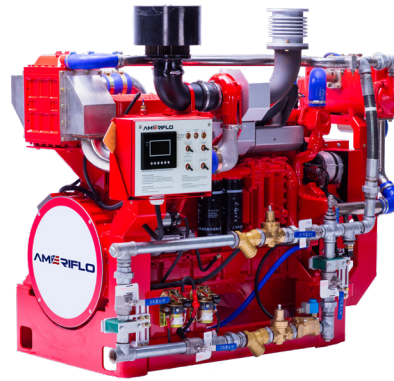


FM - APPROVED RATINGS BHP & KW

ENGINE MODEL:	AF6-159
EMISSIONS:	TIER 0
DATE:	01/16/2021
DRAWING NUMBER:	AF6-159.00
PERFORMANCE CURVE NUMBER:	C06159B
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:	<input checked="" type="checkbox"/> WET <input type="checkbox"/> DRY	
DISPLACEMENT - IN <sup>3</sup> [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 / 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 OPERATING 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 [M <sup>3</sup> /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 [M <sup>3</sup> /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 [M <sup>3</sup> /HR]:	198 [45]	
MINIMUM RAW WATER FLOW @ ENGINE SPEED (RPM)	1470	1760
RAW WATER TEMPERATURES TO 60.8°F [16°C] - GPM [M <sup>3</sup> /HR]:	66.0 [15.0]	74.8 [17.0]
RAW WATER TEMPERATURES TO 100.4°F [38°C] - GPM [M <sup>3</sup> /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

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

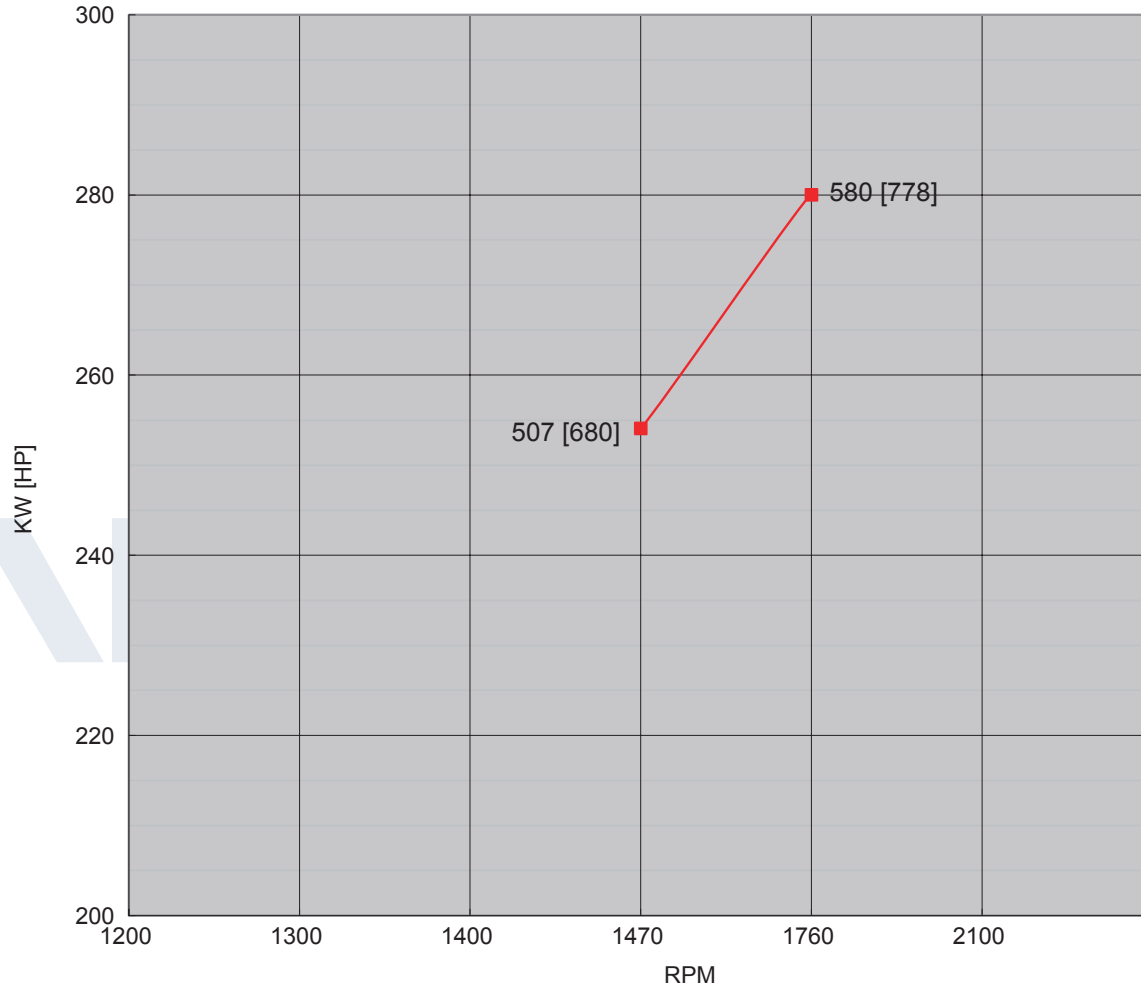
**SPARE PARTS LIST**

PART DESCRIPTION	QUANTITY	PART NUMBER	REMARKS
<b>LUBRICATION SYSTEM</b>			
OIL FILTER	2 PIECES	AF-D17-002-02+B	
OIL PRESSURE SENSOR	1 PIECE	AF-21103-OPS	
<b>FUEL SYSTEM</b>			
FUEL FILTER	1 PIECE	AF-S00010128+1	
INJECTION PUMP	1 PIECE	AF-S00000770+01	
FUEL SUPPLY & RETURN HOSE	1 PIECE	AF6-159.09.03	
	1 PIECE	AF6-159.09.04	
<b>COOLING SYSTEM</b>			
HEAT EXCHANGER	1 PIECE	AF-C300ZJ-HE	
COOLING LOOP	1 SET	AF-CL40SV	
COOLANT HOSE (90° ELBOW)	1 PIECE	AF-E90-60/120P4	
COOLANT HOSE (90° REDUCER ELBOW)	1 PIECE	AF-RE-60-65/130P4	
COOLING HOSE	1 PIECE	AF-8-3-800-CH	
	1 PIECE	AF-16-5-2000-CH	
WATER PUMP	1 PIECE		
RUNNING WATER TEMPERATURE SENSOR	1 PIECE	AF-E00105-WTR	
STANDBY WATER TEMPERATURE SENSOR	1 PIECE	AF-00108-WTS	
THERMOSTAT	1 PIECE	AF-1500079215	
PREHEATER	1 PIECE	AF-FH220450065 OR AF-FH110200065 OR AF-SH110200065	
FLOW SENSOR	1 PIECE	AF-WK150B	
<b>CONTROL SYSTEM</b>			
STARTER	1 PIECE	AF-S00011506+02	
ALTERNATOR	1 PIECE	AF-S00011521+01	
BATTERY	2 PIECES	AF-N200	
STARTER CONTACTOR	2 PIECES	AF-535-0098	
OVERSPEED SHUTDOWN	1 PIECE	AF-YC-ENL-A0	
SPEED SENSOR	1 PIECE	AF-KE10040	
INSTRUMENT PANEL	1 SET	AF-ENL-AB-ETS/R-B	
<b>TRANSMISSION SYSTEM</b>			
BELT	2 PIECES	AF-1500079197	
STOP SOLENOID	1 PIECE	AF-5295568-SN	
<b>INTAKE &amp; EXHAUST SYSTEM</b>			
AIR FILTER	1 PIECE	AF-S00034176+02	
TURBOCHARGER	1 PIECE	AF-S00017008+01	

**POWER CURVE**

CURVE NUMBER:	C06159	DATE:	01/16/2021
DISPLACEMENT - IN <sup>3</sup> [L]:	1153 [18.90]	ASPIRATION:	TURBOCHARGED + WATER COOLED
POWER STANDARD:	UL/FM	BORE & STROKE - IN [MM]:	6.26 x 6.26 [159 x 159]
NUMBER OF CYLINDERS:	6	FUEL SYSTEM:	INLINE, MECHANICAL

● ALL DATA CERTIFIED WITHIN ±5%.



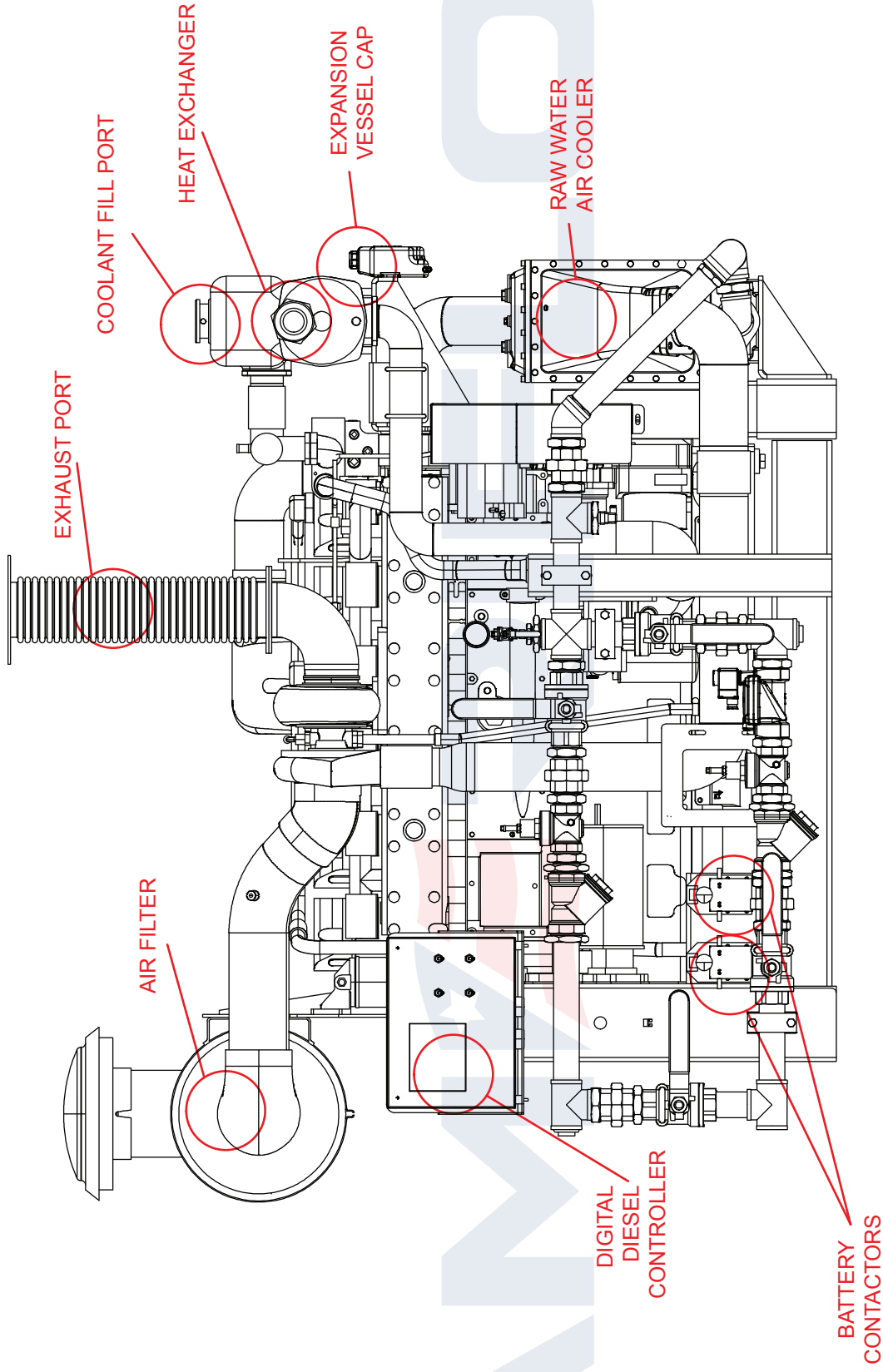
TORQUE		
SPEED	LB-FT	N-M
RPM		
1150		
1470	2430	3296
1760	2321	3147
2100		

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		

● ALL DATA IS BASED ON ENGINE OPERATING WITH FUEL SYSTEM, LUBRICATING OIL PUMP, AIR CLEANER AND ALTERNATOR. DOES NOT INCLUDE AIR COMPRESSOR, FAN & OPTIONAL EQUIPMENT. DATA IS BASED ON SAE STANDARD J1394 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.





**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	PROJECT	SCALE	PAGE	OF
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		DATE: 09/01/2020			
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