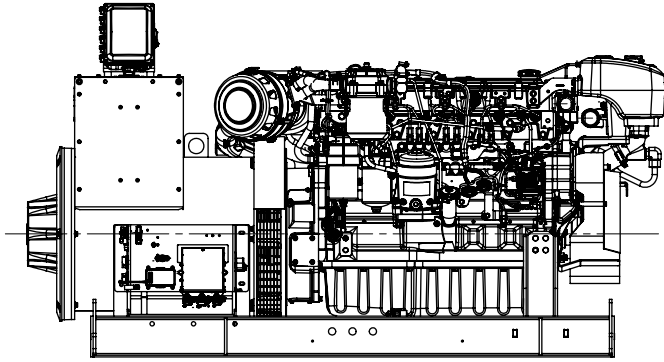
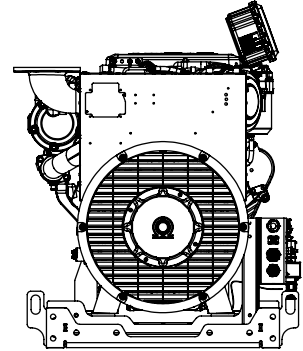


## Model - J3M0902K9-SDB 200kWe



### Overall Dimensions

94.0" L  
43.0"W  
52.0"H



## Standard Spec Configuration

### Engine

- John Deere 6090AFM85 298hp @1800rpm
- HPCR and GenII Electronics
- EPA Marine Tier III Compliant
- Controls Inc M3-4004 Panel
- Radiator Cooled, (KC shown)
- Blower Fan
- Full Belt Guard
- CCV System
- K&N Air Cleaner
- 4-point lift lugs
- Oil Pan Drain Valve
- Fuel Return Restriction Alarm
- 12v DC Engine electrical System
- ABS Type Approved

### Generator

- Marathon Mariner
- 200kWe PMG, Drip Cover, Heater, DVR
- 12 wire

## Optional Spec Configuration

- Keel Cooled, Dry Exhaust
- Heat Exchanger Cooled, Wet Exhaust
- 12v DC Engine Electrics
- ABS Certified
- Various AC Voltage Configurations
- Various Control Panel Options and Harness Lengths
- Various service and filter locations

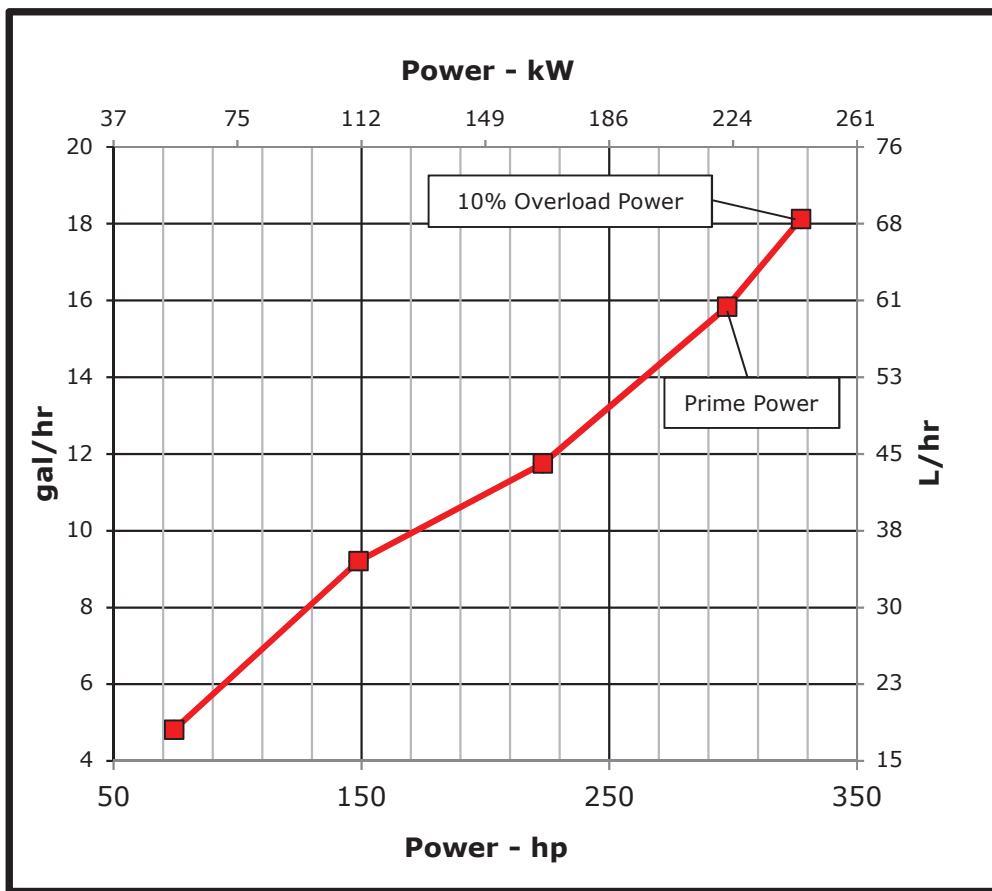


# ENGINE PERFORMANCE CURVE

Rating: **60 Hz - 298hp (222kW) @ 1800 RPM**  
 Application: **Marine**

**PowerTech™ 9.0L Engine**  
**Model: 6090AFM85**

Generator Efficiency (%)	Power Factor	Calculated Gen-Set Rating		Prime Power	10% Overload Power
		kWe	kVA	hp (kW)	hp (kW)
88-92	0.8	195-204	244-255	298 (222)	327 (244)



## REFERENCE CONDITIONS

Air Intake Restriction.....12 in.H<sub>2</sub>O (3 kPa)  
 Exhaust Back Pressure..... 30 in.H<sub>2</sub>O (7.5 kPa)

Rated speed and power  
 Gross power guaranteed within ±5% at ISO 8665/SAE J1228 and ISO 3046/SAE J1995  
 Test conditions:

77 °F (25 °C) air inlet temperature  
 29.31 in.Hg (99 kPa) barometric pressure  
 104 °F (40 °C) fuel inlet temperature  
 0.853 fuel specific gravity @ 60 °F (15.5 °C)

Ambient air temperature is defined to be the temperature of ambient air close to operating vessel that is not influenced in any manner by operating characteristics of the vessel (free field temp).

Conversion factors: Power: kW = hp x 0.746  
 Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg  
 Torque: N·m = lb-ft x 1.356

All values from currently available data. Subject to manufacturing and measurement variations and to change without notice.  
 Actual performance is subject to application and operation conditions outside of John Deere control.

All pressures shown in gauge pressure

## Notes:

**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% overload capability, and conforms to ISO 8528 prime power. Average load over a 24-hour period shall not exceed 67% of the prime rating, of which no more than 2 hours are between 100% and 110% of the prime rating.

Constant speed engines are not certified for constant speed propulsion applications (i.e. variable pitch propeller, hybrid propulsion system).

Possible applications: This rating is used for applications that require constant speed operation in power generation or auxiliary applications such as generators and hydraulic pumps.

## Designed/Calibrated to meet:

- EPA Marine Tier 3 Constant Speed Auxiliary (40 CFR 1042)
- IMO Tier II Compliant (MARPOL Annex VI)

Ref: Engine Emission Label

## Certified by:

*Keith A. Ockerson*

9-Jun-20

Performance Curve: 6090AFM85\_E

All values at rated speed, power, and standard conditions, per SAE J1995 unless otherwise noted.

# Engine Installation Criteria

## General Data

Model	6090AFM85		
Number of Cylinders	6		
Bore	118 mm	4.65 in	
Stroke	136 mm	5.35 in	
Displacement	9 L	549 in <sup>3</sup>	
Compression Ratio	16.3:1		
Valves per Cylinder, Intake/Exhaust	2/2		
Combustion System	Direct injection		
Firing Order	1-5-3-6-2-4		
Engine Type	In line, 4 Cycle		
Aspiration	Turbocharged and Aftercooled		
Aftercooling System	Engine coolant		
Engine Crankcase Vent System	Closed		

## Cooling System\*

Engine Coolant Heat Rejection**	245 kW	13945 BTU/min	
Max. Pressure Drop Across Keel Cooler	40 kPa	6 psi	
Coolant Flow	334 L/min	88.2 gal/min	
Min. Coolant Pump Inlet Pressure	30.3 kPa	4.4 psi	
Thermostat Start to Open	71 °C	160 °F	
Thermostat Fully Open	83 °C	182 °F	
Engine Coolant Capacity, HE	42 L	11.1 gal	
Engine Coolant Capacity, KC	40 L	10.6 gal	
Min. Coolant Fill Rate	12 L/min	3.2 gal/min	
Min. Pressure Cap	110.3 kPa	16 psi	
Max. External Coolant Restriction	40 kPa	5.8 psi	
Normal Operation Max Top Tank Temperature	100 °C	212 °F	
≤ 5% of Total Operating Time Top Tank Temperature	100-110 °C	212-230 °F	
Tank Temperature			
Absolute Max Top Tank Temperature	110 °C	230 °F	
Recommended Fuel Cooler	4 kW	212 BTU/min	
Engine Radiated Heat	15 kW	856 BTU/min	

\* The cooling system should be capable of typical at ambient up to the maximum conditions in which the vessel will operate.

Typical operation is defined as the average load sustainable in the vessel over 10 min.

\*\* Reference 32 °C Sea Water Temperature

## Physical Data

Length to rear face of block	1297 mm	51.1 in	
Length to rear face of flywheel housing (SAE #2)	1415 mm	55.7 in	
Length maximum	1685 mm	66.3 in	
Width maximum	1027 mm	40.4 in	
Height, crank centerline to top	664 mm	26.1 in	
Height, crank centerline to bottom	319 mm	12.6 in	
Weight, with oil, no coolant (includes engine, flywheel housing, flywheel, and electronics)	1055 kg	2325 lb	
Center of Gravity Location, X-axis From Rear Face of Block	408 mm	16.1 in	
Center of Gravity Location, Y-axis Right of Crankshaft	38 mm	1.5 in	
Center of Gravity Location, Z-axis Above Crankshaft	200 mm	7.87 in	
Max. Allowable Static Bending Moment At Rear Face of Flywheel Housing (for installations up to 5-G)	814 Nm	600 lb-ft	
Thrust Bearing Load Limit, Forward Continuous	8.6 kN	1933 lbf	
Thrust Bearing Load Limit, Forward Intermittent	13 kN	2923 lbf	
Thrust Bearing Load Limit, Rearward Continuous	4 kN	899 lbf	
Thrust Bearing Load Limit, Rearward Intermittent	6 kN	1349 lbf	

## Electrical System

Min. Recommended Battery Capacity, 12V @32 °F (0 °C)	1100 amps	
Min. Recommended Battery Capacity, 24V @32 °F (0 °C)	750 amps	
Starter Rolling Current, 12V @32 °F (0 °C)	920 amps	
Starter Rolling Current, 24V @32 °F (0 °C)	600 amps	
Min. Voltage at ECU during Cranking, 12V	6 volts	
Min. Voltage at ECU during Cranking, 24V	10 volts	
Max. Allowable Start Circuit Resistance, 12V	0.0012 ohms	
Max. Allowable Start Circuit Resistance, 24V	0.002 ohms	
Electrical Component Maximum Temperature Limit	125 °C	257 °F
Maximum ECU Temperature	105 °C	221 °F

Performance Curve: 6090AFM85\_E

All values at rated speed and power at standard conditions per SAE J1995 unless otherwise noted.

# Engine Installation Criteria

## Fuel System

ECU Description	L14			
Fuel Injection Pump	Denso HP4			
Governor Type	Electronic			
Volumetric Fuel Consumption, Prime	59.9	L/hr	15.8	gal/hr
Mass Fuel Consumption, Prime	50.9	kg/hr	112	lb/hr
Total Fuel Volumetric Flow	240	L/hr	63.4	gal/hr
Total Fuel Mass Flow	204	kg/hr	450	lb/hr
Max. Fuel Inlet Restriction*	20	kPa	80	in.H <sub>2</sub> O
Max. Fuel Inlet Pressure	20	kPa	80	in.H <sub>2</sub> O
Max Fuel Return Pressure	20	kPa	80	in.H <sub>2</sub> O
Normal Operation Fuel Temperature	40	°C	104	°F
Max. Fuel Inlet Temperature	100	°C	212	°F
Min. Recommended Fuel Line Inside Diameter	8.34	mm	0.33	in
Min. Recommended Fuel Line Size	6 (-) AN			
Primary Fuel Filter	10 mic			
Secondary Fuel Filter	2 mic			

## Lubrication System

Oil Pressure at 1800 RPM**	280	kPa	41	psi
Max. Crankcase Pressure	2	kPa	8	in.H <sub>2</sub> O
Maximum Installed Angle, Front Down	0 deg			
Maximum Installed Angle, Front Up	12 deg			
Engine Angularity Limits Any Direction, Continuous***	20 deg			
Engine Angularity Limits Any Direction, Intermittent***	30 deg			

## Seawater Pump System

Seawater Pump Flow	352	L/min	93	gal/min
Max. Suction Lift	3	m	9.8	ft
Max. Outlet Pressure	140	kPa	20	psi
Max. Inlet Restriction	30	kPa	4	psi

\* With clean filters

\*\* With John Deere Plus-50 II™ 15w-40, not applicable with break in oil.

\*\*\* With 1932 option

## Air Intake System

Engine Air Flow	19.6	m <sup>3</sup> /min	692	ft <sup>3</sup> /min
Intake Manifold Pressure	196	kPa	28.4	psi
Manifold Air Temperature	89	°C	192	°F
Maximum Manifold Air Temperature	130	°C	266	°F
Max. Allowable Temperature Rise, Ambient Air to Engine Inlet	17	°C	30	°F
Max. Air Intake Restriction, Clean Air Cleaner	3	kPa	12	in.H <sub>2</sub> O
Max. Air Intake Restriction, Dirty Air Cleaner	6.25	kPa	25	in.H <sub>2</sub> O
Min. Ventilation Area	0.121	m <sup>2</sup>	187	in <sup>2</sup>

## Performance Data

Prime Power	222	kW	297	hp
10% Overload Power	244	kW	327	hp
Rated Speed	1800 RPM			
Low Idle Speed	1000 RPM			
Prime Torque	1177	Nm	868	lb-ft
BMEP, Prime	1643	kPa	238	psi
Rated Pferdestärke, Prime (metric hp)	302 ps			
Front Drive Capacity, Intermittent	955	Nm	704	lb-ft
Front Drive Capacity, Continuous	955	Nm	704	lb-ft
Software and Label Convertible to 50 Hz?	NO			
Friction Power @ Rated Speed	24	kW	32.2	hp

## Exhaust System

Exhaust Flow	49	m <sup>3</sup> /min	1713	ft <sup>3</sup> /min
Exhaust Flow @ gas STP	18.91	m <sup>3</sup> /min	668	ft <sup>3</sup> /min
Exhaust Temperature	493	°C	919.4	°F
Max. Allowable Exhaust Restriction	7.5	kPa	30	in.H <sub>2</sub> O
Max. Shear on Turbocharger Exhaust Outlet	11	kg	24.3	lb
Max. Bending Moment on Turbocharger Exhaust Outlet	7	Nm	15.4	lb-ft
Min. Exhaust Pipe Diameter, Dry	114.3	mm	4.5	in
Min. Exhaust Pipe Diameter, Wet	127.0	mm	5.0	in

Performance Curve: 6090AFM85\_E

All values at rated speed and power at standard conditions per SAE J1995 unless otherwise noted.

## Engine Installation Criteria

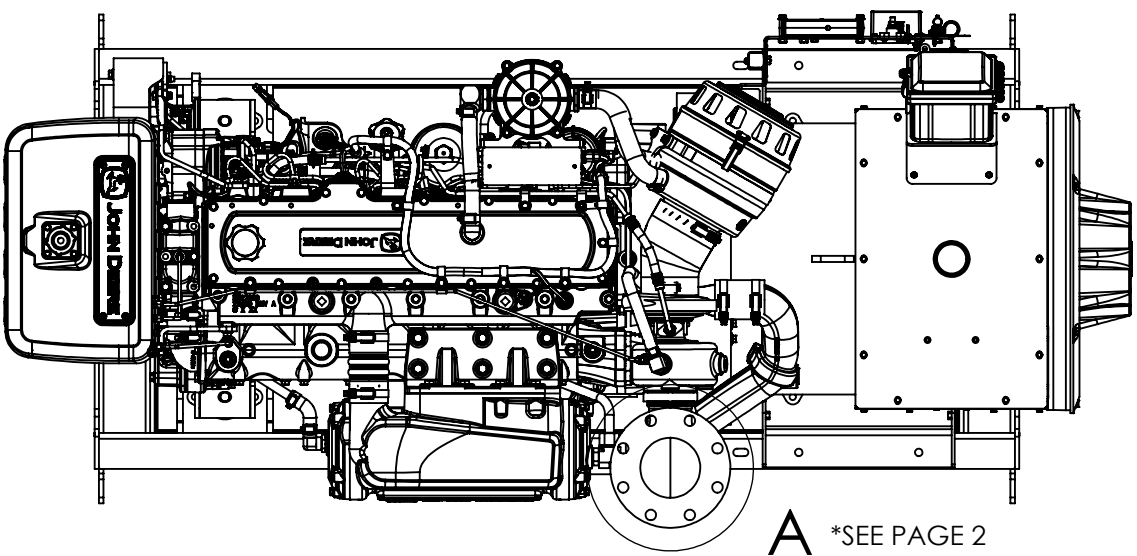
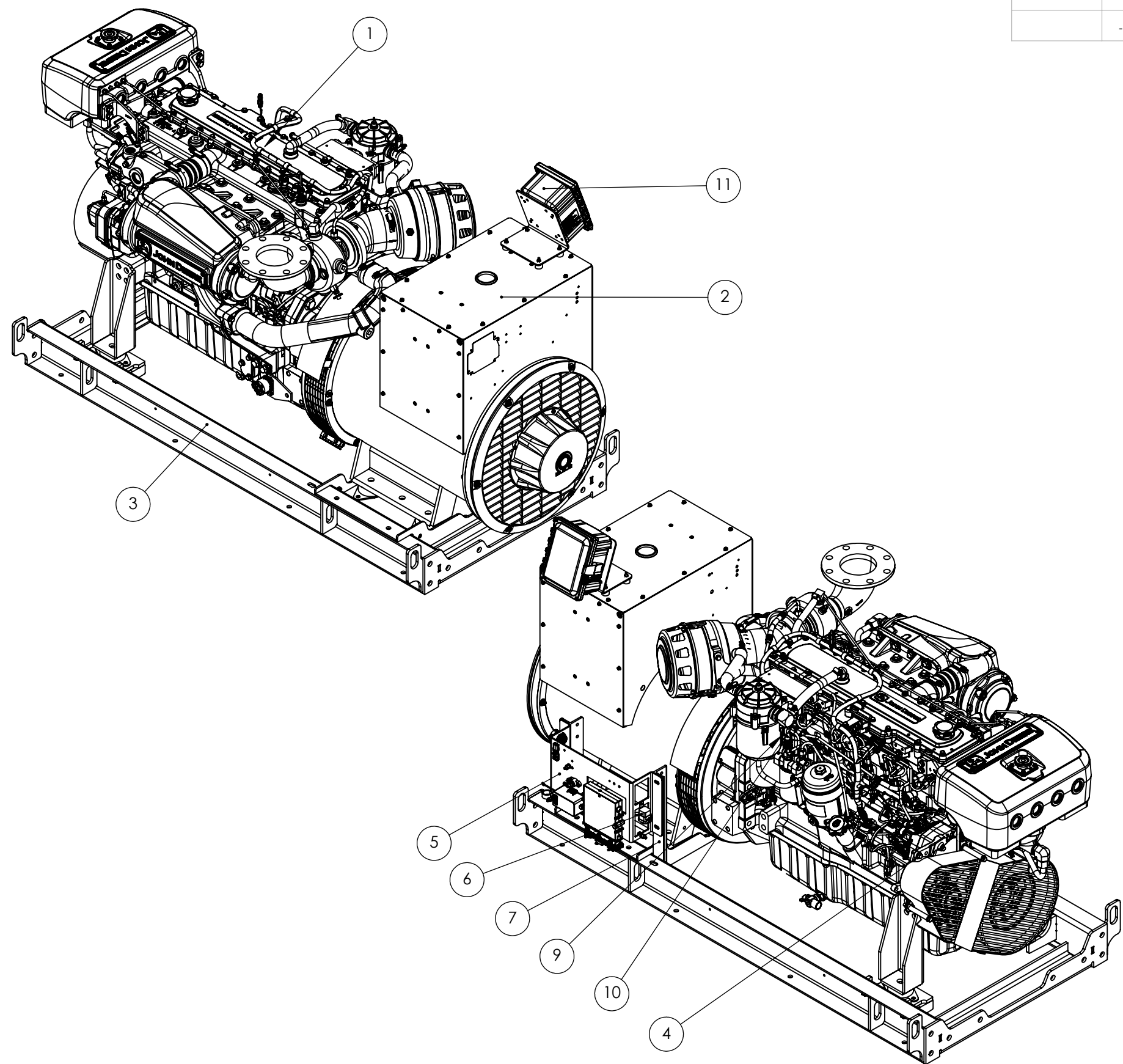
**Engine Performance Data Table**

Engine Power	Crank Power		Crank Torque		Fuel Consumption		BSFC
	kW	hp	Nm	lb-ft	L/hr	gal/hr	
<b>25%</b>	55	74	294	217	18.2	4.8	279
<b>50%</b>	111	149	589	434	34.8	9.2	267
<b>75%</b>	166	223	883	651	44.5	11.7	227
<b>100%</b>	222	298	1177	868	59.9	15.8	230
<b>110%</b>	244	327	1295	955	68.6	18.1	239

Performance Curve: 6090AFM85\_E

All values at rated speed and power at standard conditions per SAE J1995 unless otherwise noted.

ECR #	REV	DESCRIPTION OF CHANGE	DATE	REV BY
	-			



ITEM NO.	NUMBER	DESCRIPTION	QTY.
1	90AM85KCGD	6090AFM85 DEERE, 297 @ 1800, K.C.	1
2	431PSL6258	180-240kWe, PMG, DC	1
3	250-A3634	SKID BASE ASSY, 6090	1
4	700-A3632	6090 ALT. BLOCK-OFF	1
5	DZ110509	GEN 2, ENG/ECU, 10FT	1
6	RE52665	12V FUEL&KCKBK RELAY	1
7	250-07225	BRACKET, GEN-2 ECU	2
8	700-07240	5FT ADAPTER HARNESS	1
9	3J982-6-8	#6 FORFS TO 1/2"BARB	1
10	3J982-6-6	#6 FORFS TO 3/8"BARB	1
11	MVP-62303-95061	MVP PANEL, W/KEYLESS	1



PLEASE REVIEW, VERIFY, SIGN AND DATE THIS DESIGN TO ENSURE THAT OUR DESIGN MEETS YOUR APPLICATION REQUIREMENTS. PLEASE RETURN TO YOUR SDI/BPS REPRESENTATIVE.

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

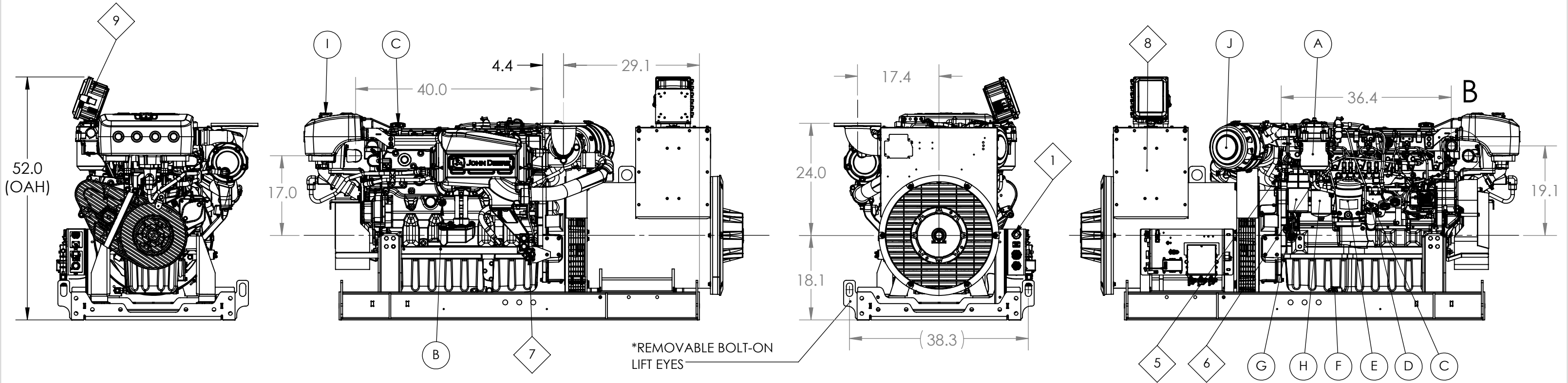
- NOTES:**
1. INSTALLATION DRAWING ONLY.
  2. DO NOT SCALE FROM DRAWING.
  3. CONTACT SUPERIOR DIESEL FOR ALL ENGINE CODES AND PART NUMBERS.

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SYSTEMS, LLC.

		RHINELANDER, WI (715) 365-0500 SEVILLE, OH (330) 769-1850 ESSEX, CT (860) 767-7502			
TOLERANCE ON DIMENSIONS UNLESS OTHERWISE NOTED		DRAWN KDP	DATE 06/18/2020	TITLE 200kWe, KC, 12V, SAE#2 6090AFM85, W/SKID CONTROLS	
ANGLES: ±.5°		CHECKED KDP	DATE 06/22/2020		
FRACTIONS: ±1/32		MODELS AFM85		DRAWING NO J3M0902K9-SDB	
DECIMALS: .0 = ±.060 .00 = ±.030 .000 = ±.010		MATERIAL		WEIGHT ± 4240 LBS	SHEET 1 OF 2
				REV. -	

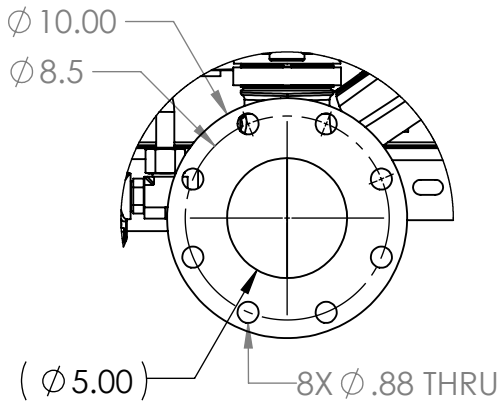
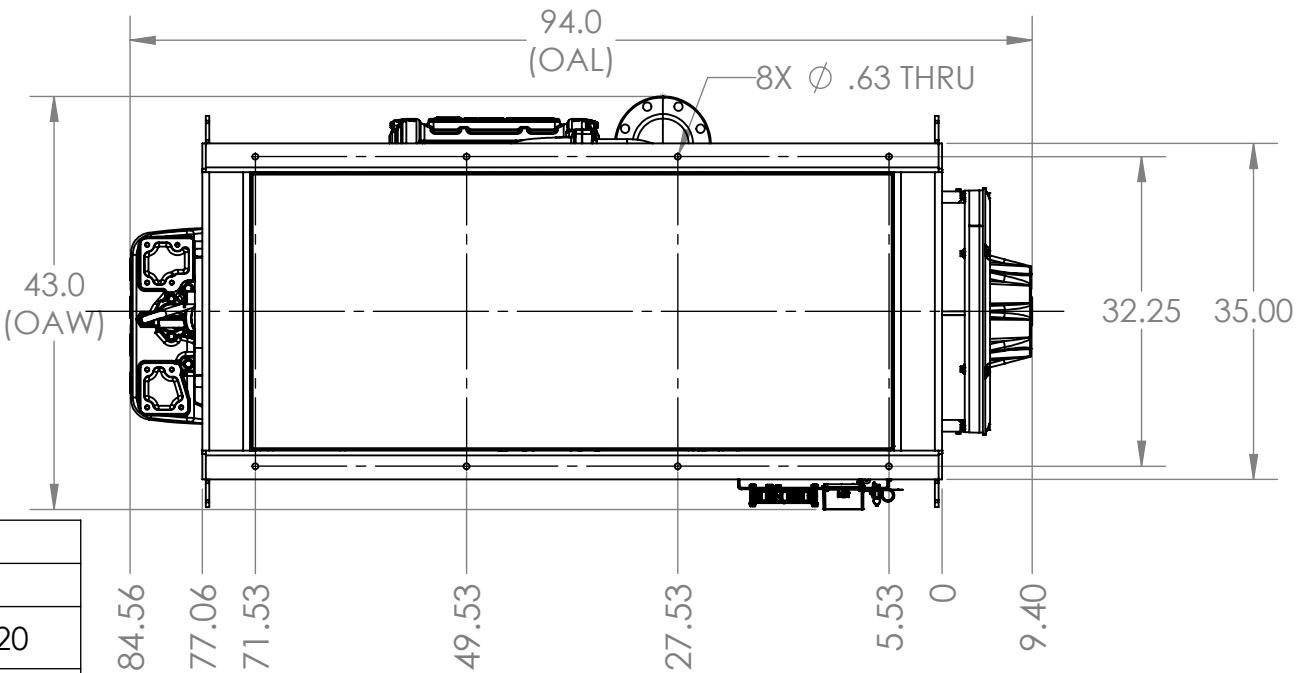
ECR #	REV	DESCRIPTION OF CHANGE	DATE	REV BY
	-			



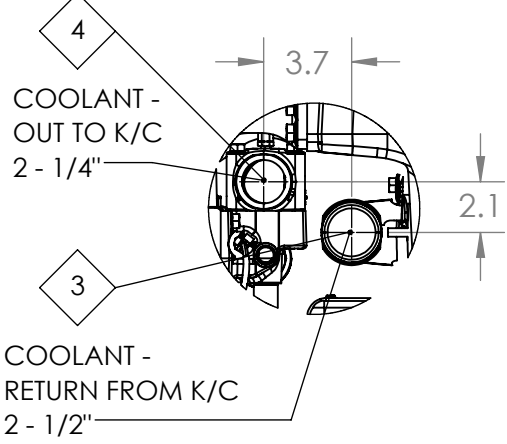
CUSTOMER SERVICE POINTS ●	
ITEM	NAME
A	CCV SYSTEM
B	COOLANT DRAIN(S)
C	OIL FILL(S)
D	OIL DIPSTICK
E	OIL FILTER
F	OIL DRAIN
G	PRIMARY FUEL FILTER
H	SECONDARY FUEL FILTER
I	COOLANT FILL & PRESSURE CAP
J	WASHABLE AIR FILTER

CUSTOMER INSTALLATION POINTS ◆		
ITEM	NAME	REMARKS
1	ECU HARNESS CONNECTION	C04, C05, C18, C20
2	DRY ELBOW	SEE DETAIL A
3	FROM KEELCOOLER	SEE DETAIL B
4	TO KEELCOOLER	SEE DETAIL B
5	FUEL INLET	1/2" BARB
6	FUEL RETURN	3/8" BARB
7	START RELAY	SEE OPTION DRAWING
8	GENERATOR	SEE INST. MANUAL
9	CONTROL PANEL	SEE OPER. MANUAL

- NOTES:**
- SEE APPLICABLE ENGINE INSTALLATION DRAWINGS FOR FURTHER INFORMATION.
  - ORIGIN - CENTERLINE OF CRANKSHAFT AT REAR FACE OF BLOCK.



DETAIL A  
5" ANSI DRY ELBOW  
SCALE 1 : 8



DETAIL B  
K/C INLET & RETURN  
SCALE 1 : 8

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TOLERANCE ON DIMENSIONS UNLESS OTHERWISE NOTED		DRAWN KDP	DATE 06/18/2020	TITLE 200kW <sub>e</sub> , KC, 12V, SAE#2 6090AFM85, W/SKID, CONTROLS	
ANGLES: $\pm$ .5°		CHECKED KDP	DATE 06/22/2020	DRAWING NO J3M0902K9-SDB	
FRACTIONS: $\pm$ 1/32		MODELS AFM85		SHEET 2 OF 2	
DECIMALS: .0 = $\pm$ .060 .00 = $\pm$ .030 .000 = $\pm$ .010		WEIGHT $\pm$ 4240 LBS		REV. -	
MATERIAL					