



THE IGNITION SPECIALIST™

NGK ***Ener-GX***™



Industrial Spark Plug



Cross Reference

		NGK Ener-GX™		
		Economy	Commercial	Professional
Bosch	7313	CT1-70	CT2-40	CT3-40
	7311		CT2-40	CT3-40
	7321		DT1-40	DT2-40
	7305			AS2-25*
	7306		AS1-25* / AS3-25**	AS2-25*
Champion	RN5C	CT1-70	CT2-40	CT3-40
	RN79G		CT2-40	CT3-40
	RC78PYP		DT1-40	DT2-40
	RC78PYP15		DT1-40	DT2-40
	RC78WYP		DT1-40	DT2-40
	RC78WYP15		DT1-40	DT2-40
	RB77WPCC		AS1-25* / AS3-25**	AS2-25*
	FB77WPCC		AS1-25* / AS3-25**	AS2-25*
	FB77WW		AS1-25* / AS3-25**	AS2-25*
	FB76WW			AS2-25*
Denso	GE3-1		CT2-40	CT3-40
	GE3-5A		CT2-40	CT3-40
	GK3-1		DT1-40	DT2-40
	GK3-5			DT2-40
	GI3-1			AS2-25*
	GI3-3		AS1-25* / AS3-25**	AS2-25*
	GI3-5			AS2-25*

*Not for pre-chamber engines.

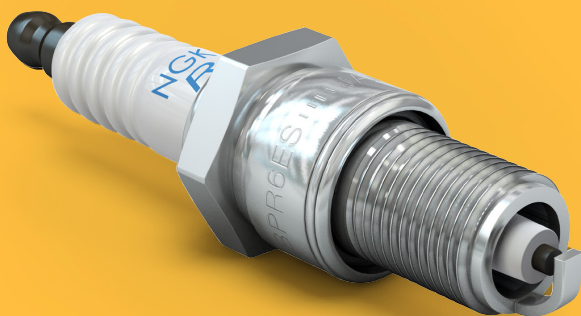
**Applicable for open/pre-chamber engines.

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NGK is the world's #1 OE manufacturer
of spark plugs and the pioneer of
innovative spark plug technology.



The NGK brand.

NGK delivers technologically strong and top-quality spark plugs under the NGK Spark Plugs brand — the sign of reliability since 1936. NGK spark plugs is chosen by both OE and consumers.




For industrial users.

NGK knows that the needs for industrial spark plugs require quality, reliability and durability. NGK offers spark plugs designed to improve your standard with reliable technology and OE quality production.

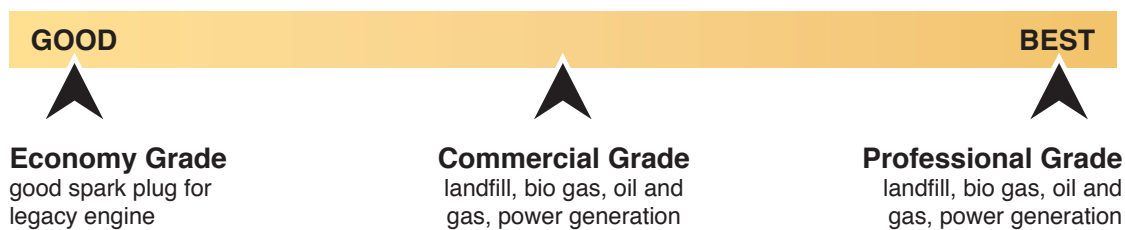
NGK
Ener-GXTM



Ener-GX™ Lineup

	A Type	C Type	D Type
			
Professional	AS2-25	CT3-40	DT2-40
Commercial	AS1-25 / AS3-25	CT2-40	DT1-40
Economy	-	CT1-70	-

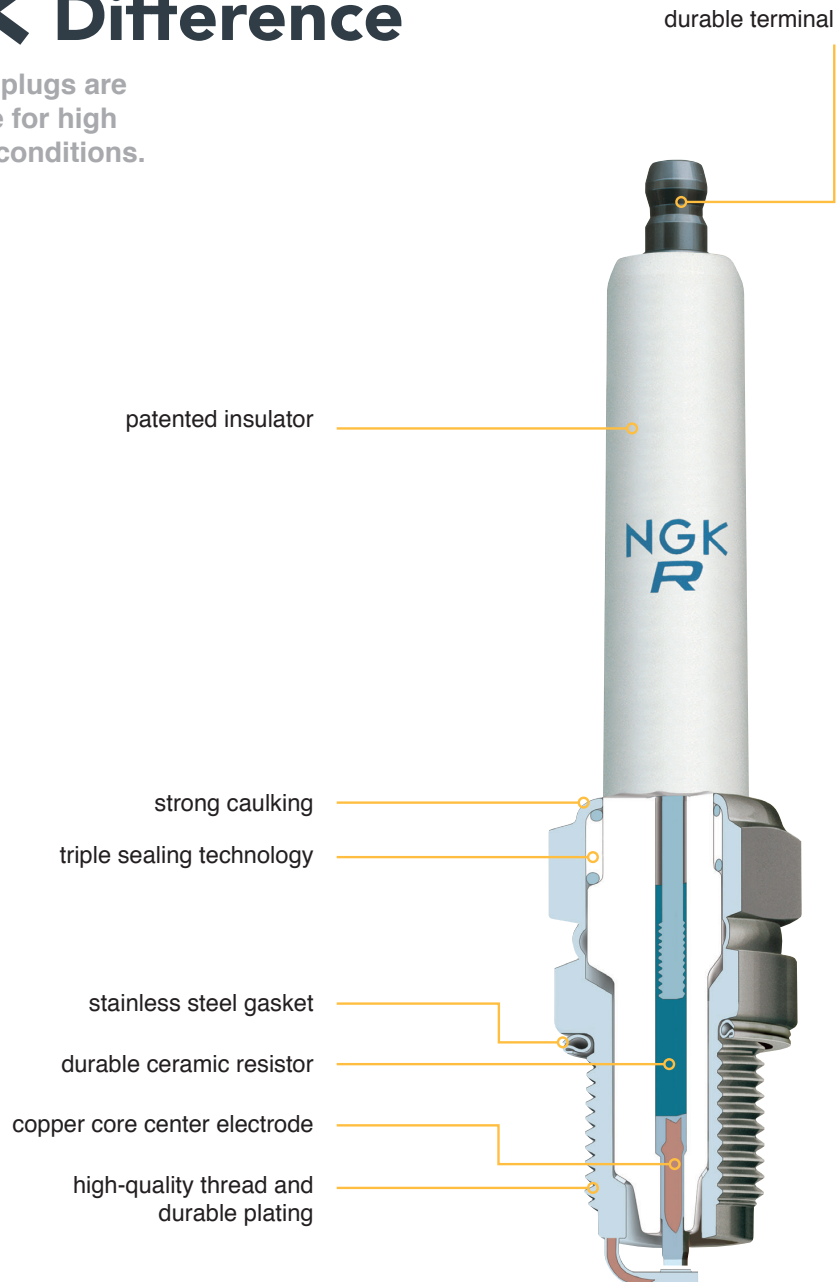
Durability Scale



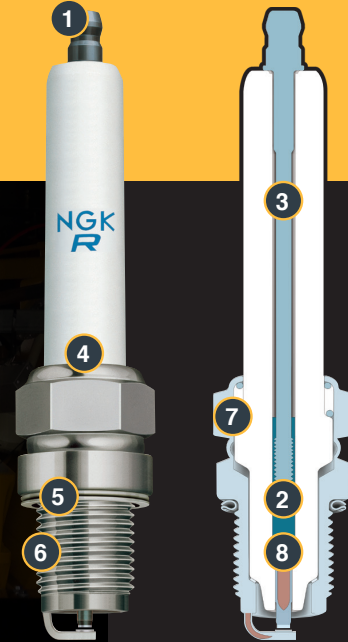
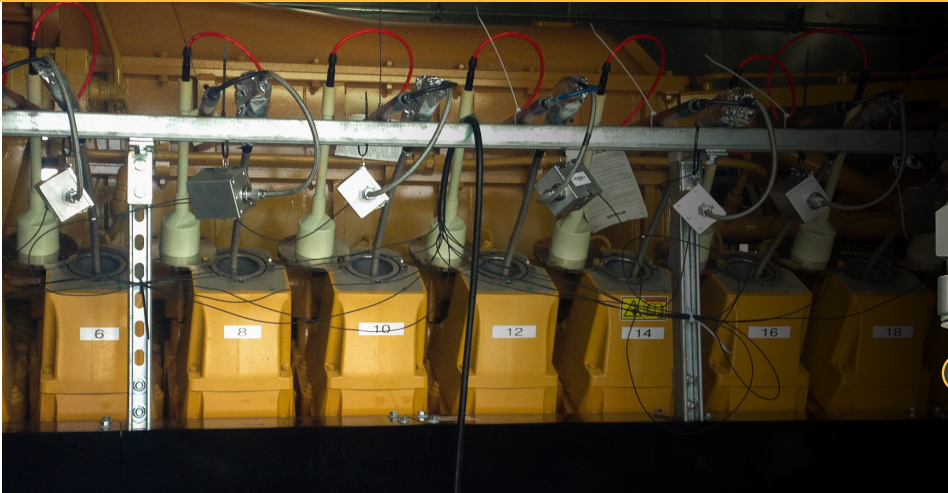
A Type Components

The NGK Difference

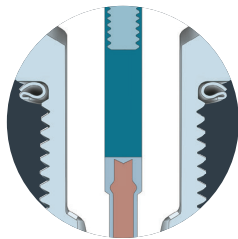
NGK Ener-GX™ spark plugs are designed to be reliable for high performance in harsh conditions.



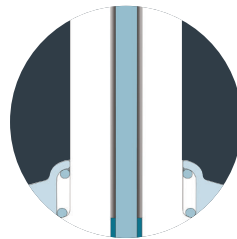
A Type Components



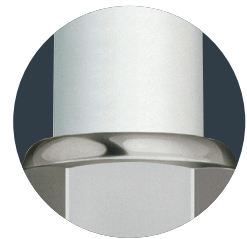
1 Durable Terminal
ensures connection to coil every time; hard terminal performs even under the heaviest vibrations



2 Durable Resistor
NGK's glass-sealed resistor guarantees stable performance under high temperatures and high voltages



3 Patented Insulators
ensures dielectric and physical strength; patented in-house-made ceramic properties establishes proper heat transfer



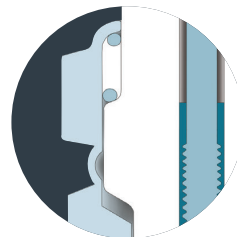
4 Strong Caulking
NGK's cold-crimping technology provides absolute locking of insulator to shell, virtually eliminating the possibility of dislodging



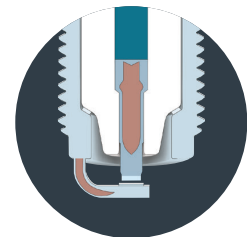
5 Stainless Steel Gasket
provides enhanced sealing and thermal conductivity at high temperatures



6 High Quality Thread and Plating
superior quality nickel plating resists corrosion on the shell and ensures smooth installation



7 Triple Sealing Technology
airtight seal holds compression under heavy combustion



8 Solid Copper Core Center Electrode
deeply inserted in the center electrode for improved thermal conductivity

A Type Components

Rapid Heat Transfer and Durability

Extra Wide Ground Electrode

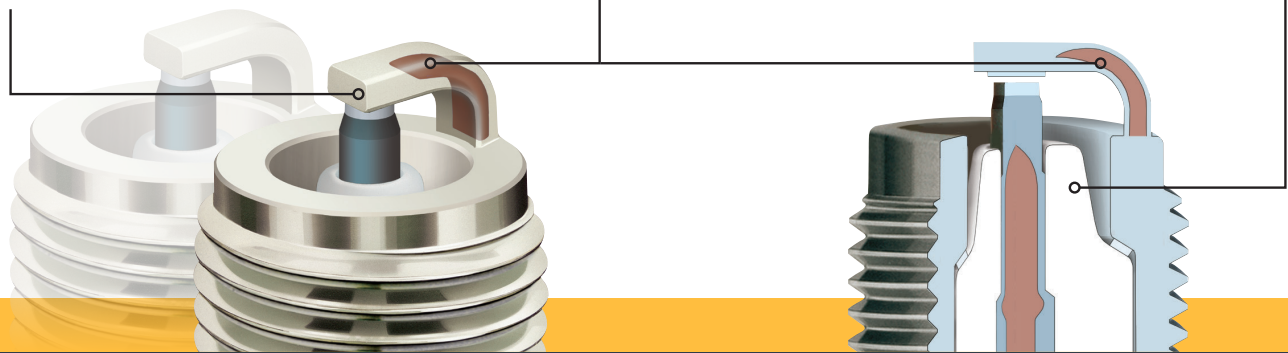
sophisticated patented nickel alloy performs under high temperature and pressure

Patented 3-Layer Copper Core

copper core technology ensures rapid heat transfer

Optimized Insulator Shape

ensures physical and thermal strength, and prevents side-spark



Efficient Overall Design

AS1-25 / AS2-25

Securely Welded Pad

precious metal pad, adhered through NGK's powerful welding technology, increases longevity of the spark plug

Maximized Gas Volume Design

ensures good combustion; wider design increases flame expansion after spark discharge

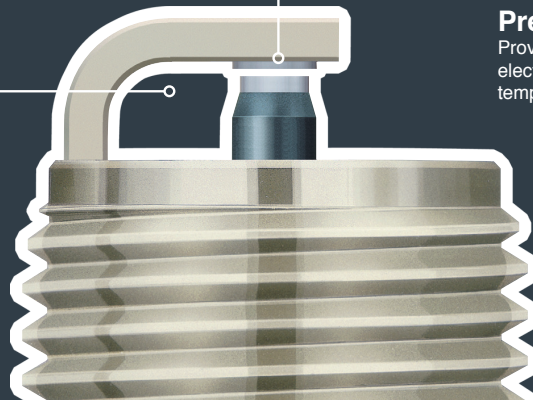
AS3-25

Laser-Weld Precious Metal Tip

NGK's superior welding technology guarantees stable longevity

New Generation Precious Metal

Provides superior resistance against electrode wear in high combustion temperature environments



A Type Grades

There isn't one tool for every application. NGK knows professional operators look for the best tool to secure their specific engine operation.

Professional Grade



AS2-25

- ▼ 2.5mm center electrode tip
- ▼ 3.0mm ground electrode pad
- ▼ super-wide ground electrode
- ▼ best durability
- ▼ best for long operation on landfill and bio gas
- ▼ best for very long operation on oil & gas

Commercial Grade



- ▼ super-wide ground electrode
- ▼ better durability
- ▼ better for landfill and bio gas
- ▼ better for long operation on oil & gas

AS1-25 (for single-chamber engines)

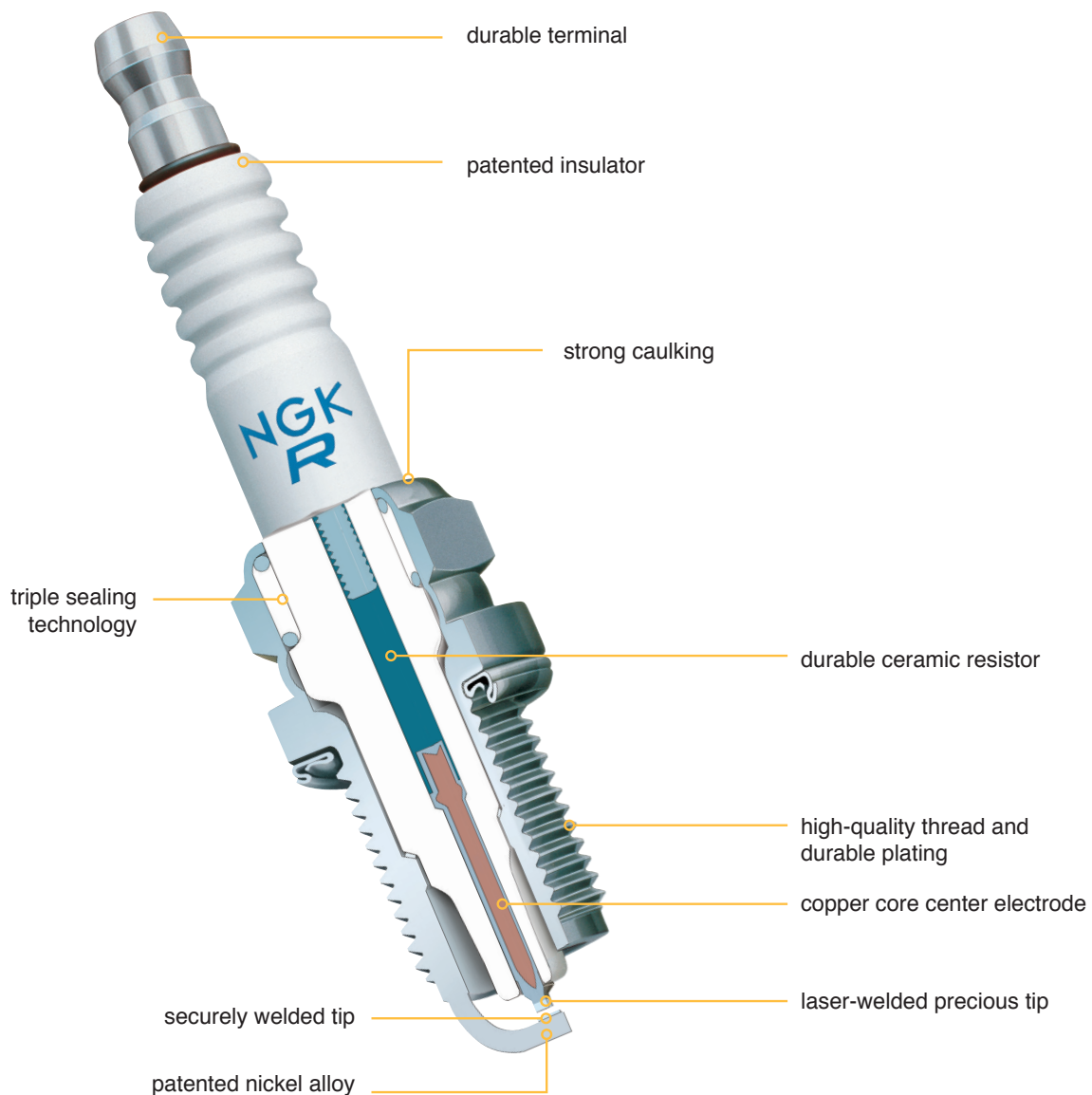
- ▼ 1.8mm center electrode tip
- ▼ 2.6mm ground electrode pad

AS3-25 (for single and pre-chamber engines)

- ▼ 1.6mm center electrode tip
- ▼ 1.8mm square ground electrode pad
- ▼ high ignitability ground electrode design
- ▼ new generation metal for resistance against electrode wear

C & D Type Components

The **NGK** Difference



C & D Type Grades

Professional Grade (C and D)

- ▼ best durability
- ▼ best for long operation on landfill and bio gas
- ▼ best for very long operation on oil & gas and power generation



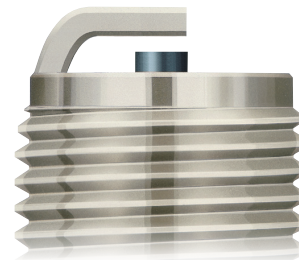
Commercial Grade (C and D)

- ▼ better durability
- ▼ better for landfill and bio gas
- ▼ better for long operation on oil & gas and power generation



Economy Grade (C only)

- ▼ good for legacy engines



Application Chart



Make	Model	Thread Diameter	Thread Reach	NGK Ener-GX™		
				Economy	Commercial	Professional
Ariel	JGS-1 High Tension	14mm	14mm	---	CT2-40	CT3-40
	JGS-1 LOW TENSION	14mm	14mm	---	CT2-40	CT3-40
Arrow	VRG220, VRG330	14mm	14mm	---	CT2-40	CT3-40
CAT	G3304B	14mm	14mm	---	CT2-40	CT3-40
	G3306B	14mm	14mm	---	CT2-40	CT3-40
	G3406	14mm	14mm	---	CT2-40	CT3-40
	G3408	14mm	14mm	---	CT2-40	CT3-40
	G3408C	14mm	14mm	---	CT2-40	CT3-40
	G3412	14mm	14mm	---	CT2-40	CT3-40
	G3412C	14mm	14mm	---	CT2-40	CT3-40
	G3508	18mm	20.6mm	---	AS1-25	AS2-25
	G3508B	18mm	20.6mm	---	AS1-25	AS2-25
	G3512	18mm	20.6mm	---	AS1-25	AS2-25
	G3512B	18mm	20.6mm	---	AS1-25	AS2-25
	G3516	18mm	20.6mm	---	AS1-25	AS2-25
	G3516B	18mm	20.6mm	---	AS1-25	AS2-25
	G3516J	18mm	20.6mm	---	AS1-25	AS2-25
	G3520B	18mm	20.6mm	---	AS1-25	AS2-25
	G3520C	18mm	20.6mm	---	AS1-25	AS2-25
	G3606	18mm	20.6mm	---	AS3-25	---
	G3606A4	18mm	20.6mm	---	AS3-25	---

Make	Model	Thread Diameter	Thread Reach	NGK Ener-GX™		
				Economy	Commercial	Professional
CAT	G3608	18mm	20.6mm	---	AS3-25	---
	G3608A4	18mm	20.6mm	---	AS3-25	---
	G3612	18mm	20.6mm	---	AS3-25	---
	G3612A4	18mm	20.6mm	---	AS3-25	---
	G3616	18mm	20.6mm	---	AS3-25	---
	G3616A4	18mm	20.6mm	---	AS3-25	---
Chrysler	HB361, HB383, HC361, HT361	14MM	14MM	CT1-70	CT2-40	CT3-40
	HB413, HC413, HB170	14MM	14MM	CT1-70	CT2-40	CT3-40
	HT413, HB426, HC426, H170	14MM	14MM	CT1-70	CT2-40	CT3-40
	IND53, IND56, IND56A	14MM	14MM	CT1-70	CT2-40	CT3-40
	THRU 1974 H225, HB225	14MM	14MM	CT1-70	CT2-40	CT3-40
	LH318	14MM	14MM	CT1-70	CT2-40	CT3-40
	H170, HB170, H225, HB225	14MM	14MM	CT1-70	CT2-40	CT3-40
	H318, HB318, HC318, HT318	14MM	14MM	CT1-70	CT2-40	CT3-40
	HB361, HB383, HC361, HT361	14MM	14MM	CT1-70	CT2-40	CT3-40
	HB413, HC413, HT413, HB426, HC426	14MM	14MM	CT1-70	CT2-40	CT3-40
CUMMINS	6B W/230HP	14MM	12.7MM	---	DT1-40	DT2-40
	6C	14MM	12.7MM	---	DT1-40	DT2-40
	FTA19GC SLB	18MM	20.6MM	---	AS1-25	AS2-25
	G3.9	14MM	12.7MM	---	DT1-40	DT2-40
	G5.9	14MM	12.7MM	---	DT1-40	DT2-40
	G5.9E	14MM	12.7MM	---	DT1-40	DT2-40
	G8.3	14MM	12.7MM	---	DT1-40	DT2-40
	G8.3E	14MM	12.7MM	---	DT1-40	DT2-40
	G855	18MM	20.6MM	---	AS1-25	AS2-25
	G855E	18MM	20.6MM	---	AS1-25	AS2-25
	GTA 8.3	14MM	12.7MM	---	DT1-40	DT2-40
	GTA 8.3 SLB	14MM	12.7MM	---	DT1-40	DT2-40
	GTA855	18MM	20.6MM	---	AS1-25	AS2-25
	GTA855E	18MM	20.6MM	---	AS1-25	AS2-25

Application Chart

Make	Model	Thread Diameter	Thread Reach	NGK Ener-GX™		
				Economy	Commercial	Professional
CUMMINS	KTA19GC	18MM	20.6MM	---	AS1-25	AS2-25
	KTA38GC SLB	18MM	20.6MM	---	AS1-25	AS2-25
	L-10	14MM	12.7MM	---	DT1-40	DT2-40
	Q19G	18MM	20.6MM	---	AS1-25	AS2-25
	QSV81-V16	18MM	20.6MM	---	AS1-25	AS2-25
	QSV 91-V18	18MM	20.6MM	---	AS1-25	AS2-25
DETROIT	149 SERIES	18MM	20.6MM	---	AS1-25	AS2-25
	30, 40, 50 SERIES	14MM	12.7MM	---	DT1-40	DT2-40
DEUTZ MWM	G620 V-8, TBG16 V-8, TBG616 V-12	18MM	20.6MM	---	AS1-25	AS2-25
	TBG616K V-8K, TBG616K V-12, TBG616K V16	18MM	20.6MM	---	AS1-25	AS2-25
	TBG620 V8, TBG620 V-12, TBG620 V-16	18MM	20.6MM	---	AS1-25	AS2-25
	TBG620K V-12, TBG620K V-16K	18MM	20.6MM	---	AS1-25	AS2-25
ENTERPRISE	GSC-36, 38; GSM-36, 38	18MM	20.6MM	---	AS1-25	AS2-25
	TDSG 36-6-36 (REAR SIDE OF HEAD)	18MM	20.6MM	---	AS1-25	AS2-25
FORD	158, 175, 201, 256 CID	14MM	14MM	CT1-70	CT2-40	CT3-40
GM	305, 351, 401, 478, 702 GASOLINE	14MM	14MM	CT1-70	CT2-40	CT3-40
	305, 351, 401, 478, 702 LPG	14MM	14MM	CT1-70	CT2-40	CT3-40
GUASCOR	FG180, FGLD180, FG240	18MM	20.6MM	---	AS1-25	AS2-25
	FGLD240, FGLD360, FGLD480	18MM	20.6MM	---	AS1-25	AS2-25
	HGM 560	18MM	20.6MM	---	AS1-25	AS2-25
	SFGLD 180, SFGLD 240, SFGLD 360, SFGLD 480, SFGLD 560	18MM	20.6MM	---	AS1-25	AS2-25
HERCULES	GTA 3.7, GTA 5.6	14MM	12.7MM	---	DT1-40	DT2-40
	G4800, GTA 4800	14MM	12.7MM	---	DT1-40	DT2-40
INTERNATIONAL	C-537, C-605 GASOLINE	14MM	14MM	CT1-70	CT2-40	CT3-40

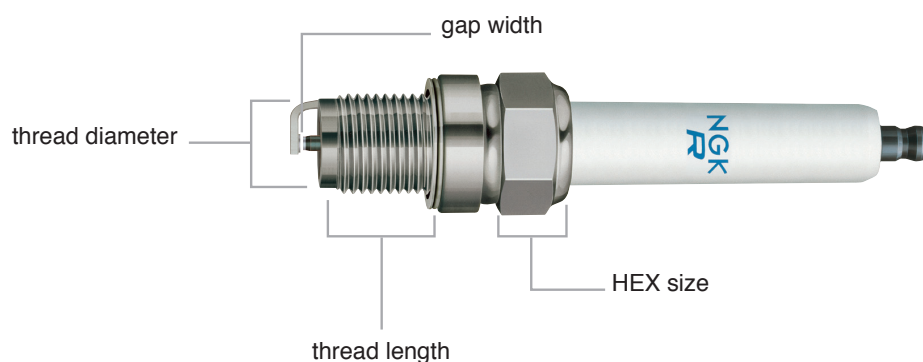
Make	Model	Thread Diameter	Thread Reach	NGK Ener-GX™		
				Economy	Commercial	Professional
INTERNATIONAL	C-537, C-605 CNG, LPG	14MM	14MM	CT1-70	CT2-40	CT3-40
JENBACHER	J208 8-CYL, J212 12-CYL	18MM	20.6MM	---	AS1-25	AS2-25
	J216 16-CYL, J312 12-CYL	18MM	20.6MM	---	AS1-25	AS2-25
	J316 16-CYL, J320 20-CYL	18MM	20.6MM	---	AS1-25	AS2-25
	J612 12-CYL AFTER 9/95	18MM	20.6MM	---	AS1-25	AS2-25
	J612 12-CYL THRU 8/95	18MM	20.6MM	---	AS1-25	AS2-25
	J616 16-CYL AFTER 9/95	18MM	20.6MM	---	AS1-25	AS2-25
	J616 16-CYL THRU 8/95	18MM	20.6MM	---	AS1-25	AS2-25
JOHN DEERE	300 SERIES CNG/ LPG	14MM	14MM	CT1-70	CT2-40	CT3-40
	607AFN30 (150HP & 200HP)	14MM	12.7MM		DT1-40	DT2-40
J-W POWER	SUPERBURN PRE-CELL	14MM	14MM	CT1-70	CT2-40	CT3-40
MAN NUTZFAHRZEUGE	E 0824 - E 301, E 302	14MM	14MM	---	CT2-40	CT3-40
	E 0826 - E301, E302	14MM	14MM	---	CT2-40	CT3-40
	E 0834	14MM	12.7MM		DT1-40	DT2-40
	E 2482, E 2842, E & LE	14MM	14MM	---	CT2-40	CT3-40
	E 2843 LN	14MM	14MM	---	CT2-40	CT3-40
	E 2866 DUH03	14MM	14MM	---	CT2-40	CT3-40
	E2866 LUH01	14MM	14MM	---	CT2-40	CT3-40
NORDBERG (HATCH & KIRK)	FSE96 NATURAL GAS	18MM	20.6MM	---	AS1-25	AS2-25
PERKINS	4000 SERIES	18MM	20.6MM	---	AS1-25	AS2-25
	900 SERIES	14MM	12.7MM	---	DT1-40	DT2-40
SACM	MODEL 175 1996 & UP	14MM	12.7MM	---	DT1-40	DT2-40
	MODEL UD30 THUR 1994	14MM	12.7MM	---	DT1-40	DT2-40
SUPERIOR	1706G2, 1712G1	18MM	20.6MM	---	AS1-25	AS2-25
WARTSILLA	MODEL 175 AFTER 1994	14mm	12.7MM	---	DT1-40	DT2-40

Application Chart

Make	Model	Thread Diameter	Thread Reach	NGK Ener-GX™		
				Economy	Commercial	Professional
WARTSILLA	MODEL 34SG	18MM	20.6MM	---	AS1-25	AS2-25
	MODEL W20V	18MM	20.6MM	---	AS1-25	AS2-25
	MODEL W25SG, W28SG, W34SG	18MM	20.6MM	---	AS1-25	AS2-25
WAUKESHA	8L-AT25GL/AT27GL	18MM	20.6MM	---	AS1-25	AS2-25
	12V-AT25GL/AT27GL	18MM	20.6MM	---	AS1-25	AS2-25
	VRG220, VRG330	14MM	14MM	---	CT2-40	CT3-40
	H1077G, H1077GSI, L1616G, L1616GSI	14MM	14MM	---	CT2-40	CT3-40
	F11FG F11GS GSI/ GSID	14MM	14MM	---	CT2-40	CT3-40
	P2154G, P2154GSI	14MM	14MM	---	CT2-40	CT3-40
	VRG220, VRG330	14MM	14MM	CT1-70	CT2-40	CT3-40
	VRN265, VRN283, VRN310	14MM	14MM	CT1-70	CT2-40	CT3-40
	F18GM F18GL/GLD	18MM	20.6MM	---	AS1-25	AS2-25
	H24G, H24GL/GLD	18MM	20.6MM	---	AS1-25	AS2-25
	L36GL/GLD	18MM	20.6MM	---	AS1-25	AS2-25
	P48GL/GLD	18MM	20.6MM	---	AS1-25	AS2-25
	3521GL 13/16" REACH	18MM	20.6MM	---	AS1-25	AS2-25
	5108GL 13/16" REACH	18MM	20.6MM	---	AS1-25	AS2-25
	5790GL 13/16" REACH	18MM	20.6MM	---	AS1-25	AS2-25
	7042GL 13/16" REACH HEAD	18MM	20.6MM	---	AS1-25	AS2-25
	5115GL	18MM	20.6MM	---	AS1-25	AS2-25
	9390GL 13/16" REACH HEAD	18MM	20.6MM	---	AS1-25	AS2-25
WISCONSIN	W2-1230 THRU SERIAL#5995537	14MM	14MM	CT1-70	CT2-40	CT3-40
	W2-1235, W4-2460, W2-1250	14MM	14MM	CT1-70	CT2-40	CT3-40

Parts Identification

A	S	1	-	25
Thread and HEX Size	Thread Length	Suffix	-	Gap
A: M18x1.5 Hex 22.2	S: 20.6mm			25 = 0.25mm
B: M18x1.5 Hex 20.8	T: 19mm			40 = 0.4mm
C: M14x1.25 Hex 20.8	U: 14mm			70 = 0.7mm
D: M14x1.25 Hex 16	V: 12.7mm			

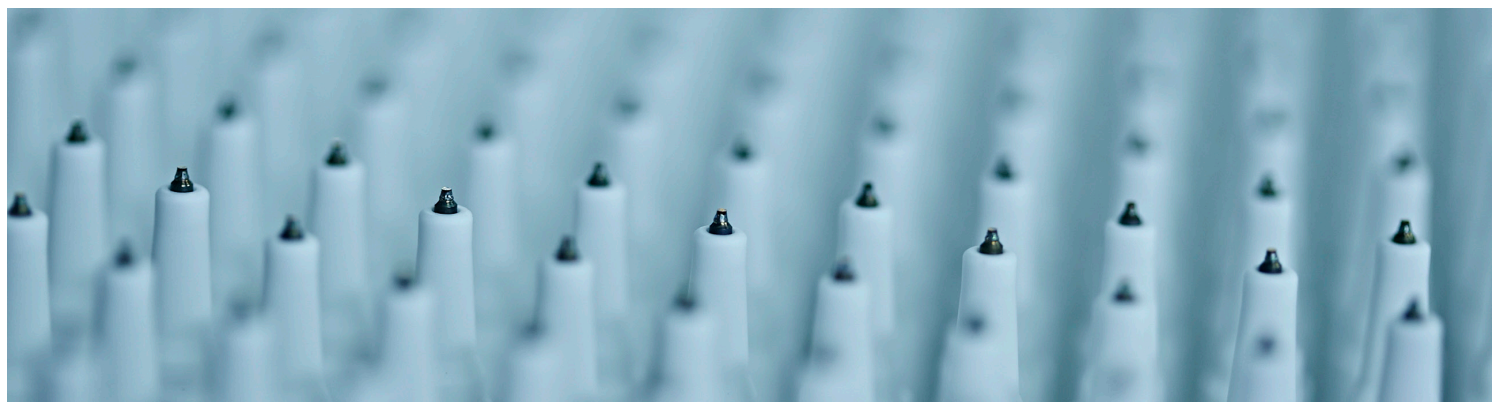


Gap Conversion

mm.	0.2	0.3	0.4	0.5	0.6	0.7
in.*	0.080	0.012	0.016	0.020	0.024	0.028

*inch measurement is rounded to the nearest thousandth

Handling Guide



Spark Plug Installation

1. Check condition and cleanliness of threads in cylinder head.
2. Install new spark plug by hand until it sets. A length of rubber tubing pushed over the insulator can be a useful aid for plug installation where access is difficult.
3. Tighten to specified torque setting as shown in the chart below.
4. If a torque wrench is unavailable, refer to engine manufacturer's installation instructions or the tightening angle advice displayed on NGK packaging.

***Anti-seize**

If you apply anti-seize compounds on the spark plug thread, please install spark plugs by using rotation angle *only*.

Tightening Torque

	Iron Head	Aluminum Head	Rotation angle after hand-tight
18mm Gasket Type	50 ± 5 Nm 37 ± 3.7 lb/ft	50 ± 5 Nm 37 ± 3.7 lb/ft	1/2 turn (180°)
14mm Gasket Type	30 ± 5 Nm 21.5 ± 3.5 lb/ft	27.5 ± 2.5 Nm 19.5 ± 1.5 lb/ft	1/2 - 2/3 turn (180° - 240°)

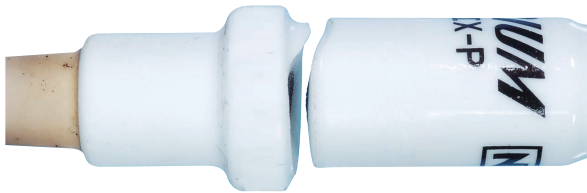
Installation Tips

- **It is important not to over or under tighten spark plugs during installation.** Over tightening can lead to distortion of the spark plug. Under tightening can lead to loosening of the spark plug and overheating.
- **Always use the correct spark plug socket** for removal and installation to prevent damage to the spark plug or engine.

Frequent Trouble

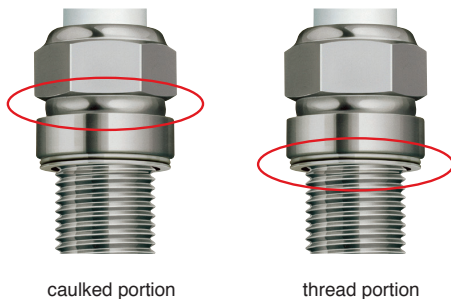
Wrench-hitting

Breakages on the insulator head can occur if an **incorrect spark plug torque wrench** is used.



Over-torquing

Distortions and breakages can occur on the caulked and thread portions of the spark plug if the **torque is excessively tightened.**





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