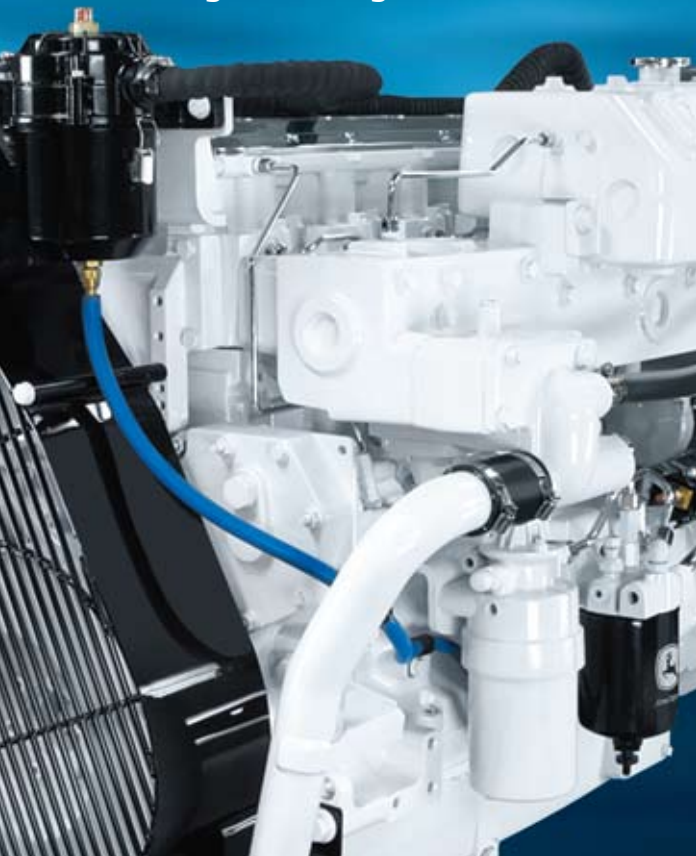




JOHN DEERE

Marine Applications

Diesel Engine Ratings





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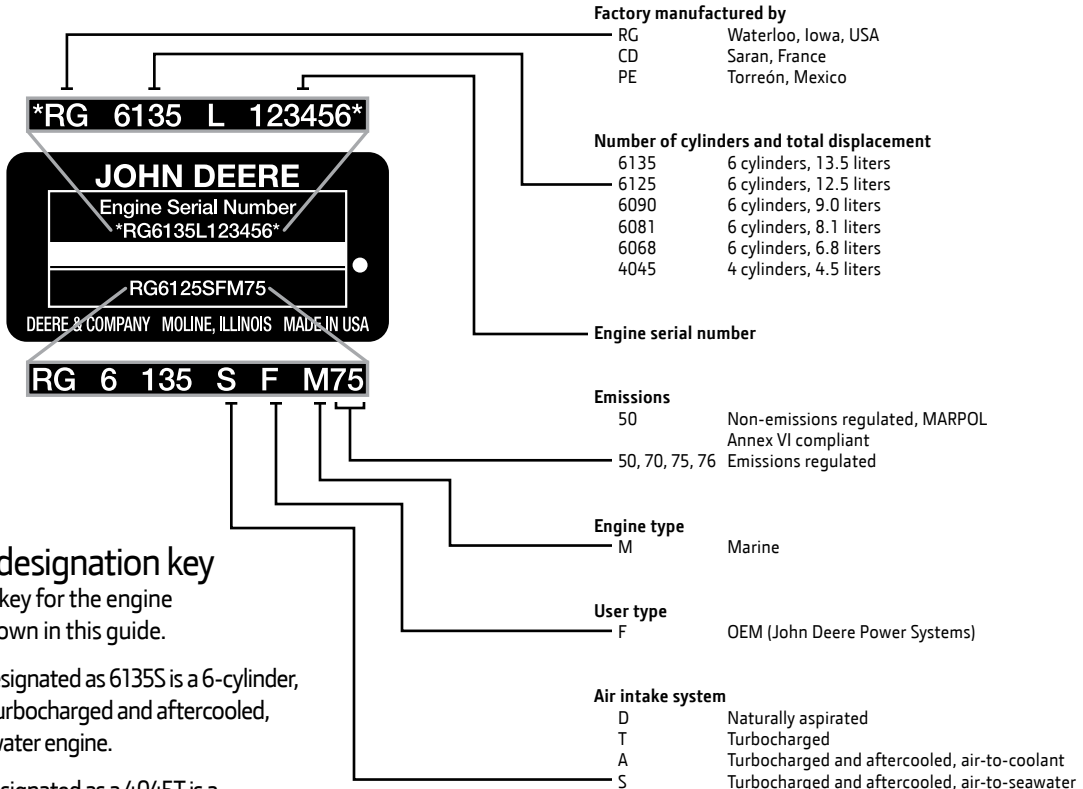
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Identification plate



Model designation key

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

A model designated as 6135S is a 6-cylinder, 13.5-liter turbocharged and aftercooled, air-to-seawater engine.

A model designated as a 4045T is a 4-cylinder, 4.5-liter turbocharged engine.

6135S



M ratings



M1: The M1 rating is for marine propulsion applications that may operate up to 24 hours per day at uninterrupted full power. These applications typically operate more than 3,000 hours per year and have load factors* over 65 percent. The M1 rating is the ISO 8665 standard power rating and the SAE J1228 crankshaft power rating. Both are defined as the power level at which an engine can run continuously between recommended service intervals.

Possible applications: Line haul tugs and towboats, fish and shrimp trawlers/draggers, and displacement hull fishing boats over 18 m (60 ft).

M2: The M2 rating is for marine propulsion applications that operate up to 3,000 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 out of each 24 hours of operation. The remaining time of operation must be at cruising† speeds.

Possible applications: Short-range tugs and towboats, long-range ferryboats, large passenger vessels, and offshore displacement hull fishing boats under 18 m (60 ft).

Marine auxiliary power engines for dedicated hydraulic pump drives, dredge pumps, or other constant-load marine applications should use the M2 rating.

* 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 8-hour run, and the full-power fuel consumption is 60 liters per hour, the load factor is $160 \text{ liters} / (60 \text{ liters per hour} \times 8 \text{ hours}) = 33.3 \text{ percent}$.

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

M3: The M3 rating is for marine propulsion applications that operate up to 2,000 hours per year and have load factors* up to 50 percent. This rating is for applications that use full power for no more than 4 hours out of each 12 hours of operation. The remaining time of operation must be at cruising† speeds.

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

M4: The M4 rating is for marine propulsion applications that operate up to 800 hours per year and have load factors* below 40 percent. This rating is for applications that use full power for no more than 1 hour out of each 12 hours of operation. The remaining time of operation must be at cruising† speeds.

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

M5: The M5 rating is for marine recreational propulsion applications that operate 300 hours or less 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 8 hours and cruising† speed the remainder of the 8 hours, and do not operate for the remaining 16 hours of the day.

Possible applications: Recreational boats in the U.S., tactical military vessels, and rescue boats outside the U.S.

Marine generator: 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 2 hours are between 100 percent and 110 percent of the prime rating.

The marine generator rating is restricted to generator applications only. The criteria used to establish marine generator application ratings are the same used to establish industrial prime power generator application ratings.

* 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 8-hour run, and the full-power fuel consumption is 60 liters per hour, the load factor is $160 \text{ liters} / (60 \text{ liters per hour} \times 8 \text{ hours}) = 33.3 \text{ percent}$.

† 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
M5	≤ 35%	≤ 300 hr	0.5 of each 8 hr
M4	≤ 40%	≤ 800 hr	1 of each 12 hr
M3	≤ 50%	≤ 2,000 hr	4 of each 12 hr
M2	≤ 65%	≤ 3,000 hr	16 of each 24 hr
M1	> 65%	> 3,000 hr	Uninterrupted

Emissions

	Commercial	Recreational	Auxiliary
EU Directive on IWT (2004/26/EC) CCNR for sailing on the Rhine	■		■
EPA Tier 2 regulations in North America	■	■	■
Engines > 130 kW (174 hp) MARPOL Annex VI	■	■	■
EU Recreational Craft Directive (2003/44/EC) Vessels 2.4 to 24 meters in length		■	
Non-road mobile machinery (NRMM) (97/68/EC)	■	■	■



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 rating	Displacement		Rated power		Rated speed	Rated fuel consumption	
		L	cu in	kW	hp	rpm	L/hr	gal/hr
4045TFM75								
M3	1, 2, 3, 4	4.5	276	101	135	2600	29.4	7.8
M2	1, 2, 3, 4	4.5	276	90	121	2500	25.4	6.2
M1	1, 2, 3, 4	4.5	276	80	107	2400	22.1	5.8
4045TFM50								
M4	1	4.5	276	112	150	2600	29.7	7.8
M3	1	4.5	276	101	135	2500	26.3	6.9
M2	1	4.5	276	90	120	2400	22.7	6
M1	1	4.5	276	78	105	2300	19.5	5.2
4045DFM70								
M2	1, 2, 3, 4	4.5	276	60	80	2500	17.5	4.6
4045DFM50								
M2	1	4.5	276	63	85	2500	17.3	4.6
M1	1	4.5	276	56	75	2400	15	4

Emissions rating:

1. MARPOL Annex VI compliant
2. EPA Tier 2
3. IWT (2004/26/EC)
4. RCD (2003/44/EC)

Ratings are subject to change.

Engine model	Length		Width		Height		Weight, dry		Maximum installed angle	
	mm	in	mm	in	mm	in	kg	lb	Front up	Front down
4045TFM75	1056	41.6	827	32.6	912	35.9	462	1019	15	0
4045TFM50	1056	41.6	827	32.6	912	35.9	462	1017	15	0
4045DFM70	923	36.3	758	29.8	902	35.5	437	963	15	0
4045DFM50	923	36.3	758	29.8	902	35.5	437	961	15	0

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
- Feature constant power to 400 rpm below rated speed
- Excellent choice for recreational boats, launches, work boats, trawler yachts, and patrol craft



Engine model	Emissions rating	Displacement		Rated power		Rated speed	Rated fuel consumption	
		L	cu in	kW	hp	rpm	L/hr	gal/hr
6068SFM75								
M5	1,2,3,4	6.8	414	298	400	2800	77.6	20.5
M4	1,2,3,4	6.8	414	265	355	2700	66.8	17.7
M3	1,2,3,4	6.8	414	239	321	2600	60.2	15.9
M2	1,2,3,4	6.8	414	209	280	2500	52.3	13.8
M1	1,2,3,4	6.8	414	186	249	2400	47.2	12.5
6068SFM50								
M5	1,2,3,4	6.8	414	224	300	2600	59.1	15.6
M4	1,2,3,4	6.8	414	199	267	2500	51.6	13.6
M3	1,2,3,4	6.8	414	176	236	2400	45.5	12
6068AFM75								
M4	1,2,3,4	6.8	414	245	330	2600	65.2	17.2
M3	1,2,3,4	6.8	414	224	300	2500	57.8	15.3
M2	1,2,3,4	6.8	414	198	265	2400	56.2	13.5
M1	1,2,3,4	6.8	414	172	230	2300	43.7	11.5
6068TFM75								
M3	1,2,3,4	6.8	414	150	201	2600	44.1	11.7
M2	1,2,3,4	6.8	414	133	178	2500	38.3	10.1
M1	1,2,3,4	6.8	414	118	158	2400	33.7	8.9
6068TFM50								
M4	1	6.8	414	168	225	2600	44.3	11.7
M3	1	6.8	414	149	200	2500	38.8	10.3
M2	1	6.8	414	131	175	2400	34.7	9.2
M1	1	6.8	414	115	154	2300	29.6	7.8

Emissions rating:

1. MARPOL Annex VI compliant
2. EPA Tier 2
3. IWT (2004/26/EC)
4. RCD (2003/44/EC)

Ratings are subject to change.

Engine model	Length		Width		Height		Weight, dry		Maximum installed angle	
	mm	in	mm	in	mm	in	kg	lb	Front up	Front down
6068SFM75	1380	54.3	1112	43.8	959	37.8	890	1962	9	0
6068SFM50	1380	54.3	875	34.4	882	34.7	793	1748	9	0
6068AFM75	1347	53.0	854	33.6	937	36.9	812	1790	9	0
6068TFM75	1313	51.7	828	32.6	881	34.7	590	1301	9	0
6068TFM50	1313	51.7	828	32.6	881	34.7	590	1298	9	0

PowerTech

8.1L marine engines

- Keel-cooled or heat exchanger configurations
- Turbocharged with air-to-coolant aftercooling
- Feature constant power to 400 rpm below rated speed
- Excellent choice for launches, work boats, trawler yachts, and patrol craft

Engine model	Emissions rating	Displacement		Rated power		Rated speed	Rated fuel consumption	
		L	cu in	kW	hp	rpm	L/hr	gal/hr
6081AFM75								
M4	1, 2, 3, 4	8.1	497	280	375	2400	72.9	19.3
M3	1, 2, 3, 4	8.1	497	246	330	2300	62.3	16.7
M2	1, 2, 3, 4	8.1	497	224	300	2200	57.8	15.3
M1	1, 2, 3, 4	8.1	497	175	235	2100	46.6	12.3

Emissions rating:

1. MARPOL Annex VI compliant
2. EPA Tier 2
3. IWT (2004/26/EC)
4. RCD (2003/44/EC)

Ratings are subject to change.

Engine model	Length		Width		Height		Weight, dry		Maximum installed angle	
	mm	in	mm	in	mm	in	kg	lb	Front up	Front down
6081AFM75	1516	59.7	907	35.7	1014	39.9	853	1881	12	0



PowerTech 9.0L marine engines

- Heat exchanger cooled
- Turbocharged with air-to-seawater 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 rating	Displacement		Rated power		Rated speed	Rated fuel consumption	
		L	cu in	kW	hp	rpm	L/hr	gal/hr
6090SFM75								
M4	1, 2, 3, 4	9.0	548	373	500	2400	94.0	24.8
M3	1, 2, 3, 4	9.0	548	317	425	2300	80.4	21.2
M2	1, 2, 3, 4	9.0	548	280	375	2200	70.9	18.7
M1	1, 2, 3, 4	9.0	548	242	325	2100	62.7	16.6

Emissions rating:

1. MARPOL Annex VI compliant
2. EPA Tier 2
3. IWT (2004/26/EC)
4. RCD (2003/44/EC)

Ratings are subject to change.

Engine model	Length		Width		Height		Weight, dry		Maximum installed angle	
	mm	in	mm	in	mm	in	kg	lb	Front up	Front down
6090SFM75	1714	67.5	974	38.3	977	38.5	1066	2350	12	0

PowerTech

12.5L marine engines

- Keel-cooled or heat exchanger configurations
- Turbocharged with air-to-seawater aftercooling or air-to-coolant aftercooling
- Feature constant power to 400 rpm below rated speed
- Excellent choice for recreational boats, launches, work boats, trawler yachts, and patrol craft



Engine model	Emissions rating	Displacement		Rated power		Rated speed	Rated fuel consumption	
		L	cu in	kW	hp	rpm	L/hr	gal/hr
6125SFM75								
M4	1, 2, 3, 4	12.5	766	455	610	2100	118.5	31.3
M3	1, 2, 3, 4	12.5	766	392	526	2000	102.1	27
M2	1, 2, 3, 4	12.5	766	335	449	1900	87.3	23.1
M1	1, 2, 3, 4	12.5	766	283	380	1800	73.7	19.5
6125AFM75								
M4	1, 2, 3, 4	12.5	766	392	526	2100	106.5	28.1
M3	1, 2, 3, 4	12.5	766	339	455	2000	92.1	24.3
M2	1, 2, 3, 4	12.5	766	298	400	1900	67.8	17.9
M1	1, 2, 3, 4	12.5	766	254	341	1800	66.2	17.5

Emissions rating:

1. MARPOL Annex VI compliant
2. EPA Tier 2
3. IWT (2004/26/EC)
4. RCD (2003/44/EC)

Ratings are subject to change.

Engine model	Length		Width		Height		Weight, dry		Maximum installed angle	
	mm	in	mm	in	mm	in	kg	lb	Front up	Front down
6125SFM75	1801	70.9	1032	40.6	1227	48.3	1475	3252	12	0
6125AFM75	1718	67.6	850	33.5	1150	45.3	1372	3025	12	0

PowerTech

13.5L marine engines

- Heat exchanger cooled
- Turbocharged with air-to-seawater 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 rating	Displacement		Rated power		Rated speed	Rated fuel consumption	
		L	cu in	kW	hp	rpm	L/hr	gal/hr
6135SFM75								
M5	1, 2, 3, 4	13.5	824	559	750	2200	140.2	37
M4	1, 2, 3, 4	13.5	824	485	650	2100	126	33.3
M3	1, 2, 3, 4	13.5	824	429	575	2000	109.4	28.9
M2	1, 2, 3, 4	13.5	824	373	500	1900	94.0	24.8
M1	1, 2, 3, 4	13.5	824	317	425	1800	79.5	21

Emissions rating:

1. MARPOL Annex VI compliant
2. EPA Tier 2
3. IWT (2004/26/EC)
4. RCD (2003/44/EC)

Ratings are subject to change.

Engine model	Length		Width		Height		Weight, dry		Maximum installed angle	
	mm	in	mm	in	mm	in	kg	lb	Front up	Front down
6135SFM75	1818	71.6	1022	40.2	1194	47.0	1525	3362	12	0



PowerTech HazLoc 8.1L engines

- U.S. Coast Guard MSC approved*
- Electronically controlled HPCR fuel system
- Self-diagnostics and engine protection
- Electronic instrument panel with plain text messaging
- Air-to-air aftercooling, dry exhaust, and turbo or air-to-coolant aftercooling with water-cooled exhaust manifold and turbo



* Class 1, Division 1 (Zone 1)
Groups C & D hazardous
weather-deck locations
onboard United States
Coast Guard (USCG) certified
Subchapter D & O vessels.

Engine model	Emissions rating	Displacement		Rated power		Rated speed	Rated fuel consumption	
		L	cu in	kW	hp	rpm	L/hr	gal/hr
6081HFH70	2	8.1	497	242	325	2200	59.8	15.8
6081AFM75	1, 2, 3	8.1	497	175-280	235-375	2100-2400	73	19.3

Emissions rating:

1. MARPOL Annex VI compliant
2. EPA Tier 2
3. IWT (2004/26/EC)

Ratings are subject to change.

Engine model	Length		Width		Height		Weight, dry	
	mm	in	mm	in	mm	in	kg	lb
6081HFH70	1209	47.6	597	23.5	1153	45.4	776	1711
6081AFM75	1299	51.1	787	31	1005	39.5	853	1881



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



Engine model	Emissions rating	Rated speed rpm	Engine prime power		Engine 10% overload power	
			kW	hp	kW	hp
EMISSIONS CERTIFIED						
6135SFM75	1, 2, 6	1800	417	559	458	614
6135SFM75	1, 2, 6	1500	333	447	366	492
6125SFM75	1, 2, 6	1800	364	488	400	536
6125SFM75	1, 2, 6	1500	307	412	338	453
6125AFM75	1, 2	1800	300	402	330	443
6090SFM75	1, 2, 6	1800	278	373	306	410
6090SFM75	1, 2, 6	1500	222	298	244	328
6081AFM75	1, 2	1800	195	261	214	287
6068SFM75	1, 2, 6	1800	174	233	191	256
6068SFM75	1, 2, 6	1500	146	196	160	215
6068AFM75	1, 2, 6	1800	166	223	183	245
6068AFM75	1, 2, 6	1500	139	186	153	205
6068TFM76	2, 5	1800	110	148	121	162
4045TFM75	2, 5	1800	73	98	80	107
4045DFM70	2, 5	1800	46	62	50	67
NON-EMISSIONS CERTIFIED						
6081AFM75	1	1500	162	217	178	239
6068TFM76	5	1500	89	119	98	131
6068TFM50	5	1800	115	154	125	168
6068TFM50	5	1500	89	119	98	131
4045TFM75	5	1500	55	74	61	82
4045DFM70	5	1500	40	54	44	59
4045TFM50	5	1800	71	95	78	105
4045TFM50	5	1500	57	76	63	84
4045DFM50	5	1800	48	64	53	71
4045DFM50	5	1500	40	54	44	59

Emissions rating:

1. MARPOL Annex VI compliant
2. EPA Tier 2
3. IWT (2004/26/EC)
4. RCD (2003/44/EC)
5. IMO Exempt
6. NRMM (97/68/EC)

Typical prime ratings		Typical 10% overload ratings		Typical generator efficiency
kVA	kWe	kVA	kWe	%
EMISSIONS CERTIFIED				
459-480	367-384	504-526	403-421	88-92
366-383	393-306	403-421	432-463	88-92
400-419	320-335	440-461	352-369	88-92
338-353	270-282	372-388	297-310	88-92
330-345	264-276	363-378	290-304	88-92
305-320	244-256	336-353	269-282	88-92
244-255	195-205	268-281	215-224	88-92
214-224	171-179	235-246	188-197	88-92
191-200	153-160	210-220	168-176	88-92
160-168	128-134	176-184	141-147	88-92
183-191	146-153	201-210	161-168	88-92
153-160	122-128	169-176	135-141	88-92
121-126	97-101	133-138	106-111	88-92
80-84	64-67	88-92	70-74	88-92
50-53	40-42	55-58	44-46	88-92
NON-EMISSIONS CERTIFIED				
178-186	142-149	196-205	156-164	88-92
98-102	78-82	108-113	86-90	88-92
124-132	99-106	136-145	108-116	88-92
78-82	78-82	108-113	86-90	88-92
60-64	48-51	66-70	53-56	88-92
44-46	35-37	48-51	39-41	88-92
78-81	62-65	86-89	68-71	88-92
62-65	50-52	68-71	55-57	88-92
52-55	42-44	58-61	47-49	88-92
44-46	35-37	48-51	39-40	88-92

Ratings are subject to change.

PowerTech auxiliary drive engines

- Variable speed, radiator cooled, engines that can be used to run auxiliaries such as pumps, winches, deck cranes, and hydraulics.
- Ratings from 250 -525 hp available in 6.8L, 8.1L, and 12.5L displacements.



Engine model	Emissions rating	Displacement		Rated power		Rated speed	Rated fuel consumption	
		L	cu in	kW	hp	rpm	L/hr	gal/hr
6068HF475	2	6.8	414	187	250	2200	46	12.1
6081HF070	2	8.1	496	242	325	2200	59.9	15.8
6125HF070	2	12.5	763	317	425	2100	77.1	20.3
6125HF070	2	12.5	763	392	525	2100	97.1	25.6

Emissions rating:
2. EPA Tier 2

Ratings are subject to change.

Engine model	Length		Width		Height		Weight, dry	
	mm	in	mm	in	mm	in	kg	lb
6068HF475	1161	45.7	627	24.7	1044	41.1	587	1294
6081HF070	1210	47.6	599	23.5	1152	45.4	776	1711
6125HF070	1326	52.2	808	31.8	1239	48.8	1205	2657
6125HF070	1326	52.2	808	31.8	1239	48.8	1205	2657



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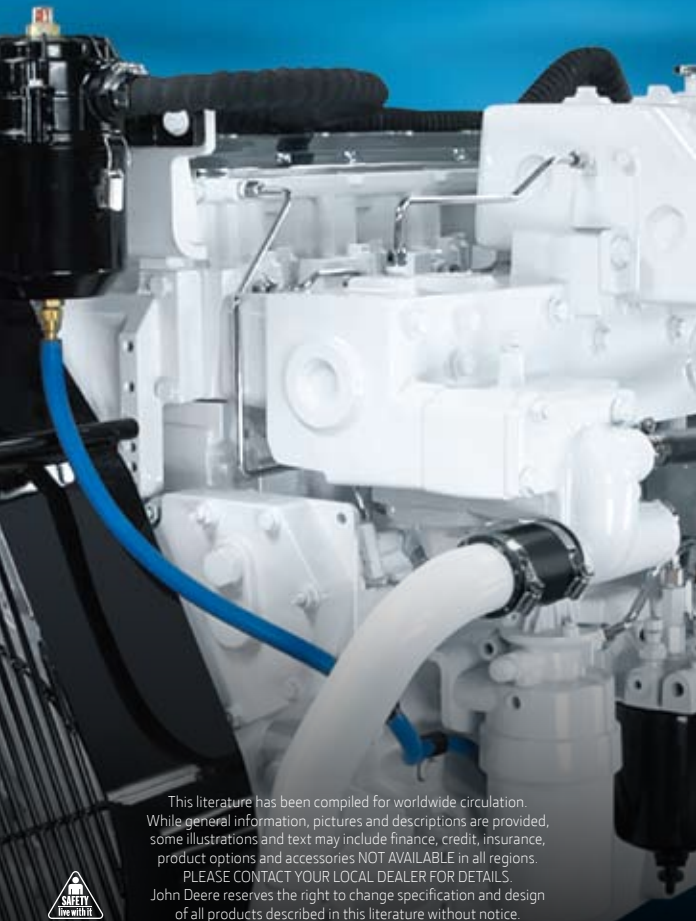
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