

P R E S S I N F O R M A T I O N

HONDA
ENGINES

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ENGINES



Dear Editor:

The Honda Engines team is pleased to present our new full line press kit for 2011. The enclosed booklet and CD contain a comprehensive overview of all general purpose Honda Engine models, background information, and detailed product specifications and photography.

This booklet is designed to provide thumbnail overviews of each of our engine product families – the GC Series, the GS Series, the GX Series, Mini-Four Stroke and our V-Twin models. The table of contents will guide you to the corresponding product pages, and additional material and photography are contained and categorized on the enclosed CD.

The contents of this kit also are housed at www.hondanews.com. We encourage you to visit the site throughout the year for the latest news, updates and downloadable high-resolution images on Honda and our products. As always, we hope you will feel free to contact us if you require any additional information or materials.

Kind regards,



Sara Pines
Honda Public Relations




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What's New

One Engine for All

Honda continuously works to meet future, lower EPA and CARB standards regarding the performance of its products. In January 2007, Honda Engines began certifying its models to the new, lower California Air Resources Board (CARB) 2007 standards, existing EPA Phase 2 emission requirements and offering 50 state compliant engines. Investing in meeting the strictest of environmental requirements in the development of one engine for use in all 50 states reflects Honda's forward thinking on emission regulations, air quality and the needs of its customers. Moreover, Honda engines meet the new CARB exhaust and evaporative emissions requirements without the use of a catalytic converter.

As a result, the overall emission levels from Honda engines have been reduced by more than 32 percent compared to 1995. Further, the EPA has finalized a new emission control program to reduce hydrocarbon emissions from small spark-ignition engines by approximately 35 percent. The new exhaust emissions standards take effect in 2011 or 2012, depending on the size of the engine. The final rule also includes new standards to reduce evaporative emissions.

Defining Net Power in Honda Engines

The SAE J1349 standard measures net horsepower with the manufacturer's production muffler and air cleaner in place. Net horsepower more closely correlates with the power the operator will experience when using a Honda engine powered product. The power rating of the engines indicated in this document is the net power output tested on a production engine for the model noted and measured at the rpm specified. Mass production engines may vary from this value. Actual power output for the engine installed in the final machine will vary depending on numerous factors, including the operation speed of the engine in application, environmental conditions, maintenance and other variables.

GC Series Engines

Consistent, dependable power.

[Fast, easy, reliable starting.]



The GC Series is Honda's solution to the need for quiet, efficient engines specifically designed for home-use power equipment applications. Honda's innovative design features – including the world's first internal timing belt on an engine of this kind, a tough nylon overhead cam, and uniblock construction – make the engines lighter and more compact than other engines in their class with significantly reduced noise, fuel and oil consumption.

Lightest engines in their class.

Combined with Honda's innovative Dualube™ lubrication system, the result is a simple, sophisticated design that minimizes the number of parts and can reduce some potential maintenance needs.

The GC Series includes the GC160/GC190 (horizontal shaft) and the GCV160/GCV190 (vertical shaft) models. Additionally, Honda also introduced electric start options on the GC/GCV160 and GC/GCV190 models, available nationally through Honda Engine distributors and to OEMs.

Applications spotlight: Honda GC Series engines are designed specifically for premium, high volume residential power equipment applications. Horizontal shaft models are ideal for a variety of consumer products, including pressure washers, water pumps, compressors, and portable generators. Vertical shaft models typically power devices like lawnmowers and pressure washers but also find applications in other residential uses.

Dramatically improved sound quality.

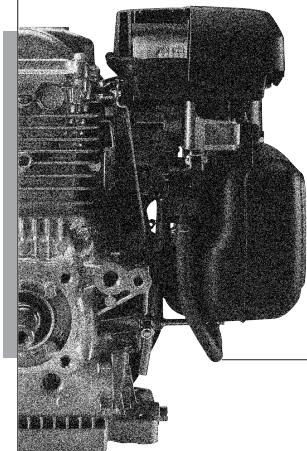
GS Series Engines

Powerful, yet lightweight.

[Long lasting durability.]

The Honda GS Series is positioned squarely between the GC Series premium residential and the GX Series commercial engines.

Capitalizing on the same basic overhead cam (OHC) architecture as Honda's extremely popular GC engines, the GS Series features uniblock construction and a unique internal timing belt design that results in the lightest and most compact package in its class. With 187 cubic centimeters of displacement, this efficient design also delivers an unparalleled power-to-weight ratio with quiet operation, and easy starting.



A whole new kind of quiet.



Overhead cam design.

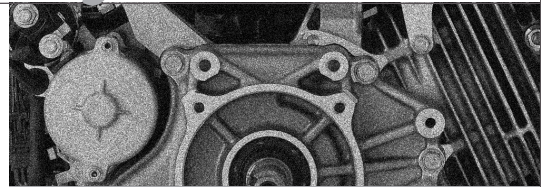
To further enhance performance and durability, Honda GS engines incorporate a cast iron cylinder sleeve and a redesigned piston with a three-piece oil control ring. Adding to the engine's commercial character, the GSV190 features ball bearings on the flywheel side of the crankshaft, while the GS190 utilizes ball bearings at both ends of the crankshaft. A dual stage air filter with an oiled pre-filter enhances engine performance in the dusty environment often created by mowing or tilling.

The Honda GS engines exemplify Honda's fundamental design philosophies of durability, quality, reliability, ease of starting and high fuel economy.

Applications spotlight: The GS190 horizontal shaft and GSV190 vertical shaft models are designed to serve both premium residential and light-duty commercial markets. Intended for use on such popular applications as pumps, blowers, lawnmowers, and tillers, these Honda models satisfy the homeowner seeking ultimate performance, and the contractor seeking a lightweight, compact package.

GX Series Engines

Premium quality.



[Maximum performance.]

The GX Series offers reliable, easy starting and fuel efficient power for a variety of commercial applications. Featuring four all-new larger models (GX240, GX270, GX340, and GX390), these engines feature a rugged OHV design that ensures a high level of durability and reliability. These models also feature a host of technologies and design elements that allow for improved power output. The engines produce six percent more power than previous models, making them among the most powerful engines in each of their respective categories. This additional power is achieved via an advanced combustion chamber design, the implementation of Digital Capacitive Discharge Ignition (CDI) with variable ignition timing, and an increased compression ratio. Although fuel efficiency is a key attribute of all Honda engines, fuel consumption in the new GX family of engines has been significantly reduced. Large GX engines, for example, increase fuel efficiency by 12 percent.

The redesigned mid GX engines – the GX120, the GX160 and the GX200 – are single-cylinder, horizontal-shaft models equipped with a number of design enhancements, including a new carburetor chamber coating; a recoil rope design change; the addition of a carburetor filter; and an improved fuel tank guard – all of which improve their fuel economy, reliability and durability. Further, these engines, while having the same existing physical dimensions and power output of the models they replace, boast increased performance resulting, in part, from the incorporation of these innovative features:

- *improved fuel economy through changes in valve timing, compression ratio, carburetor settings, and cooling system modifications;*
- *emissions standards met through changes in valve timing, carburetor settings, and other proprietary components;*
- *low noise levels achieved via a change in muffler structure design, breather valve, push rod materials, and crank/case cover rigidity;*
- *vibration reduction accomplished through use of a lighter engine piston.*

Applications spotlight: Larger GX engines are ideal for an array of construction, maintenance and premium power equipment – ideal for the rental market. This market relies on Honda OHV engines to ensure customer satisfaction with a minimal level of maintenance and repair. Mid GX engines are an ideal fit for an array of commercial turf applications and equipment including generators, construction / industrial equipment, agricultural equipment, water pumps, and pressure washers.

More power. Fuel efficient. Less noise.



iGX Engines

Taking intelligence to

The Honda *iGX* is a revolutionary, intelligent, computer-controlled general purpose engine that sets an even higher standard for ease of use, fuel efficiency, and quiet operation. In 2010, Honda expanded its *iGX* Series with an all-new *iGX340* and *iGX390* engine. The *iGX* Series offers further enhancements to the GX series, incorporating an electronic self tuning regulator (STR) governor. Similar to GX models, *iGX* engines also are (OHV) horizontal shaft engines, yet provide additional advanced technologies for more complex applications. In addition, the *iGX340* and 390 models feature an integrated electronic control unit (ECU) that delivers complete drive-by-wire remote control capability and controls key aspects of engine operation.





a whole new level.

Benefiting both consumers and the environment, *iGX* technology results in lower fuel consumption and lower noise through reduced total engine running time and engine speed that can be lowered based on power demands. This intelligent technology works in conjunction with the new engine's V-type valve layout and spark plug center combustion chamber to yield a fuel economy increase of approximately 15 percent compared to a similar conventional engine.

Additionally, the *iGX* is easier for users to operate, eliminating the need for manual manipulation of the choke and throttle and making it ideal for rental applications.

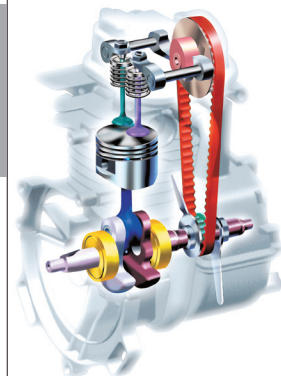
Applications spotlight: *iGX* engines are ideal for a wide range of commercial and residential power equipment applications including pressure washers, utility vehicles, water pumps, lawn tractors, generators, and welders.

Mini Four-Stroke Engines

Full 360°.

[Any-side-up operation.]

The advanced design of Honda's mini-four stroke engines, including a cross flow combustion chamber, provides a wide, smooth range of torque unique to four-stroke technology. State-of-the-art design and manufacturing techniques have reduced the number of moving parts. Many of these techniques have resulted in reduced engine weight and smoother operation for the end user.



Robust power and quick throttle response.

The Honda GX35 mini four-stroke engine is Honda's most powerful engine for handheld applications. Based on the same Honda 360-degree-inclinable mini four-stroke technology as the GX25, the 35.8cc GX35 features an oil-immersed timing belt and overhead-cam (OHC) architecture.

Unlike many two-stroke competitors, the GX35 delivers powerful output across a wide range of operating speeds with ample low-speed torque, which means that it does not always need to be operated at wide open throttle. This reduces noise and operator fatigue while substantially increasing fuel economy.

Applications spotlight: Honda mini-four stroke engines are well suited to a variety of applications from handheld and portable equipment including brush cutters, lawnmowers and pumps as well as screeds and concrete vibrators.



Quick, easy starts even after long storage.

V-Twin Engines

*More power. More compact.
Proven fuel economy.*





HONDA **V-TWIN**

Included in the GX Series are the GX OHV V-Twin engines. The most powerful engines ever offered by Honda are designed to offer customers more power and adaptability with greater fuel economy in a more compact package. Six V-Twin models (GX/GXV630, GX/GXV660 and GX/GXV690) are available in both horizontal and vertical shaft configurations.

The V-Twin features an advanced style that not only looks different from other engines in its class but provides increased functionality. The engine is more compact and offers more versatility for a greater breadth of product applications. A number of new elements, including a hemispherical combustion chamber; an integrated cylinder and cylinder head; forged steel connecting rods; a 9.3:1 compression ratio; a digital CDI with variable ignition timing; and twin barrel inner-vent carburetion contribute to an overall enhanced operation with remarkable fuel consumption and emissions performance.

Applications spotlight: Honda V-Twin engines are well-suited for light utility vehicles as well as commercial turf, construction and rental equipment applications. More specifically, Honda's V-Twin engines are designed for demanding, power-hungry, commercial applications including commercial turf equipment (zero-turn radius mowers, lawn tractors, trenchers, stump grinders and chipper/shredders); construction equipment (concrete saws, vibratory rollers, ride-on cement trowels, and generators); and pressure washers and floor buffers.

Honda Engine Technology

For decades, Honda has been a recognized leader in four-stroke engine technology, and produces 37 models in four basic series. Starting with these 37 basic models, Honda offers more than 400 variations to meet a wide variety of needs and applications.

A number of technological innovations are found in Honda Engines, as illustrated by the following chart. More information about these features and benefits can be found on the corresponding CD as well as at www.engines.honda.com and www.hondanews.com.

FEATURE	BENEFIT	MODEL(S)
Automatic mechanical de-compression system	Easy starting	All
Variable Timing Digital CDI ignition	Easy starting, high power output, and better fuel efficiency	GX, V-Twin, iGX
Oil Alert®	Better reliability	GX, V-Twin, iGX
Hemispherical combustion chamber	Better fuel efficiency and higher output	V-Twin
Integrated cylinder and head	Improved reliability and combustion	GC/V, GSV, Mini-4 Stroke, GX100, V-Twin
High capacity oil pump	Better reliability	V-Twin
Integrated ECU (electronic control unit) with a self-tuning regulator (STR) governor system	Intelligent operation, increased performance, and improved fuel efficiency	iGX
Electronic governor	Increased power	iGX
Compact combustion chamber, overhead camshaft	Increased reliability, easier maintenance, and lighter weight	GC, GS
Lifetime timing belt design	Better reliability	GC, GS
Auto Choke System	Easy starting	GCV
Full 360° 'any-side-up' operation	Ease of use	GX25, GX35
Approximately half the operating cost of comparable two-stroke engines	Reduced cost of ownership	Mini-4 Stroke
Belt-driven OHC design	Quieter performance	GC, GS, Mini-4 Stroke



About Honda Engines

Honda is the world's largest manufacturer of engines, producing and marketing approximately 27 million units globally in 2010 for a diverse array of automotive, motorcycle, marine, and power equipment products. Honda Engines offers a complete line of small, general purpose engines for commercial, rental industry, and consumer applications. Honda engines supply smooth and dependable power for more than 3,000 different product applications including pressure washers, lawnmowers, and rescue and construction equipment.

Additionally, Honda engines are some of the quietest and easiest to start of their kind, even in harsh commercial and construction environments. Such attributes have made Honda engines the popular choice for original equipment manufacturers looking to add value to their own brands.

Honda Power Equipment products are assembled at 11 Honda manufacturing facilities around the world, including Honda Power Equipment Mfg., Inc., located in Swepsonville, North Carolina. Research, development, and testing activities are conducted at Honda R&D Americas, Inc., also located in North Carolina, and Honda R&D Co., Ltd., in Japan.

Overall, Honda Power Equipment Mfg., Inc. (HPE) has boosted the number of its general purpose engines produced per year for use by Honda and other OEMs. In addition to engines, HPE produces Honda generators, lawnmowers, snowblowers, pumps, tillers and string trimmers. Honda's North Carolina Research and Development Center is an 11,000 square foot facility established in 1993 that conducts product engineering, prototype development, and testing of power equipment products.

Honda Engines is an operating unit of Honda Power Equipment, with headquarters in Alpharetta, Georgia. Following is contact information.

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