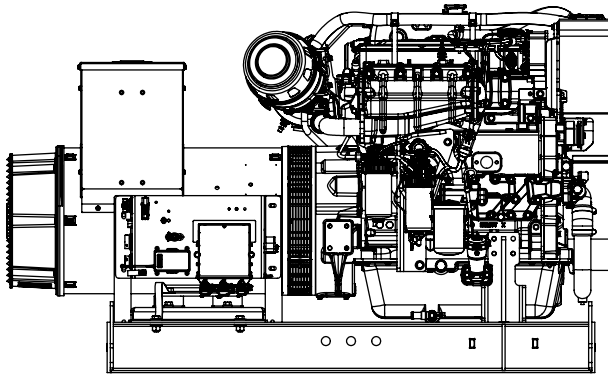
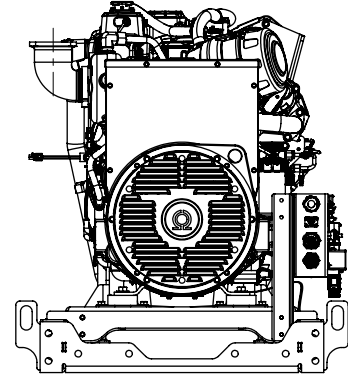


## Model - J3M0453K9-SDB01 99kWe



### Overall Dimensions

71.7" L  
39.3"W  
48.3"H



## Standard Spec Configuration

### Engine

- John Deere 4045AFM85 148HP @1800rpm
- HPCR and GenII Electronics
- EPA Tier III Compliant
- Controls Inc M3-4004 Panel
- Radiator Cooled, Diesel Radiator (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
- 24v DC Engine electrical System
- ABS Type Approved

### Generator

- Marathon Mariner
- 99kWe 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
- SOLAS
- Various AC Voltage Configurations
- Various Control Panel Options and Harness Lengths
- Various service and filter locations

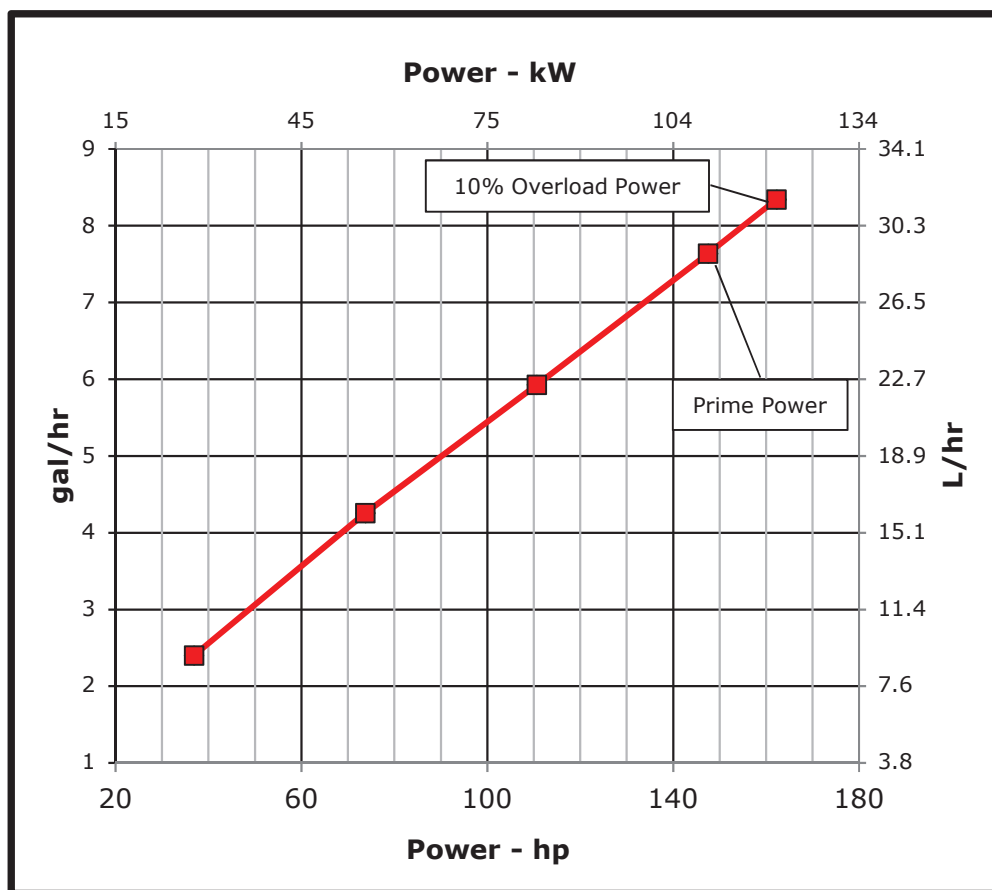


# ENGINE PERFORMANCE CURVE

Rating: **60 Hz - 148hp (110kW) @ 1800 RPM**  
 Application: **Marine**

**PowerTech™ 4.5L Engine**  
**Model: 4045AFM85**

Generator Efficiency (%)	Power Factor	Calculated Gen-Set Rating		Prime Power	10% Overload Power
		kWe	kVA	hp (kW)	hp (kW)
88-92	0.8	97-101	121-126	148 (110)	162 (121)



## 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 MARPOL Annex VI Exempt (<130 kW)

Certified by:

*Scott A. Ahlstrom*

Ref: Engine Emission Label

29-Jun-20

Performance Curve: 4045AFM85\_E

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

# Engine Installation Criteria

## General Data

Model	4045AFM85			
Number of Cylinders	4			
Bore	107	mm	4.21	in
Stroke	127	mm	5.00	in
Displacement	4.48	L	275	in <sup>3</sup>
Compression Ratio	16.7:1			
Valves per Cylinder, Intake/Exhaust	2/2			
Combustion System	Direct injection			
Firing Order	1-3-4-2			
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**	123	kW	7001	BTU/min
Max. Pressure Drop Across Keel Cooler	40	kPa	6	psi
Coolant Flow	155	L/min	40.9	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	17	L	4.4	gal
Engine Coolant Capacity, KC	20	L	5.2	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
Absolute Max Top Tank Temperature	110	°C	230	°F
Recommended Fuel Cooler	3	kW	144	BTU/min
Engine Radiated Heat	7	kW	413	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	752	mm	29.6	in
Length to rear face of flywheel housing (SAE #3)	890	mm	35.0	in
Length maximum	1105	mm	43.5	in
Width maximum	864	mm	34	in
Height, crank centerline to top	654	mm	25.7	in
Height, crank centerline to bottom	310	mm	12.2	in
Weight, with oil, no coolant (includes engine, flywheel housing, flywheel, and electronics)	578	kg	1274	lb
Center of Gravity Location, X-axis From Rear Face of Block	273	mm	10.8	in
Center of Gravity Location, Y-axis Right of Crankshaft	4.78	mm	0.2	in
Center of Gravity Location, Z-axis Above Crankshaft	227	mm	8.95	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	2.2	kN	495	lbf
Thrust Bearing Load Limit, Forward Intermittent	4	kN	899	lbf
Thrust Bearing Load Limit, Rearward Continuous	1	kN	225	lbf
Thrust Bearing Load Limit, Rearward Intermittent	2	kN	450	lbf

## Electrical System

Min. Recommended Battery Capacity, 12V @32 °F (0 °C)	625	amps
Min. Recommended Battery Capacity, 24V @32 °F (0 °C)	500	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	0.002	ohms
Max. Allowable Start Circuit Resistance, 24V	0.0012	ohms
Electrical Component Maximum Temperature Limit	125	°C 257 °F
Maximum ECU Temperature	105	°C 221 °F

Performance Curve: 4045AFM85\_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	HPCR		
Governor Type	Electronic		
Volumetric Fuel Consumption, Prime	28.9 L/hr	7.6 gal/hr	
Mass Fuel Consumption, Prime	24.6 kg/hr	54 lb/hr	
Total Fuel Volumetric Flow	152 L/hr	40.0 gal/hr	
Total Fuel Mass Flow	129 kg/hr	284 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	6.63 mm	0.26 in	
Min. Recommended Fuel Line Size	5 (-) AN		
Primary Fuel Filter	10 mic		
Secondary Fuel Filter	2 mic		

## Lubrication System

Oil Pressure at 1800 RPM**	378 kPa	55 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***	35 deg		
Engine Angularity Limits Any Direction, Intermittent***	45 deg		

## Seawater Pump System

Seawater Pump Flow	197 L/min	52 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 19CZ option

## Air Intake System

Engine Air Flow	8.5 m <sup>3</sup> /min	301 ft <sup>3</sup> /min	
Intake Manifold Pressure	164 kPa	23.7 psi	
Manifold Air Temperature	81 °C	178 °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	0.053 m <sup>2</sup>	81 in <sup>2</sup>	

## Performance Data

Prime Power	110 kW	148 hp	
10% Overload Power	121 kW	162 hp	
Rated Speed	1800 RPM		
Low Idle Speed	1000 RPM		
Prime Torque	584 Nm	430 lb-ft	
BMEP, Prime	1637 kPa	237 psi	
Rated Pferdestärke, Prime (metric hp)	150 ps		
Front Drive Capacity, Intermittent	621 Nm	458 lb-ft	
Front Drive Capacity, Continuous	621 Nm	458 lb-ft	
Friction Power @ Rated Speed	12.8 kW	17 hp	

## Exhaust System

Exhaust Flow	19.4 m <sup>3</sup> /min	685 ft <sup>3</sup> /min	
Exhaust Flow @ gas STP	8.81 m <sup>3</sup> /min	311 ft <sup>3</sup> /min	
Exhaust Temperature	434 °C	813.2 °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	101.6 mm	4.0 in	
Min. Exhaust Pipe Diameter, Wet	114.3 mm	4.5 in	

Performance Curve: 4045AFM85\_E

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

## Engine Installation Criteria

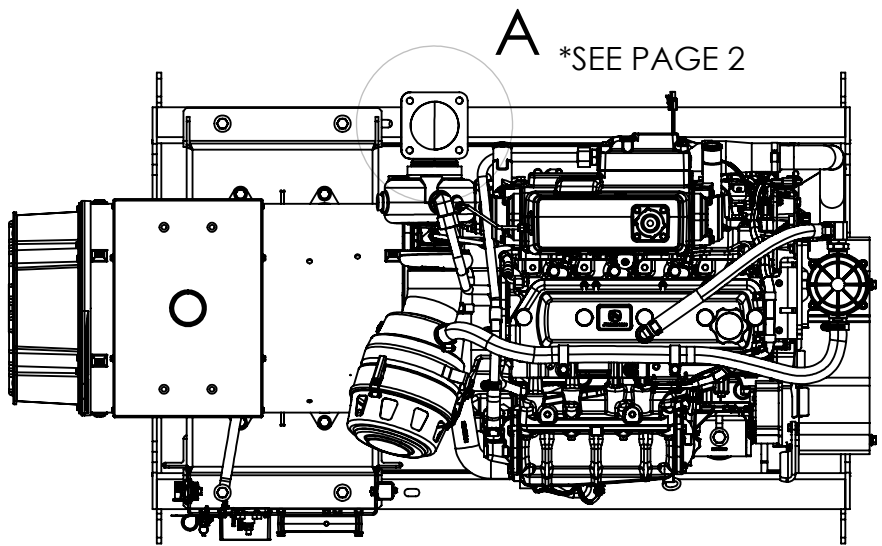
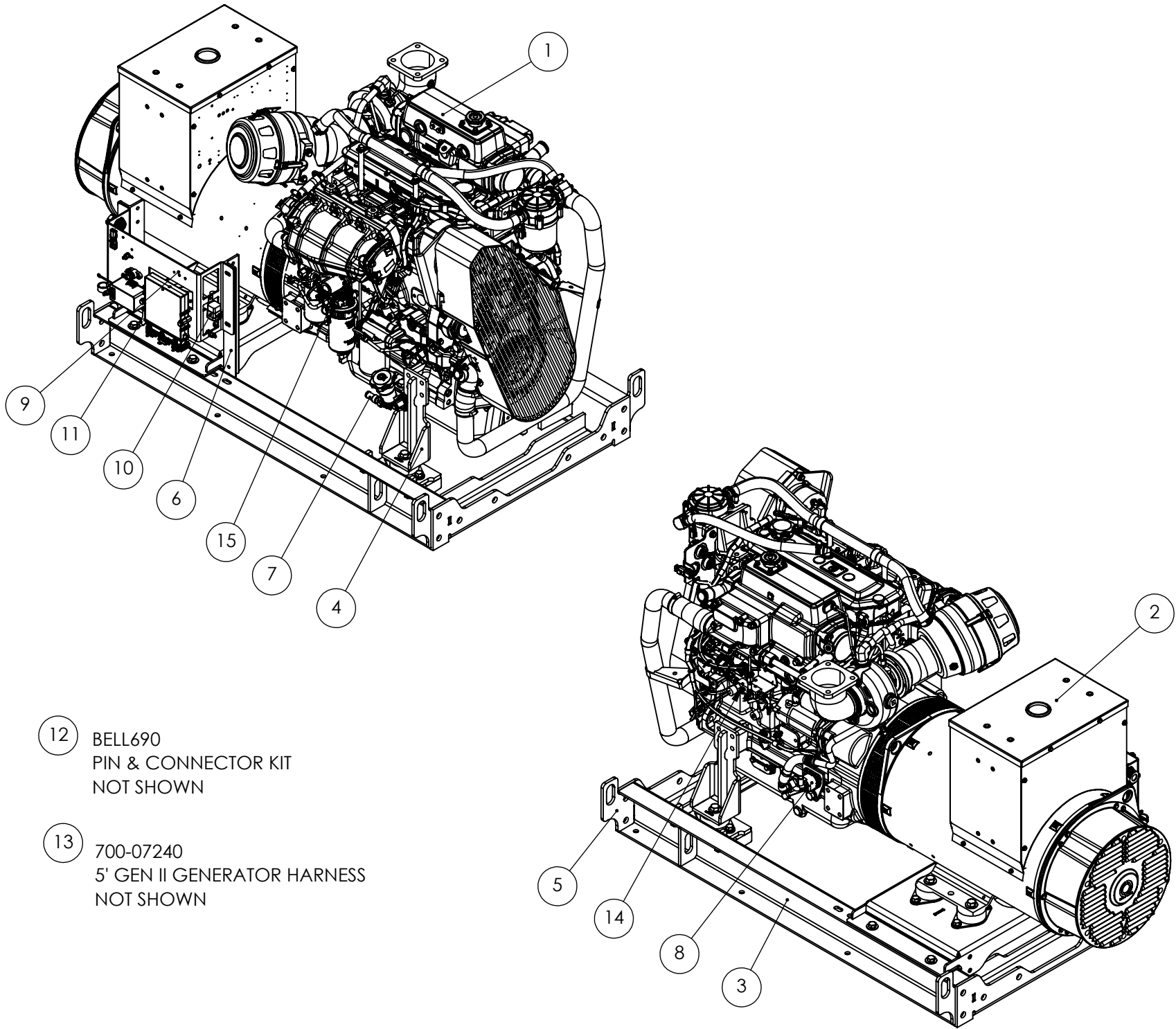
**Engine Performance Data Table**

Engine Power	Crank Power		Crank Torque		Fuel Consumption		BSFC
	kW	hp	Nm	lb-ft	L/hr	gal/hr	
<b>25%</b>	27.5	36.9	145.9	107.6	9.1	2.4	280.7
<b>50%</b>	55.0	73.8	291.8	215.2	16.1	4.3	248.8
<b>75%</b>	82.5	110.6	437.7	322.8	22.4	5.9	231.1
<b>100%</b>	110.0	147.5	583.6	430.4	28.9	7.6	223.3
<b>110%</b>	121.0	162.3	642.0	473.5	31.6	8.3	221.8

Performance Curve: 4045AFM85\_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
	A	UPDATED BOM TABLE	03/05/2021	KDP



\*REMOVABLE LIFT EYE

ITEM #	PART NUMBER	DESCRIPTION	QTY.
1	45AM32-148-GK00 45AM34-148-GK00	4045AFM85, 12V, KC, 148HP 4045AFM85, 24V, KC, 148HP	1
2	363PSL3127PDHD	99kWe, PMG, DRIP COV, HEATER, DVR	1
3	250-A3898	UNIVERSAL 4045 GEN SKID	1
4	250-07219	UNIVERSAL FRONT LEGS	2
5	*250-07256	LIFTING LUG, BOLT-ON	4
6	250-07225	GEN II ECU BRACKET	2
7	RE509019	OIL DRAIN VALVE	1
8	700-A3843	START RELAY WIRING	1
9	DZ110509	GEN II ENGINE TO ECU HARNESS KIT, 10FT	1
10	RE52665 RE505214	12V FUEL_KICKBACK RELAY 24V FUEL_KICKBACK RELAY	1
11	69925K34	GROUNDING BRAID	1
12	BELL690	PIN & CONNECTOR KIT	1
13	700-07240	5' GEN II GENERATOR HARNESS	1
14	150-A2906	FUEL RETURN ALARM KIT	1
15	3J982-6-6	FUEL INLET 3/8 BARB	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: \_\_\_\_\_

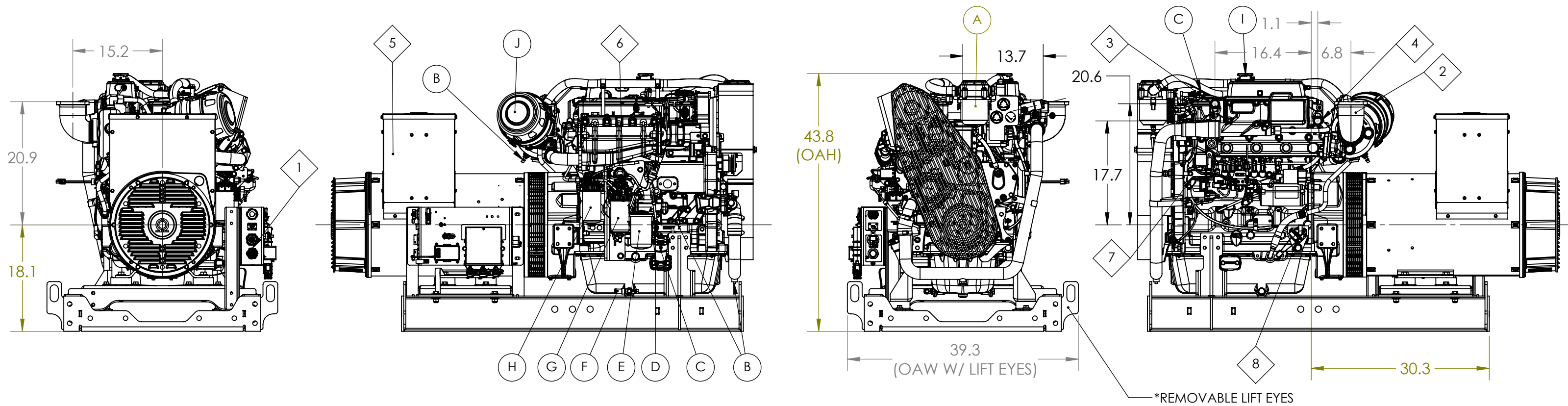
- NOTES:**
1. INSTALLATION DRAWING ONLY.
  2. DO NOT SCALE FROM DRAWING.
  3. CONTACT SUPERIOR DIESEL FOR ALL ENGINE CODES AND PART NUMBERS.

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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	TITLE 99kWe, KC, 12V OR 24V 4045AFM85, SKID MARINE GENSET	
ANGLES: ±.5°		CHECKED KDP	DATE		
FRACTIONS: ±1/32		MODELS AFM85		DRAWING NO J3M0453K9-SDB01	
DECIMALS: .0 = ±.060 .00 = ±.030 .000 = ±.010		MATERIAL		WEIGHT ±2570 LBS	SHEET 1 OF 2
				REV. A	

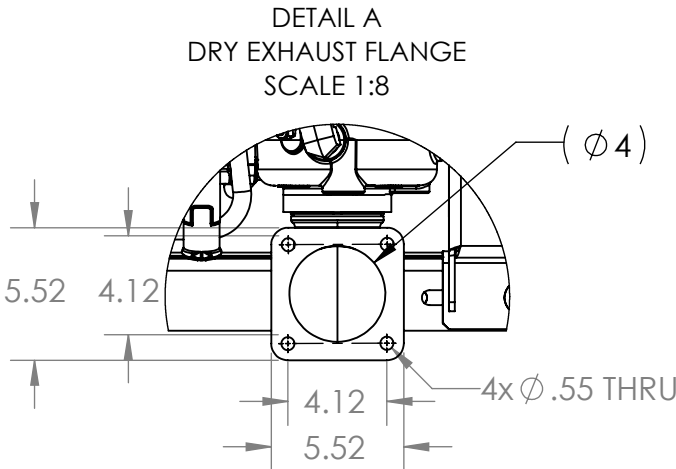
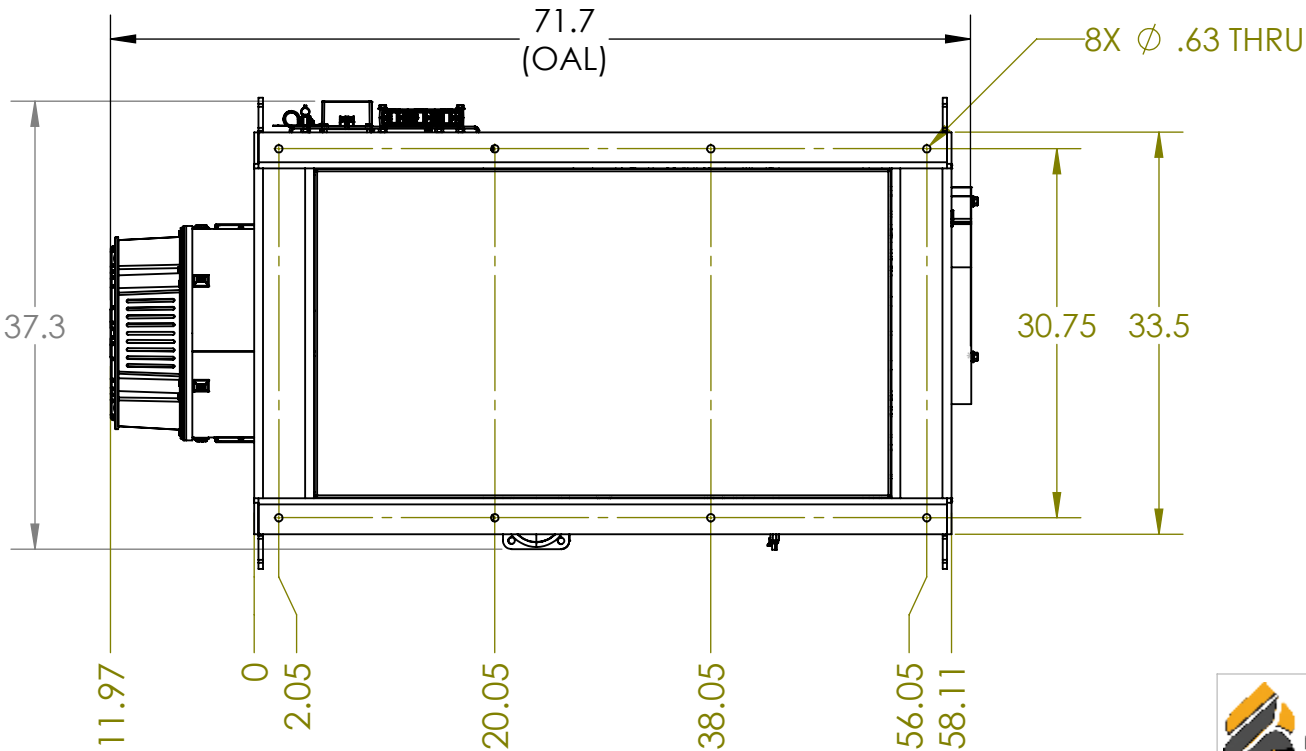
ECR #	REV	DESCRIPTION OF CHANGE	DATE	REV BY
	A	UPDATED BOM TABLE	03/05/2021	KDP



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, BAT+, BAT-
2	DRY ELBOW	SEE DETAIL A
3	FROM KEEL COOLER	1.5" OD BEADED
4	TO KEEL COOLER	1.5" OD BEADED
5	GENERATOR	SEE MARATHON INSTR.
6	FUEL INLET	-6 (3/8) BARB
7	FUEL RETURN	1/8-27 NPTF
8	START RELAY	SEE OPTION DRAWING

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



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ANGLES: ±.5°		CHECKED KDP	DATE	DRAWING NO J3M0453K9-SDB01	
FRACTIONS: ±1/32		MODELS AFM85		SHEET 2 OF 2	
DECIMALS: .0 = ±.060 .00 = ±.030 .000 = ±.010				REV. A	
MATERIAL		WEIGHT ±2570 LBS			