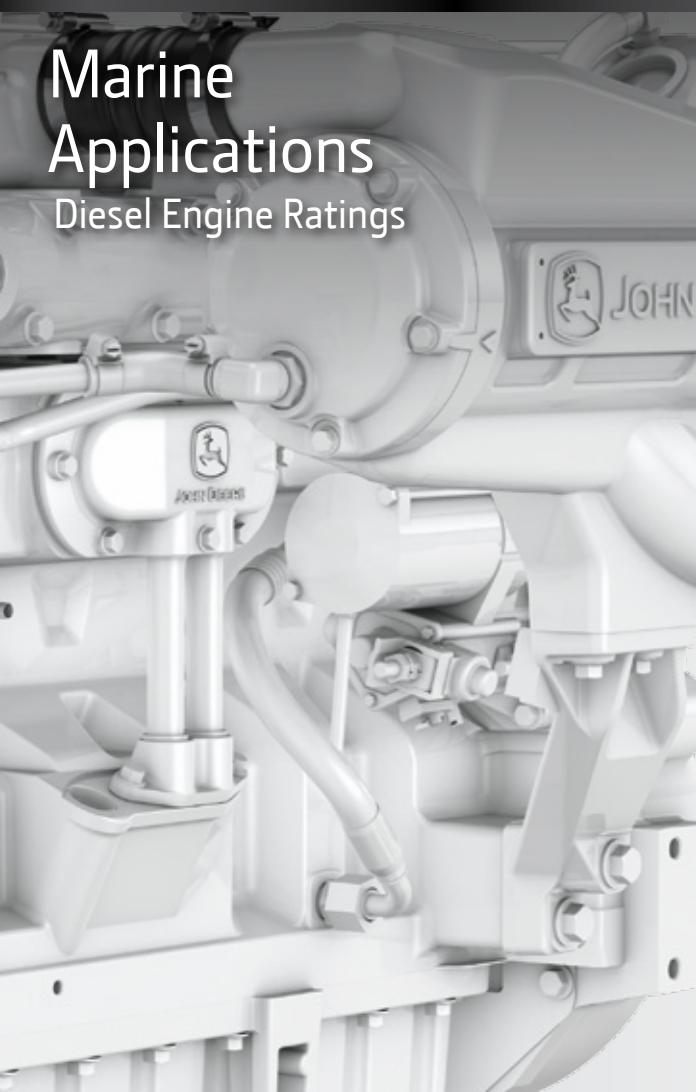




JOHN DEERE

Marine Applications

Diesel Engine Ratings





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Nothing Runs Like A Deere™

John Deere PowerTech™ engines are as powerful in the water as they are on the land. Our marine propulsion and generator engines share the same reputation for performance and reliability that their agricultural and industrial counterparts have enjoyed for decades. They are also backed by a vast service network that will keep you operating — no matter where you go.

When you choose John Deere, you get the support of one of the strongest engine and equipment companies in the world. See for yourself why more vessels are powered by John Deere.



Clean engines — clean air

With John Deere PowerTech engines, everything runs clean and efficiently — above and below deck. John Deere marine engines offer closed crankcase vents that eliminate undesirable gases in the engine room and keep the bilge clean.

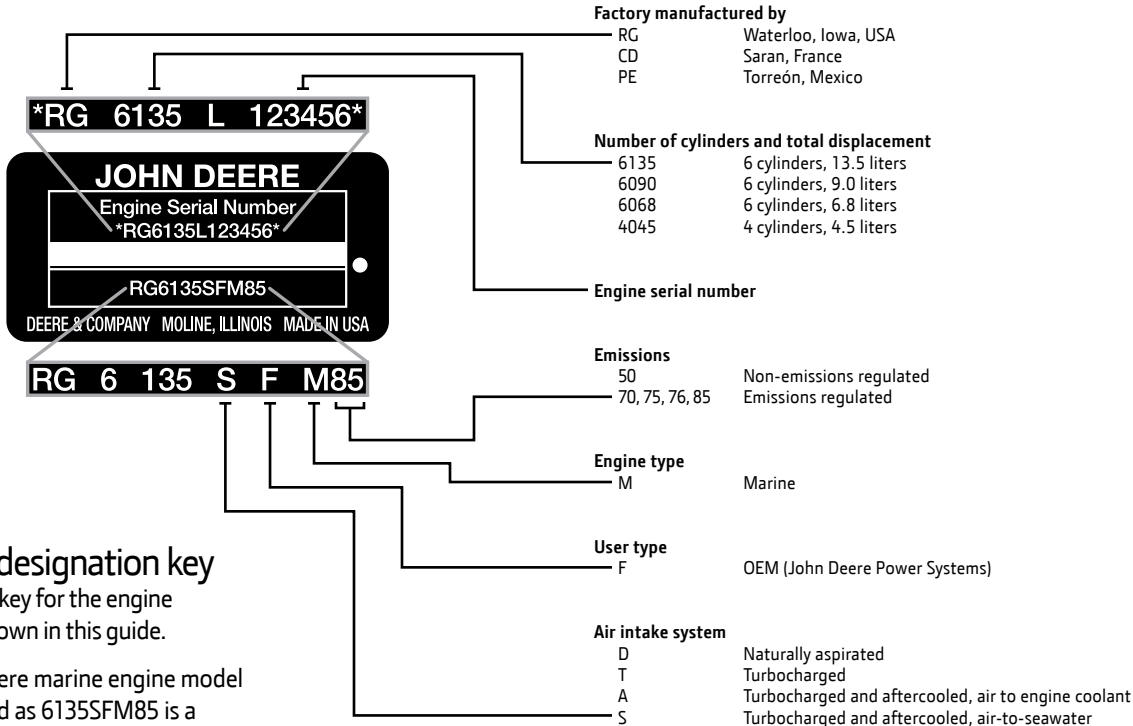
John Deere also protects the air outside your boat by complying with international, European, and United States emissions standards for regulated vessels. John Deere meets Environmental Protection Agency (EPA) Marine Tier 3 emissions regulations with a complete line of PowerTech engines for newly constructed vessels as well as repowered boats, as regulation dates become effective.

Marine classification societies

John Deere has worked with various marine classification societies allowing the use of our engines in vessels designed and built to the societies' requirements.



Identification plate

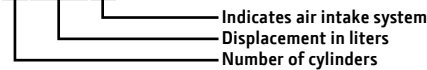


Model designation key

Below is a key for the engine models shown in this guide.

A John Deere marine engine model designated as 6135SFM85 is a 6-cylinder, 13.5-liter turbocharged and aftercooled, air-to-seawater engine that is emissions regulated.

6135S



Marine propulsion M ratings

Ratings are based on the ISO 8655 standard power rating and the SAEJ1228 crankshaft power rating.

The M rating definitions are provided as a guide to help in the selection of the engine that best fits the application requirements. It is recommended to consult a John Deere representative to verify the optimal rating for the specific application.

The **M1** rating is for marine propulsion applications that may operate up to 24 hours per day at uninterrupted full power and have load factors* greater than 65 percent.

Possible applications: Line hauls tugs and towboats, fish and shrimp trawlers/draggers, and displacement hull fishing boats.

The **M2** rating is for marine propulsion applications that typically operate between 3,000-5,000 hours per year and have load factors* up to 65 percent. This rating is for applications that are in continuous use and use full power for no more than 16 hours of each 24 hours of operation. The remaining time of operation is at or below cruising[†] speed.

Possible applications: Short-range tugs and towboats, long-range ferryboats, large passenger vessels, and offshore displacement hull fishing boats.

The **M3** rating is for marine propulsion applications that typically operate between 2,000-4,000 hours per year and have load factors* up to 50 percent. This rating is for applications that use full power for no more than four hours out of each 12 hours of operation. The remaining time of operation is at or below cruising[†] speed.

Possible applications: Coastal fishing boats, offshore crew boats, research boats, short range ferryboats, and dinner cruise boats.

The **M4** rating is for marine propulsion applications that typically operate between 1,000-3,000 hours per year and have load factors* below 40 percent. This rating is for applications that use full power no more than one hour out of each 12 hours of operation. The remaining time of operation is at or below cruising[†] speed.

Possible applications: Inshore crew boats, charter fishing boats, pilot boats, dive boats, and planning hull commercial fishing boats.

The **M5** rating is for marine recreational and certification for light duty commercial Tier 3 propulsion applications that operate between 300-1,000 hours per year and have load factors* below 35 percent. This rating is for applications that use full power for no more than 30 minutes out of each eight hours. The remaining time of operation is at or below cruising[†] speed.

Possible applications: Recreational boats, tactical military vessels, and rescue boats.

* Load factor is the actual fuel burned over a period of time divided by the full-power fuel consumption for the same period of time. For example, if an engine burns 160 liters of fuel during an eight-hour run, and the full-power fuel consumption is 60 liters per hour, the load factor is 160 liters / (60 liters per hour x 8 hours) = 33.3 percent.

† Cruising is any operating time where the engine speed is more than 200 rpm less than the maximum attainable engine speed.

Load factor

M rating	Typical load factor	Typical annual usage	Typical full power operation
M1	> 65%	Unrestricted	Uninterrupted
M2	≤ 65%	3,000 – 5,000 hr	16 of each 24 hr
M3	≤ 50%	2,000 – 4,000 hr	4 of each 12 hr
M4	≤ 40%	1,000 – 3,000 hr	1 of each 12 hr
M5	≤ 35%	300 – 1,000 hr	0.5 of each 8 hr



Marine generator engine ratings

The marine generator engine rating is the power available under normal varying electrical load factors* for an unlimited number of hours per year in commercial applications. This rating incorporates a 10 percent overload capability and conforms to ISO 8528 prime power. Average load over a 24-hour period shall not exceed 67 percent of the prime rating, of which no more than two hours are between 100 percent and 110 percent of the prime rating.

This rating is used for applications that require constant speed in auxiliary applications.



* Load factor is the actual fuel burned over a period of time divided by the full-power fuel consumption for the same period of time. For example, if an engine burns 160 liters of fuel during an eight-hour run, and the full-power fuel consumption is 60 liters per hour, the load factor is 160 liters / (60 liters per hour x 8 hours) = 33.3 percent

Marine engine propulsion power ratings

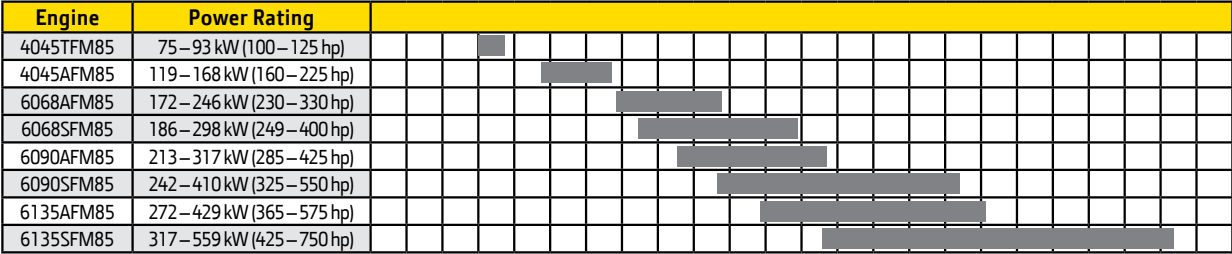
Propulsion power ratings IMO compliant engines



Ratings are subject to change. Please contact your John Deere marine dealer for details.

kW	0	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
hp	0	34	67	101	134	168	201	235	268	302	335	369	402	436	469	503	536	570	603	637	670	704	738	771	805

Propulsion power ratings IMO & EPA compliant engines



Ratings are subject to change. Please contact your John Deere marine dealer for details.

kW	0	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
hp	0	34	67	101	134	168	201	235	268	302	335	369	402	436	469	503	536	570	603	637	670	704	738	771	805

PowerTech

4.5L marine engines

- Keel-cooled or heat exchanger configurations
- Naturally aspirated or turbocharged, non-aftercooled
- Feature constant power to 400 rpm below rated speed
- Excellent choice for launches, work boats, trawler yachts, and patrol craft



Engine model	Emissions				Rated power		Rated speed	Rated fuel consumption	
	IMO	EPA	EU	RCD	kW	hp	rpm	L/hr	gal/hr
IMO compliant engines									
4045DFM70									
M2	EX	-	III A	RCD I	60	80	2500	17.5	4.6
4045TFM75									
M1	EX	-	III A	RCD I	80	107	2400	22.1	5.8
M2	EX	-	III A	RCD I	90	121	2500	25.4	6.7
M3	EX	-	III A	RCD I	101	135	2600	29.4	7.8
4045TFM50									
M4	EX	-	-	-	112	150	2600	29.7	7.8
IMO & EPA compliant engines									
4045TFM85									
M1	EX	Tier 3	III A	RCD I	75	100	2400	21.4	5.7
M2	EX	Tier 3	III A	RCD I	93	125	2500	29	8
4045AFM85									
M1	EX	Tier 3	III A	RCD I	119	160	2300	33.2	8.8
M2	Tier 2	Tier 3	III A	RCD I	134	180	2400	37	10
M3	Tier 2	Tier 3	III A	RCD I	149	200	2500	44	12
M4	Tier 2	Tier 3	III A	RCD I	168	225	2600	49	13

EX = MARPOL Annex VI exempt

Ratings are subject to change.

Engine model	Length, to rear of block		Width		Height		Weight, dry	
	mm	in	mm	in	mm	in	kg	lb
4045TFM50	748	29.4	827	32.5	912	35.9	461	1017
4045DFM70	756	29.8	675	26.6	901	35.4	437	963
4045TFM75	748	29.4	828	32.6	912	35.9	462	1019
4045TFM85	739	29.1	715	28.1	912	35.9	507	1117
4045AFM85	752	29.6	770	30.3	964	37.9	578	1274

PowerTech

6.8L marine engines

- Keel-cooled or heat exchanger configurations
- Turbocharged, non-aftercooled, or turbocharged with air-to-seawater or air-to-coolant aftercooling
- Excellent choice for recreational boats, launches, work boats, trawler yachts, and patrol craft



Engine model	Length, to rear of block		Width		Height		Weight, dry	
	mm	in	mm	in	mm	in	kg	lb
6068TFM50	1004	39.5	828	32.6	881	34.7	730	1609
6068SFM50	1049	41.3	875	34.4	946	37.3	776	1711
6068TFM75	1004	39.5	828	32.6	882	34.7	730	1609
6068AFM75	1034	40.7	854	33.6	912	35.9	786	1732
6068SFM75	1034	40.7	872	34.3	959	37.7	890	1962
6068AFM85	1034	40.7	862	33.9	935	36.9	787	1735
6068SFM85	1034	40.7	872	34.3	931	36.7	763	1682

Engine model	Emissions				Rated power		Rated speed	Rated fuel consumption	
	IMO	EPA	EU	RCD	kW	hp	rpm	L/hr	gal/hr
IMO compliant engines									
6068TFM50									
M1	EX	-	-	-	115	154	2300	29.6	7.8
M2	-	-	-	-	130	175	2400	34.7	9.2
M3	-	-	-	-	149	200	2500	38.8	10.3
M4	-	-	-	-	168	225	2600	44.3	11.7
6068SFM50									
M3	Tier 2	-	III A	RCD I	176	236	2400	45.5	12.0
M4	Tier 2	-	III A	RCD I	199	267	2500	51.6	13.6
M5	Tier 2	-	III A	RCD I	224	300	2600	59.1	15.6
6068TFM75									
M1	EX	-	III A	RCD I	118	158	2400	33.7	8.9
M2	Tier 2	-	III A	RCD I	133	178	2500	38.3	10.1
M3	Tier 2	-	III A	RCD I	150	201	2600	44.1	11.6
6068AFM75									
M1	Tier 2	-	III A	RCD I	172	230	2300	43.7	11.6
M2	Tier 2	-	III A	RCD I	198	265	2400	50.0	13.0
M3	Tier 2	-	III A	RCD I	224	300	2500	57.0	15.0
M4	Tier 2	-	III A	RCD I	246	330	2600	64.0	17.0
6068SFM75									
M1	Tier 2	-	III A	RCD I	186	249	2400	47.2	12.5
M2	Tier 2	-	III A	RCD I	209	280	2500	52.3	13.8
M3	Tier 2	-	III A	RCD I	239	321	2600	60.2	15.9
M4	Tier 2	-	III A	RCD I	265	355	2700	66.8	17.7
M5	Tier 2	-	III A	RCD I	298	400	2800	77.6	20.5
IMO & EPA compliant engines									
6068AFM85									
M1	Tier 2	Tier 3	III A	RCD I	172	230	2300	50.9	13.4
M2	Tier 2	Tier 3	III A	RCD I	198	265	2400	58.0	15.0
M3	Tier 2	Tier 3	III A	RCD I	224	300	2500	65.0	17.0
M4	Tier 2	Tier 3	III A	RCD I	246	330	2600	71.0	19.0
6068SFM85									
M1	Tier 2	Tier 3	III A	RCD I	186	249	2400	51.0	13.0
M2	Tier 2	Tier 3	III A	RCD I	209	280	2500	57.0	15.0
M3	Tier 2	Tier 3	III A	RCD I	239	321	2600	63.0	17.0
M4	Tier 2	Tier 3	III A	RCD I	265	355	2700	69.0	18.0
M5	Tier 2	Tier 3	III A	RCD I	298	400	2800	81.0	21.0

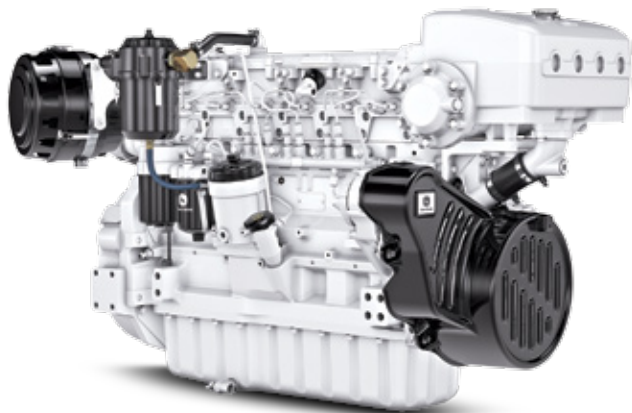
EX = MARPOL Annex VI exempt

Ratings are subject to change.

PowerTech

9.0L marine engines

- Keel-cooled or heat exchanger configurations
- Turbocharged with air-to-seawater or air-to-coolant aftercooling
- 4-valve cylinder head
- Electronically controlled HPCR fuel system
- Front or side service
- Excellent choice for patrol craft, launches, workboats, fishing boats, trawler yachts, and sportfishing boats



Engine model	Emissions				Rated power		Rated speed	Rated fuel consumption	
	IMO	EPA	EU	RCD	kW	hp	rpm	L/hr	gal/hr
IMO compliant engines									
6090AFM75									
M1	Tier 2	-	III A	RCD I	213	285	2100	56.0	15.0
M2	Tier 2	-	III A	RCD I	242	325	2200	62.0	16.0
M3	Tier 2	-	III A	RCD I	280	375	2300	76.0	20.0
M4	Tier 2	-	III A	RCD I	317	425	2400	86.0	23.0
6090SFM75									
M1	Tier 2	-	III A	RCD I	242	325	2100	56.3	14.9
M2	Tier 2	-	III A	RCD I	280	375	2200	64.0	17.0
M3	Tier 2	-	III A	RCD I	317	425	2300	74.0	20.0
M4	Tier 2	-	III A	RCD I	373	500	2400	88.0	23.0
M5	Tier 2	-	III A	RCD I	410	550	2500	108.0	29.0
IMO & EPA compliant engines									
6090AFM85									
M1	Tier 2	Tier 3	III A	RCD I	213	285	2100	64.6	17.1
M2	Tier 2	Tier 3	III A	RCD I	242	325	2200	71.0	19.0
M3	Tier 2	Tier 3	III A	RCD I	280	375	2300	81.0	21.0
M4	Tier 2	Tier 3	III A	RCD I	317	425	2400	91.0	24.0
6090SFM85									
M1	Tier 2	Tier 3	III A	RCD I	242	325	2100	65.4	17.3
M2	Tier 2	Tier 3	III A	RCD I	280	375	2200	78.0	21.0
M3	Tier 2	Tier 3	III A	RCD I	317	425	2300	87.0	23.0
M4	Tier 2	Tier 3	III A	RCD I	373	500	2400	107.0	28.0
M5	Tier 2	Tier 3	III A	RCD I	410	550	2500	116.0	31.0

EX = MARPOL Annex VI exempt

Ratings are subject to change.

Engine model	Length, to rear of block		Width		Height		Weight, dry	
	mm	in	mm	in	mm	in	kg	lb
6090AFM75	1682	66.2	938	36.9	984	38.8	1011	2229
6090SFM75	1293	50.9	975	38.4	982	38.7	1066	2349
6090AFM85	1297	51.1	1027	40.4	983	38.7	1055	2325
6090SFM85	1297	51.1	974	38.3	983	38.7	1056	2327

PowerTech

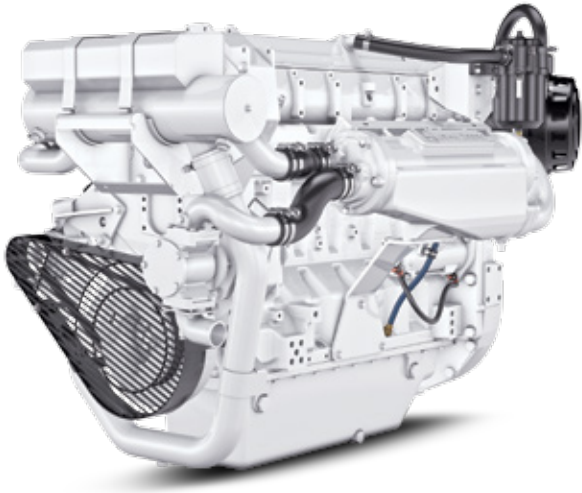
13.5L marine engines

- Keel-cooled or heat exchanger configurations
- Turbocharged with air-to-seawater or air-to-coolant aftercooling
- 4-valve cylinder head
- Feature constant power to 400 rpm below rated speed
- Excellent choice for patrol craft, launches, workboats, fishing boats, trawler yachts, and sportfishing boats

Engine model	Emissions				Rated power		Rated speed	Rated fuel consumption	
	IMO	EPA	EU	RCD	kW	hp	rpm	L/hr	gal/hr
IMO & EPA compliant engines									
6135AFM85									
M1	Tier 2	Tier 3	III A	RCD I	272	365	1800	76.7	20.3
M2	Tier 2	Tier 3	III A	RCD I	317	425	1900	86.0	23.0
M3	Tier 2	Tier 3	III A	RCD I	373	500	2000	102.0	27.0
M4	Tier 2	Tier 3	III A	RCD I	429	575	2100	119.0	31.0
6135SFM85									
M1	Tier 2	Tier 3	III A	RCD I	317	425	1800	79.5	21.0
M2	Tier 2	Tier 3	III A	RCD I	373	500	1900	94.0	25.0
M3	Tier 2	Tier 3	III A	RCD I	429	575	2000	111.0	29.0
M4	Tier 2	Tier 3	III A	RCD I	485	650	2100	124.0	33.0
M5	Tier 2	Tier 3	III A	RCD I	559	750	2200	146.0	39.0

Ratings are subject to change.

Engine model	Length, to rear of block		Width		Height		Weight, dry	
	mm	in	mm	in	mm	in	kg	lb
6135AFM85	1316	51.8	1062	41.8	1182	46.5	1410	3108
6135SFM85	1335	52.6	1063	41.9	1176	46.3	1426	3143



PowerTech marine generator drive engines

- Quiet, smooth operation
- Preferred provider of generator drive engines worldwide
- Available in 1500 rpm for 50 Hz and 1800 rpm for 60 Hz configurations
- This rating incorporates a 10 percent overload capability and conforms to ISO 8528 prime power.

Conversions

Generator drive rating (kWe)

$$\text{kWe} = [\text{Engine power (kW)} - \text{Fan power loss (kW)}] \times \text{Generator efficiency}$$

Note: Marine generator sets do not have fan power loss

Power factor (PF)

$$\text{PF} = \frac{\text{kWe/kVA} = \text{Real power}}{\text{Apparent power}}$$

PF constant = 0.80

Formulas

$$\begin{aligned} &(\text{Standby power, kWe}) = \\ &(\text{Prime power, kWe}) * (110\% \text{ Overload capacity}) \\ &\text{kWe rating}/0.8 = \text{kVA rating} \end{aligned}$$

Electrical power is calculated from the typical generator efficiency and fan power percentages shown. Applications may vary.

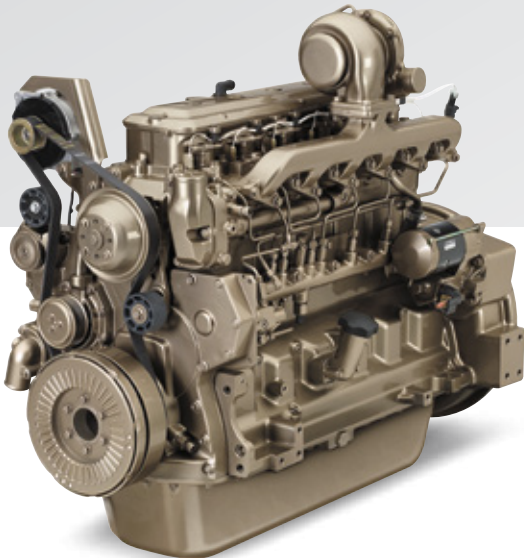
Engine model	Emissions		Prime power ratings			
	IMO	EPA	kW	hp	kVA	kWe
1500 rpm / 50Hz						
IMO compliant engines						
4045DFM70	EX	-	40	54	45	36
4045TFM75	EX	-	55	74	62	50
4045TFM85	EX	-	61	82	69	55
4045AFM85	EX	-	89	119	102	82
6068TFM50	EX	-	89	119	102	82
6068TFM76	EX	-	89	119	102	82
6068AFM85	EX	-	117	157	132	106
6068AFM85	Tier 2	-	139	187	160	128
6068AFM75	Tier 2	-	139	187	160	128
6068SFM85	Tier 2	-	168	226	188	150
6090AFM75	Tier 2	-	195	261	219	175
6090SFM75	Tier 2	-	222	297	250	200
6090AFM85	Tier 2	-	195	261	219	175
6090SFM85	Tier 2	-	222	297	250	200
6135AFM85	Tier 2	-	278	373	313	250
6135SFM85	Tier 2	-	334	447	375	300
1800 rpm / 60Hz						
IMO compliant engines						
4045DFM70	EX	-	46	62	50	40
4045TFM75	EX	-	73	98	81	65
6068TFM50	EX	-	115	154	124	99
6068TFM76	EX	-	110	148	124	99
6068AFM75	Tier 2	-	166	223	188	150
6090AFM75	Tier 2	-	222	297	250	200
6090SFM75	Tier 2	-	278	373	313	250
IMO & EPA compliant engines						
4045TFM85	EX	Tier 3	74	99	81	65
4045AFM85	EX	Tier 3	110	148	124	99
6068AFM85	Tier 2	Tier 3	166	223	188	150
6068SFM85	Tier 2	Tier 3	195	262	218	175
6090AFM85	Tier 2	Tier 3	222	297	250	200
6090SFM85	Tier 2	Tier 3	278	373	313	250
6135AFM85	Tier 2	Tier 3	334	447	375	300
6135SFM85	Tier 2	Tier 3	416	558	469	375

EX = MARPOL Annex VI exempt

Ratings are subject to change.

Auxiliary power that's ready when you are

John Deere PowerTech™ engines are compliant with EPA Tier 3 regulations and engineered to run vessel auxiliaries such as pumps, winches, deck cranes, and hydraulics. With displacements from 4.5 liters to 13.5 liters and power ratings from 74 to 448 kW (99 to 600 hp), fitting your application has never been easier. We also offer a choice of options and accessories.



Ratings: Constant Speed

Engine model	Emissions		Displacement		Rated power		Rated speed
	IMO	EPA	L	cu in	kW	hp	
4045HF285	Tier 2	Tier 3	4.5	275	129	173	1800
4045TF285	Tier 2	Tier 3	4.5	275	78	105	1800

Ratings: Variable Speed

Engine model	Emissions		Displacement		Rated power		Rated speed
	IMO	EPA	L	cu in	kW	hp	
4045TF285	Tier 2	Tier 3	4.5	275	74	99	2200
6068HF485	Tier 2	Tier 3	6.8	415	187	251	2200
6090HF485	Tier 2	Tier 3	9.0	549	280	375	2200
6135HF485	Tier 2	Tier 3	13.5	824	448	600	2100

Ratings are subject to change.

Marine emergency power gen-sets

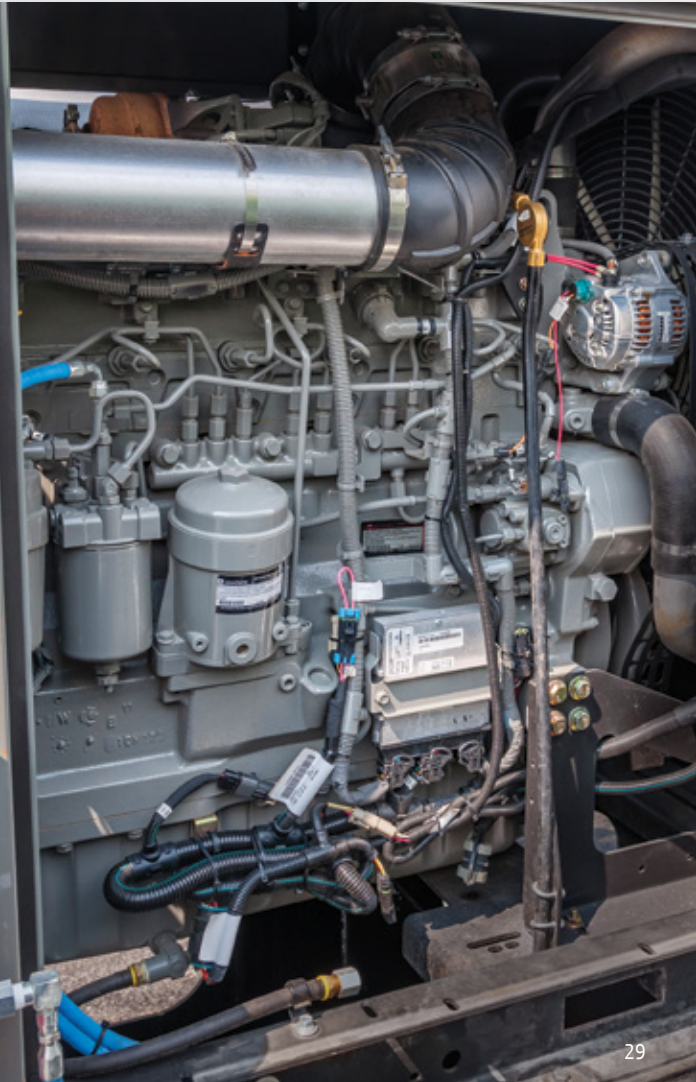
John Deere Power Systems provides radiator-cooled, dry-exhaust manifold PowerTech gen-set engines that carry marine society approvals.

- This rating incorporates a 10 percent overload capability and conforms to ISO 8528 prime power.

Ratings: Marine Emergency Power Gen-Sets

Engine model	Displacement		Rated power		Rated speed
	L	cu in	kW	hp	rpm
6068HF275	6.8	514	111	149	1500
6068HF279	6.8	514	139	186	1500
6068HF275	6.8	514	149	200	1800
6068HF275	6.8	514	170	228	1800
6068HF275	6.8	514	191	256	1800
6090HFG86	9.0	548	253	339	1500
6090HFG86	9.0	548	304	408	1500
6090HFG86	9.0	548	258	346	1800
6090HFG86	9.0	548	315	422	1800
6090HFG86	9.0	548	345	463	1800

Not available in all countries.



Customer support



With more than 4,000 service locations worldwide, John Deere is always there when you need service and support. You'll find an authorized John Deere dealer or engine distributor almost anywhere in the world. Go to JohnDeere.com/dealer to find the service dealer nearest you.

We have centralized parts warehouses in the United States and Europe, plus numerous worldwide depots that employ overnight parts shipping — so you'll never have to wait long for parts. You can also order parts anywhere at any time using your phone, tablet, or laptop. Order online at JDParts.JohnDeere.com.

In addition, John Deere service personnel are highly trained technicians who stay on top of changing engine technologies and service techniques.

John Deere dealers and distributors are your best source for service, knowledge, and engine parts. They're one of the many reasons to specify John Deere engines in your equipment.

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.

Scan this code to register your John Deere OEM engine now or visit JohnDeere.com/warranty.



Worldwide locations

North America, South America, Brazil, and Caribbean

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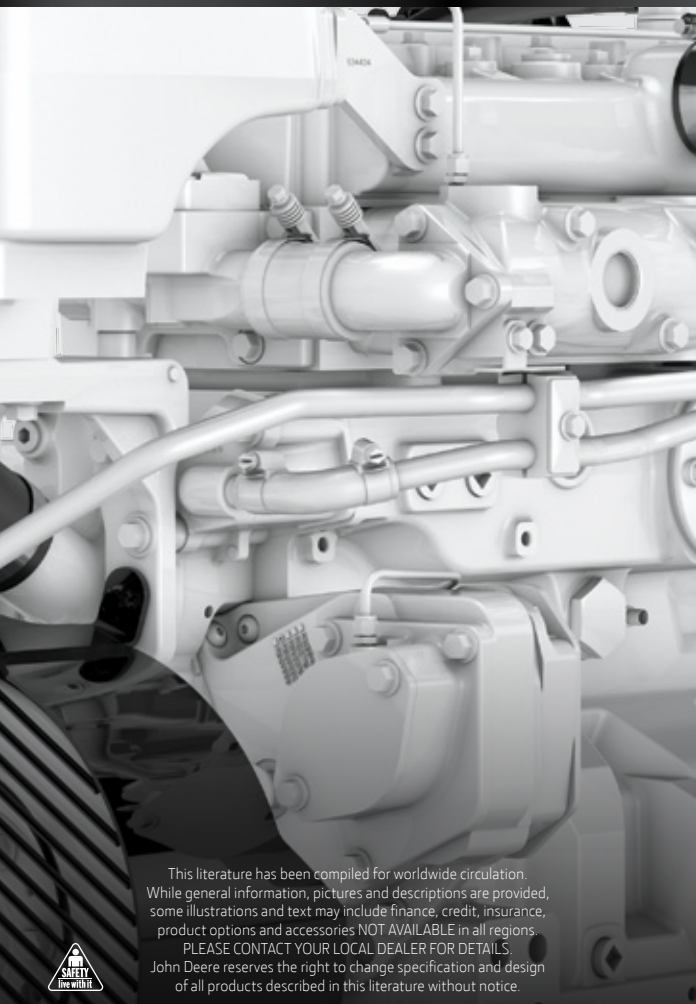
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