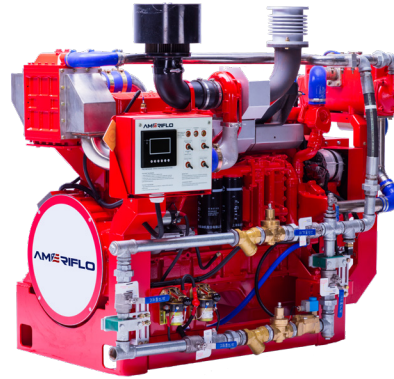


FM - APPROVED RATINGS BHP & KW

ENGINE MODEL:	AF6-159B
EMISSIONS:	TIER 0
DATE:	01/16/2021
DRAWING NUMBER:	AF6-159B.00
PERFORMANCE CURVE NUMBER:	C06159BF
RATED POWER:	778 BHP @ 1760 RPM 580 KW @ 1760 RPM
REFERENCE NUMBER:	14DS001E
VERSION:	A


GENERAL ENGINE DATA

TYPE:		4 CYCLE; INLINE; WATER COOLED
NUMBER OF CYLINDERS:		6
ASPIRATION:		TURBOCHARGED + WATER COOLED
BORE & STROKE - IN [MM]:		6.26 x 6.26 [159 x 159]
CYLINDER LINER TYPE:		☒ WET ☐ DRY
DISPLACEMENT - IN³ [L]:		1153 [18.90]
COMPRESSION RATIO:		13.90:01
FIRING ORDER:		1 - 5 - 3 - 6 - 2 - 4
COMBUSTION SYSTEM:		DIRECT INJECTION
ROTATION (AS VIEWED FROM FRONT OF ENGINE):		CCW
VALVES PER CYLINDER:		INTAKE: 2 EXHAUST: 2
VALVE LASH (COLD ENGINE):	INTAKE - IN [MM]:	0.014 [0.360]
	EXHAUST - IN [MM]:	0.027 [0.690]
IGNITION TYPE:		COMPRESSION (DIESEL)
CHARGE AIR COOLING TYPE:		RAW WATER
WEIGHT (FUEL PUMP CONFIGURATION) - LBS [KG]:		5456 [2475]
DIMENSIONS (L x W x H) - IN [MM]:		89 x 54 x 76 [2250 x 1380 x 1935]
FLYWHEEL / FLYWHEEL HOUSING DIMENSIONS:		14.00 INCHES / SAE #0
TORQUE @ RATED RPM - LB-FT [N-M]:		2321 [3147]

ENGINE PERFORMANCE DATA

ESTIMATED FREE FIELD SOUND PRESSURE LEVEL AT 3 FEET [1 METER] WITH FULL-LOAD GOVERNED SPEED (INCLUDES NOISE FROM EXHAUST, COOLING SYSTEM AND DRIVEN COMPONENTS)	dBa	≤ 108
ALL DATA IS BASED ON ENGINE OPERATIONING WITH FUEL SYSTEM, LUBRICATING OIL PUMP, AIR CLEANER AND ALTERNATOR. DOES NOT INCLUDE AIR COMPRESSOR, FAN & OPTIONAL EQUIPMENT. DATA IS BASED ON SAE STANDARD J1349 CONDITIONS AT 300 FEET [91.4 METERS] ALTITUDE, 29.61 INCHES [752 MILLIMETERS] HG DRY BAROMETER AND 77°F [25°C] INTAKE AIR TEMPERATURE USING #0 DIESEL FUEL FOLLOWING THE GB 252-2011 STANDARD.		
ALTITUDE ABOVE WHICH OUTPUT SHOULD BE DERATED:	FEET [METER]	300 [91]
DERATE PER 1,000 FEET [305 METERS] ABOVE ALTITUDE LIMIT:		3%
TEMPERATURE ABOVE WHICH OUTPUT SHOULD BE DERATED:	°F [°C]	77 [25]
DERATE PER 10°F [5.6°C] ABOVE TEMPERATURE LIMIT:		1%

● ALL DATA CERTIFIED WITHIN ±5%.

EXHAUST SYSTEM

EXHAUST GAS TEMPERATURE @ MAXIMUM RATING (POWER) - °F [°C]:	≤ 936 [502] @ 1760 RPM
EXHAUST GAS FLOW @ MAXIMUM OUTPUT - CFM [M³/HR]:	5649 [9265] @ 1760 RPM
MAXIMUM ALLOWABLE BACK PRESSURE - PSI [KPA]:	1.45 [10]
MINIMUM EXHAUST PIPE DIAMETER - IN [MM]:	8 [200]

AIR INTAKE SYSTEM

AIR CLEANER TYPE:	DRY TYPE, DISPOSABLE
AIR FLOW - CFM [M³/HR]:	2051 [3485] @ 1760 RPM
AIR INLET RESTRICTION - PSI [KPA]:	≤ 0.87 [6]

LUBRICATION SYSTEM

OIL CAPACITY (ENGINE ONLY) - QTS [L]:	40.2 [38]
MAXIMUM SUMP OIL TEMPERATURE - °F [°C]:	176 ~ 239 [80 ~ 248]
NORMAL OPERATING OIL PRESSURE RANGE - PSI [BAR]:	49.3 ~ 69.6 [3.4 ~ 4.8]
OIL PRESSURE @ IDLE - PSI [BAR]:	> 20.0 [1.38]

COOLING SYSTEM

COOLANT CAPACITY (ENGINE & HEAT EXCHANGER) - QTS [L]:		84.5 [80]	
THERMOSTAT RANGE:	START OPEN - °F [°C]:	180 [82]	
	FULL OPEN - °F [°C]:	199 [93]	
COOLANT PRESSURE MAXIMUM - PSI [BAR]:		13 [0.9]	
RAW WATER PRESSURE RANGE @ HEAT EXCHANGER - PSI [BAR]:		72.5 [5]	
ENGINE NORMAL OPERATING COOLANT TEMPERATURE - °F [°C]:		160 ~ 203 [71 ~ 95]	
RAW WATER COOLING FLOW RATE - GPM [M³/HR]:		198 [45]	
MINIMUM RAW WATER FLOW @ ENGINE SPEED (RPM)		1470	1760
RAW WATER TEMPERATURES TO 60.8°F [16°C] - GPM [M³/HR]:		66.0 [15.0]	74.8 [17.0]
RAW WATER TEMPERATURES TO 100.4°F [38°C] - GPM [M³/HR]:		78.4 [17.8]	95.1 [21.6]
RAW WATER INTAKE PIPE SIZE:	RAW WATER INLET - IN:	2.00 NPT	
	RAW WATER OUTLET - IN:	2.50 NPT	

HEATER SYSTEM

WATTAGE - W:	4500
VOLTAGE (AC) - V:	220

DC ELECTRICAL SYSTEM

NORMAL SYSTEM VOLTAGE - V:	24
STARTER MOTOR - HP [KW]:	12.7 [9.5]
RECOMMENDED BATTERY SIZE - AH:	200
COLD CRANKING AMPS @ 0°F (-18°C):	1000
CHARGING ALTERNATOR OUTPUT - AMPS:	35

❶ ALL DATA CERTIFIED WITHIN ±5%.

FUEL SYSTEM

INJECTION PUMP:	INLINE, PLUNGER TYPE
INJECTION PUMP ADVANCE ANGLE - °:	10.0
MINIMUM SUPPLY LINE SIZE - IN [MM]:	0.750 [19]
MINIMUM RETURN LINE SIZE - IN [MM]:	0.625 [16]
FUEL MANAGEMENT CONTROL:	MECHANICAL
IDLE SPEED - RPM:	675
GOVERNED SPEED RATE - %:	< 10

① ALL DATA CERTIFIED WITHIN ±5%.



ENGINE MATERIALS & CONSTRUCTION

ENGINE		AIR INTAKE	
CAMSHAFT:		AIR CLEANER:	
TYPE	OVERHEAD	TYPE	DRIP PROOF
MATERIAL	CARBON STEEL	MATERIAL	PLEATED PAPER
LOCATION	IN BLOCK	COOLING SYSTEM	
DRIVE	SPUR GEAR	COOLANT HEAT EXCHANGER:	
CONNECTING RODS:		TYPE	TUBE & SHELL
TYPE	I-BEAM, FRACTURE	MATERIAL	
MATERIAL	FORGED STEEL	ELECTRODE	ZINC
CRANKSHAFT:		HEADERS	ALUMINUM
TYPE	GROUND	SHELL	ALUMINUM
MATERIAL	DUCTILE IRON	TUBES	COPPER
MAIN BEARINGS:		COOLANT PUMP:	
TYPE	PRECISION, HALF SHELL	TYPE	CENTRIFUGAL
MATERIAL	TIM ALUMINUM ALLOY	DRIVE	V-BELT
CYLINDER BLOCK:		THERMOSTAT:	
TYPE	GANTRY	TYPE	NON-BLOCKING
MATERIAL	CAST IRON	QUANTITY	1
CYLINDER HEAD:		COOLING LOOP (GALVANIZED):	
TYPE	ONE PIECE	TEES, ELBOWS, PIPE	GALVANIZED STEEL
MATERIAL	CAST IRON	BALL VALVES	BRASS
CYLINDER LINERS:		SOLENOID VALVE	BRASS
TYPE	WET LINED	PRESSURE REGULATOR	BRASS
MATERIAL	CAST IRON ALLOY	STRAINER	BRASS
PISTONS:		COOLING LOOP (316 STAINLESS STEEL):	
TYPE	TRUNK	TEES, ELBOWS, PIPE	316 STAINLESS STEEL
MATERIAL	ALUMINUM ALLOY	BALL VALVES	316 STAINLESS STEEL
PISTON PINS:		SOLENOID VALVE	316 STAINLESS STEEL
TYPE	FULL FLOATING	PRESSURE REGULATOR	316 STAINLESS STEEL
MATERIAL	ALLOY STEEL	STRAINER	316 STAINLESS STEEL
PISTON RINGS:		FUEL SYSTEM	
FIRST	DUCTILE CAST IRON	FUEL INJECTION PUMP:	
SECOND	ALLOY CAST IRON	TYPE	FULL MECHANICAL, CENTRIFUGAL
THIRD	ALLOY CAST IRON	DRIVE	GEAR DRIVEN
VALVES:		LUBRICATION SYSTEM	
TYPE	POPPET	TYPE	GEROTOR
ARRANGEMENT	OVERHEAD	DRIVE	GEAR
VALVE # PER CYLINDER	1 INTAKE, 1 EXHAUST		
OPERATING MECHANISM	MECHANICAL ROCKER ARM		
LIFTER TYPE	LARGE HEAD		

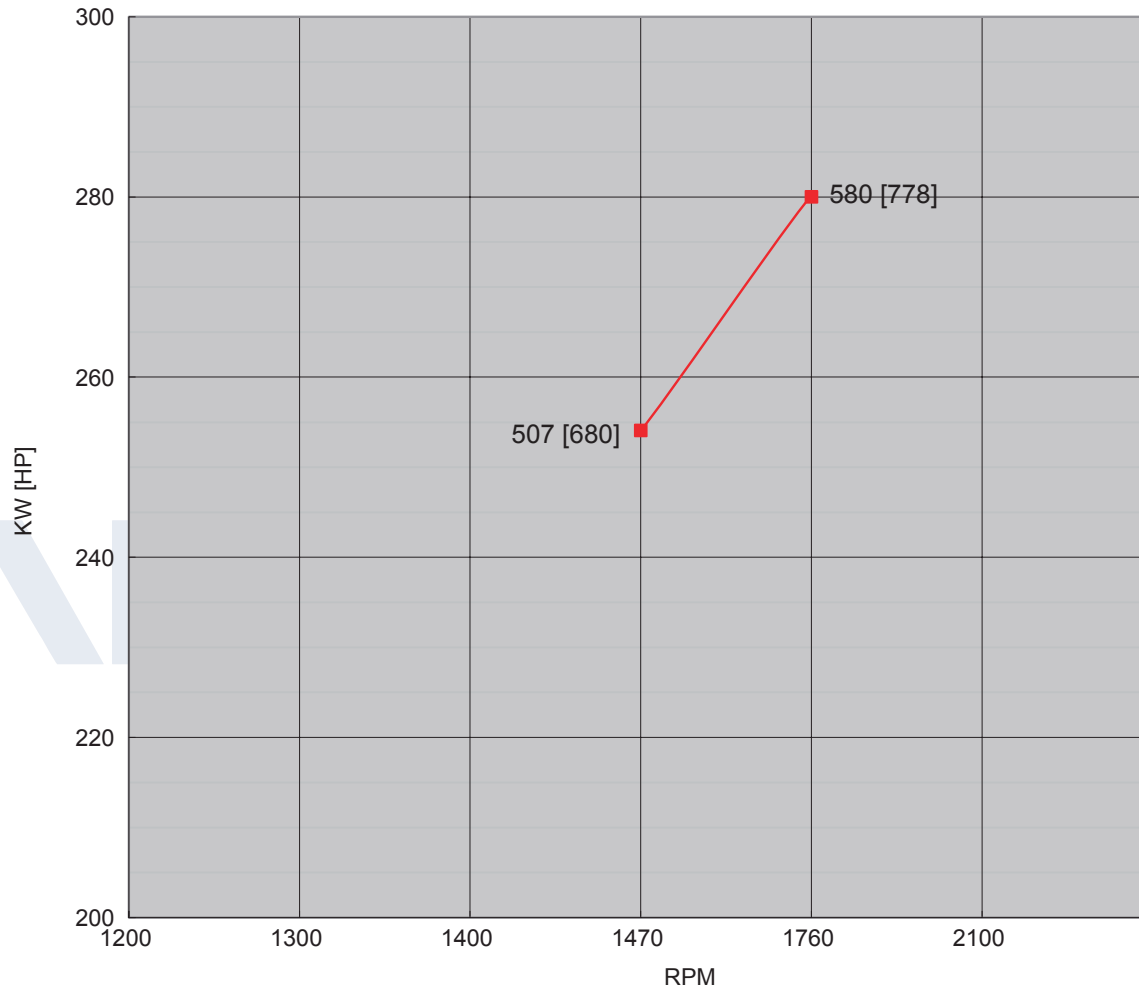
SPARE PARTS LIST

PART DESCRIPTION	PART NUMBER	REMARKS
AFTERCOOLER	AF1500073926	KL19
HEAT EXCHANGER	AFC900ZZ-HE	MAX. WORKING PRESSURE 72.5 PSI [5 BAR]
ALTERNATOR	3016627	28 V / 35 A
STARTING SYSTEM	4296454	24 V / 9.5 KW
TURBOCHARGER	HX80	3594118
FUEL PUMP WITH SPEED CONTROLLER	4296019	N/A
FUEL INJECTORS	3095773	0.16 MM
CONTROLLER	AF.ENG.AB-ETS-R-B	N/A
BATTERY	908DFT	12 V / 200 AH
EMERGENCY STARTERS	535-0098	24 VDC 800 A
OIL PRESSURE SENSOR	KE21103	11.6 ± 4.35 PSI [80 ± 30 KPA]
HIGH TEMPERATURE COOLANT SENSOR	KE00108	203 ± 37 °F [95 ± 3°C]
LOW COOLANT TEMPERATURE SENSOR	KE00108	104 ± 37 °F [40 ± 3°C]
HIGH TEMPERATURE RAW WATER SENSOR	204.040.15GO.1.IP65	104 ± 37 °F [40 ± 3°C]
FLOW SENSOR	WK150B	N/A
OVERSPEED SHUTDOWN DEVICE	YC-ENL-A0	N/A
SPEED SENSOR	3034572	N/A
ENGINE HEATER	FH220450065	220 V / 4.5 KW MAX. TEMP 149°F [65°C]
	SH110200065	220 V / 2 KW MAX. TEMP 149°F [65°C] WITH PUMP
	SH110200065	110 V / 2 KW MAX. TEMP 149°F [65°C] WITHOUT PUMP
OIL FILTERS	3401544	2 PIECES
FUEL FILTERS	3315847	2 PIECES
AIR FILTERS	4913882	1 PIECE
BELTS	5412987	1 PIECE
THERMOSTATS	3076489	1 PIECE
EXHAUST BLANKET	AFKTA190801-EI	DN80
FUEL SUPPLY & RETURN LINES	AF6-KTA19-11.01 AF6-KTA19-11.02	N/A

POWER CURVE

CURVE NUMBER:	C06159BF	DATE:	01/16/2021
DISPLACEMENT - IN ³ [L]:	1153 [18.90]	ASPIRATION:	TURBOCHARGED + WATER COOLED
POWER STANDARD:	UL	BORE & STROKE - IN [MM]:	6.26 x 6.26 [159 x 159]
NUMBER OF CYLINDERS:	6	FUEL SYSTEM:	INLINE, MECHANICAL

❶ ALL DATA CERTIFIED WITHIN ±5%.



TORQUE		
SPEED	LB-FT	N-M
RPM		
1150		
1470	2430	3296
1760	2321	3147
2100		

OUTPUT POWER		
SPEED	HP	KW
RPM		
1150		
1470	680	507
1760	778	580
2100		

FUEL CONSUMPTION		
SPEED	LB/BHP-HR	G/KW-HR
RPM		
1150		
1470	0.345	210
1760	0.350	213
2100		

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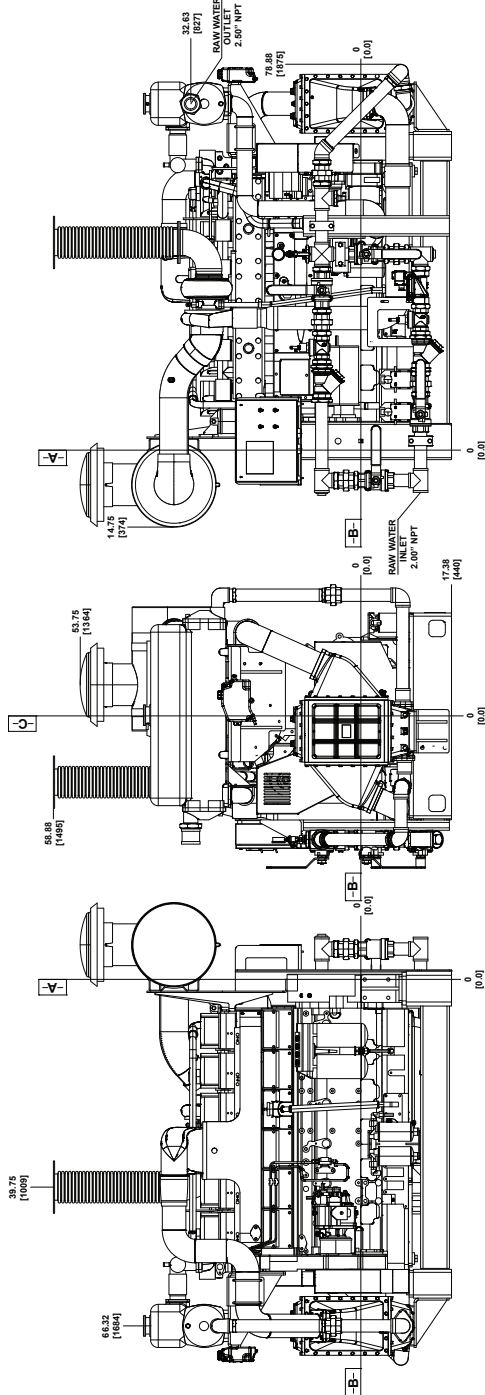
DATUMS:

- A-** — DIMENSIONAL FACE OF FLYWHEEL
-B- — ENGINE HORIZONTAL CENTER (CRANKSHAFT)
-C- — ENGINE VERTICAL CENTER (CRANKSHAFT)

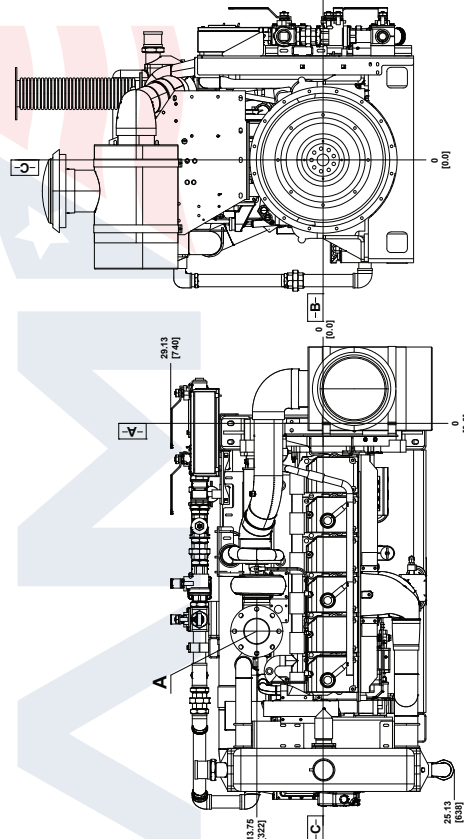
NOTES:

1. FUEL SUPPLY PIPING MINIMUM INSIDE DIAMETER FROM TANK TO ENGINE MUST BE ≥ 0.500 [12].
2. FUEL RETURN PIPING MINIMUM INSIDE DIAMETER FROM TANK TO ENGINE MUST BE ≥ 0.500 [12].

**DRAWING SUBJECT TO CHANGE
WITHOUT NOTICE.**

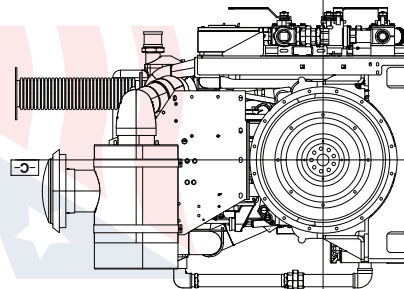


LEFT SIDE VIEW

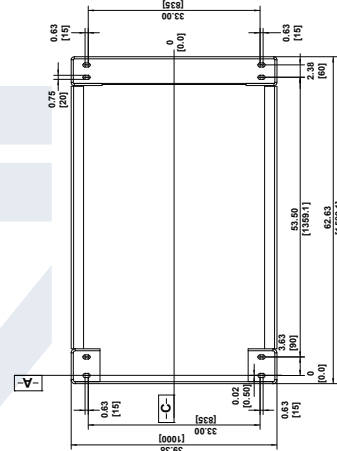


TOP VIEW

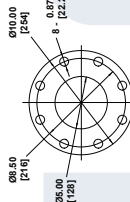
FRONT VIEW



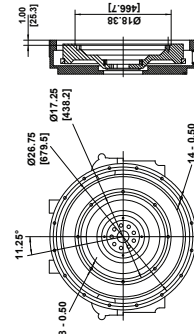
REAR VIEW



MOUNTING DIMENSIONS



SCALE 2:1



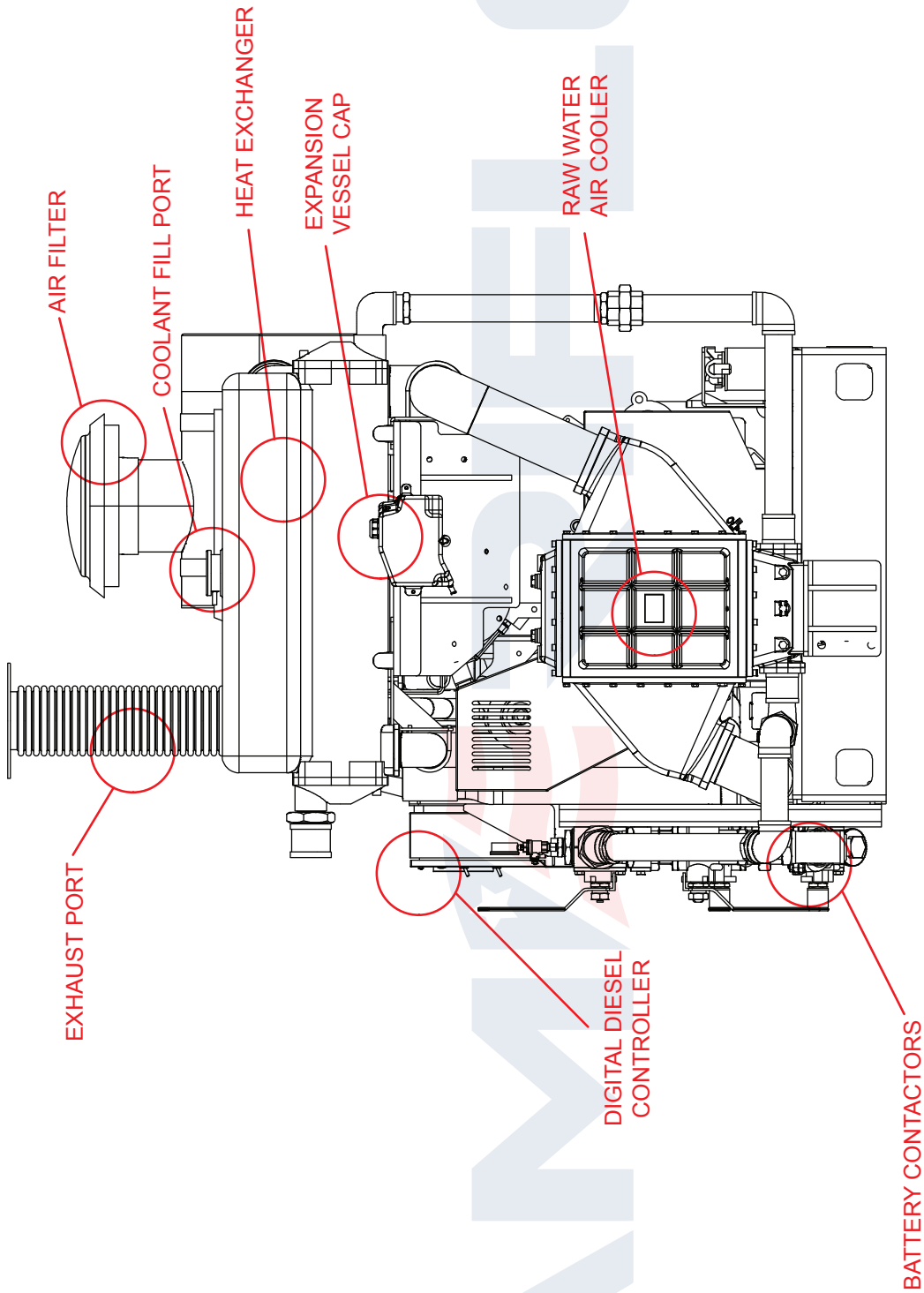
A - EXHAUST FLANGE (5")

FLYWHEEL HOUSING SAE #0 FLYWHEEL 14.00 INCH

[illegible]

NOTES:

1. ALL PLUMBING MUST BE SUPPORTED AND/OR ISOLATED SO THAT NO WEIGHT OR STRESS IS APPLIED TO ANY ENGINE COMPONENT.
2. REFER TO SPECIFIC MODELS' INSTALLATION, OPERATION & MAINTENANCE MANUAL FOR INSTALLATION GUIDELINES.



NOTES:

1. ALL PLUMBING MUST BE SUPPORTED AND/OR ISOLATED SO THAT NO WEIGHT OR STRESS IS APPLIED TO ANY ENGINE COMPONENT.
2. REFER TO SPECIFIC MODELS' INSTALLATION, OPERATION & MAINTENANCE MANUAL FOR INSTALLATION GUIDELINES.

REV		UNITS	
		IN [MM]	
		PROJECTION: 	
		PROJECT: 	
		SCALE: NONE	
		PAGE 1	
		OF 1	
		MATERIAL:	
		AF6-159B-FRONT	
		NAME: INSTALLATION DRAWING	
		DIESEL FIRE PUMP DRIVER	
		MODEL AF6-159B	
		PART NO.:	
		AF6-159B-FRONT	
		DATE: 09/01/2020	
		DATE: 09/01/2020	
		APPROVED: DATE: 09/01/2020	
		APVD	
		DWN	
		MUF	
		CREATION	
		DESCRIPTION	
		REV	
		A	

