

Generator Drive Applications

Diesel Engines



JOHN DEERE

Put the value of John Deere
generator drive engines to work for you



John Deere generator power

- Leading gen-set manufacturers trust John Deere PowerTech™ generator drive engines.
- John Deere is one of the very few engine manufacturers that don't make gen-sets. This focus on engines makes us unbiased partners with gen-set OEMs.
- We listen closely to gen-set manufacturers to provide the features and services they need.
- We deliver high power in a compact design.
- Complete power range meets all worldwide emissions regulations and certifications — from non-emissions certified engines to Tier 4 and Stage III A.
- Reliable operation, low maintenance, long engine life, and unbeatable fluid economy lead to low cost of ownership.
- Extensive worldwide support network provides peace of mind.



Power in remote locations. John Deere generator drive engines provide prime power for pumping stations, peak shaving, distributed power, mining, and other remote applications.



Power at a moment's notice. From computer centers to hospital operating rooms, John Deere-powered standby generator sets protect critical applications, ensure uninterrupted productivity, and offer peace of mind.



Confidence is built in

Prime or standby power

John Deere generator drive engines are ready when and where you need them! They provide fast response for standby situations and exceptional load recovery in all applications.

Without interruption

When it's your prime power source, you can't afford any interruptions. That's where John Deere generator drive engines earn their reputation for reliability and confidence. Even our maintenance intervals are extended with a 500-hour oil change.

In any condition

Are you operating in subzero cold or blistering heat? Don't worry. John Deere engines start in freezing temperatures thanks to advanced electronic high-pressure fuel systems and preheating options such as glow plugs, air heaters, or block heaters. We also offer a full line of cooling packages built to handle the hottest working conditions.

For the long haul

The John Deere name has always been synonymous with durability. It explains why you find so many John Deere engines continuing to do their job many years after they were put into service. Check out the heavy-duty features found on all John Deere generator drive engines by visiting JohnDeere.com/gendrive.



Ready to install

Application choices

Select from a wide range of John Deere generator drive engine models with displacements from 2.9L to 13.5L and a variety of options. Our power ranges overlap across engine displacements so you can choose exactly the right fit for your application.



- 12 V or 24 V electrical systems
- Left or right side service points
- Multiple fan heights and speed ratios
- Factory-installed cooling systems

Power density

Imagine a 4-cylinder engine that performs like a 6-cylinder! One of the secrets of John Deere engines is their ability to generate maximum power in minimum space. We use engine technologies such as dual turbochargers and 4-valve cylinder heads to achieve maximum power density. Through these advancements, our current 4.5L, 6.8L, and 9.0L engines perform in applications where larger displacement engines are traditionally required. Our power density also results in smaller canopies, less weight on the trailer, and lower fuel costs.

Installation flexibility

Install John Deere engines using the engine block's front or side mounts. It's your choice. We also offer many options to ensure perfect integration and provide single-side service points for easy access. Have a unique space or noise requirement? With our multiple fan heights and speed ratios, you can build generator sets for tight places or quiet operation.

Application assistance

It's like having a direct line to an application engineer. Our experienced technical team works closely with you to make sure John Deere engines are compatible with your gen-sets. John Deere also offers application-approved cooling packages for our full line of engines. These preconfigured units can save you hours of engineering time and help you get generator sets to market faster.

Our solutions to different regulations

John Deere engines comply with all nonroad emissions regulations for the U.S. Environmental Protection Agency (EPA) and the European Union (EU).

PowerTech™ diesel oxidation catalyst/selective catalytic reduction (DOC/SCR) engines join our complete lineup to give generator set manufacturers more choices for meeting Final Tier 4 emissions regulations. We continue to provide diesel oxidation catalyst/diesel particulate filter/selective catalytic reduction (DOC/DPF/SCR) engines, which deliver the best available control technology (BACT) for reducing particulate matter and provide premium performance when the job requires it. We also offer a full line of Tier 3, Interim Tier 4/Stage III A, and non-emissions certified engines for standby generator sets and nonregulated areas.

Standby power. The EPA allows emergency standby applications to use Tier 3 products that do not require aftertreatment. The European Union (EU) does not regulate standby applications.

Emergency stationary provision. The New Source Performance Standard (NSPS) provision of the EPA requires that Tier 3 engines for standby power be limited to emergency use and no more than 100 hours per year for required maintenance and testing. Owners/operators must record the use of the engine during all operations, including hours operated during emergencies and non-emergencies.

Prime power. Prime power and portable applications are required to meet Final Tier 4 emissions regulations in North America and Stage III A in Europe.

EU off-highway mobile emissions regulations — constant speed engines



NOTES: Stage V emission regulations to be finalized in 2016; expected implementation dates are 2019 – 2020.

The EU does not regulate engines to an emission stage for stationary applications. Medium combustion directive regulations for engines above 350 kW (stationary) have expected implementation dates in 2019.

Examples

NOx	2.0
NMHC	0.19
PM	0.025

2.0, the maximum amount of nitrogen oxides (NOx) allowed in g/kWh.

0.19, the maximum amount of nonmethane hydrocarbons (NMHC) allowed in g/kWh.

0.025, the maximum amount of particulate matter (PM) allowed in g/kWh.

NMHC + NOx PM	7.5 0.80
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7.5, the maximum amount of NMHC + NOx allowed in g/kWh.

0.80, the maximum amount of PM allowed in g/kWh.

Legend

EU	Stage II	Stage III A
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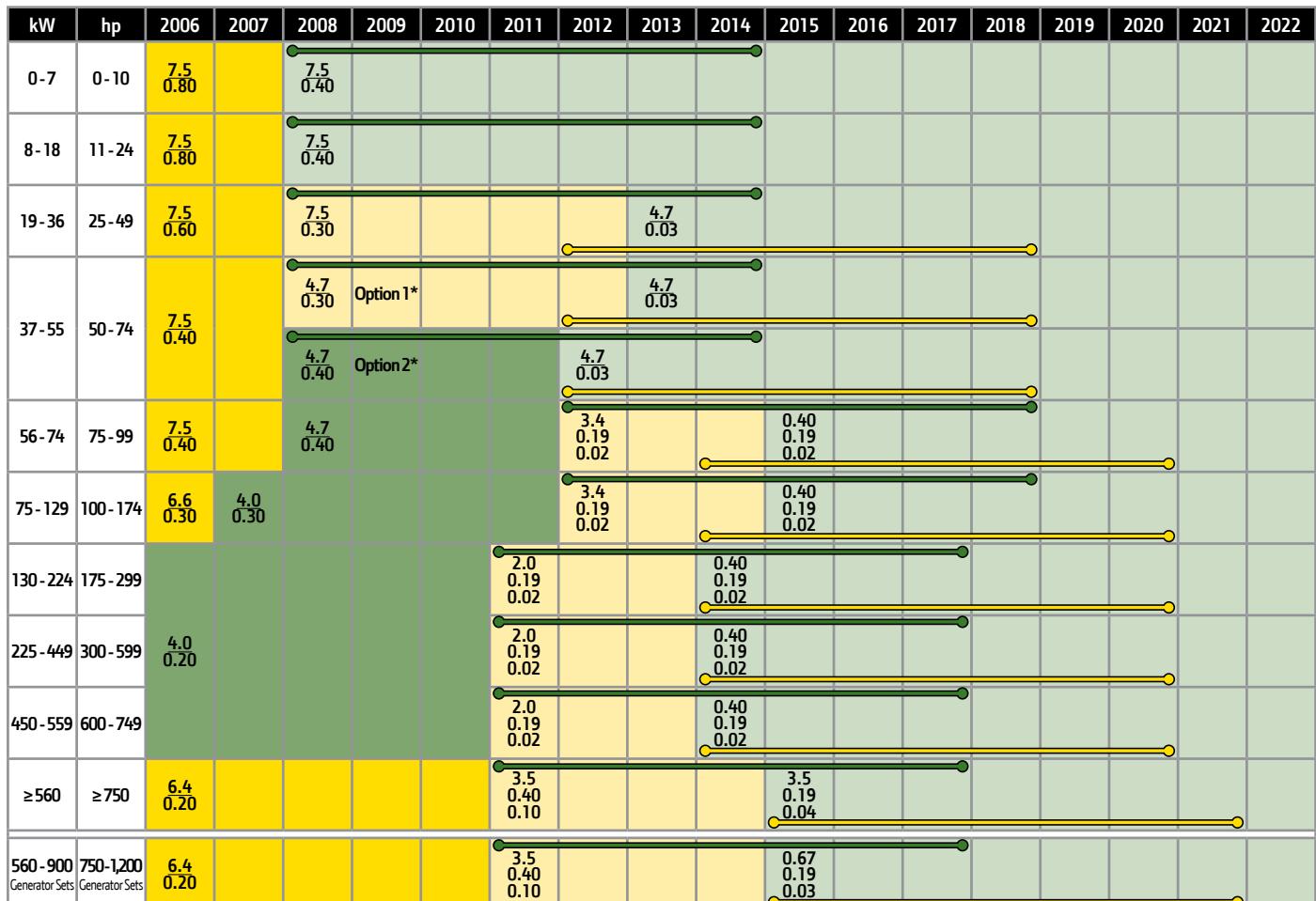


Fuel sulfur regulations

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
EU	2000 ppm		1000 ppm					10 ppm					

New emissions regulations took effect January 1 of the year indicated by color change unless otherwise noted.

EPA off-highway emissions regulations



*In the 50 to 74 horsepower category, there were two options. Option 1 required a reduced PM level (0.30 vs. 0.40) but allowed Final Tier 4 to be delayed one year (2013)

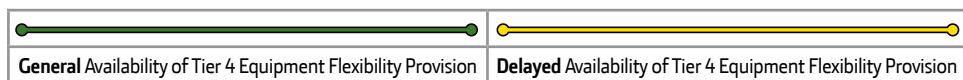
NOTE: In emergency stationary applications, the EPA does not require engines to use aftertreatment.

Fuel sulfur regulations

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
EPA	5000 ppm		500 ppm														

Legend

EPA	Tier 2	Tier 3	Interim Tier 4	Final Tier 4



Examples

NOx NMHC PM	2.0 0.19 0.025	2.0, the maximum amount of nitrogen oxides (NOx) allowed in g/kWh. 0.19, the maximum amount of nonmethane hydrocarbons (NMHC) allowed in g/kWh. 0.025, the maximum amount of particulate matter (PM) allowed in g/kWh.
NMHC + NOx PM	7.5 0.80	7.5, the maximum amount of NMHC + NOx allowed in g/kWh. 0.80, the maximum amount of PM allowed in g/kWh.

Ready when you need it

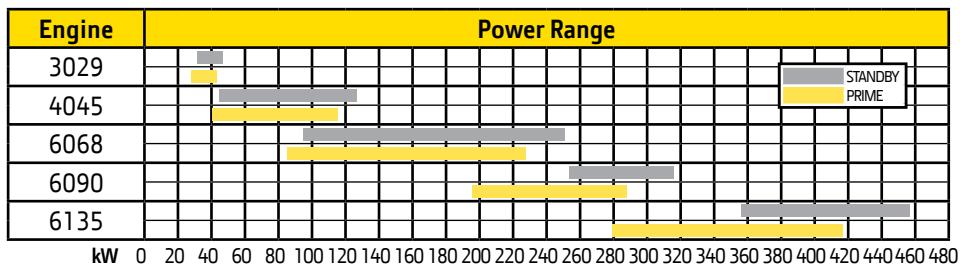


Ready for any market

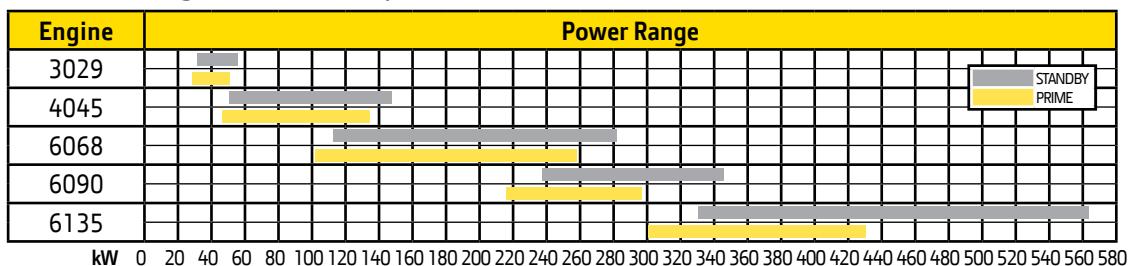
John Deere generator drive engines keep your gen-sets in compliance, and they keep your customers confident. Wherever your generator sets go, they will be ready to meet local emissions regulations in most countries.



Gen-Set Ratings 50 Hz (1500 rpm)



Gen-Set Ratings 60 Hz (1800 rpm)



Full line of generator drive engines

John Deere offers more than 200 configurations of generator drive engines from 31 to 563 kW (42 to 755 hp) to meet all emissions regulations and power nodes.

Jet fuel capable

Some John Deere generator drive engines are jet fuel capable and are available in dual frequency 1500 rpm (50 Hz) and 1800 rpm (60 Hz) with the same software and hardware.

Advanced electronic controls

John Deere uses proven electronic controls in almost all our power ranges. They help provide load recovery, clean power, better diagnostics, engine monitoring, and ease of synchronization when operating more than one set in parallel. John Deere uses smart governing and throttling selections to make this process seamless — even when paralleling to older mechanical engines.

Dual frequency

Electronic controls also make it easy for manufacturers that need 60 Hz and 50 Hz power to switch between 1800 and 1500 rpm without reprogramming.

50 Hz engines

Our current engine range meets emissions regulations introduced by the European directive 97/68/EC, TA-Luft, and CCNR. Non-emissions certified engines are also available for non-regulated markets.

60 Hz engines

We offer a wide choice of engines that fully meet EPA emissions regulations. Non-emissions certified engines are also available for non-regulated markets.

Integrated Emissions Control system

John Deere has integrated new technologies with field-proven solutions to meet each regulatory tier. A single electronic control unit (ECU) controls the engine and entire Integrated Emissions Control system.

Turbocharging

John Deere engines use fixed geometry turbochargers sized for specific power ranges, wastegate turbochargers (WGT) to develop more airflow at lower engine speeds, and variable geometry turbochargers (VGT) to tailor the amount of recirculated exhaust gas that mixes with fresh air. Some models use a fixed turbocharger and VGT in series to deliver higher power density, improved low-speed torque, and improved high altitude operation.



Engine technology summary

Engine	Emissions Regulations	Turbocharging	Cooled EGR	Exhaust Filter	PM Aftertreatment	SCR
PowerTech M	Interim Tier 4 and Stage III A	Fixed	No	No	No	No
PowerTech E	Tier 3 and Stage III A	Fixed	No	No	No	No
PowerTech Plus	Tier 3	VGT	Yes	No	No	No
PowerTech PWX	Interim Tier 4	WGT	Yes	Yes	DOC/DPF	No
PowerTech PVX	Interim Tier 4	VGT	Yes	Yes	DOC/DPF	No
PowerTech PSX	Interim Tier 4	Series	Yes	Yes	DOC/DPF	No
PowerTech EWX	Final Tier 4	WGT	No	Yes	DOC/DPF	No
PowerTech PWL	Final Tier 4	WGT	Yes	No	DOC	Yes
PowerTech PVL	Final Tier 4	VGT	Yes	No	DOC	Yes
PowerTech PVS	Final Tier 4	VGT	Yes	Yes	DOC/DPF	Yes
PowerTech PSL	Final Tier 4	Series	Yes	No	DOC	Yes
PowerTech PSS	Final Tier 4	Series	Yes	Yes	DOC/DPF	Yes

Turbocharging: Fixed = fixed turbocharger, VGT = variable geometry turbocharger, WGT = wastegate turbocharger, Series = series turbochargers

Cooled EGR: cooled exhaust gas recirculation

DOC: diesel oxidation catalyst

DPF: diesel particulate filter

SCR: selective catalytic reduction

Cooled exhaust gas recirculation (EGR)

Cooled EGR is a proven technology that reduces nitrogen oxides (NOx) by mixing measured amounts of cooled exhaust gas with incoming fresh air to lower the engine's peak combustion temperature.

Exhaust filters

Some engine models use an exhaust filter to provide a simple and reliable solution for reducing particulate matter (PM). This is the best available control technology (BACT) for reducing PM in nonattainment areas.

Selective catalytic reduction (SCR)

John Deere engines feature an SCR system that utilizes a urea-based additive, sometimes referred to as diesel exhaust fluid (DEF). The ammonia in the urea mixes with engine exhaust gases in the SCR catalyst to reduce NOx — converting it to nitrogen and water vapor. This is the best available control technology (BACT) for reducing NOx in nonattainment areas.

Ready for results

Fluid economy

Generate more power with less fuel. Low-friction pistons, 4-valve cylinder heads, and advanced electronic controls are just some of the tools we use to help you build efficient generator sets. John Deere Final Tier 4 engines use an optimized SCR system that minimizes consumption of fuel and diesel exhaust fluid (DEF).

Low idle speeds

John Deere generator drive engines have low idle capability for reduced fluid consumption and decreased wear and tear during transport or startup and shutdown checks.

Easy operation

John Deere generator drive engines are designed to minimize noise and vibration. All service points are located on a single side for easy access and quick service.

Big-engine durability

Heavy-duty components that are usually found in larger engines are used throughout the John Deere generator drive engine line. Many of our engines feature wet-type cylinder liners, top-liner cooling, steel pistons, and variable-speed fan drives. Visit JohnDeere.com/gendrive for complete specifications.

Total quality

From our continuing research and development efforts to our rigorous manufacturing processes, every component of a John Deere engine is scrutinized for quality. The total result is a generator drive engine that delivers performance, fuel efficiency, reliability, emissions compliance, and easy installation — a combination of engine qualities that you can't find just anywhere. We are ISO 9001 and 14001 certified and have expertise partnering with gen-set manufacturers worldwide.

Low cost of ownership

John Deere generator drive engines quietly do their job generating electrical power. The fuel efficiency of John Deere prime power engines minimizes the number of times you have to fill the tank. It all adds up to a low cost of ownership. It's exactly why John Deere has received the attention and loyalty of so many generator set manufacturers and customers.



Customer support

A worldwide support network

The proven John Deere dealer network of over 4,000 service locations is prepared to fully support you and your engines. From around the globe, John Deere engine distributors and service dealers are your best source for engine service, knowledge, and parts. Our dealers keep John Deere maintenance and repair parts in stock to keep your gen-sets running reliably. Also, the worldwide John Deere parts distribution system has overnight delivery in most areas of the world.

To find the nearest John Deere engine distributor or service dealer, visit JohnDeere.com/dealer.



Qualified John Deere technicians

Only John Deere service technicians have the expertise to ensure top performance of your John Deere engine. Our technicians continuously participate in specialized training on John Deere engine technology, diagnostic tools, and service techniques. Trust your John Deere engine technician to have repairs completed quickly and accurately.

Genuine John Deere parts

There's a reason John Deere engine parts have such a strong reputation — quality. Other companies claim their repair parts meet or exceed OEM specifications. But the only real way to ensure performance is to use engine parts designed by John Deere for John Deere engines. Rely on the quality and support of genuine John Deere parts and service to keep your engine running like new.

With just a few clicks, get the parts you need through JDParts.com. Order from anywhere at any time using your phone, tablet, or laptop.

- Order online through your local dealer, 24/7/365
- Ship to your dealer or to your home as early as next day
- Search parts by model number, part number, or keyword
- Take advantage of local John Deere dealer pricing and inventory
- Get access to parts catalogs with product images

Fast. Convenient. Online.
JDParts.com



Warranty you can count on

At John Deere, we stand behind every engine we build. That's why our warranty covers your John Deere OEM engine for an unlimited number of hours during the first 12 months of use, or up to 2,000 hours in the first 24 months. Our warranty plans also protect genuine John Deere engine parts and accessories. Contact your John Deere engine distributor or service dealer for standard coverage details and extended warranty options.

Be sure to register your John Deere OEM engine and take full advantage of the John Deere service and support network. Registering your engine not only prepares us to support your warranty needs but also allows us to keep you informed on new products, services, and money-saving offers from John Deere.

You can register your John Deere OEM engine by simply scanning this code or visiting JohnDeere.com/enginewarranty.



Preventive Maintenance Kits

Get uptime in a box with a Preventive Maintenance Kit filled with genuine John Deere parts. Ask your John Deere dealer to customize a kit to fit your exact equipment needs and be prepared for planned maintenance and unforeseen repairs.



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