50,000	30,000	
Pre-2002 Mid-Liner Engines		10,000	
Mercedes Benz³			
MBE 900 (EPA 2007)	20,000	15,000	6,000
MBE 4000 (EPA 2007)	30,000	15,000	10,000
MBE 900 (Pre 2007)	20,000	15,000	
PACCAR⁶			
PACCAR Service Description: (If idle time is greater than 30%, use the next lower drain interval.) If B6-B20 biodiesel fuel is used, the oil and filter must be changed every 40,000 mi for line haul applications; every 20,000 mi for severe duty, or every six months.	NORMAL DUTY Line Haul Greater than 6 mpg, <20% Idle Time, 80,000lb GVW or Less	NORMAL DUTY Line Haul Greater than 6 mpg, >20% Idle Time, 80,000lb GVW or Less	SEVERE DUTY Vocational Less than 6 mpg or >80,000 lb GVW
MX-11 (EPA 2017)	75,000	50,000	30,000
MX-13 (EPA 2017)	75,000	50,000	30,000
PX-7, PX-9 (EPA 2017)	500 Hours	500 Hours	500 Hours
MX-13 (EPA 2010)	60,000	40,000	25,000
PX-7, PX-9 (EPA 2010)		15,000	

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Volvo ⁷			
Volvo Service Application:	Greater than 6 mpg <39 L/100km	Regional Haul Greater than 5 mpg <50 L/100km	Heavy Haul Less than 5 mpg >50 L/100km
Model Year 2011 and Newer Engines Using Volvo VDS-4.5 Premium Oil			
D11 / D13 or D16 with 42L/44qt Oil Pan: Volvo VDS-4.5* Premium Oil, Filters and Fuel Filters (Replace) If idle time is greater than 30%, use the next lower drain interval. <i>* Approved oils only, lists can be made available</i>	55,000	45,000	30,000
D16 with 52 L/55qt Oil Pan: Volvo VDS-4.5* Premium Oil, Filters, and Fuel Filters (Replace) If idle time is greater than 30%, use the next lower drain interval. <i>* Approved oils only, lists can be made available</i>	60,000	45,000	35,000
Model Year 2011 to 2016 Engines Using Volvo VDS-4 Premium Oil			
D11 / D13 or D16 with 42L/44qt Oil Pan: Volvo VDS-4* Premium Oil, Filters and Fuel Filters (Replace) If idle time is greater than 30%, use the next lower drain interval. <i>* Approved oils only, lists can be made available</i>	45,000	35,000	25,000
D16 with 52 L/55qt Oil Pan: Volvo VDS-4* Premium Oil, Filters, and Fuel Filters (Replace) If idle time is greater than 30%, use the next lower drain interval. <i>* Approved oils only, lists can be made available</i>	50,000	45,000	35,000
Other			
VE D12 (EGR)	25,000	15,000	12,000
D12	25,000	15,000	12,000
D7	15,000	12,000	10,000

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- ¹ Based on use of Cat ECF-3, API CJ-4 oil, fuel consumption, GVW and percent idle time. SAE10W-30 is the preferred viscosity grade for the 3116, 3126, C7, C-9 and C9 diesel engines when the ambient temperature is between -18 °C (0 °F) and 40 °C (104 °F).
- ² Based on use of Cummins CES 20085 oil, fuel consumption and GVW
- ³ Highly Efficient Long Haul (over-the-road transport) service applies to vehicles that annually travel more than 60,000 miles (96,000 kilometers) and average greater than 7 miles per gallon with minimal city stop-and-go operation and minimum idle.
Long Haul (over-the-road transport) service applies to vehicles that annually travel more than 60,000 miles (96,000 kilometers) and average between 6 and 6.9 miles per gallon with minimal city stop-and-go operation.
Short Haul service applies to vehicles that annually travel up to 30,000-60,000 miles (48,000-96,000 kilometers) and average between 5.1 and 5.9 miles per gallon.
Severe Duty service applies to vehicles that annually travel up to 30,000 miles (48,000 kilometers) or average less than 5 miles per gallon or that operate under severe conditions. Severe Duty service also applies to RV applications. Only one of these conditions needs to be met to categorize an application as Severe Duty Service. For more information refer to Detroit Diesel DDC-SVC-BRO-0001.
- ⁴ Based on use of API CJ-4 oil, fuel utilization and duty cycle
- ^{4A} Navistar's Extended Drain Service Interval is based upon units well over 30K annual miles and fuel consumption (MPG). Oil Sampling and Review may be required. Consult your OEM for further recommendations
- ^{4B} Navistar allows for the determination of the ODI based upon Type of Service, Fuel Economy and Filtration Utilization. Consult your OEM for further recommendations
- ⁵ To take advantage of the Class 8 EXTENDED SERVICE INTERVAL, vehicles must use Mack EO-O Premium Plus oil; be in sustained operation exceeding 100,000 miles per year; average 50 mph or above; be equipped with E-Tech or E7 V-MAC II engine; average fuel usage of 6.0 mpg or better; and be equipped with the Centri-Max oil filtration system
- ⁶ Normal Duty is considered Line Haul, 6 MPG or better, 80K lbs or less. Units under 20% Idle time may be considered for 60K ODI. Severe Duty is considered Vocational units, less than 6MPG and loads greater than 80K lbs.
- ⁷ Based on use of VDS-4 10W-30 oil, fuel consumption, GVW, percent idle time and service.

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