

January Edition of Natural Gas Engine Tech Talk

Jason Bauer, Technical Support Manager

Email: jason.p.bauer@cummins.com

Ph: (812) 447-0516

New this month:

NGVAmerica: Weight Allowance Guidance Flyer for Use by Natural Gas Fleets

<https://www.ngvamerica.org/wp-content/uploads/2020/01/NGV-Weight-Allowance-Guidance.pdf>

This Month's Tech Talk Tips

Spark Plug Maintenance

One of the biggest drivers of unplanned maintenance events on your Cummins Natural Gas powered is equipment is likely misfire from a worn out, damaged, or miss-handled spark plug.

Below are three tips based on what we've seen works, or doesn't:

1. **Change the spark plugs on time.** The maintenance interval for the spark plug is 1000hrs for the ISX12G/N, 1500hrs for the ISL G/ L9N, and 750hrs for the B6.7N. Almost every fleet that has "premature" spark plug replacement is caused by having the incorrect average vehicle speed when calculating the interval or is just missing the interval. Our preventative maintenance intervals are designed such that the total usable life of the spark plug is utilized, yet the spark plug is changed prior to misfire occurring.
2. **Do not ADJUST the gap on your new spark plugs.** If you have a new spark plug that appears to be out of spec, just return it for a replacement. If you feel you need to check the gap before installing only use a wire/pin style gauge like shown here. Do not use the blade/leaf style or the flat disk gap gauges as it damages the electrode.
3. **Use only genuine Cummins spark plugs.** Spark plugs are an emissions related component. We have extensively tested and validated these plugs to meet the emissions certification of your engine. Aftermarket spark plugs have not been proven to meet the emissions certification.



Ignition Coil Maintenance

In general, the ignition coil should last the life of the Cummins natural gas engine provided the complete ignition system is maintained correctly. As the spark plug gap grows, higher voltage from the coil is required to jump the gap of the spark plug. This higher voltage puts additional stress on the components up stream of the spark plug. This includes the spark plug boot, coil extension, and the coil itself.

During spark plug changes, you should inspect the coil and coil extension for damage, signs of arcing, and perform functional testing of the coil and extension. This includes a resistance check of the coil and the extension. More information on these steps are included in the Operation and Maintenance manual for the respective engine on Quick Serve Online. <http://quickserve.cummins.com>

Key points on ignition coils:

1. The ISX12G/N and ISB6.7G/B6.7N have flexible extensions to aid in installation and removal in tight spaces. Do not bend these extensions beyond 90 degrees or damage may occur.
2. The coil extension can be separated from the coil and replaced separately if needed. The extensions typically have a 10,000hr replacement interval. Note: A coil does not need to be replaced if the damage is limited to the extension.
3. If the extension has a translucent heat shrink wrap near the spark plug end of the extension, do not remove this heat shrink, it is providing additional dielectric resistance.
4. Use caution when removing the coils, do not use excess force to remove them.
5. On ISLG and L9N, the coils should be installed separately from the coil mounting brackets. Failure to do so can cause misalignment and damage to the coils.
6. Don't forget to replace the spark plug boot. The ISX12G/N and ISB6.7G/B6.7N coil extensions have an internal spark plug boot.

Most ignition coils returned to Cummins as “failed” components are NTF (No Trouble Found) when inspected and tested.

Technical Resources:

Jason Bauer's New Maintenance Tip Videos – Click Links Below

[Maintenance Intervals](#)

[Natural Gas Engine Oil](#)

[Ignition Coil Maintenance](#)

[Fuel Filter Maintenance](#)

[Spark Plug Maintenance](#)

[Tips for Success](#)

Minimum methane number requirement for Cummins Natural Gas Engines:

C Gas Plus, B Gas Plus, and L Gas Plus	65
ISL G, ISX12 G, ISB6.7 G, and all 2018 engines	75

Fuel Quality Calculator:

<https://www.cumminswestport.com/fuel-quality-calculator>

Recommended Maximum GVW for Best Performance & Efficiency:

B6.7N	33,000lbs
L9N	66,000lbs
ISX12N	80,000lbs

ISB6.7 G & B6.7N Maintenance Intervals	
	Hours
Oil & Filter* - CES 20085	500
Oil & Filter* - CES 20092	750
Spark Plugs	750
Fuel Filter	1,000
Valve Adjustment	1,500
Crankcase Breather	2,000
Ignition Coil Extension	5,000

ISL G & L9N Maintenance Intervals	
	Hours
Oil & Filter* - CES 20085	500
Coolant Filter	500
Oil & Filter* - CES 20092	1,000
Fuel Filter	1,000
Valve Adjustment	1,000
Spark Plugs	1,500
Crankcase Breather Filter - L9N	2,000
Standard Coolant	2,000
Ignition Coil Extension	10,000

ISX12 G & ISX12 N Maintenance Intervals	
	Hours
Oil & Filter* - CES 20085	500
Oil & Filter* - CES 20092	1,000
Spark Plugs	1,000
Coolant Filter	1,500
Standard Coolant	6,000
Valve Adjustment	1,000 / 3,000
Ignition Coil Extension	10,000
Crankcase Breather Filter - ISX12N	10,000

*Per Cummins QSOL

ISB6.7 G & B6.7N Maintenance Part Numbers		
Component	Cummins Part #	Fleetguard Part #
Oil Filter	3937736	LF3970
Fuel Filter	3607140	NG5900
Crankcase Filter	5288839	x
Spark Plug Kit**	4376564	x
Ignition Coil Extension	5402163	x

**Kit includes spark plug and pregreased boot

ISL G & L9N Maintenance Part Numbers		
Component	Cummins Part #	Fleetguard Part #
Oil Filter	3401544	LF9009
Fuel Filter	3607140	NG5900
Crankcase Filter*	5288839	x
Spark Plug Kit**	5473009	x
Ignition Coil Extension	5265337	x

*If equipped

**Kit includes spark plug and pregreased boot

ISX12 G & ISX12 N Maintenance Part Numbers		
Component	Cummins Part #	Fleetguard Part #
Oil Filter	4367100	LF14000NN
Fuel Filter*	3607140	NG5900
Crankcase Filter*	4389517	CV53009
Spark Plug Kit**	4309391	x
Ignition Coil Extension	4387015	x

*If equipped

**Kit includes spark plug and pregreased boot

CES 20092 Oil Provider Recommendations

Company Name	Product Name	Vis Grade
Valvoline	Premium Blue 9200 - One Solution 10W-30	10W-30
Valvoline	Premium Blue 9200 - One Solution 15W-40	15W-40

Alternatives

Company Name	Product Name	Vis Grade
Association of Independent Oil Distributors	Purus TFO Synthetic Blend CK-4/SN	15W-40
Association of Independent Oil Distributors	Purus TFO Synthetic Blend CK-4/SN	10W-30
Castrol Ltd.	Castrol Duratec ES 15W-40	15W-40
Castrol Ltd.	Castrol Vecton Long Drain NG 15W-40	15W-40
CITGO Petroleum Corporation	Citgard® CNG/LNG Engine Oil 10W-30	10W-30
CITGO Petroleum Corporation	Citgard® CNG/LNG Engine Oil 15W-40	15W-40
Petro-Canada Lubricants Inc	Duron GEO LD 10W-30	10W-30
Petro-Canada Lubricants Inc	Duron GEO LD 15W-40	15W-40
SINOPEC LUBRICANT CO. LTD.	Sinopec Tulux G600 CNG/LNG/LPG 15W-40	15W-40
TongYi Petroleum Chemical Co.	TongYi Long Range Gas Engine Oil LPG/CNG	10W-30
TongYi Petroleum Chemical Co.	TongYi Long Range Gas Engine Oil LPG/CNG	15W-40
TongYi Petroleum Chemical Co.	TongYi Long Range Gas Engine Oil LPG/CNG/LNG 15W-40	15W-40
TOTAL LUBRIFIANTS	Total Rubia Gas 9M 15W-40	15W-40
TOTAL LUBRIFIANTS	Total Rubia Gas 9M FE 10W-30	10W-30