

# Off-Highway Diesel Engines

Final Tier 4/Stage V



JOHN DEERE

*Power Meets Progress*



# Power Meets Progress

When an unstoppable force meets the latest technologies, great things happen. Like next generation industrial engines from John Deere. They are built from the ground up to deliver new levels of reliability, durability, flexibility, and serviceability.

## Off-highway performance

John Deere specializes in rugged off-highway applications. That's why our engines are built with heavy-duty components, top-liner cooling, steel pistons to maximize reliability, and wet-type cylinder liners for long-haul durability.

## The power of choice

With John Deere, you get a wide range of configurations and accessories so you can specify the right engine that best fits your application. Our preconfigured options and innovative technologies can help save hours of engineering time and help you get machines to market faster.



## Machine integration

You get expert integration assistance provided by an extensive network of John Deere engineers and distributors. OEMs can put our application engineering experience and know-how to work to help save development time and money.

## Connected Support

John Deere OEM industrial and marine engines can be protected by John Deere Connected Support™ remote monitoring and diagnostic services.\* With more than 9,000 John Deere service locations worldwide, you never have far to go to find expert assistance and advice.

## Ultimate uptime

Our distributors and dealers stock maintenance parts, as well as many other common replacement parts, to meet your service needs quickly. Our worldwide parts distribution system offers overnight delivery in most regions.

\*Contact your John Deere dealer or distributor for availability of Connected Support on specific engine models.





*Off-Highway Diesel Engines*



# Engines for Final Tier 4/Stage V applications

## Industrial engine power ratings

Engine name	Engine model	Power ratings	Turbo	Cooled EGR	Aftertreatment	Exhaust canister size	SCR size	Power range
EWX 2.9L	3029HI530	36 – 55 kW (48 – 74 hp)	WGT	-	DOC/DPF	2	-	0 – 75
JD4G	JD4G IHR*	63 – 120 kW (84 – 161 hp)	WGT	-	DOC/DPF/SCR	2	2	75 – 149
EWX 4.5L	4045TI530	55 kW (74 hp)	WGT	-	DOC/DPF	2	-	0 – 75
EWS 4.5L	4045HI551	74 – 110 kW (99 – 148 hp)	WGT	-	DOC/DPF/SCR	2	2	75 – 149
PWS 4.5L	4045HI550	74 – 104 kW (99 – 140 hp)	WGT	Yes	DOC/DPF/SCR	2	3	75 – 149
PSS 4.5L	4045CI550	93 – 129 kW (125 – 173 hp)	Series	Yes	DOC/DPF/SCR	3	3	149 – 224
PSS 4.5L	4045CI551	116 – 129 kW (156 – 173 hp)	Series	Yes	DOC/DPF/SCR	4	4	149 – 224
PVS 6.8L	6068HI550	104 – 129 kW (140 – 173 hp)	VGT	Yes	DOC/DPF/SCR	3	3	149 – 224
PVS 6.8L	6068HI550	138 – 187 kW (185 – 251 hp)	VGT	Yes	DOC/DPF/SCR	4	4	224 – 298
PSS 6.8L	6068CI550	168 – 187 kW (225 – 251 hp)	Series	Yes	DOC/DPF/SCR	4	4	224 – 298
PSS 6.8L	6068CI550	187 – 224 kW (251 – 300 hp)	Series	Yes	DOC/DPF/SCR	5	5	298 – 373
PSS 9.0L	6090CI550	187 – 242 kW (251 – 325 hp)	Series	Yes	DOC/DPF/SCR	5	5	298 – 373
PSS 9.0L	6090CI550	261 – 317 kW (350 – 425 hp)	Series	Yes	DOC/DPF/SCR	6	6	373 – 447
JD14P	6136HI550	300 – 410 kW (402 – 550 hp)	WGT	Yes	DOC/DPF/SCR	6		447 – 522
JD14X	6136CI550	391 – 510 kW (525 – 684 hp)	Series	Yes	DOC/DPF/SCR	7		522 – 597
JD18X	6180CI510	522 – 677 kW (700 – 908 hp)	Series	Yes	-	-		597 – 671

**kW** 0 75 149 224 298 373 447 522 597 671  
**hp** 0 100 200 300 400 500 600 700 800 900

\*Industrial Highly Regulated (IHR).

## Final Tier 4/Stage V engine technology

### PowerTech EWX

EWX engines are compact, powerful, cost-effective, and simple to install without requiring cooled exhaust gas recirculation (EGR) or selective catalytic reduction (SCR). Our straightforward PowerTech™ EWX engines have 2-valve cylinder heads, high-pressure common-rail (HPCR) fuel systems, and full authority electronic controls. They use simple wastegate turbocharging to maintain transient response and peak torque in all operating conditions.

### PowerTech EWS

EWS engines meet performance and emissions requirements without requiring cooled EGR. PowerTech EWS engines have 2-valve cylinder heads, high-pressure common-rail fuel systems, and full authority electronic controls. They use simple wastegate turbocharging to maintain transient response and peak torque in all operating conditions.

### PowerTech PWS

PWS engines combine advanced combustion technologies, enhanced engine calibration, and simple wastegate turbocharging. PWS engines feature PowerTech Plus technology with a DOC/DPF and an SCR system that reduce emissions while maximizing performance.

### PowerTech PVS

PVS engines deliver more power, torque, and fluid economy. They utilize our proven PowerTech Plus technology with variable geometry turbocharging, a DOC/DPF, and an SCR system to improve combustion efficiency, reduce emissions, enhance performance, and improve fluid economy.

### PowerTech PSS

PSS engines provide a powerful combination of power density, performance, and fluid efficiency. For ultimate performance in off-highway applications, PowerTech PSS engines can handle almost any job. All displacements feature series turbochargers to deliver excellent performance and responsiveness. PSS engines feature proven PowerTech Plus technology that includes a DOC/DPF and an SCR system designed specifically for off-highway applications.

### Performance levels

John Deere next generation engines include three performance levels designated by G, P, and X.



Cost-effective power solutions for price-sensitive market applications.



Balance of performance and cost.



Exceptional power, ultimate performance, and leading technology.



# Engines for Final Tier 4 applications

## Industrial engine power ratings

Engine name	Final Tier 4 engine model	Power ratings	Turbo	Cooled EGR	Aftertreatment	Exhaust canister size	SCR size	Power range									
EWL 4.5L	4045HI440	74 – 110 kW (99 – 148 hp)	WGT	-	DOC/SCR	2	2										
PWL 4.5L	4045HFC04	63 – 104 kW (85 – 140 hp)	WGT	Yes	DOC/SCR	2	3										
PSL 4.5L	4045HFC06	93 – 129 kW (125 – 173 hp)	Series	Yes	DOC/SCR	3	3										
JD14P	6136HI440	300 – 410 kW (402 – 550 hp)	WGT	Yes	DOC/SCR	6	6										
JD14X	6136CI440	391 – 510 kW (524 – 684 hp)	Series	Yes	DOC/SCR	7	7										

kW	0	75	149	224	298	373	447	522
hp	0	100	200	300	400	500	600	700

## Final Tier 4 engine technology

### PowerTech EWL

EWL engines meet performance and emissions requirements without requiring cooled exhaust gas recirculation (EGR). They have 2-valve cylinder heads, high-pressure common-rail (HPCR) fuel systems, and full authority electronic controls. They pair our proven PowerTech Plus technology with a DOC and optimized selective catalytic reduction (SCR) system to produce near-zero levels of PM without a DPF.

### PowerTech PWL

PWL engines combine advanced combustion technologies, enhanced engine calibration, and simple wastegate turbocharging. They pair our proven PowerTech Plus technology with a DOC and optimized SCR system to produce near-zero levels of PM without a DPF.

### PowerTech PSL

PSL engines provide exceptional power in a compact package. They feature an optimized engine calibration, a 4-valve cylinder head, an HPCR fuel system, full authority electronic controls, and series turbocharging consisting of a fixed geometry turbocharger (FGT) and wastegate turbocharger (WGT). Combining proven PowerTech Plus technology with a DOC and SCR system delivers excellent performance and fluid efficiency without the need for a DPF.

### Performance levels

John Deere next generation engines include three performance levels designated by G, P, and X.



Cost-effective power solutions for price-sensitive market applications.

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Exceptional power, ultimate performance, and leading technology.

# The John Deere difference

## Proven performance



### *Off-highway experience*

John Deere has billions of hours of field experience with off-highway engine technologies.

We use an exhaust system strategy that is designed to be transparent to the operator without impacting machine performance. Our proven aftertreatment solution has logged more than 1 billion hours of operation on hundreds of internal and external OEM applications.



### *Turbocharged power*

John Deere engines deliver fast transient response and high peak torque thanks to tailored turbocharging technologies. We use a combination of wastegate, variable geometry, and series turbochargers to meet your application needs.

## Reliable uptime



### *Day-to-day reliability*

John Deere engines feature top-liner cooling, efficient lubrication, and robust cooling systems for reliable operation.



### *Long-haul durability*

Heavy-duty, oversized components, steel pistons, and wet-type cylinder liners provide long engine life.

John Deere engines are designed for rugged applications.



### *Extreme conditions*

Engines built to operate in hot and dry, sub-zero, and humid climates as well as high altitudes. The engine control unit (ECU) monitors and protects engine components in extreme conditions.

In regions where fuel quality may vary, John Deere protects the engine with two-stage fuel filtration and water detection.





## Efficient operation



### **Fuel efficiency**

The efficient design of the John Deere combustion chamber with high-ring pistons helps deliver excellent fuel economy.



### **Less DEF**

Use of cooled EGR reduces nitrogen oxides (NOx) out of the engine. This enables the use of a smaller selective catalytic reduction (SCR) system and lower diesel exhaust fluid (DEF) consumption. John Deere engines with EGR use 1% to 3% less DEF compared to non-EGR engines.



### **Life cycle costs**

Reliable operation, low maintenance, long engine life, and exceptional fluid economy lead to low cost of operation with John Deere engines.



### **Long service intervals**

500-hour interval for oil and fuel filters, 1,500 hours for OCV, 4,500 hours for DEF supply module filter, 6,000 hours for coolant, and up to 15,000 hours for DPF. No service required on DEF header filter.

## Easy integration



### **Stage V solutions**

No re-engineering or hardware changes are required. John Deere Stage V engines have the same engine envelope size and use the same mounting points as John Deere Stage IV engines. Your engines have dual EPA and EU certification.



### **Integration flexibility**

With multiple parts options and various aftertreatment outlet and inlet choices, OEMs may have to do less modification to integrate John Deere engines. Easy configurability saves development costs and reduces delivery time to market.

Single-side service points make installation and maintenance easier.



# Integrated Emissions Control system

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

## ***Turbocharging***

John Deere engines use fixed geometry turbochargers (FGT) 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 FGT and VGT in series to deliver higher power density, improved low-speed torque, and excellent high-altitude operation.

## ***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***

Engine models under 560 kW (751 hp) peak power meet Stage V emissions regulations using an exhaust filter with a diesel oxidation catalyst (DOC) and diesel particulate filter (DPF) to provide a reliable solution for reducing particulate matter (PM). This is the accepted technology for reducing PM in nonattainment areas.

## ***Selective catalytic reduction (SCR)***

Many John Deere Final Tier 4/Stage V 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 an accepted technology for reducing NOx in nonattainment areas. SCR and DEF are not required for engines under 560 kW (751 hp) peak power.



# Always at your side

## *Warranty support when you need it*

John Deere provides one of the best warranties in the business. Our 2-year/2,000-hour standard warranty applies not only to the new OEM engine but also to John Deere parts and accessories added by a John Deere engine distributor.\*

Register your John Deere OEM engine and enable your John Deere dealer or engine distributor to respond should you need a warrantable repair.† Registering your engine at [JohnDeere.com/OEMWarranty](http://JohnDeere.com/OEMWarranty) gives us the information needed to stock the right service parts, maintenance products, and servicing tools.

*\* When sold and installed by John Deere or its authorized dealers and distributors.*

*† See specific OEM product warranty language for applicable terms and conditions. Refer to the John Deere new engine warranty for complete warranty coverage details.*

*Note: The 2-year/2,000-hour standard warranty and OEM engine registration may not be available in all countries.*





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