Technical Bulletin

Spark Plug Considerations

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Document Number: SPDi-TB0003
Effective Date: July 5, 2013
Revision No. 2

Overview:

This Technical Bulletin contains important information regarding the spark plug considerations when using SPDi units. It is important to read and understand the material below to prevent damage to your SPDi unit as well as to ensure the best performance from the device and your vehicle. Spark plugs are used for delivering electric current from the SDPi unit (ignition system) to the combustion chamber. Selecting sparkplugs designed for your vehicle, within the appropriate temperature range and spark plug gap are critical to the performance of your engine. Poor selection could lead to misfire or fouling. We have seen the best results using Denso spark plugs or NGK G-Power Spark plugs; this is because of their unique design.

Considerations:

1. It is important to consider your vehicle specifications when selecting spark plugs. Factors such as thread reach, thread diameter, isolator nose projection and other spark plug features are determined based off vehicle specification. Failure to select the proper spark plug for your vehicle could result in pre-ignition, detonation, misfires or fouling. We recommend that you speak with your vehicles manufactures or use Denso Spark plug finder which can be found at http://www.globaldenso.com/en/products/aftermarket/plug/search/index.html NGK Spark Plug Part Finder which can be found athttp://www.ngksparkplugs.ca/part-finder.cfm
   Note: Denso and NGK Spark Plug Finders are designed for stock factory vehicles.
2. Spark plugs can be purchased with single or multiple electrodes. The SPDi Spark unit works only using a single electrode spark plug. For best results we suggest using either Denso or NGK G-Power spark plugs. The electrode used in these types of spark plug contains a fine tip which reduces the required voltage and has proven to be the most effective with our SPDi Spark units. Please visit the Denso and NGK websites for more details surrounding their product line.
3. Some spark plug companies suggest that electrodes made of more precious metals such platinum, iridium or yttrium provide more efficient combustion. Our testing shows that the electrode shape plays a much more significant factor in the effectiveness of our systems rather than material composition.
4. Selecting spark plugs with the proper heat range is important in the prevention fouling and pre-ignition. Pre-ignition occurs when the tip of the spark plug gets too high and fouling is the opposite when the tip is too cold. Both of these conditions could result is a performance loss as well as damages to your engine. Denso and NGK offer spark plugs with various heat ratings to accommodate different driving scenarios as well as vehicle modifications. Below is a general guideline for selecting the appropriate heat range based on the type of vehicle you will be driving.
   Street- Stock- 4
   Performance Upgrades-8
   Racing-9
   Note: The above heat ratings may not be applied to your vehicle as they can be changed as a result of engine size and performance upgrades done to your vehicle. To ensure that you select a spark plug heat range best suited for your vehicle we recommend you speak with a spark plug profession.
5. Spark plug gaps play a critical element in the performance of not only the vehicle but also the performance of the SPDi units. Should the spark plug gap be to narrow it could cause too small or too weak a spark to effectively ignite the fuel-mixture. Alternatively, a gap too large could prevent any spark from occurring and could result in misfires. Based on the considerations about we suggest spark plug gaps to be if you are using a Denso spark plug, the spark plug gap should be around 0.028in (0.71mm). For NGK G-Power Spark plugs we recommend that the spark plug gap is set at 0.025in (0.635mm) for non-aspirated vehicles and 0.020in (0.508mm) for aspirated/ turbo vehicles.
6. Our independent tests have shown that Denso and NGK G-Power spark plugs show considerably better results and reliability compared to Bosh Spark plugs. This is mainly a result of the electrode configuration in these spark plugs and its ability to handle breakdown voltage. To ensure the best results we strongly recommend using one of these two recommended spark plugs.

Safety Precautions:

(Please read and understand these safety precautions thoroughly prior to use)

1. SPDi engine kits are available for specific engine types. To prevent compilations and damages to the engine and SPDi unit it is recommended that the SPDi is only installed on a vehicle for which it was designed.
2. Take caution when installing or altering the SPDi unit by ensuring that your vehicle is situated in a safe manner:
   a. Place vehicle on a flat level surface.
   b. Turn the engine off and allow it to cool.
   c. Remove the ignition key.
   d. Automatic transmissions should be placed in park,
   e. Manual transmissions should be placed in gear or in neutral with the emergency brake engaged.
3. Take caution when installing/ removing spark plugs.
   a. Do not change spark plugs while the vehicle is running.
   b. Allow engine to cool before attempting to remove or install spark plugs.
   c. Adjust the spark plug gap prior to installation.

   d. Change spark plugs one by one to avoid mixing up the spark plug wires. Alternatively label each wire.
   e. Refer to proper removal and installation techniques included with your spark plug purchase.
4. SPDi should only be installed on engines in good operating condition. Engine defects should be corrected (repaired) prior to SPDi installation.
5. **Hazard**: The SPDi module does not contain any user replaceable parts. Do not attempt to open, dismantle or modify the SPDi module for any reason. An electrical shock risk exists even when the unit is not powered.

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