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SPARK PLUGS

NGK SPARK PLUG

NGK SPARK PLUG NUMBERING SYSTEM

Bombardier uses the NGK spark plug brand on all its snowmobile models.

The heat range identification system is:

Low number —————▶ hot plug

High number —————▶ cold plug

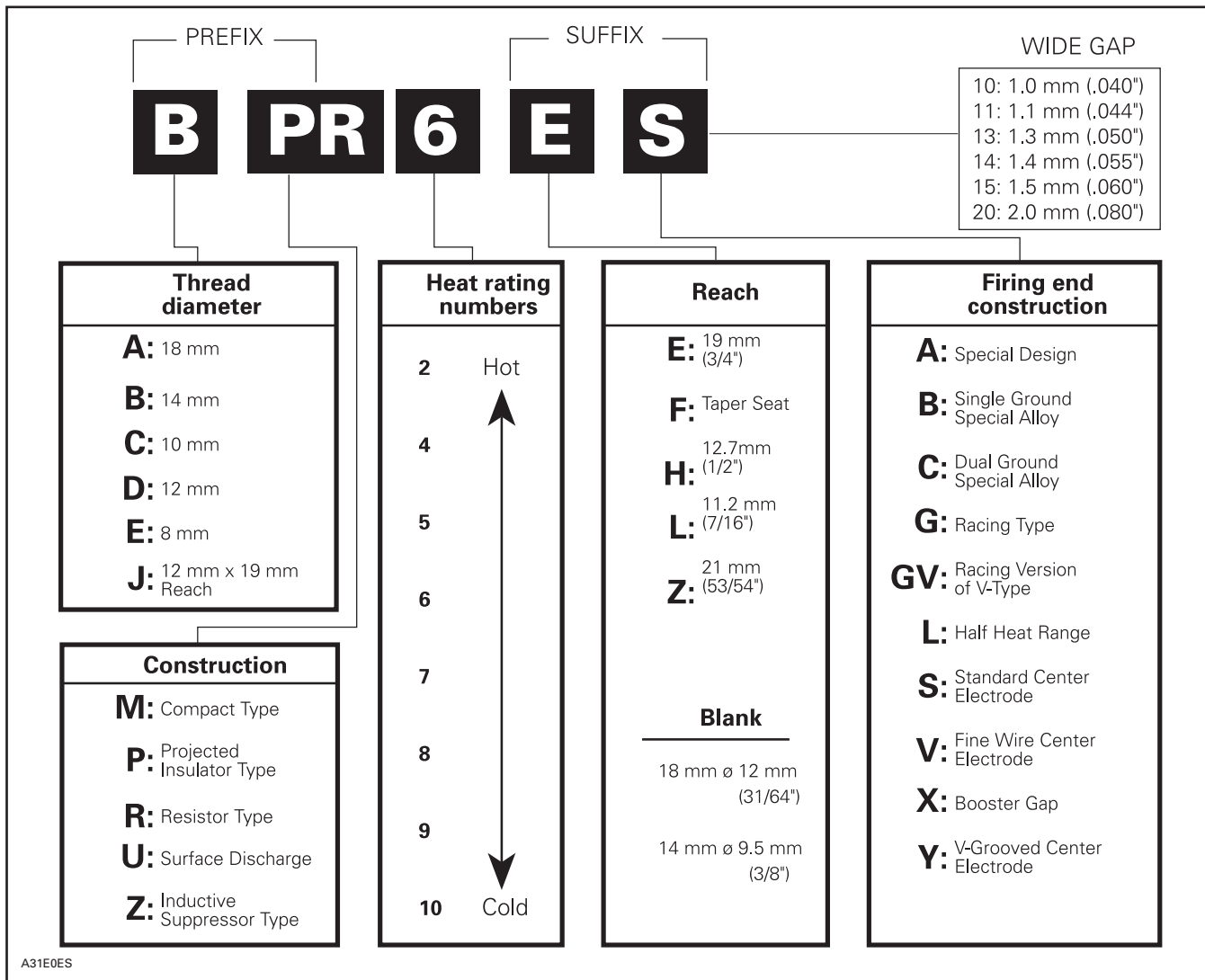
REFERENCE CHART

NGK spark plug used on Bombardier Mini Z snowmobile is covered in this manual:

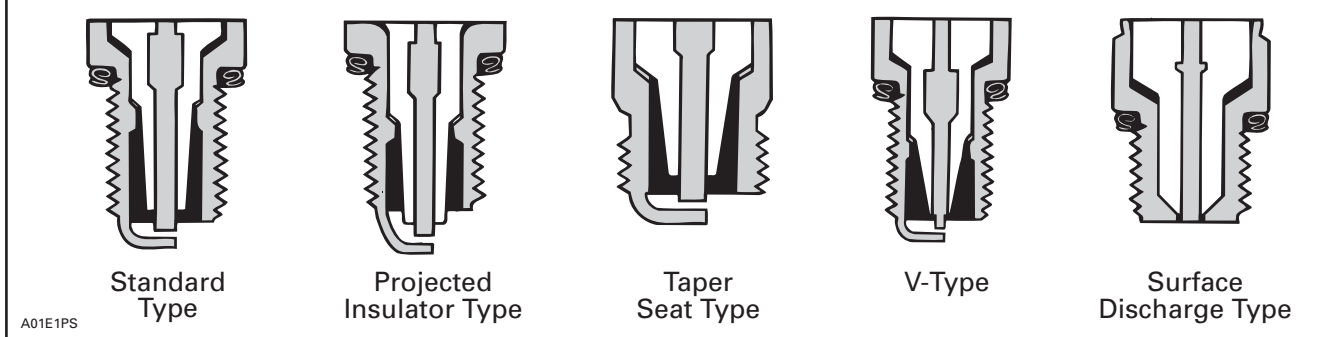
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Section 06 ELECTRICAL
Subsection 02 (SPARK PLUGS)

DESIGN SYMBOLS USED IN NGK SPARK PLUGS



CROSSCUTS AND GAP STYLES OF SPARK PLUGS



DISASSEMBLY

First unscrew the spark plug 1 turn.

Clean the spark plug and cylinder head with pressurized air, then completely unscrew.

WARNING

Whenever using compressed air, always wear protective eye wear.

HEAT RANGE

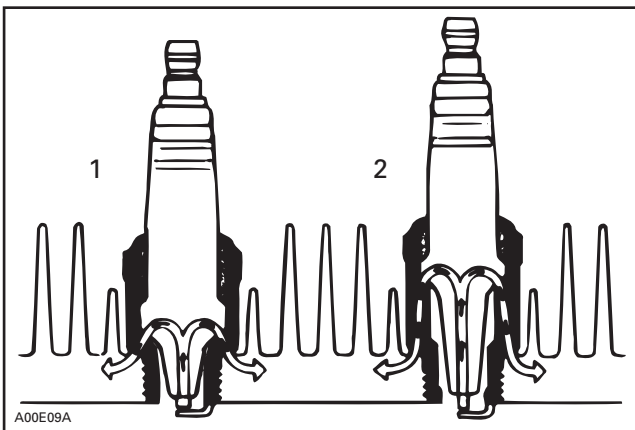
The proper operating temperature or heat range of the spark plugs is determined by the spark plug ability to dissipate the heat generated by combustion.

The longer the heat path between the electrode tip to the plug shell, the hotter the spark plug operating temperature will be — and inversely, the shorter the heat path, the colder the operating temperature will be.

A “cold” type plug has a relatively short insulator nose and transfers heat very rapidly into the cylinder head.

Such a plug is used in heavy duty or continuous high speed operation to avoid overheating.

The “hot” type plug has a longer insulator nose and transfers heat more slowly away from its firing end. It runs hotter and burns off combustion deposits which might tend to foul the plug during prolonged idle or low speed operation.



1. Cold
2. Hot

CAUTION: Severe engine damage might occur if a wrong heat range plug is used.

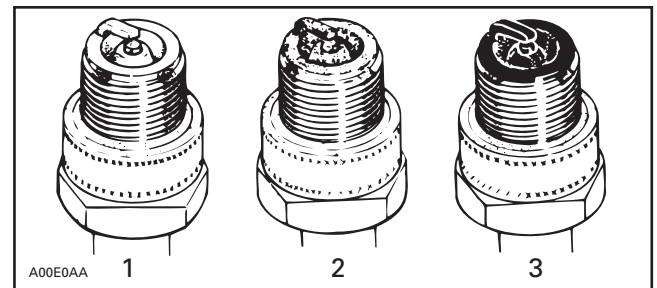
A too “hot” plug will result in overheating and pre-ignition, etc.

A too “cold” plug will result in fouling (shorting the spark plug) or may create carbon build up which can heat up red-hot and cause pre-ignition or detonation.

FOULING

Fouling of the spark plug is indicated by irregular running of the engine, decreased engine speed due to misfiring, reduced performance, and increased fuel consumption. This is due to a loss of compression. Other possible causes are: prolonged idling, or running on a too rich mixture due to a faulty carburetor adjustment or incorrect fuel and/or fuel mixing. The plug face of a fouled spark plug has either a dry coating of soot or an oily, glossy coating given by an excess either of oil or of oil with soot. Such coatings form a conductive connection between the center electrode and ground.

SPARK PLUG ANALYSIS



1. Overheated (light grey)
2. Normal (brownish)
3. Fouled (black)

The plug electrode and piston dome reveal the condition of the engine, operating condition, method of driving and fuel mixture. For this reason it is advisable to inspect the spark plug at regular intervals, examining the plug electrode and the piston dome.

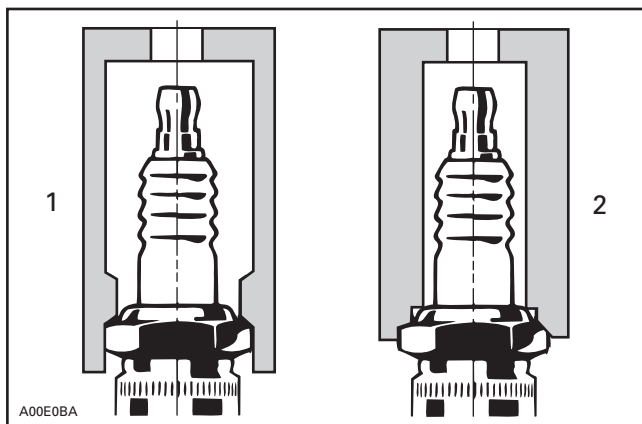
Section 06 ELECTRICAL

Subsection 02 (SPARK PLUGS)

SPARK PLUG INSTALLATION

Prior to installation make sure that contact surfaces of the cylinder head and spark plug are free of grime.

1. Using a wire feeler gauge, set electrode gap according to TECHNICAL DATA 10.
2. Apply anti-seize lubricant (P/N 413 701 000) over the spark plug threads to prevent possible seizure.
3. Hand screw spark plug into cylinder head and tighten with a torque wrench and a proper socket.



1. Proper socket
2. Improper socket

SPARK PLUG TIGHTENING TORQUE

MODELS	SPARK PLUGS	TORQUE N•m (lbf•ft)
All models	NGK	27 (20)

TESTING PROCEDURE

IGNITION SYSTEM TESTING SEQUENCE

In the case of ignition problems, check the following in the prescribed order until the problem can be solved.

1. Sparking/spark plug condition
2. Electrical connectors
3. Ignition switches, tether cord cap switch and emergency switch
4. Ignition coil resistance

LIGHTING SYSTEM TESTING SEQUENCE

1. Electrical connectors
2. Lamp coil resistance

Analysis of Readings

Resistance Readings

Place multimeter selector switch to Ω in order to measure resistance. Readings must be within the indicated range. Otherwise, the part is considered to be defective and must be replaced.

CAUTION: When taking measurements, it is useless to try to start the vehicle since readings would then be distorted.

Intermittent Ignition Problems

It is difficult to make a diagnostic in the case of intermittent ignition problems. Thus, problems occurring only when the engine operating temperature is normal must be checked in similar conditions.

In most cases when problems are caused by temperature or vibrations, these can only be solved by replacing parts. Most problems cannot be detected when the engine is stopped.

Multiple Problems

As a matter of fact, more than one component can be defective. As a result, if the problem remains although a part was replaced, start over the whole verification from the beginning in order to identify the other defective component.

1. SPARKING

During this operation, it is important to use the snowmobile spark plug and not a new one. Bring the plug in contact with the engine. If no spark is produced, replace the spark plug with a new one and do the test again.

2. ELECTRICAL CONNECTOR TESTING

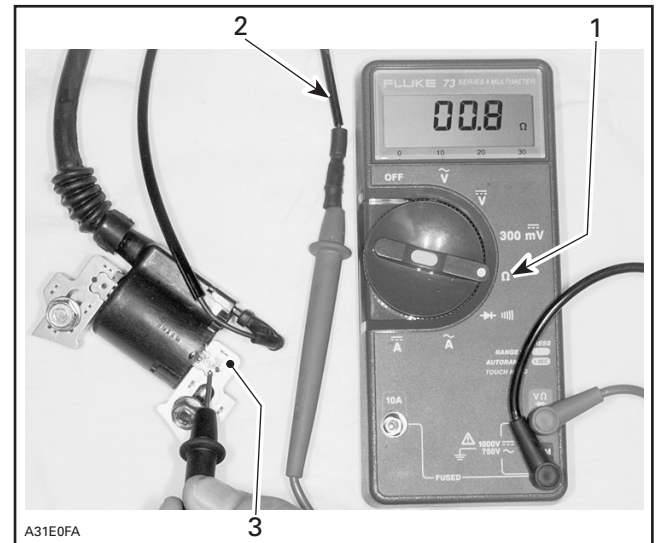
Make sure that none of the connectors are disconnected.

3. IGNITION COIL TESTING

Primary Side

Bring multimeter selector switch to Ω position.

Connect first multimeter probe to ignition coil primary black wire then second probe to ignition coil iron core, as shown in the next photo.



PRIMARY SIDE TESTING

1. Multimeter to Ω position
2. Ignition coil primary black wire
3. Ignition coil iron core

The measured resistance should be according to the following table. If not, replace ignition coil.

PRIMARY SIDE RESISTANCE VALUE	0.8 - 1.0 Ω
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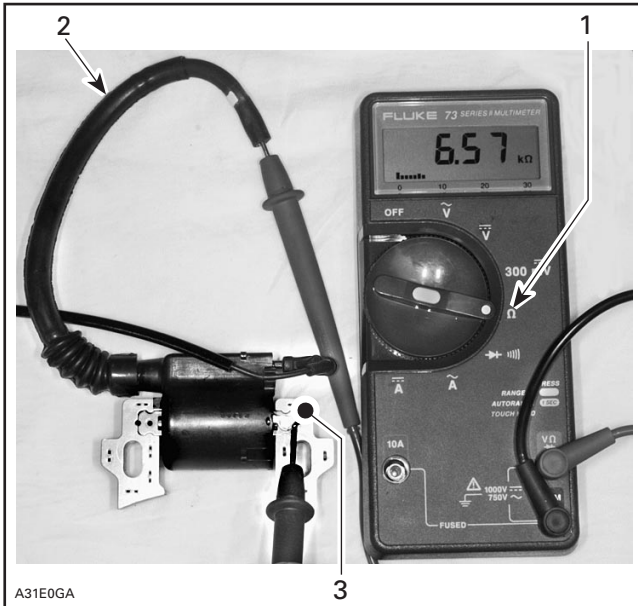
Subsection 03 (TESTING PROCEDURE)

Secondary Side

Bring multimeter selector switch to Ω position.
Remove spark plug cap by unscrewing cap from cable.

NOTE: A false resistance reading will result if spark plug cap is not removed.

Connect first multimeter probe to spark plug lead wire then second probe to ignition coil iron core, as shown in the next photo.



SECONDARY SIDE TESTING

1. Multimeter to Ω position
2. Spark plug lead wire
3. Ignition coil iron core

The measured resistance should be according to the following table. If not, replace ignition coil.

SECONDARY SIDE RESISTANCE VALUE	5.9 - 7.1 k Ω
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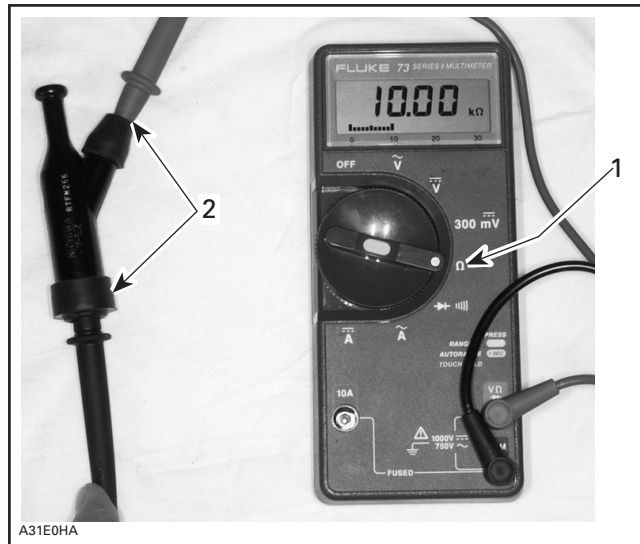
4. SPARK PLUG CAP TESTING

Remove spark plug cap by unscrewing cap from cable.

NOTE: A false resistance reading will result if spark plug cap is not removed.

Bring multimeter selector switch to Ω position.

Connect first multimeter probe to one end of the spark plug cap then second probe to the other end as shown in the next photo.



SPARK PLUG CAP TESTING

1. Multimeter to Ω position
2. Spark plug cap end

The measured resistance should be according to the following table. If not, replace spark plug cap.

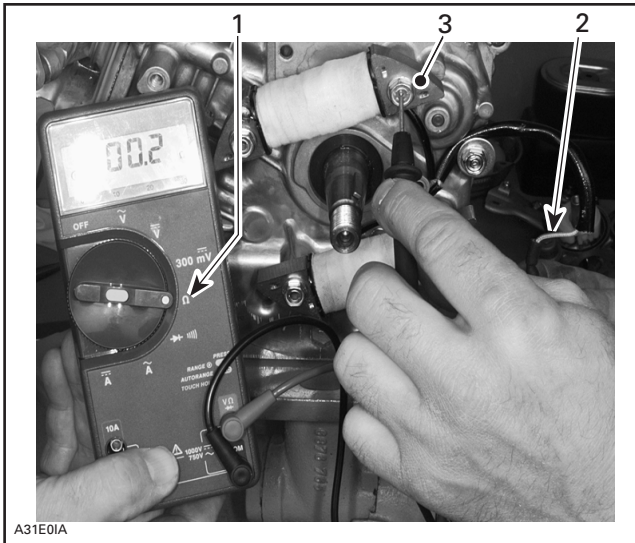
RESISTANCE	7.5 - 12.5 k Ω
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5. LAMP COIL TESTING

NOTE: Lamp coil is parallel 2 coils type.

Bring multimeter selector switch to Ω position.

Connect first multimeter probe to pink wire then second probe to lamp coil iron core, as shown in the next photo.



LAMP COIL TESTING

1. Multimeter to Ω position
2. Pink wire
3. Lamp coil iron core

The measured resistance should be according to the following table. If not, replace lamp coil.

RESISTANCE	0.18 - 0.23 Ω
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