JOHN DEERE

Generator Drive Applications

Diesel Engine Ratings

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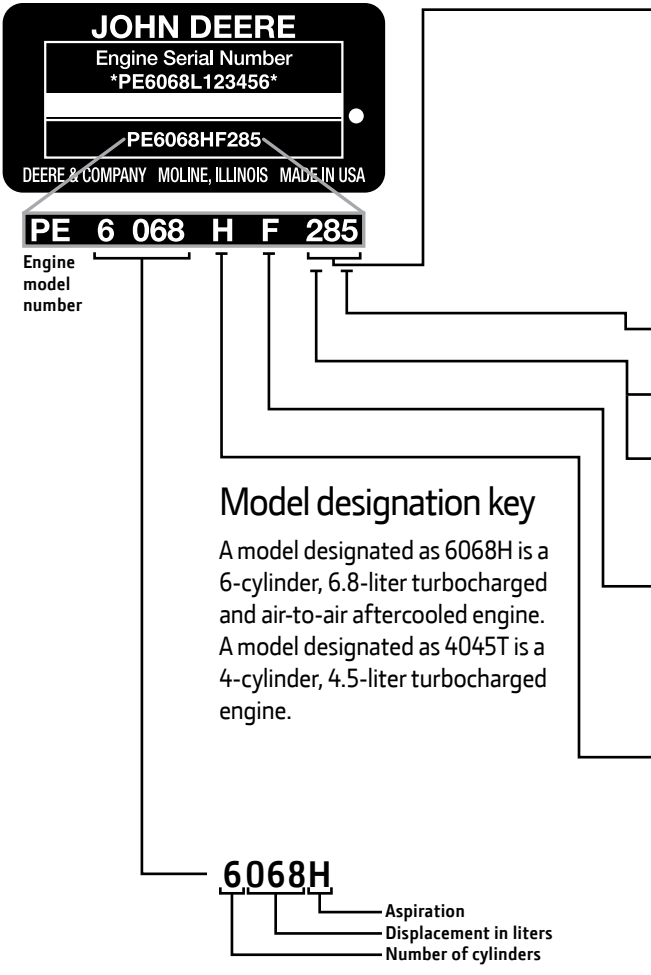
Diesel Engine Ratings

CONTENTS

Generator drive engine identification



Model designation key

A model designated as 6068H is a 6-cylinder, 6.8-liter turbocharged and air-to-air aftercooled engine. A model designated as 4045T is a 4-cylinder, 4.5-liter turbocharged engine.

Emissions certification

129, 150, 250, 258, 475, G55	Non-emissions certified – 50 Hz
129, 150, 250, 275, 475, G55	Non-emissions certified – 60 Hz
270, 275, 279, 475	Stage II
280, 285, 484, 485, G75,* G82, G84, G85, G86, G89	Tier 3
G81, G82, G84, G89	Stage III A
290, G92, G93, G94, G95	Interim Tier 4
G03, G04, G05, G06, G08, G09	Final Tier 4
258, U29, U55	Non-certified generator set power unit (GSPU)
U89, U70, U72, U74, U79	Stage II generator set power unit (GSPU)
U81, U82, U84	Stage III A generator set power unit (GSPU)

Engine controls (starting with some Tier 2/Stage II engines)

0 or 1	Mechanical controls
2, 3, 4, 5, or 6	Electronic controls

Valves per cylinder (Tier 2, Tier 3, and Stage II engines)

2	2 valves
4	4 valves

Engine type (Tier 3, Interim Tier 4, Final Tier 4, and Stage III A engines)

G	Generator set (bare engine)
U	Generator set power unit (GSPU)
M	Marine

User type

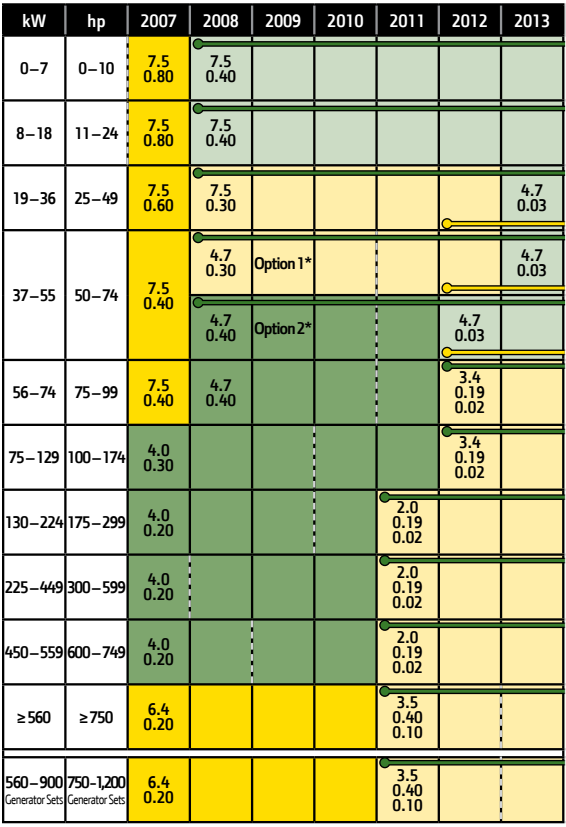
F	OEM (John Deere Power Systems)
XX	Other letters are used to identify John Deere equipment manufacturing locations

Aspiration

D	Naturally aspirated
T	Turbocharged
A	Turbocharged and air-to-coolant aftercooled
H	Turbocharged and air-to-air aftercooled
S	Turbocharged and air-to-seawater aftercooled

*This PowerTech engine is capable of meeting Tier 2 emissions as required by emergency standby regulations (>560 kW).

EPA nonroad emissions regulations



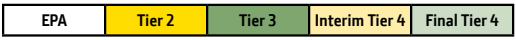
*In the 50 to 74 horsepower category there are two options. Option 1 requires a reduced PM level (0.30 vs. 0.40) but allows Final Tier 4 to be delayed one year (2013).

NOTE: The vertical dashed lines separating the years show when the seven-year life of the Tier 2/3 Equipment Flexibility Provision ends and engines can no longer be placed in vehicle production.

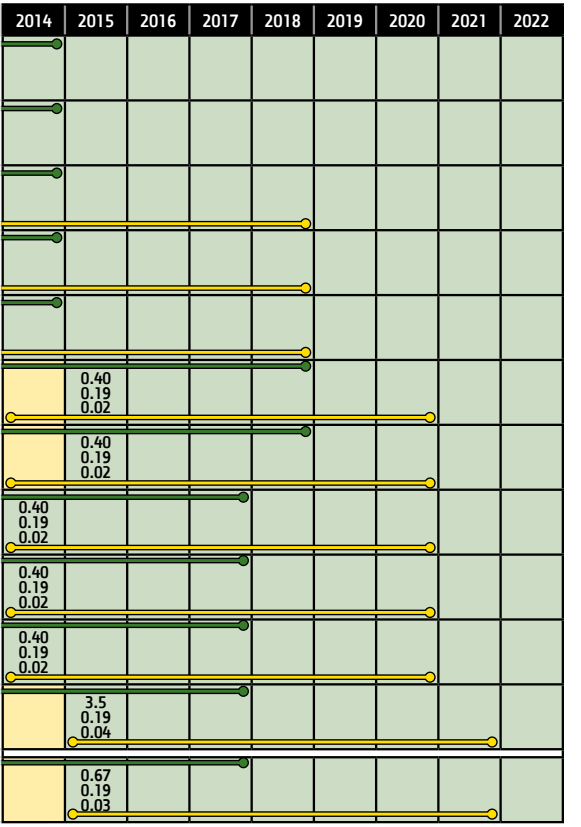
NOTE: In emergency standby applications, the EPA does not require engines to use aftertreatment.

Fuel sulfur regulations

Legend



EPA: Environmental Protection Agency



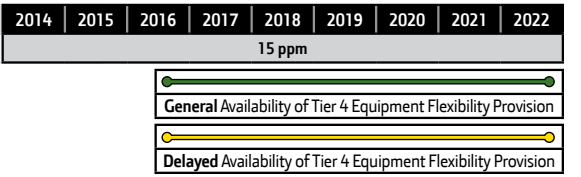
Examples

NOx	**0.40**
NMHC	**0.19**
PM	**0.02**

Nitrogen oxides allowed in g/kWh
Nonmethane hydrocarbons allowed in g/kWh
Particulates (mass based) allowed in g/kWh

NMHC + NOx	**4.7**
PM	**0.03**

Nonmethane hydrocarbons + nitrogen oxides allowed in g/kWh
Particulates (mass based) allowed in g/kWh



EU nonroad mobile emissions regulations –

kW	hp	2007	2008	2009	2010	2011	2012	2013
0–7	0–10	Not regulated in EU						
8–18	11–24	Not regulated in EU						
19–36	25–49	8.0 1.5 0.80				7.5 0.60		
37–56	50–74	7.0 1.3 0.40					4.7 0.40	
57–74	75–99	7.0 1.3 0.40					4.7 0.40	
75–129	100–174	6.0 1.0 0.30				4.0 0.30		
130–559	175–749	6.0 1.0 0.20				4.0 0.20		
≥560	≥750	Not regulated in EU						
≥560	≥750	Not regulated in EU						

NOTE: Stage V emissions regulations have implementation dates of 2019 – 2020. The EU does not regulate engines to an emissions stage for stationary applications. Medium combustion directive regulations for engines above 350 kW (stationary) have expected implementation dates in 2019.

Fuel sulfur regulations

	2007	2008	2009	2010	2011	2012	2013
EU	2000 ppm	1000 ppm			10 ppm		

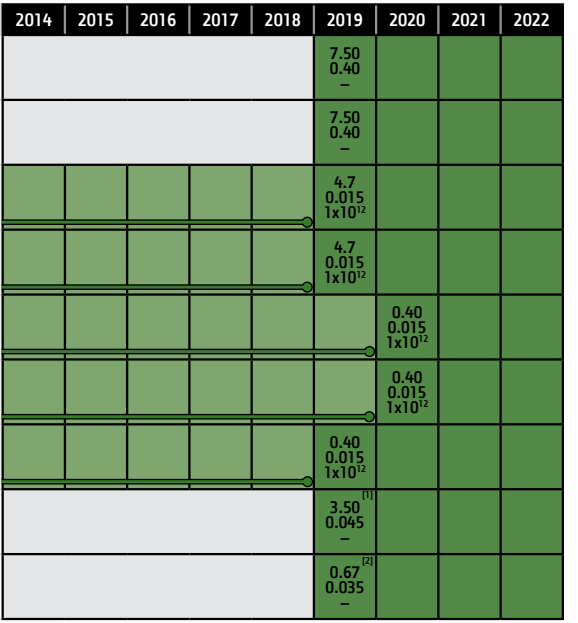
Legend

EU	Stage II	Stage III A	Stage V

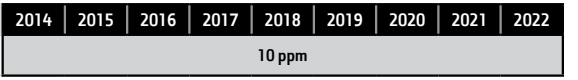
Availability of EU Flexibility Scheme

EU: European Union

— constant-speed engines



[1] Nonroad mobile — Industrial
[2] Nonroad mobile — Generator Set



Examples

NOx NMHC PM	6.0 1.0 0.20	Nitrogen oxides allowed in g/kWh Nonmethane hydrocarbons allowed in g/kWh Particulates (mass based) allowed in g/kWh
NMHC + NOx PM	4.0 0.30	Nonmethane hydrocarbons + nitrogen oxides allowed in g/kWh Particulates (mass based) allowed in g/kWh
NMHC + NOx PM PN	4.7 0.015 1x10[12]	Nonmethane hydrocarbons + nitrogen oxides allowed in g/kWh Particulates (mass based) allowed in g/kWh Particulates (number based) allowed in #/kWh
NOx PM PN	3.50 0.045 –	Nitrogen oxides allowed in g/kWh Particulates (mass based) allowed in g/kWh Particulates (number based) standard does not apply in this power segment

Engines for EPA Final Tier 4 applications

Dual frequency 50 Hz/60 Hz

PowerTech technology	Speed	Engine model	Standby ratings			
	rpm		kWm	hpm	kVA	kWe
DOC/SCR						
PWL	1800	4045HFG04	68	91	71	57
	1500		68	91	72	57
PWL	1800	4045HFG04	80	107	84	67
	1500		80	107	84	67
PWL	1800	4045HFG04	99	133	106	85
	1500		80	107	85	68
PSL	1800	4045HFG06	128	172	138	111
	1500		112	150	121	97
PVL	1800	6068HFG05	160	214	174	139
	1500		160	214	175	140
PVL	1800	6068HFG05	192	257	211	169
	1500		165	221	180	144
PSL	1800	6068HFG06	216	289	236	189
	1500		197	264	215	172
PSL	1800	6068HFG06	240	322	262	210
	1500		197	264	214	171
PSL	1800	6090HFG06	273	366	298	239
	1500		273	366	300	240
PSL	1800	6090HFG06	326	437	356	285
	1500		300	402	328	262
PSL	1800	6090HFG06 [7]	345	462	377	302
	1500		300	402	327	261
PSL	1800	6135HFG06	473	634	521	417
	1500		430	576	474	379

[7] Prime rating not available at this node.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
62	83	64	51	90	4.8
62	83	65	52	90	4.4
73	97	76	60	90	5.6
73	97	76	61	90	5.1
90	121	96	76	92	6.9
73	98	77	61	92	6.3
117	157	126	101	92	7.7
102	137	109	87	92	7.1
146	196	158	126	92	9
146	196	158	127	92	8.2
175	235	191	153	93	10.8
150	201	163	130	93	9.9
196	263	213	171	93	13
179	240	194	155	93	11.8
218	292	237	190	93	14.4
179	240	193	154	93	13.1
249	334	270	216	93	16.4
249	334	272	218	93	14.9
297	398	322	258	93	19.6
273	366	297	237	93	17.8
N/A	N/A	N/A	N/A	93	20.7
N/A	N/A	N/A	N/A	93	18.9
431	578	472	378	93	24.7
391	524	428	343	93	22.5

Engines for EPA Final Tier 4 applications

Dual frequency 50 Hz/60 Hz

PowerTech technology	Speed	Engine model	Standby ratings			
	rpm		kWm	hpm	kVA	kWe
DOC/DPF						
EWX	1800	3029HFG03	36	48	39	31
	1500		36	48	39	31
EWX	1800	3029HFG03	48	64	52	41
	1500		48	64	52	42
EWX	1800	3029HFG03	55	74	59	48
	1500		48	64	52	41
EWX	1800	4045TFG03	55	74	57	46
DOC/DPF/SCR						
PSS	1800	4045HFG09	105	141	114	91
PSS	1800	4045HFG09	124	166	162	130
PVS	1800	6068HFG08	150	201	162	130
PVS	1800	6068HFG08	180	241	195	156
PSS	1800	6068HFG09	216	289	236	189
PSS	1800	6068HFG09	240	322	262	210
PSS	1800	6090HFG09	237	318	259	207
PSS	1800	6090HFG09	273	366	298	239
PSS	1800	6090HFG09	297	398	325	260
PSS	1800	6090HFG09	326	437	356	285
PSS	1800	6090HFG09[7]	345	462	377	302
PSS	1800	6135HFG09	356	477	389	311
PSS	1800	6135HFG09	411	551	449	359
PSS	1800	6135HFG09	473	634	517	413

[7] Prime rating not available at this node.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
33	44	36	28	90	1.4
33	44	36	29	90	1.2
44	59	47	38	90	1.9
44	59	48	38	90	1.7
50	67	54	43	90	2.2
44	59	47	38	90	2
50	67	52	41	90	3.9
93	125	121	97	92	6.3
136	182	146	117	92	7.4
136	182	146	117	92	9
164	219	176	141	92	10.8
218	292	239	191	93	13
218	292	237	190	93	14.4
216	289	235	188	93	14.2
249	334	270	216	93	16.4
271	363	294	235	93	17.8
298	399	324	259	93	19.6
N/A	N/A	N/A	N/A	93	20.7
324	434	351	281	93	21.4
374	501	406	325	93	24.7
432	579	469	375	93	28.4

Engines for EPA Interim Tier 4 applications

60 Hz

PowerTech technology	Engine model	Standby ratings			
		kWm	hpm	kVA	kWe
M	3029TFG89	35	47	37	30
M	3029HFG89	46	62	49	39
M	4045TF290	55	74	58	47
PWX	4045HFG92	67	90	69	55
PWX	4045HFG92	80	107	85	68
PWX	4045HFG92	99	133	105	84
PVX	4045HFG93	105	141	111	89
PVX	4045HFG93	124	166	131	105
PVX	6068HFG94	150	201	162	130
PVX	6068HFG94	180	241	195	156
PSX	6068HFG95	216	289	235	188
PSX	6090HFG95	272	364	297	238
PSX	6090HFG95	297	398	325	260
PSX	6090HFG95	328	440	358	287
PSX	6135HFG95	356	477	389	311
PSX	6135HFG95	411	551	449	359
PSX	6135HFG95	473	634	517	413

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
31	42	32	26	90	2.2
42	56	44	35	90	2.6
50	67	53	42	90	3.3
61	82	63	50	90	5.4
73	98	77	61	92	6.4
90	121	94	76	92	7.9
94	126	98	79	92	8.4
113	151	119	95	92	9.9
136	182	146	117	92	9
164	220	176	141	92	10.8
215	288	233	187	93	14.2
246	330	267	214	93	16.4
267	358	290	232	93	17.8
295	395	320	256	93	19.7
320	429	347	278	93	21.4
370	496	401	321	93	24.7
426	571	462	370	93	28.4

Engines for EPA Tier 3 applications

60 Hz

PowerTech technology	Engine model	Standby ratings			
		kWm	hpm	kVA	kWe
M	3029TFG89	35	47	37	30
M	3029HFG89	46	62	49	39
M	4045TF280 [5]	56	75	61	49
M	4045TF280 [5]	63	84	69	55
M	4045HF280 [5]	74	99	81	65
E	4045TF285	74	99	77	62
E	4045HF285	94	126	102	82
E	4045HF285	99	133	108	86
E	4045HF285	118	158	128	103
E	4045HF285	147	197	162	129
Plus	4045HFG85 [5]	147	197	162	129
E	6068HF285	147	197	160	128
E	6068HF285	177	237	192	154
E	6068HFG82 [2]	212	284	232	185
Plus	6068HFG85 [5]	212	284	232	185
E	6090HF484	229	307	250	200
Plus	6068HFG85 [5]	235	315	257	205
E	6090HFG84 [2]	258	346	278	222
E	6090HF484	287	385	314	251
E	6090HFG84 [2]	315	422	344	275
E	6090HF484	315	422	344	275
Plus	6090HFG85 [5]	315	422	347	278
E	6090HFG86 [3]	345	462	379	303
Plus	6135HF485 [5]	345	462	378	302
E	6135HFG84 [3]	401	537	44	358
Plus	6135HF485 [5]	401	537	441	352
E	6135HFG84 [3]	460	616	513	411
Plus	6135HF485 [5]	460	616	505	404
E	6135HFG75 [3] [4]	563	754	628	503

[2] 60 Hz/50 Hz dual frequency is available on these engines and meet EPA Interim Tier 4 and EU Stage III A emissions regulations.

[3] Available for emergency standby applications only.

[4] This PowerTech engine is capable of meeting Tier 2 emissions as required by emergency stationary regulations (>560 kW).

[5] Jet fuel ratings available; contact your John Deere engine distributor for a complete listing.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
31	42	32	29	90	2.2
42	56	44	35	90	2.9
51	68	55	44	90	1.9
57	76	62	50	90	1.9
67	90	73	58	90	2.2
67	90	70	56	90	5.2
86	115	93	74	92	5.2
90	121	98	78	92	5.2
107	143	116	92	92	6.5
134	180	147	117	92	6.5
134	180	147	117	92	6.5
134	180	145	116	92	8.1
161	216	174	139	92	9.8
193	259	210	168	93	12.6
193	259	210	168	93	12.6
208	279	226	181	93	13.7
214	287	232	186	93	14.1
235	315	251	201	93	18.9
258	346	280	224	93	17.2
287	385	312	249	93	18.9
287	385	312	249	93	18.9
287	385	315	252	93	16.1
N/A	N/A	N/A	N/A	93	19.3
311	417	338	271	93	19.9
N/A	N/A	N/A	N/A	93	16
365	489	399	319	93	22
N/A	N/A	N/A	N/A	93	18.4
419	561	458	366	93	25.3
N/A	N/A	N/A	N/A	93	22.5

Engines for EU Stage III A/EPA Tier 3

Dual frequency 50 Hz/60 Hz

PowerTech technology	Engine model	GSPU model[8]	Speed	Standby ratings			
			rpm	kWm	hpm	kVA	kWe
M	3029TFG89[2]	3029TFU89[2]	1500	31	42	33	27
			1800	35	47	37	30
M	3029HFG89[2]	3029HFU89[2]	1500	43	58	47	37
			1800	46	62	49	39
M	4045HFG81	4045HFU81	1500	61	82	59	47
			1800	65	87	56	45
E	4045HFG82	4045HFU82	1500	83	111	91	73
			1800	86	115	93	74
E	4045HFG82	4045HFU82	1500	103	138	114	91
			1800	106	142	114	91
E	4045HFG82	4045HFU82	1500	123	165	135	108
			1800	126	169	133	106
E	6068HFG82	6068HFU82	1500	153	205	168	134
			1800	156	209	165	132
E	6068HFG82	6068HFU82	1500	202	271	226	181
			1800	212	284	232	185
E	6090HFG84	6090HFU84	1500	253	339	276	221
			1800	258	346	278	222
E	6090HFG84	6090HFU84	1500	304	407	336	269
			1800	315	422	344	275

[2] 60 Hz/50 Hz dual frequency is available on these engines and meet EPA Interim Tier 4 and EU Stage III A emissions regulations.

[8] Generator set power unit (GSPU). A GSPU is a John Deere factory-built gen-set power unit, based on a bare engine with mounting pads, cooling package, and air filter.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
28	38	30	24	90	1.3
31	42	32	26	90	2.2
39	52	42	34	90	1.5
42	56	44	35	90	2.6
56	75	53	42	90	9
59	79	49	39	90	15.5
76	102	83	67	90	2
78	105	84	67	90	3.4
94	126	104	83	92	4
96	129	103	82	92	6.7
112	150	122	98	92	6
115	154	120	96	92	10.3
139	186	151	121	92	7.3
142	190	149	119	92	12.6
184	247	205	164	93	7.3
193	259	210	168	93	12.6
230	308	250	200	93	15.2
235	315	251	201	93	18.9
277	371	304	243	93	15.2
287	385	312	249	93	18.9

Engines for non-emissions certified applications

60 Hz

PowerTech technology	Engine model	GSPU model[8]	Standby ratings			
			kWm	hpm	kVA	kWe
M	3029DF129	3029DFU29	35	47	36	29
M	3029TF129	3029TFU29	48	64	51	41
M	4054DF150	4045DF158	53	71	57	45
M	4045TF150	4045TF158	74	99	79	63
M	4045TF250	N/A	84	113	90	72
M	4045TF250	4045TF258	100	134	109	87
M	6068HF150	N/A	112	150	122	98
M	4045HF150	4045HF158	123	165	135	108
M	6068TF250	6068TF258	142	190	152	123
E	4045HF285	N/A	147	197	162	129
M	6068HF250	N/A	148	198	162	129
M	6068HF150	6068HF158	187	251	207	165
M	6068HF150	6068HF258	210	281	232	186
E	6068HFG20	6068HFU20	210	282	230	183
E	6068HF475	N/A	234	314	258	207
E	6068HFG55	6068HFU55	260	348	281	225
E	6090HFG84	6090HFU84	315	422	344	275
E	6135HF475	N/A	360	482	398	318
E	6135HF475	N/A	420	563	464	371
E	6135HF475	N/A	460	616	508	406
E	6135HFG75	N/A	563	754	628	503

[8] Generator set power unit (GSPU). A GSPU is a John Deere factory-built gen-set power unit, based on a bare engine with mounting pads, cooling package, and air filter.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
31	42	32	25	90	3
44	59	47	37	90	2.4
48	64	51	41	90	2.6
67	90	71	57	90	3.7
98	131	106	85	90	4.1
90	121	98	78	92	5
101	135	110	88	92	5.6
111	149	121	97	92	6
129	173	138	112	92	7.5
134	180	147	117	92	6.5
133	178	144	115	92	7.1
168	225	184	148	93	9.3
189	253	208	166	93	10.4
191	256	210	168	93	12.6
213	285	234	187	93	11.7
237	318	254	203	93	18.5
287	385	312	249	93	18.9
327	438	359	287	93	17.9
382	512	420	336	93	20.9
418	560	459	367	93	23
N/A	N/A	N/A	N/A	93	22.5

Engines for non-emissions certified applications

50 Hz

Engine model	GSPU model[8]	Standby ratings			
		kWm	hpm	kVA	kWe
PowerTech M					
3029DF129	3029DFU29	31	42	33	26
3029TF129	3029TFU29	42	56	45	36
4045DF120	4045DF158	44	59	47	38
4045TF120	4045TF158	70	94	75	60
4045TF220	4045TF258	83	111	90	72
4045HF120	4045HF158	102	137	113	90
6068TF220	6068TF258	121	162	135	108
6068HF120	6068HF158	155	208	172	138
6068HF120	6068HF258	183	245	203	162
PowerTech E					
6068HFG20	6068HFU20	202	271	226	181
6068HFG55	6068HFU55	228	306	250	200
6068HFG55	6068HFU55	250	335	279	223
6090HFG84	6090HFU84	304	407	336	269
6135HF475	N/A	355	476	392	314
6135HF475	N/A	405	543	447	358
6135HF475	N/A	456	611	504	403

[8] Generator set power unit (GSPU). A GSPU is a John Deere factory-built gen-set power unit, based on a bare engine with mounting pads, cooling package, and air filter.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
27	36	28	23	90	2
38	51	41	32	90	2
40	54	43	34	90	2
63	84	67	54	90	3.5
75	101	81	65	92	4.8
91	122	100	80	92	4
109	146	121	97	92	4
140	188	155	124	92	5.5
166	222	183	147	92	6.5
184	247	200	164	93	7.3
207	278	225	180	93	11
227	304	252	202	93	10
277	371	304	243	93	15.2
323	433	355	284	93	17.8
369	494	405	324	93	20.3
415	556	456	365	93	22.8

PowerTech marine generator drive applications

- 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	Prime power ratings			
		kWm	hpm	kVA	kWe
1500 rpm/50Hz					
4045DFM70	¥	40	54	45	36
4045TFM75	¥	55	74	62	50
4045TFM85	¥	61	82	69	55
4045AFM85	¥	89	119	102	82
6068TFM50	¥	89	119	102	82
6068TFM76	¥	89	119	102	82
6068AFM75	1	139	186	160	128
6068AFM85	1	139	186	160	128
6068SFM85	1	168	226	188	150
6090AFM75	1	195	261	219	175
6090SFM75	1	222	298	250	200
6090AFM85	1	195	261	219	175
6090SFM85	1	222	298	250	200
6135AFM85	1	278	373	313	250
6135SFM85	1	334	448	375	300
1800 rpm/60Hz					
4045FDM70	¥	46	62	50	40
4045TFM75	¥	73	98	81	65
4045TFM85	¥,3	74	99	81	65
4045AFM85	¥,3	110	148	124	99
6068TFM50	¥	115	154	124	99
6068TFM76	¥	110	148	124	99
6068AFM75	1	166	223	188	150
6068AFM85	1,3	166	223	188	150
6068SFM85	1,3	195	262	218	175
6090AFM75	1	222	297	250	200
6090SFM75	1	278	373	313	250
6090AFM85	1,3	222	297	250	200
6090SFM85	1,3	278	373	313	250
6135AFM85	1,3	334	448	375	300
6135SFM85	1,3	416	558	469	375

Emissions rating:
¥. MARPOL Annex VI exempt
1. MARPOL Annex VI compliant, IMO Tier 2
3. EPA Marine Tier 3

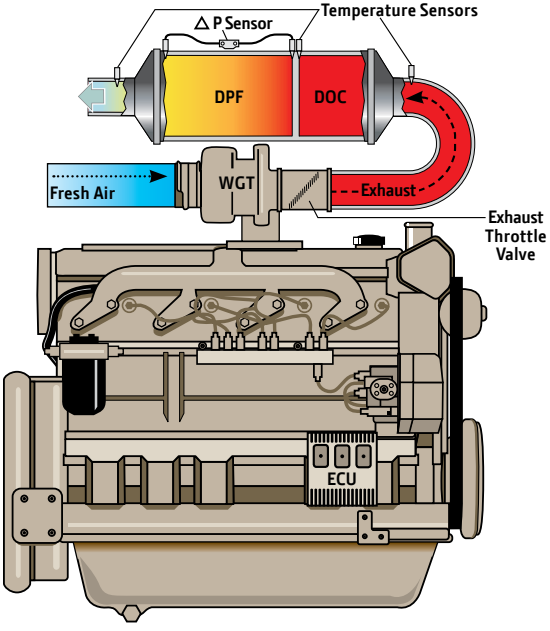
10% overload power ratings			
kWm	hpm	kVA	kWe
44	59	50	40
61	82	69	55
67	90	75	60
98	131	113	90
98	131	113	90
98	131	113	90
153	205	176	141
153	205	176	141
185	248	206	165
214	287	240	192
244	328	275	220
214	287	240	192
244	328	275	220
306	410	344	275
367	493	413	330
50	67	55	44
80	107	89	71
81	109	89	71
121	162	136	109
125	168	134	108
121	162	136	109
183	245	207	166
183	245	207	166
215	288	241	192
244	327	275	220
306	410	344	275
244	327	275	220
306	410	344	275
367	492	412	330
458	614	516	413

Overload ratings calculated on a typical generator efficiency range of 88 – 92%.

Ratings are subject to change.

PowerTech EWX 2.9L and 4.5L engines

EPA Final Tier 4

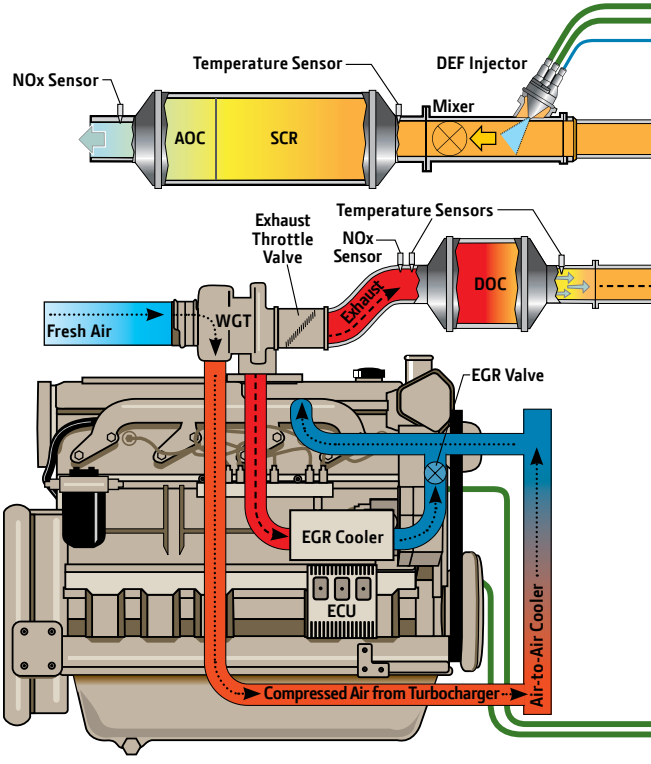


PowerTech EWX 4.5L engine configuration shown.

- Wastegated turbocharger
- Exhaust filter
- High-pressure common-rail (HPCR) and engine control unit (ECU)
- 2-valve cylinder head
- Air-to-air aftercooled (2.9L)
- Compact size
- John Deere electronic engine controls
- Additional features
  - Gear-driven auxiliary drives
  - 500-hour oil change
  - Replaceable wet-type cylinder liners
  - Oil-cooled pistons with hardened ring groove insert
  - Forged-steel connecting rods
  - Engine-mounted full flow oil cooler

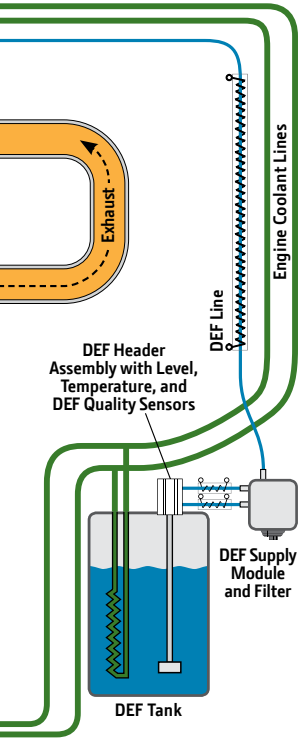
PowerTech PWL 4.5L engines
PowerTech PVL 6.8L engines
PowerTech PSL 4.5L, 6.8L, 9.0L, and

EPA Final Tier 4



PowerTech PWL 4.5L engine configuration shown.

13.5L engines



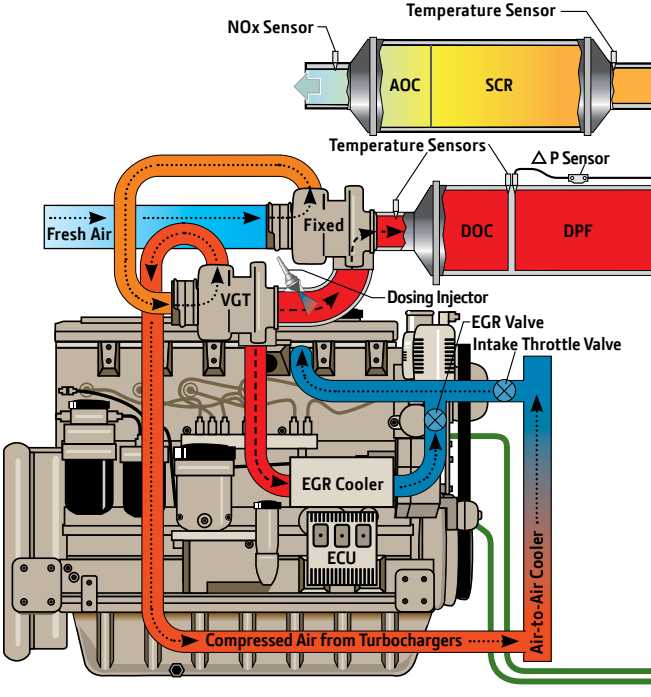
– Wastegated turbocharger (PWL)
– Variable geometry turbocharger (VGT) (PVL)
– Series turbochargers (PSL)
– Cooled exhaust gas recirculation (EGR)
– Diesel oxidation catalyst (DOC)
– Selective catalytic reduction (SCR)
– High-pressure common-rail (HPCR) and engine control unit (ECU)
– 4-valve cylinder head
– Air-to-air aftercooled
– Compact size
– John Deere electronic engine controls

– Additional features

- – Gear-driven auxiliary drives
- – 500-hour oil change
- – Replaceable wet-type cylinder liners
- – Oil-cooled pistons with hardened ring groove insert
- – Single-piece low-friction steel piston with directed top-liner cooling (6.8L, 9.0L, and 13.5L, PSL)
- – Optional variable-speed fan drive improves fuel economy and reduces noise levels
- – Low-pressure fuel system with electrical transfer pump and “auto-prime” feature
- – R.H. and L.H. engine-mounted final fuel filters

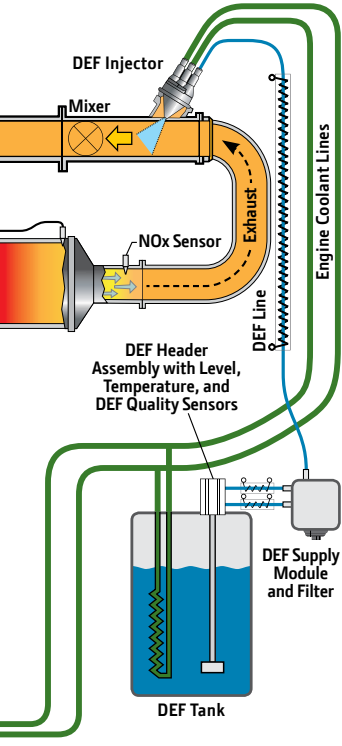
PowerTech PVS 6.8L engines PowerTech PSS 4.5L, 6.8L, 9.0L, and

EPA Final Tier 4



PowerTech PSS 9.0L and 13.5L engine configuration shown.

13.5L engines



– Series turbochargers (PSS)
– Variable geometry turbocharger (VGT) (PVS)
– Cooled exhaust gas recirculation (EGR)
– Exhaust filters
– Selective catalytic reduction (SCR)
– High-pressure common-rail (HPCR) and engine control unit (ECU) (4.5L, 6.8L, and 9.0L)
– Electronic unit injector (EUI) and engine control unit (ECU) (13.5L)
– 4-valve cylinder head
– Air-to-air aftercooled
– Compact size
– John Deere electronic engine controls

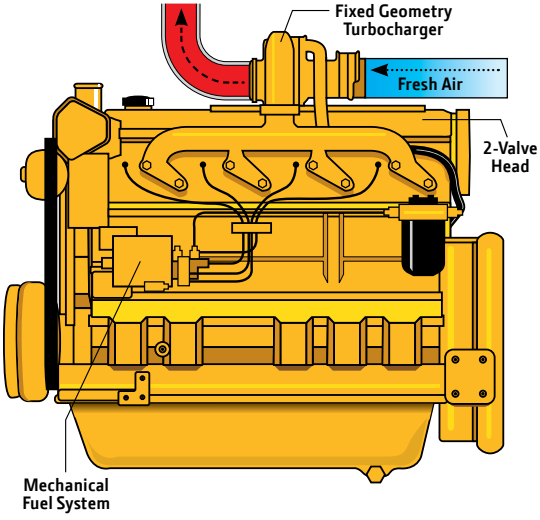
– Additional features*

- – Glow plugs (4.5L and 6.8L)
- – Gear-driven auxiliary drives
- – Gear-driven water pump (9.0L and 13.5L)
- – 500-hour oil change
- – Replaceable wet-type cylinder liners
- – Directed top-liner cooling (6.8L, 9.0L, and 13.5L)
- – Single-piece low-friction steel piston with integrated oil-cooled gallery (6.8L, 9.0L, and 13.5L)
- – Optional variable-speed fan drive improves fuel economy and reduces noise levels
- – Low-pressure fuel system with electrical transfer pump and “auto-prime” feature

*Available on all PowerTech PSS and PVS engines unless noted.

PowerTech M
2.9L and 4.5L engines

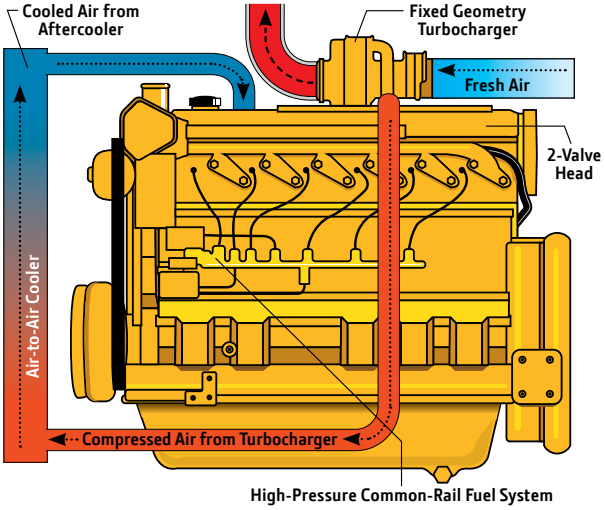
EPA Interim Tier 4 and EPA Tier 3/EU Stage III A



– Fixed geometry turbocharger
– Mechanical rotary pump
– 2-valve cylinder head
  Cross-flow design
– Air-to-air aftercooled
– Compact size
– Additional features
  – Glow plugs (4.5L)
  – Gear-driven auxiliary drives
  – 500-hour oil change
  – Replaceable wet-type cylinder liners
  – Oil-cooled pistons with hardened ring groove insert
  – Forged-steel connecting rods

PowerTech E
4.5L, 6.8L, 9.0L, and 13.5L* engines

EPA Tier 3/EU Stage III A

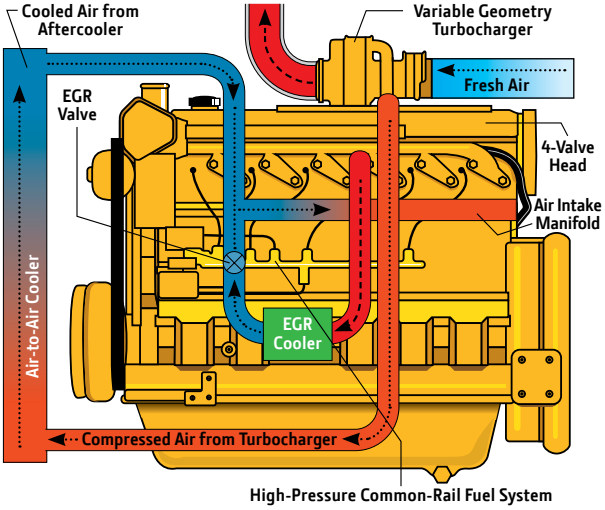


*13.5L engines are EPA Tier 3-compliant only.

- Fixed geometry turbocharger
- High-pressure common-rail (HPCR) and engine control unit (ECU)
- Electronic unit injector (13.5L)
- 2-valve cylinder head (4.5L and 6.8L)
  Cross-flow design
- 4-valve cylinder head (9.0L and 13.5L)
- Air-to-air aftercooled
- Compact size
- John Deere electronic engine controls
- Additional features
  - Gear-driven auxiliary drives
  - Gear-driven water pump (9.0L and 13.5L)
  - 500-hour oil change
  - Replaceable wet-type cylinder liners
  - Directed top-liner cooling (9.0L and 13.5L)
  - Single-piece low-friction steel piston with integrated oil-cooled gallery (9.0L and 13.5L)
  - Low-pressure fuel system with electrical transfer pump and “auto-prime” feature

PowerTech Plus
4.5L, 6.8L, 9.0L, and 13.5L engines

EPA Tier 3



– Variable geometry turbocharger (VGT)

– Cooled exhaust gas recirculation (EGR)

- High-pressure common-rail (HPCR) and engine control unit (ECU) (4.5L and 6.8L)
- Electronic unit injector (EUI) and engine control unit (ECU) (13.5L)
- 4-valve cylinder head
- Air-to-air aftercooled
- Compact size
- John Deere electronic engine controls
- Additional features
  - Glow plugs (4.5L and 6.8L)
  - Gear-driven auxiliary drives
  - Gear-driven water pump (9.0L and 13.5L)
  - 500-hour oil change
  - Replaceable wet-type cylinder liners
  - Directed top-liner cooling (9.0L and 13.5L)
  - Single-piece low-friction steel piston with integrated oil-cooled gallery (13.5L)
  - Low-pressure fuel system with electrical transfer pump and “auto-prime” feature

Definitions and conversions

Prime power is the nominal power an engine is capable of delivering with a variable load for an unlimited number of hours per year. This rating conforms to ISO 3046 and SAE J1995.

Standby power as defined in ISO 8528-1 is the maximum engine power available at varying load factors for up to 200 hours per year. This rating conforms to ISO 3046 and SAE J1995. The calculated generator-set rating range for standby applications is based on minimum engine power (nominal -5 percent) to provide 100 percent meet-or-exceed performance for assembled standby generator sets.

Generator drive rating (kWe)

kWe = [Engine power (kW) -
Fan power loss (kW)]
x Generator efficiency

Note: Marine generator sets do not have fan power loss

Power factor (PF)

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

PF constant = 0.8

Formulas

(Standby power, kWe) =
(Prime power, kWe) * (110% overload capacity)

kWe rating/0.8 = kVA rating

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

Worldwide locations

North America, South America, Brazil, and Caribbean
John Deere Power Systems
3801 West Ridgeway Avenue
P.O. Box 5100
Waterloo, IA 50704-5100
Phone: +1 800 533 6446 (U.S.)
Phone: +1 319 292 6060 (Canada)
Fax: +1 319 292 5075
Email: jdpower@JohnDeere.com

Mexico and Central America
Industrias John Deere S.A. de C.V.
Boulevard Diaz Ordaz No. 500
Garza Garcia, Nuevo Leon 66210
Mexico
Phone: +52 81 8288 1212
Fax: +52 81 8288 8284
Email: mexweb@JohnDeere.com

Europe, Africa, and Middle East
John Deere Power Systems
Orléans-Saran Unit
La Foulonnerie – B.P. 11013
45401 Fleury-les-Aubrais Cedex
France
Phone: +33 2 38 82 61 19
Fax: +33 2 38 84 62 66
Email: jdengine@JohnDeere.com

Australia and New Zealand
John Deere Limited
Power Systems Division
P.O. Box 1545, Browns Plains BC
QLD 4118 Australia
Phone: + 61 7 3802 3222
Fax: +61 7 3803 6555
Email: 23powersystems@JohnDeere.com
JohnDeere.com.au
JohnDeere.co.nz

Far East
John Deere Asia (Singapore) Pte. Ltd.
#06-02/03 Alexandra Point
438 Alexandra Road
119958 Singapore
Phone: +65 (68) 79 88 00
Fax: +65 (62) 78 03 63
Email: JDAsiaEngines@JohnDeere.com

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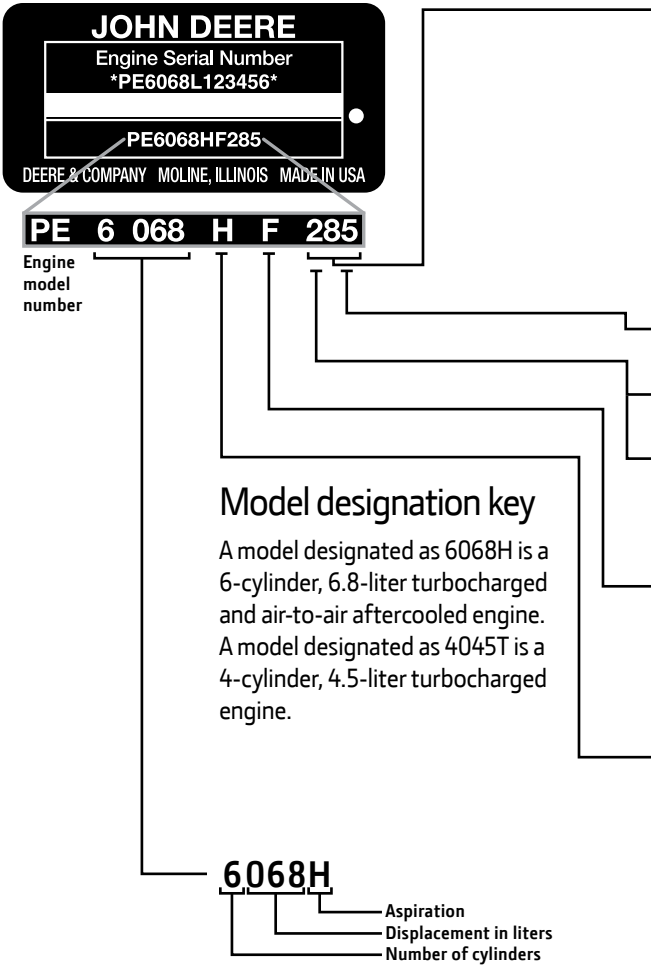
DSWT39 Litho in U.S.A. (17-02)

JohnDeere.com/GenDrive

CONTENTS

Generator drive engine identification



Model designation key

A model designated as 6068H is a 6-cylinder, 6.8-liter turbocharged and air-to-air aftercooled engine. A model designated as 4045T is a 4-cylinder, 4.5-liter turbocharged engine.

Emissions certification

129, 150, 250, 258, 475, G55	Non-emissions certified – 50 Hz
129, 150, 250, 275, 475, G55	Non-emissions certified – 60 Hz
270, 275, 279, 475	Stage II
280, 285, 484, 485, G75,* G82, G84, G85, G86, G89	Tier 3
G81, G82, G84, G89	Stage III A
290, G92, G93, G94, G95	Interim Tier 4
G03, G04, G05, G06, G08, G09	Final Tier 4
258, U29, U55	Non-certified generator set power unit (GSPU)
U89, U70, U72, U74, U79	Stage II generator set power unit (GSPU)
U81, U82, U84	Stage III A generator set power unit (GSPU)

Engine controls (starting with some Tier 2/Stage II engines)

0 or 1	Mechanical controls
2, 3, 4, 5, or 6	Electronic controls

Valves per cylinder (Tier 2, Tier 3, and Stage II engines)

2	2 valves
4	4 valves

Engine type (Tier 3, Interim Tier 4, Final Tier 4, and Stage III A engines)

G	Generator set (bare engine)
U	Generator set power unit (GSPU)
M	Marine

User type

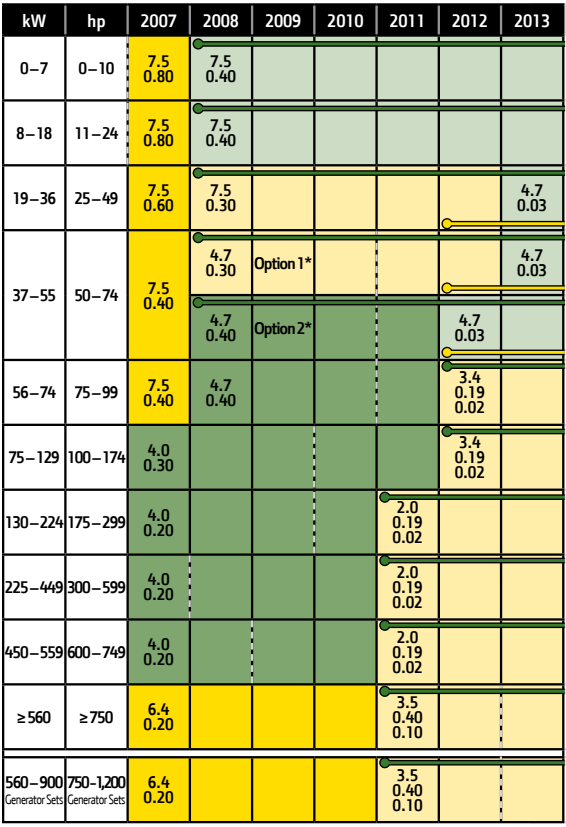
F	OEM (John Deere Power Systems)
XX	Other letters are used to identify John Deere equipment manufacturing locations

Aspiration

D	Naturally aspirated
T	Turbocharged
A	Turbocharged and air-to-coolant aftercooled
H	Turbocharged and air-to-air aftercooled
S	Turbocharged and air-to-seawater aftercooled

*This PowerTech engine is capable of meeting Tier 2 emissions as required by emergency standby regulations (>560 kW).

EPA nonroad emissions regulations



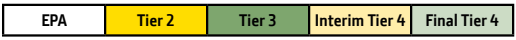
*In the 50 to 74 horsepower category there are two options. Option 1 requires a reduced PM level (0.30 vs. 0.40) but allows Final Tier 4 to be delayed one year (2013).

NOTE: The vertical dashed lines separating the years show when the seven-year life of the Tier 2/3 Equipment Flexibility Provision ends and engines can no longer be placed in vehicle production.

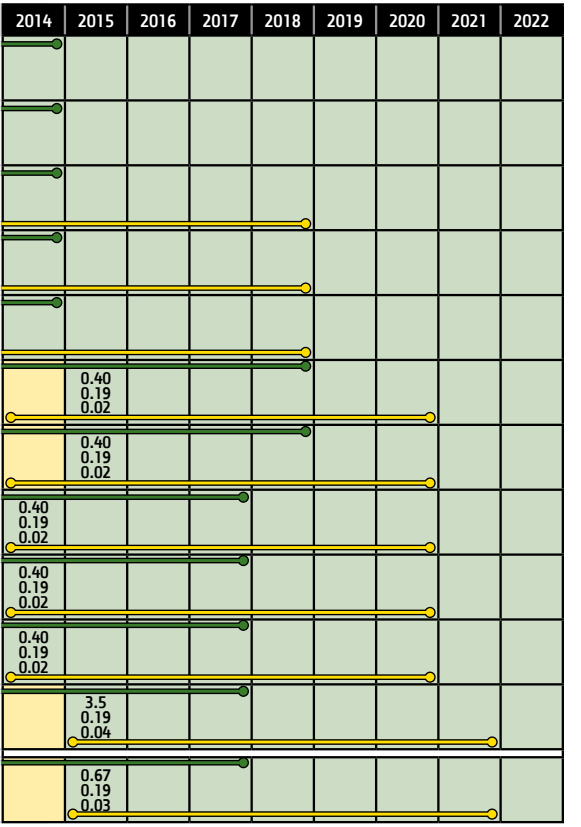
NOTE: In emergency standby applications, the EPA does not require engines to use aftertreatment.

Fuel sulfur regulations

Legend



EPA: Environmental Protection Agency



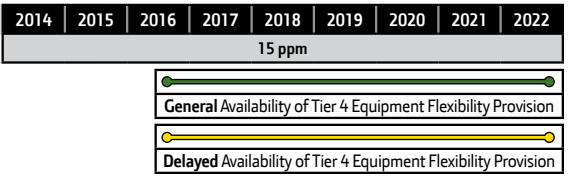
Examples

NOx	**0.40**
NMHC	**0.19**
PM	**0.02**

Nitrogen oxides allowed in g/kWh
Nonmethane hydrocarbons allowed in g/kWh
Particulates (mass based) allowed in g/kWh

NMHC + NOx	**4.7**
PM	**0.03**

Nonmethane hydrocarbons + nitrogen oxides allowed in g/kWh
Particulates (mass based) allowed in g/kWh



EU nonroad mobile emissions regulations –

kW	hp	2007	2008	2009	2010	2011	2012	2013
0–7	0–10	Not regulated in EU						
8–18	11–24	Not regulated in EU						
19–36	25–49	8.0 1.5 0.80				7.5 0.60		
37–56	50–74	7.0 1.3 0.40					4.7 0.40	
57–74	75–99	7.0 1.3 0.40					4.7 0.40	
75–129	100–174	6.0 1.0 0.30				4.0 0.30		
130–559	175–749	6.0 1.0 0.20				4.0 0.20		
≥560	≥750	Not regulated in EU						
≥560	≥750	Not regulated in EU						

NOTE: Stage V emissions regulations have implementation dates of 2019 – 2020. The EU does not regulate engines to an emissions stage for stationary applications. Medium combustion directive regulations for engines above 350 kW (stationary) have expected implementation dates in 2019.

Fuel sulfur regulations

	2007	2008	2009	2010	2011	2012	2013
EU	2000 ppm	1000 ppm			10 ppm		

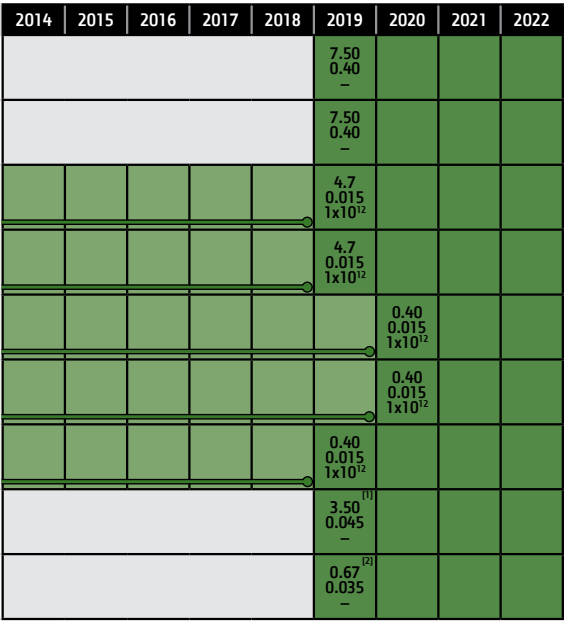
Legend

EU	Stage II	Stage III A	Stage V

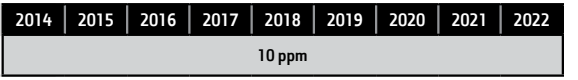
Availability of EU Flexibility Scheme

EU: European Union

— constant-speed engines



[1] Nonroad mobile — Industrial
[2] Nonroad mobile — Generator Set



Examples

NOx NMHC PM	6.0 1.0 0.20	Nitrogen oxides allowed in g/kWh Nonmethane hydrocarbons allowed in g/kWh Particulates (mass based) allowed in g/kWh
NMHC + NOx PM	4.0 0.30	Nonmethane hydrocarbons + nitrogen oxides allowed in g/kWh Particulates (mass based) allowed in g/kWh
NMHC + NOx PM PN	4.7 0.015 1x10[12]	Nonmethane hydrocarbons + nitrogen oxides allowed in g/kWh Particulates (mass based) allowed in g/kWh Particulates (number based) allowed in #/kWh
NOx PM PN	3.50 0.045 –	Nitrogen oxides allowed in g/kWh Particulates (mass based) allowed in g/kWh Particulates (number based) standard does not apply in this power segment

Engines for EPA Final Tier 4 applications

Dual frequency 50 Hz/60 Hz

PowerTech technology	Speed	Engine model	Standby ratings			
	rpm		kWm	hpm	kVA	kWe
DOC/SCR						
PWL	1800	4045HFG04	68	91	71	57
	1500		68	91	72	57
PWL	1800	4045HFG04	80	107	84	67
	1500		80	107	84	67
PWL	1800	4045HFG04	99	133	106	85
	1500		80	107	85	68
PSL	1800	4045HFG06	128	172	138	111
	1500		112	150	121	97
PVL	1800	6068HFG05	160	214	174	139
	1500		160	214	175	140
PVL	1800	6068HFG05	192	257	211	169
	1500		165	221	180	144
PSL	1800	6068HFG06	216	289	236	189
	1500		197	264	215	172
PSL	1800	6068HFG06	240	322	262	210
	1500		197	264	214	171
PSL	1800	6090HFG06	273	366	298	239
	1500		273	366	300	240
PSL	1800	6090HFG06	326	437	356	285
	1500		300	402	328	262
PSL	1800	6090HFG06 [7]	345	462	377	302
	1500		300	402	327	261
PSL	1800	6135HFG06	473	634	521	417
	1500		430	576	474	379

[7] Prime rating not available at this node.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
62	83	64	51	90	4.8
62	83	65	52	90	4.4
73	97	76	60	90	5.6
73	97	76	61	90	5.1
90	121	96	76	92	6.9
73	98	77	61	92	6.3
117	157	126	101	92	7.7
102	137	109	87	92	7.1
146	196	158	126	92	9
146	196	158	127	92	8.2
175	235	191	153	93	10.8
150	201	163	130	93	9.9
196	263	213	171	93	13
179	240	194	155	93	11.8
218	292	237	190	93	14.4
179	240	193	154	93	13.1
249	334	270	216	93	16.4
249	334	272	218	93	14.9
297	398	322	258	93	19.6
273	366	297	237	93	17.8
N/A	N/A	N/A	N/A	93	20.7
N/A	N/A	N/A	N/A	93	18.9
431	578	472	378	93	24.7
391	524	428	343	93	22.5

Engines for EPA Final Tier 4 applications

Dual frequency 50 Hz/60 Hz

PowerTech technology	Speed	Engine model	Standby ratings			
	rpm		kWm	hpm	kVA	kWe
DOC/DPF						
EWX	1800	3029HFG03	36	48	39	31
	1500		36	48	39	31
EWX	1800	3029HFG03	48	64	52	41
	1500		48	64	52	42
EWX	1800	3029HFG03	55	74	59	48
	1500		48	64	52	41
EWX	1800	4045TFG03	55	74	57	46
DOC/DPF/SCR						
PSS	1800	4045HFG09	105	141	114	91
PSS	1800	4045HFG09	124	166	162	130
PVS	1800	6068HFG08	150	201	162	130
PVS	1800	6068HFG08	180	241	195	156
PSS	1800	6068HFG09	216	289	236	189
PSS	1800	6068HFG09	240	322	262	210
PSS	1800	6090HFG09	237	318	259	207
PSS	1800	6090HFG09	273	366	298	239
PSS	1800	6090HFG09	297	398	325	260
PSS	1800	6090HFG09	326	437	356	285
PSS	1800	6090HFG09[7]	345	462	377	302
PSS	1800	6135HFG09	356	477	389	311
PSS	1800	6135HFG09	411	551	449	359
PSS	1800	6135HFG09	473	634	517	413

[7] Prime rating not available at this node.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
33	44	36	28	90	1.4
33	44	36	29	90	1.2
44	59	47	38	90	1.9
44	59	48	38	90	1.7
50	67	54	43	90	2.2
44	59	47	38	90	2
50	67	52	41	90	3.9
93	125	121	97	92	6.3
136	182	146	117	92	7.4
136	182	146	117	92	9
164	219	176	141	92	10.8
218	292	239	191	93	13
218	292	237	190	93	14.4
216	289	235	188	93	14.2
249	334	270	216	93	16.4
271	363	294	235	93	17.8
298	399	324	259	93	19.6
N/A	N/A	N/A	N/A	93	20.7
324	434	351	281	93	21.4
374	501	406	325	93	24.7
432	579	469	375	93	28.4

Engines for EPA Interim Tier 4 applications

60 Hz

PowerTech technology	Engine model	Standby ratings			
		kWm	hpm	kVA	kWe
M	3029TFG89	35	47	37	30
M	3029HFG89	46	62	49	39
M	4045TF290	55	74	58	47
PWX	4045HFG92	67	90	69	55
PWX	4045HFG92	80	107	85	68
PWX	4045HFG92	99	133	105	84
PVX	4045HFG93	105	141	111	89
PVX	4045HFG93	124	166	131	105
PVX	6068HFG94	150	201	162	130
PVX	6068HFG94	180	241	195	156
PSX	6068HFG95	216	289	235	188
PSX	6090HFG95	272	364	297	238
PSX	6090HFG95	297	398	325	260
PSX	6090HFG95	328	440	358	287
PSX	6135HFG95	356	477	389	311
PSX	6135HFG95	411	551	449	359
PSX	6135HFG95	473	634	517	413

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
31	42	32	26	90	2.2
42	56	44	35	90	2.6
50	67	53	42	90	3.3
61	82	63	50	90	5.4
73	98	77	61	92	6.4
90	121	94	76	92	7.9
94	126	98	79	92	8.4
113	151	119	95	92	9.9
136	182	146	117	92	9
164	220	176	141	92	10.8
215	288	233	187	93	14.2
246	330	267	214	93	16.4
267	358	290	232	93	17.8
295	395	320	256	93	19.7
320	429	347	278	93	21.4
370	496	401	321	93	24.7
426	571	462	370	93	28.4

Engines for EPA Tier 3 applications

60 Hz

PowerTech technology	Engine model	Standby ratings			
		kWm	hpm	kVA	kWe
M	3029TFG89	35	47	37	30
M	3029HFG89	46	62	49	39
M	4045TF280 [5]	56	75	61	49
M	4045TF280 [5]	63	84	69	55
M	4045HF280 [5]	74	99	81	65
E	4045TF285	74	99	77	62
E	4045HF285	94	126	102	82
E	4045HF285	99	133	108	86
E	4045HF285	118	158	128	103
E	4045HF285	147	197	162	129
Plus	4045HFG85 [5]	147	197	162	129
E	6068HF285	147	197	160	128
E	6068HF285	177	237	192	154
E	6068HFG82 [2]	212	284	232	185
Plus	6068HFG85 [5]	212	284	232	185
E	6090HF484	229	307	250	200
Plus	6068HFG85 [5]	235	315	257	205
E	6090HFG84 [2]	258	346	278	222
E	6090HF484	287	385	314	251
E	6090HFG84 [2]	315	422	344	275
E	6090HF484	315	422	344	275
Plus	6090HFG85 [5]	315	422	347	278
E	6090HFG86 [3]	345	462	379	303
Plus	6135HF485 [5]	345	462	378	302
E	6135HFG84 [3]	401	537	44	358
Plus	6135HF485 [5]	401	537	441	352
E	6135HFG84 [3]	460	616	513	411
Plus	6135HF485 [5]	460	616	505	404
E	6135HFG75 [3] [4]	563	754	628	503

[2] 60 Hz/50 Hz dual frequency is available on these engines and meet EPA Interim Tier 4 and EU Stage III A emissions regulations.

[3] Available for emergency standby applications only.

[4] This PowerTech engine is capable of meeting Tier 2 emissions as required by emergency stationary regulations (>560 kW).

[5] Jet fuel ratings available; contact your John Deere engine distributor for a complete listing.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
31	42	32	29	90	2.2
42	56	44	35	90	2.9
51	68	55	44	90	1.9
57	76	62	50	90	1.9
67	90	73	58	90	2.2
67	90	70	56	90	5.2
86	115	93	74	92	5.2
90	121	98	78	92	5.2
107	143	116	92	92	6.5
134	180	147	117	92	6.5
134	180	147	117	92	6.5
134	180	145	116	92	8.1
161	216	174	139	92	9.8
193	259	210	168	93	12.6
193	259	210	168	93	12.6
208	279	226	181	93	13.7
214	287	232	186	93	14.1
235	315	251	201	93	18.9
258	346	280	224	93	17.2
287	385	312	249	93	18.9
287	385	312	249	93	18.9
287	385	315	252	93	16.1
N/A	N/A	N/A	N/A	93	19.3
311	417	338	271	93	19.9
N/A	N/A	N/A	N/A	93	16
365	489	399	319	93	22
N/A	N/A	N/A	N/A	93	18.4
419	561	458	366	93	25.3
N/A	N/A	N/A	N/A	93	22.5

Engines for EU Stage III A/EPA Tier 3

Dual frequency 50 Hz/60 Hz

PowerTech technology	Engine model	GSPU model[8]	Speed	Standby ratings			
			rpm	kWm	hpm	kVA	kWe
M	3029TFG89[2]	3029TFU89[2]	1500	31	42	33	27
			1800	35	47	37	30
M	3029HFG89[2]	3029HFU89[2]	1500	43	58	47	37
			1800	46	62	49	39
M	4045HFG81	4045HFU81	1500	61	82	59	47
			1800	65	87	56	45
E	4045HFG82	4045HFU82	1500	83	111	91	73
			1800	86	115	93	74
E	4045HFG82	4045HFU82	1500	103	138	114	91
			1800	106	142	114	91
E	4045HFG82	4045HFU82	1500	123	165	135	108
			1800	126	169	133	106
E	6068HFG82	6068HFU82	1500	153	205	168	134
			1800	156	209	165	132
E	6068HFG82	6068HFU82	1500	202	271	226	181
			1800	212	284	232	185
E	6090HFG84	6090HFU84	1500	253	339	276	221
			1800	258	346	278	222
E	6090HFG84	6090HFU84	1500	304	407	336	269
			1800	315	422	344	275

[2] 60 Hz/50 Hz dual frequency is available on these engines and meet EPA Interim Tier 4 and EU Stage III A emissions regulations.

[8] Generator set power unit (GSPU). A GSPU is a John Deere factory-built gen-set power unit, based on a bare engine with mounting pads, cooling package, and air filter.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
28	38	30	24	90	1.3
31	42	32	26	90	2.2
39	52	42	34	90	1.5
42	56	44	35	90	2.6
56	75	53	42	90	9
59	79	49	39	90	15.5
76	102	83	67	90	2
78	105	84	67	90	3.4
94	126	104	83	92	4
96	129	103	82	92	6.7
112	150	122	98	92	6
115	154	120	96	92	10.3
139	186	151	121	92	7.3
142	190	149	119	92	12.6
184	247	205	164	93	7.3
193	259	210	168	93	12.6
230	308	250	200	93	15.2
235	315	251	201	93	18.9
277	371	304	243	93	15.2
287	385	312	249	93	18.9

Engines for non-emissions certified applications

60 Hz

PowerTech technology	Engine model	GSPU model[8]	Standby ratings			
			kWm	hpm	kVA	kWe
M	3029DF129	3029DFU29	35	47	36	29
M	3029TF129	3029TFU29	48	64	51	41
M	4054DF150	4045DF158	53	71	57	45
M	4045TF150	4045TF158	74	99	79	63
M	4045TF250	N/A	84	113	90	72
M	4045TF250	4045TF258	100	134	109	87
M	6068HF150	N/A	112	150	122	98
M	4045HF150	4045HF158	123	165	135	108
M	6068TF250	6068TF258	142	190	152	123
E	4045HF285	N/A	147	197	162	129
M	6068HF250	N/A	148	198	162	129
M	6068HF150	6068HF158	187	251	207	165
M	6068HF150	6068HF258	210	281	232	186
E	6068HFG20	6068HFU20	210	282	230	183
E	6068HF475	N/A	234	314	258	207
E	6068HFG55	6068HFU55	260	348	281	225
E	6090HFG84	6090HFU84	315	422	344	275
E	6135HF475	N/A	360	482	398	318
E	6135HF475	N/A	420	563	464	371
E	6135HF475	N/A	460	616	508	406
E	6135HFG75	N/A	563	754	628	503

[8] Generator set power unit (GSPU). A GSPU is a John Deere factory-built gen-set power unit, based on a bare engine with mounting pads, cooling package, and air filter.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
31	42	32	25	90	3
44	59	47	37	90	2.4
48	64	51	41	90	2.6
67	90	71	57	90	3.7
98	131	106	85	90	4.1
90	121	98	78	92	5
101	135	110	88	92	5.6
111	149	121	97	92	6
129	173	138	112	92	7.5
134	180	147	117	92	6.5
133	178	144	115	92	7.1
168	225	184	148	93	9.3
189	253	208	166	93	10.4
191	256	210	168	93	12.6
213	285	234	187	93	11.7
237	318	254	203	93	18.5
287	385	312	249	93	18.9
327	438	359	287	93	17.9
382	512	420	336	93	20.9
418	560	459	367	93	23
N/A	N/A	N/A	N/A	93	22.5

Engines for non-emissions certified applications

50 Hz

Engine model	GSPU model[8]	Standby ratings			
		kWm	hpm	kVA	kWe
PowerTech M					
3029DF129	3029DFU29	31	42	33	26
3029TF129	3029TFU29	42	56	45	36
4045DF120	4045DF158	44	59	47	38
4045TF120	4045TF158	70	94	75	60
4045TF220	4045TF258	83	111	90	72
4045HF120	4045HF158	102	137	113	90
6068TF220	6068TF258	121	162	135	108
6068HF120	6068HF158	155	208	172	138
6068HF120	6068HF258	183	245	203	162
PowerTech E					
6068HFG20	6068HFU20	202	271	226	181
6068HFG55	6068HFU55	228	306	250	200
6068HFG55	6068HFU55	250	335	279	223
6090HFG84	6090HFU84	304	407	336	269
6135HF475	N/A	355	476	392	314
6135HF475	N/A	405	543	447	358
6135HF475	N/A	456	611	504	403

[8] Generator set power unit (GSPU). A GSPU is a John Deere factory-built gen-set power unit, based on a bare engine with mounting pads, cooling package, and air filter.

Prime ratings				Generator efficiency	Fan power
kWm	hpm	kVA	kWe	%	kW
27	36	28	23	90	2
38	51	41	32	90	2
40	54	43	34	90	2
63	84	67	54	90	3.5
75	101	81	65	92	4.8
91	122	100	80	92	4
109	146	121	97	92	4
140	188	155	124	92	5.5
166	222	183	147	92	6.5
184	247	200	164	93	7.3
207	278	225	180	93	11
227	304	252	202	93	10
277	371	304	243	93	15.2
323	433	355	284	93	17.8
369	494	405	324	93	20.3
415	556	456	365	93	22.8

PowerTech marine generator drive applications

- 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	Prime power ratings			
		kWm	hpm	kVA	kWe
1500 rpm/50Hz					
4045DFM70	¥	40	54	45	36
4045TFM75	¥	55	74	62	50
4045TFM85	¥	61	82	69	55
4045AFM85	¥	89	119	102	82
6068TFM50	¥	89	119	102	82
6068TFM76	¥	89	119	102	82
6068AFM75	1	139	186	160	128
6068AFM85	1	139	186	160	128
6068SFM85	1	168	226	188	150
6090AFM75	1	195	261	219	175
6090SFM75	1	222	298	250	200
6090AFM85	1	195	261	219	175
6090SFM85	1	222	298	250	200
6135AFM85	1	278	373	313	250
6135SFM85	1	334	448	375	300
1800 rpm/60Hz					
4045FDM70	¥	46	62	50	40
4045TFM75	¥	73	98	81	65
4045TFM85	¥,3	74	99	81	65
4045AFM85	¥,3	110	148	124	99
6068TFM50	¥	115	154	124	99
6068TFM76	¥	110	148	124	99
6068AFM75	1	166	223	188	150
6068AFM85	1,3	166	223	188	150
6068SFM85	1,3	195	262	218	175
6090AFM75	1	222	297	250	200
6090SFM75	1	278	373	313	250
6090AFM85	1,3	222	297	250	200
6090SFM85	1,3	278	373	313	250
6135AFM85	1,3	334	448	375	300
6135SFM85	1,3	416	558	469	375

Emissions rating:
¥. MARPOL Annex VI exempt
1. MARPOL Annex VI compliant, IMO Tier 2
3. EPA Marine Tier 3

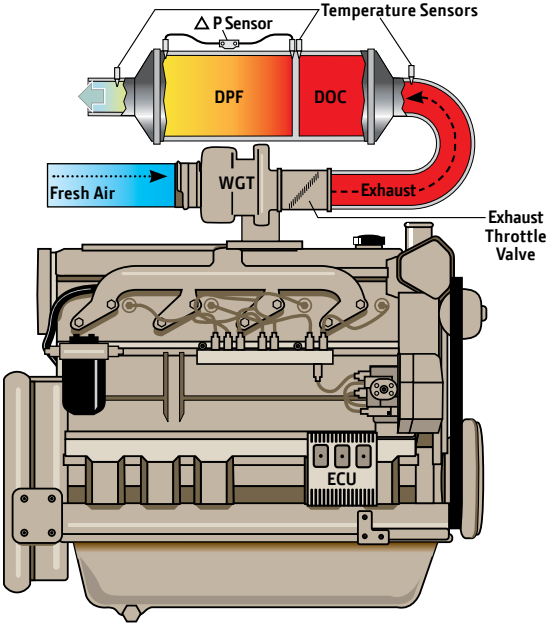
10% overload power ratings			
kWm	hpm	kVA	kWe
44	59	50	40
61	82	69	55
67	90	75	60
98	131	113	90
98	131	113	90
98	131	113	90
153	205	176	141
153	205	176	141
185	248	206	165
214	287	240	192
244	328	275	220
214	287	240	192
244	328	275	220
306	410	344	275
367	493	413	330
50	67	55	44
80	107	89	71
81	109	89	71
121	162	136	109
125	168	134	108
121	162	136	109
183	245	207	166
183	245	207	166
215	288	241	192
244	327	275	220
306	410	344	275
244	327	275	220
306	410	344	275
367	492	412	330
458	614	516	413

Overload ratings calculated on a typical generator efficiency range of 88 – 92%.

Ratings are subject to change.

PowerTech EWX 2.9L and 4.5L engines

EPA Final Tier 4

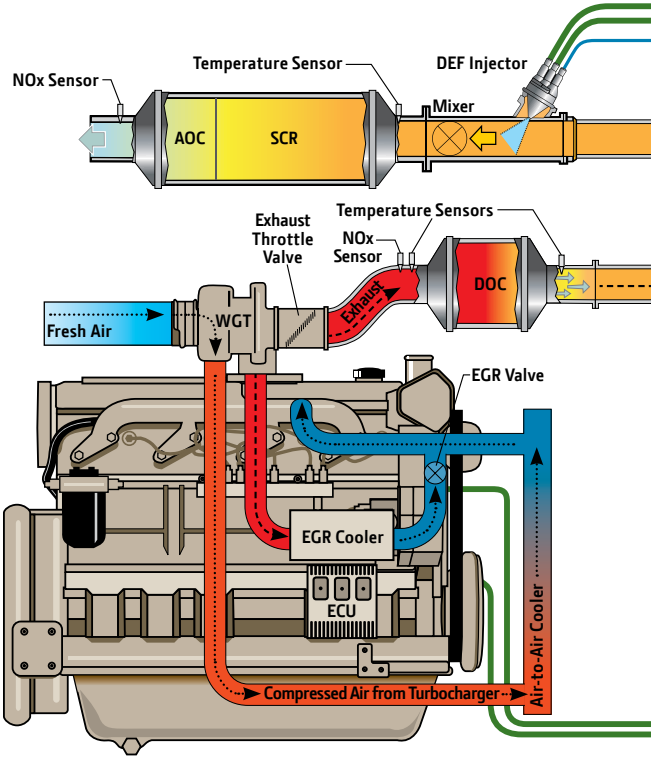


PowerTech EWX 4.5L engine configuration shown.

- Wastegated turbocharger
- Exhaust filter
- High-pressure common-rail (HPCR) and engine control unit (ECU)
- 2-valve cylinder head
- Air-to-air aftercooled (2.9L)
- Compact size
- John Deere electronic engine controls
- Additional features
  - Gear-driven auxiliary drives
  - 500-hour oil change
  - Replaceable wet-type cylinder liners
  - Oil-cooled pistons with hardened ring groove insert
  - Forged-steel connecting rods
  - Engine-mounted full flow oil cooler

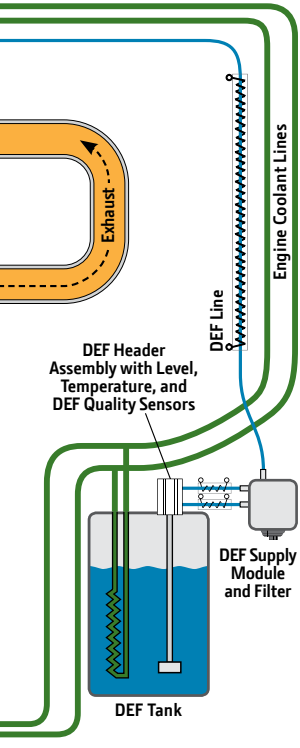
PowerTech PWL 4.5L engines
PowerTech PVL 6.8L engines
PowerTech PSL 4.5L, 6.8L, 9.0L, and

EPA Final Tier 4



PowerTech PWL 4.5L engine configuration shown.

13.5L engines



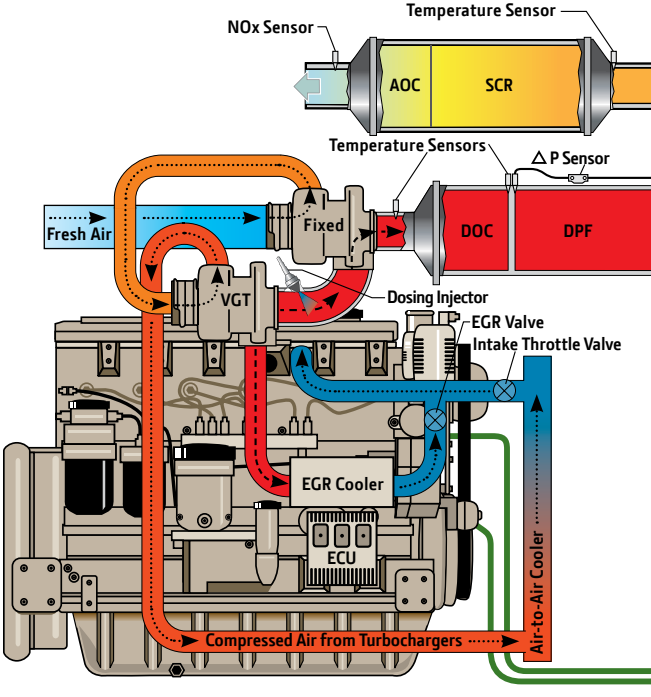
– Wastegated turbocharger (PWL)
– Variable geometry turbocharger (VGT) (PVL)
– Series turbochargers (PSL)
– Cooled exhaust gas recirculation (EGR)
– Diesel oxidation catalyst (DOC)
– Selective catalytic reduction (SCR)
– High-pressure common-rail (HPCR) and engine control unit (ECU)
– 4-valve cylinder head
– Air-to-air aftercooled
– Compact size
– John Deere electronic engine controls

– Additional features

- – Gear-driven auxiliary drives
- – 500-hour oil change
- – Replaceable wet-type cylinder liners
- – Oil-cooled pistons with hardened ring groove insert
- – Single-piece low-friction steel piston with directed top-liner cooling (6.8L, 9.0L, and 13.5L, PSL)
- – Optional variable-speed fan drive improves fuel economy and reduces noise levels
- – Low-pressure fuel system with electrical transfer pump and “auto-prime” feature
- – R.H. and L.H. engine-mounted final fuel filters

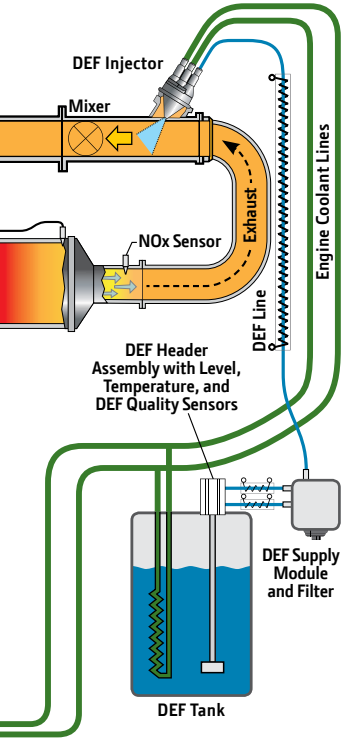
PowerTech PVS 6.8L engines PowerTech PSS 4.5L, 6.8L, 9.0L, and

EPA Final Tier 4



PowerTech PSS 9.0L and 13.5L engine configuration shown.

13.5L engines



– Series turbochargers (PSS)
– Variable geometry turbocharger (VGT) (PVS)
– Cooled exhaust gas recirculation (EGR)
– Exhaust filters
– Selective catalytic reduction (SCR)
– High-pressure common-rail (HPCR) and engine control unit (ECU) (4.5L, 6.8L, and 9.0L)
– Electronic unit injector (EUI) and engine control unit (ECU) (13.5L)
– 4-valve cylinder head
– Air-to-air aftercooled
– Compact size
– John Deere electronic engine controls

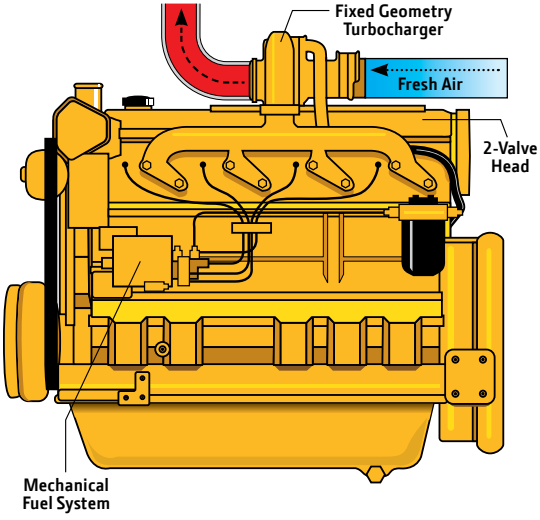
– Additional features*

- – Glow plugs (4.5L and 6.8L)
- – Gear-driven auxiliary drives
- – Gear-driven water pump (9.0L and 13.5L)
- – 500-hour oil change
- – Replaceable wet-type cylinder liners
- – Directed top-liner cooling (6.8L, 9.0L, and 13.5L)
- – Single-piece low-friction steel piston with integrated oil-cooled gallery (6.8L, 9.0L, and 13.5L)
- – Optional variable-speed fan drive improves fuel economy and reduces noise levels
- – Low-pressure fuel system with electrical transfer pump and “auto-prime” feature

*Available on all PowerTech PSS and PVS engines unless noted.

PowerTech M
2.9L and 4.5L engines

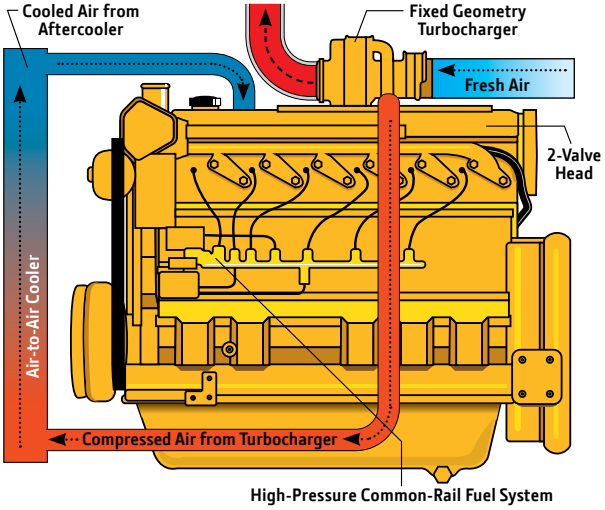
EPA Interim Tier 4 and EPA Tier 3/EU Stage III A



– Fixed geometry turbocharger
– Mechanical rotary pump
– 2-valve cylinder head
  Cross-flow design
– Air-to-air aftercooled
– Compact size
– Additional features
  – Glow plugs (4.5L)
  – Gear-driven auxiliary drives
  – 500-hour oil change
  – Replaceable wet-type cylinder liners
  – Oil-cooled pistons with hardened ring groove insert
  – Forged-steel connecting rods

PowerTech E
4.5L, 6.8L, 9.0L, and 13.5L* engines

EPA Tier 3/EU Stage III A

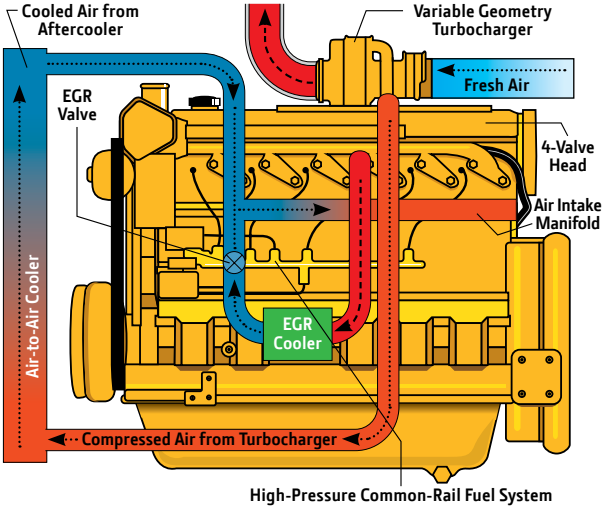


*13.5L engines are EPA Tier 3-compliant only.

- Fixed geometry turbocharger
- High-pressure common-rail (HPCR) and engine control unit (ECU)
- Electronic unit injector (13.5L)
- 2-valve cylinder head (4.5L and 6.8L)
  Cross-flow design
- 4-valve cylinder head (9.0L and 13.5L)
- Air-to-air aftercooled
- Compact size
- John Deere electronic engine controls
- Additional features
  - Gear-driven auxiliary drives
  - Gear-driven water pump (9.0L and 13.5L)
  - 500-hour oil change
  - Replaceable wet-type cylinder liners
  - Directed top-liner cooling (9.0L and 13.5L)
  - Single-piece low-friction steel piston with integrated oil-cooled gallery (9.0L and 13.5L)
  - Low-pressure fuel system with electrical transfer pump and “auto-prime” feature

PowerTech Plus
4.5L, 6.8L, 9.0L, and 13.5L engines

EPA Tier 3



– Variable geometry turbocharger (VGT)

– Cooled exhaust gas recirculation (EGR)

- High-pressure common-rail (HPCR) and engine control unit (ECU) (4.5L and 6.8L)
- Electronic unit injector (EUI) and engine control unit (ECU) (13.5L)
- 4-valve cylinder head
- Air-to-air aftercooled
- Compact size
- John Deere electronic engine controls
- Additional features
  - Glow plugs (4.5L and 6.8L)
  - Gear-driven auxiliary drives
  - Gear-driven water pump (9.0L and 13.5L)
  - 500-hour oil change
  - Replaceable wet-type cylinder liners
  - Directed top-liner cooling (9.0L and 13.5L)
  - Single-piece low-friction steel piston with integrated oil-cooled gallery (13.5L)
  - Low-pressure fuel system with electrical transfer pump and “auto-prime” feature

Definitions and conversions

Prime power is the nominal power an engine is capable of delivering with a variable load for an unlimited number of hours per year. This rating conforms to ISO 3046 and SAE J1995.

Standby power as defined in ISO 8528-1 is the maximum engine power available at varying load factors for up to 200 hours per year. This rating conforms to ISO 3046 and SAE J1995. The calculated generator-set rating range for standby applications is based on minimum engine power (nominal -5 percent) to provide 100 percent meet-or-exceed performance for assembled standby generator sets.

Generator drive rating (kWe)

kWe = [Engine power (kW) -
Fan power loss (kW)]
x Generator efficiency

Note: Marine generator sets do not have fan power loss

Power factor (PF)

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

PF constant = 0.8

Formulas

(Standby power, kWe) =
(Prime power, kWe) * (110% overload capacity)

kWe rating/0.8 = kVA rating

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

Worldwide locations

North America, South America, Brazil, and Caribbean
John Deere Power Systems
3801 West Ridgeway Avenue
P.O. Box 5100
Waterloo, IA 50704-5100
Phone: +1 800 533 6446 (U.S.)
Phone: +1 319 292 6060 (Canada)
Fax: +1 319 292 5075
Email: jdpower@JohnDeere.com

Mexico and Central America
Industrias John Deere S.A. de C.V.
Boulevard Diaz Ordaz No. 500
Garza Garcia, Nuevo Leon 66210
Mexico
Phone: +52 81 8288 1212
Fax: +52 81 8288 8284
Email: mexweb@JohnDeere.com

Europe, Africa, and Middle East
John Deere Power Systems
Orléans-Saran Unit
La Foulonnerie – B.P. 11013
45401 Fleury-les-Aubrais Cedex
France
Phone: +33 2 38 82 61 19
Fax: +33 2 38 84 62 66
Email: jdengine@JohnDeere.com

Australia and New Zealand
John Deere Limited
Power Systems Division
P.O. Box 1545, Browns Plains BC
QLD 4118 Australia
Phone: + 61 7 3802 3222
Fax: +61 7 3803 6555
Email: 23powersystems@JohnDeere.com
JohnDeere.com.au
JohnDeere.co.nz

Far East
John Deere Asia (Singapore) Pte. Ltd.
#06-02/03 Alexandra Point
438 Alexandra Road
119958 Singapore
Phone: +65 (68) 79 88 00
Fax: +65 (62) 78 03 63
Email: JDAsiaEngines@JohnDeere.com

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Conversions

Generator drive rating (kWe)

kWe = [Engine power (kW) -
Fan power loss (kW)]
x Generator efficiency

Note: Marine generator sets do not have fan power loss

Power factor (PF)

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

PF constant = 0.80

Formulas

(Standby power, kWe) =
(Prime power, kWe) * (110% Overload capacity)

kWe rating/0.8 = kVA rating

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


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P.O. Box 5100
Waterloo, IA 50704-5100
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Phone: +1 319 292 6060 (Canada)
Fax: +1 319 292 5075
Email: jdpower@JohnDeere.com

Mexico and Central America
Industrias John Deere S.A. de C.V.
Boulevard Diaz Ordaz No. 500
Garza Garcia, Nuevo Leon 66210
Mexico
Phone: +52 81 8288 1212
Fax: +52 81 8288 8284
Email: mexweb@JohnDeere.com

Europe, Africa, and Middle East
John Deere Power Systems
Orléans-Saran Unit
La Foulonnerie – B.P. 11013
45401 Fleury-les-Aubrais Cedex
France
Phone: +33 2 38 82 61 19
Fax: +33 2 38 84 62 66
Email: jdengine@JohnDeere.com

Australia and New Zealand
John Deere Limited
Power Systems Division
P.O. Box 1545, Browns Plains BC
QLD 4118 Australia
Phone: + 61 7 3802 3222
Fax: +61 7 3803 6555
Email: 23powersystems@JohnDeere.com
JohnDeere.com.au
JohnDeere.co.nz

Far East
John Deere Asia (Singapore) Pte. Ltd.
#06-02/03 Alexandra Point
438 Alexandra Road
119958 Singapore
Phone: +65 (68) 79 88 00
Fax: +65 (62) 78 03 63
Email: JDAsiaEngines@JohnDeere.com

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