

Marketing Information Bulletin



John Deere Power Systems

NUMBER: MIB03-13
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TO: North American Engine Distributors

SUBJECT: New Marine Engines Meet US EPA Marine Tier 2 Standards

Introduction

John Deere Power Systems (JDPS) is pleased to announce a new line of commercial marine engines that meet US Environmental Protection Agency (EPA) marine Tier 2 emissions standards. The new EPA standards affect all **commercial propulsion** and, **all commercial and recreational auxiliary and generator drive** marine engines manufactured in 2004 and beyond. The following table illustrates the new EPA marine emission standards.

EPA Tier 2 Commercial Marine Emissions Standards (g/ kW - H)

EPA Category	Affected Models	CO	Nox + Total HC	PM	Effective Date
1	4045, 6068	5.0	7.2	0.30	2004
1	6081, 6125	5.0	7.2	0.20	2004

Source: www.dieselnet.com

Product Line

JDPS is introducing the new line of emission certified engines to meet the new standards. These engines are in addition to the current product line except where indicated. Refer to the following tables for product data:

Marine Product Line- EPA Tier 2 Certified

Model	4045DFM70	4045TFM75	6068TFM75	6068TFM76
Replacement For	4045DFM50	-	-	-
Fuel System	Mechanical	Electronic	Electronic	Electronic
Type	DB4	DE10	VP44	DE10
M1- HP (kW)	--	106 (79) @ 2400	158 (118) @ 2400	--
M2- HP (kW)	80 (59) @ 2500	121 (90) @ 2500	178 (133) @ 2500	--
M3- HP (kW)	--	135 (101) @ 2600	201 (150) @ 2600	--
M4- HP (kW)	--	--	--	--
M5- HP (kW)	--	--	--	--
50 Hz- kWe (KVA)	33 (41)	50 (62)	--	80 (100)
60 Hz- kWe (kVA)	40 (50)	65 (81)	--	99 (124)

Marine Product Line- EPA Tier 2 Certified

Model	6068SFM	6081AFM75	6125AFM75
Replacement For	-	6081AFM01	6125AFM01
Fuel System	Electronic	Electronic	Electronic
Type	VP44	HPCR	EUI
M1- HP (kW)	182 (136) @ 2200	235 (175) @ 2100	340 (254) @ 1800
M2- HP (kW)	208 (155) @ 2300	300 (224) @ 2200	389 (290) @ 1900
M3- HP (kW)	236 (176) @ 2400	330 (246) @ 2300	455 (335) @ 2000
M4- HP (kW)	267 (199) @ 2500	375 (280) @ 2400	525 (392) @ 2100
M5- HP (kW)	300 (224) @ 2600	--	--
50 Hz- kWe (kVA)	--	146 (183)	--
60 Hz- kWe (kVA)	--	175 (219)	275 (344)

Notable Product Changes

To comply with the new emissions standards, electronically controlled fuel systems were adopted for all the new models except for the 4045DFM70. Electronically controlled fuel systems can more accurately control fuel pressure, injection duration and timing, which are the principal performance differences from non-certified engines. Noteworthy changes of the emission certified engines include changes in power ratings, slightly higher heat rejection and possibly lower fuel economy. Other than the loss of the M4 ratings on 4045T and 6068T engines, John Deere has been able to mitigate these factors on the new models that customers will not notice significant performance differences. Additionally, all the electronically controlled engines feature a protection algorithm that warns the operator of excessive operation in an overloaded condition so the operator can take steps to protect the engine.

The following is a summary of the notable product changes for each **new** model:



4045DFM70- the naturally aspirated 4045DFM70 retains the mechanical fuel system used on the 4045DFM50. It utilizes the Stanadyne DB4 rotary fuel injection pump. The engine is now equipped with a fuel-water separator as standard equipment. Propulsion power was lowered to 80 HP (59 kW) @ 2500 rpm as an M2 rating to meet the emissions requirements. Otherwise, the engine and options remain unchanged. The engine is ideal for commercial fishing applications, generators, sailboats and trawler yachts. The engine is offered in both keel cooled and heat exchanger versions.



4045TFM75- The new 4045TFM75 is equipped with a Stanadyne DE10 electronically controlled fuel system. This system incorporates a high pressure rotary injection pump and engine mounted electronic control unit (ECU). The engine is now equipped with a fuel-water separator as standard equipment. The engine electrical wiring harness will be factory installed eliminating the additional harness cost to customers as on the current 4045TFM50. This new engine will utilize an electronic instrument panel. Power is limited to the M3 rating of 135 HP (101 kW) @ 2600 rpm. An M4 power rating is not available. This engine is ideal for commercial fishing applications, generators and trawler yachts. The engine is offered in both keel cooled and heat exchanger versions.



6068TFM75- The new 6068TFM75 **propulsion** engine is equipped with the Bosch VP-44 electronically controlled fuel system as used on the current 6068SFM50 propulsion engine. The engine has a maximum M3 rating of 201 HP (150 kW) @ 2600 rpm. An M4 rating is not available. This new engine will utilize an electronic instrument panel. This propulsion engine is ideal for commercial fishing applications, trawler yachts and other displacement hull applications. The engine is offered in both keel cooled and heat exchanger versions.

6068TFM76- The new 6068TFM76 **generator drive** engine is equipped with the Stanadyne DE-10 electronically controlled fuel system. Like the 4045TFM75, the ECU is engine mounted with factory installed electrical wiring harness. This engine also utilizes an electronic instrument

panel. This engine is ideal for all commercial and recreational power generation applications. The engine is offered in both keel cooled and heat exchanger versions.



6081AFM75- The new 6081AFM75 marine engine replaces the 6081AFM01 and is equipped with an electronically controlled high pressure common rail (HPCR) fuel system. This new fuel system better manages fuel pressure, timing and duration resulting in better performance whilst meeting emissions standards. The engine features a high intake air temperature alarm and derates power to protect it from possible failures. The generator drive electrical power rating is increased 16% from the previous model to 175 kWe (219 kVA) to give marine generator drive packagers more application flexibility. Both the propulsion and generator drive engines utilize an electronic control panel. This new engine continues to serve the markets served by the 6081AFM01 with the addition of higher generator ratings for large workboats and ships. The engine is offered in both keel cooled and heat exchanger versions.



6125AFM75- The new 6125AFM75 replaces the 6125AFM01 with new features and more power. The M4 power has been increased from 450 HP (335 kW) @ 2100 rpm to 525 HP (392 kW) @ 2100 rpm. The 6125AFM75 is equipped with a watercooled exhaust manifold and turbocharger. The turbocharger is located at the rear of the engine reducing overall engine height by 4" (101 mm) from the previous engine. The engine is electronically controlled with added features including high intake air temperature alarm and derates power to prevent failures from overloading or poor engine room ventilation. Compared to the previous engine,

the new 6125AFM75 has a larger seawater pump, larger heat exchanger, more flow from the jacket water pump, and now offers a keel cooler expansion tank as an option. Other options for the engine include a silencer type air cleaner and closed crankcase ventilation system. This new engine is ideal for all types of propulsion, generator drive, and auxiliary commercial applications. Additionally, it is an ideal engine for repowering aging competitive engines for customers looking for better fuel economy, reliability, cleaner emissions and lower noise. The engine is offered in both keel cooled and heat exchanger versions.



New Electronic Instrument Panel- All the new and existing electronically controlled marine engines utilize SAE J1939 CAN Bus communication. The existing electronic instrument panels can be used with these new engines. For 2004, JDPS is introducing an improved electronic instrument to replace the current version. It features upgraded styling for the recreational market. The main feature is a larger electronic display screen that displays messages in plain text with several language options. Diagnostic fault codes are displayed in plain text messages, and numeric SPN: FMI codes making it more convenient for operators and service technicians. The display can be set up as either a single or quad display for multiple data monitoring. The menu buttons are larger and can be activated even when wearing gloves. Both main station and flybridge panels are now equipped with the new electronic display so operators can always monitor engine performance.

Part Number	Description
RE521033	Main station, electronic instrument panel, 12V a 24V, with key start switch, without throttle
RE521034	Flybridge, electronic instrument panel, 12V and 24V, push button start switch, without throttle
RE522233	Generator drive, electronic instrument panel, 12V and 24V, without analogue gauges, with key start switch, includes ramp throttle.
RE162425	2- State throttle option for RE522233 instrument panel

Wiring Harnesses- Wiring harnesses will be supplied with all new electronic marine engines. The harnesses have been redesigned with a new arrangement. The **engine wiring harness** will connect to all the sensors on the engine and terminate with two connectors; a 21-pin and a

23-pin connector. A **marine adaptor harness** will be offered as an accessory item and will connect to these two engine harness connectors. The marine adaptor harness will be equipped with connections for electronic throttle input, instrument panel connections, cranking circuit and terminals for related fuses and relays. The new marine adaptor harness will be used on all the new electronic marine engines and will be offered in lengths of 6 meters (20 Ft) or 12 meters (39 Feet). Instrument panel extensions can be installed to the marine adaptor harness to meet application requirements.

Marine Wiring Harness Arrangement

Engine Model	Fuel System Type	ECU Location	Engine Wiring Harness	Engine Wiring Harness Interface	Marine Adaptor Harness	Instrument Panel
4045DFM70	DB4	None	Order Separately	None	None	Mechanical
4045TFM75	DE10	Engine Mounted	Factory Installed	21 Pin and 23 Pin connector	Order As Accessory	Electronic
6068TFM75	VP44	Remote	Shipped Loose	21 Pin and 23 Pin connector	Order As Accessory	Electronic
6068TFM76	DE10	Engine Mounted	Factory Installed	21 Pin and 23 Pin connector	Order As Accessory	Electronic
6068SFM50 (Due in 2004)	VP44	Remote	Shipped Loose	21 Pin and 23 Pin connector	Order As Accessory	Electronic
6081AFM75	CR	Remote	Shipped Loose	21 Pin and 23 Pin connector	Order As Accessory	Electronic
6125AFM75	EUI	Remote	Shipped Loose	21 Pin and 23 Pin connector	Order As Accessory	Electronic

Customers will still need to purchase separately, the electronic throttle control kit, instrument panel, marine adaptor harness and flybridge bridge harness, as required. The 4045TFM75 and 6068TFM76 marine engines will be supplied with an engine mounted ECU and wiring harness. All other electronic engines will be shipped with the wiring harness and ECU shipped loose for remote ECU installation.

Features & Benefits Summary For EPA Marine Tier II Engines

Feature	Benefit	Affected Models
Advanced Fuel System	Improved performance, emission certified	All models
Application Flexibility	Rating selection via John Deere Custom Performance	All electronic models
Application Flexibility	Electronic option selection to the Distributor via John Deere Custom Performance	All electronic models
Application Flexibility	Enclosed loom wiring harness for improved reliability and easier installations	All electronic models
Application Flexibility	Front PTO option for SAE B and SAE C pumps	4045DFM, 4045TFM, 6068TFM
Application Flexibility	Identical customer interface (21 pin and 23 pin connectors)	All electronic models
Base Engine Improvements	Improved crankshaft nose design capable of full power utilization	4045DFM, 4045TFM, 6068TFM
Better Protection	Water-fuel separator and final fuel filters standard	All models
Electronic Protection	High coolant temperature derate	All electronic models
Electronic Protection	Low oil pressure derate	All electronic models
Electronic Protection	High intake air temperature derate	AFM, SFM Models
Electronic Protection	Engine protection for excessive operation in the lug curve warns of overloading	All electronic models

Feature	Benefit	Affected Models
Electronically Controlled	Minimal to no cold start white smoke	All electronic models
Lower Emissions	2004 EPA Marine Tier II certified	All models
Lubrication System	Improved oil filtration	All models
Maintenance Convenience	Top load oil filter	6081AFM
Operating Convenience	Station select for multi-station installations	All electronic models
Operating Convenience	Twin engine speed synchronization	All electronic models
Precise Fuel Delivery	Reduced black smoke	All models; (40% reduction on 6081AFM)

Competitive Position

At the time of this writing, competitive marine Tier II information was not available. We can only estimate what the competitive product offerings will be. In general, John Deere EPA Marine Tier II products will have the **same or more power offerings** as competitive engines that have to meet the same standard. Some competitors may also decide not to certify certain commercial engine models and reduce their product offerings. John Deere marine distributors and dealers will have a more extensive product offering than competitors giving them more opportunity for sales.

Ordering and Pricing Information

Pricing Information Bulletin PIB-03-37 announces the prices for the new 4045, 6068 and 6081 EPA Tier II marine engines. PIB03-44 announces prices for the new 6125 EPA Tier II marine engine. PIB03-39 announces the direct ship prices for the new electronic and mechanical instrument panels. Engines can be ordered by the dates listed in the following table:

Engine Model	First Orders Accepted	Ship Date
4045DFM75	November 2003	January 2004
4045TFM75	November 2003	January 2004
6068TFM75	November 2003	January 2004
6068TFM76	November 2003	January 2004
6081AFM75	November 2003	January 2004
6125AFM75	December 2003	February 2004

All marine engine options including marine adaptor harnesses, closed crankcase ventilation kits, and air cleaner/ silencers will be listed in the Marine Accessory List located in the marine applications information of your marine cd-rom or in the Engine Accessories section at <https://jdpower.deere.com/psdistrib/index.htm>.

Summary

The new EPA Marine Tier II certified John Deere marine engine offerings give JDPS distributors and dealers the opportunity to grow sales in North America with a wide range of products from 80 to 525 HP (59 to 392 kW). More opportunity may arise as competitors potentially reduce their commercial offerings. JDPS distributors and dealers can now aggressively pursue commercial propulsion and all marine generator opportunities, commercial or recreational. Customers will continue to receive the John Deere value of performance, reliability, and durability, ease of service, simple layout and above all, cleaner emissions.