

# 6.7L TURBO



# ENERGY

[Stoic.]

56100047

Rev: 1

## General Engine Data<sup>3</sup>

Type	Inline 4-cycle				Flywheel housing	SAE No. 3					
Number of cylinders	6				Flywheel	SAE No. 10					
Aspiration	Charged Cooled Forced Induction				Dry Weight (Fan to Flywheel)	lb	kg	1375	625		
Firing Order	1 - 5 - 3 - 6 - 2 - 4				Wet Weight (Fan to Flywheel)	lb	kg	1445	657		
Rotation Viewed from Flywheel	Counter Clockwise				CG From Flywheel Housing Rear Face	in	mm	16.2	411		
Bore	in	mm	4.1	105	CG Above Crank Centerline	in	mm	5.5	139		
Stroke	in	mm	5.1	130	Max Bending Moment @ Rear of Block	lb/ft	N m	5461.2	7400		
Displacement	in <sup>3</sup>	L	412	6.75	Moment of Inertia About Roll Axis	lb-ft <sup>2</sup>	kg-m <sup>2</sup>	591	25		
Compression Ratio	9.75 : 1				Oil Specification	SAE 15W-40 Low Ash Gas engine oil (.25-.5% by wt), API CD/CF or higher					
Exhaust Manifold Type	Dry type, shielded					Engine Oil Capacity <sup>8</sup>	Min	qts	L	14.8	14.0
Turbo Exhaust Outlet Pipe Size	in	mm	2.35 - 3.37	60 - 86	Max		qts	L	28.6	27.0	
Catalyst Inlet Size	in	mm	3.5	90	ECU Low Oil Pressure Warning <sup>6</sup>		psi	bar	10	0.7	
Catalyst Dp	in-H <sub>2</sub> O	kPa	40.2	10	ECU Low Oil Pressure Shutdown <sup>6</sup>		psi	bar	7	0.5	
Maximum Allowable Exhaust Back Pressure	in-Hg	kPa	5.0	17	Oil Pressure Operating Range	Idle	psi	bar	12 - 17	0.8 - 1.2	
Maximum Fuel System Pressure	psi	kPag	1.0	6.9		Rated	psi	bar	44 - 87	3 - 6	
Maximum Operating pressure to EPR	in-H <sub>2</sub> O	kPa	10.9	2.7	Max Allowable Oil Temperature		°F	°C	239	115	
Minimum Operating pressure to EPR	in-H <sub>2</sub> O	kPa	6.8	1.7	Coolant Capacity (Engine only)		gal	L	2.1	8	
Minimum Gas Supply Pipe Size <sup>5</sup>	1-1/4" NPT				Coolant Capacity (Radiator only)		gal	L	2.1	8	
Maximum Pressure Drop Across CAC	psi	kPa	1.7	12.0	Radiator Weight (Dry)		lb	kg	275	125	
Maximum Allowable Intake Restriction	Clean Air Filter	in-H <sub>2</sub> O	kPa	8.0	2.0	Thermostat Operating Temperature Range <sup>9</sup>	Cracking	°F	°C	167	75
	Dirty Air Filter	in-H <sub>2</sub> O	kPa	14.9	3.7		Full Open	°F	°C	194	90
Spark Plug Part Number					ECU Coolant Temp Warning		°F	°C	204.8	96	
Standard Spark Plug Gap <sup>10</sup>	in	mm	.018-.020	0.45-0.5	ECU Coolant Temp Shutdown		°F	°C	212	100	
Spark Plug Coil - Primary Resistance	Ohms		0.59Ω ± 10%		Max External Coolant Friction Head		psi	kPa	7.25	50	
Battery Voltage	Volts		12		CAC Rise Above Ambient Specified		°F	°C	28.8	16	
Starter Motor Power	HP	kW	5.4	4.0							

## Performance Data 60Hz<sup>3,5</sup>

Nominal Engine Speed	RPM		1800	
Mean Piston Speed	ft/min	m/s	1535	7.8
RPM Range (Min-Max) ISO 8528-5 G1	RPM		1778-1823	
Charging Alternator Voltage	Volts		14	
Charging Alternator Current	Amps		90	
Total Engine Coolant Flow	gal/min	L/min	54.2	205
Cooling Fan Power <sup>11</sup>	HP	kW	13.9	10.4
Cooling Fan Speed	RPM		2520	
Cooling Fan Air Flow <sup>11</sup>	SCFM	m <sup>3</sup> /min	9828	278
Maximum Radiator Cooling Air Temp	°F	°C	126	52

## Performance Data 50Hz<sup>3,5</sup>

Nominal Engine Speed	RPM		1500	
Mean Piston Speed	ft/min	m/s	1279	6.5
RPM Range (Min-Max) ISO 8528-5 G1	RPM		1477-1519	
Charging Alternator Voltage	Volts		14	
Charging Alternator Current	Amps		90	
Total Engine Coolant Flow	gal/min	L/min	50.2	190
Cooling Fan Power <sup>11</sup>	HP	kW	10.2	7.6
Cooling Fan Speed	RPM		2085	
Cooling Fan Air Flow <sup>11</sup>	SCFM	m <sup>3</sup> /min	7116	202
Maximum Radiator Cooling Air Temp	°F	°C	122	50

Standby			NG 60Hz		NG 50Hz		LP 60Hz		LP 50Hz	
Power Rating <sup>1,2,3,4</sup> Per ISO 3046	HP	kWm	201	150	161	120	133	99	134	100
MEP (@ rated Load on NG)	psi	bar	215	14.8	206	14.2	142	9.8	172	11.9
Fuel Consumption <sup>3,4,7</sup>	lb/hr	kg/hr	71	32	61	28	51	23.4	51	23
BSFC	lb/(hp-hr)	g/(kW-hr)	0.354	216	0.379	231	0.388	236	0.377	230
Turbine Outlet Temperature	°F	°C	1310	710	1294	701	1303	706	1285	696
Exhaust Flow at Turbine Outlet Conditions (entire engine)	lb/hr	kg/hr	1203	547	1027	467	813	370	800	364
	ACFM	m <sup>3</sup> /min	875	24.8	741	21.0	589	16.7	574	16.3

## Air Induction System<sup>5</sup>

Combustion Air required (entire engine)	lb/hr	kg/hr	1142	519	1012	460	762	346	750	341
	ACFM	m <sup>3</sup> /min	236	6.70	209	5.93	158	4.47	155	4.40
Compressor Outlet Temperature <sup>2</sup>	°F	°C	260	127	241	116	181	83	185	85

## Thermal Balance<sup>5</sup>

Total Fuel	BTU/min	kW	24672	433.8	21093	370.9
Mechanical Power	BTU/min	kW	8246	145.0	6824	120.0
Heat Rejected to Cooling Water at Rated Load	BTU/min	kW	5511	96.9	4242	74.6
Heat Rejection CAC at Rated Power	BTU/min	kW	626	11.0	836	14.7
Heat Rejection to Exhaust (LHV to 150C)	BTU/min	kW	7222	127.0	6330	111.3
Engine Radiated Heat	BTU/min	kW	1183	20.8	1632	28.7

<sup>1</sup> Standby and overload ratings based on ISO 3046 gross flywheel power.

<sup>2</sup> Technical data based on ISO 3046-1 standards of 77°F(25°C), absolute pressure 14.5PSia(100kPa) and 30% relative humidity.

<sup>3</sup> Production tolerances in engines and installed components can account for power variations of ± 5%. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations.

<sup>4</sup> All fuel and thermal calculations unless otherwise noted are done at ISO 3046 rated load using LHV for NG of 48.17 MJ/kg.

<sup>5</sup> All values in the following section are provided for informational purpose only and are non-binding.

<sup>6</sup> >1400RPM.

<sup>7</sup> See PSI Energy Technical Spec. 56300019 - Fuel Standard.

<sup>8</sup> Standard Sump Capacity.

<sup>9</sup> ± 2 degrees Celsius.

<sup>10</sup> ± 0.002" or 0.05mm.

<sup>11</sup> At 0.5 in-H<sub>2</sub>O of Package Restriction at STP.

# 6.7L TURBO



# ENERGY

[Stoic.]

56100047

Rev: 1

## General Engine Data<sup>3</sup>

Type	Inline 4-cycle				Flywheel housing	SAE No. 3					
Number of cylinders	6				Flywheel	SAE No. 10					
Aspiration	Charged Cooled Forced Induction				Dry Weight (Fan to Flywheel)	lb	kg	1375	625		
Firing Order	1 - 5 - 3 - 6 - 2 - 4				Wet Weight (Fan to Flywheel)	lb	kg	1445	657		
Rotation Viewed from Flywheel	Counter Clockwise				CG From Flywheel Housing Rear Face	in	mm	16.2	411		
Bore	in	mm	4.1	105	CG Above Crank Centerline	in	mm	5.5	139		
Stroke	in	mm	5.1	130	Max Bending Moment @ Rear of Block	lb/ft	N m	5461.2	7400		
Displacement	in <sup>3</sup>	L	412	6.75	Moment of Inertia About Roll Axis	lb-ft <sup>2</sup>	kg-m <sup>2</sup>	591	25		
Compression Ratio	9.75 : 1				Oil Specification	SAE 15W-40 Low Ash Gas engine oil (.25-.5% by wt), API CD/CF or higher					
Exhaust Manifold Type	Dry type, shielded					Engine Oil Capacity <sup>8</sup>	Min	qts	L	14.8	14.0
Turbo Exhaust Outlet Pipe Size	in	mm	2.35 - 3.37	60 - 86	Max		qts	L	28.6	27.0	
Catalyst Inlet Size	in	mm	3.5	90	ECU Low Oil Pressure Warning <sup>6</sup>		psi	bar	10	0.7	
Catalyst Dp	in-H <sub>2</sub> O	kPa	40.2	10	ECU Low Oil Pressure Shutdown <sup>6</sup>		psi	bar	7	0.5	
Maximum Allowable Exhaust Back Pressure	in-Hg	kPa	5.0	17	Oil Pressure Operating Range	Idle	psi	bar	12 - 17	0.8 - 1.2	
Maximum Fuel System Pressure	psi	kPag	1.0	6.9		Rated	psi	bar	44 - 87	3 - 6	
Maximum Operating pressure to EPR	in-H <sub>2</sub> O	kPa	10.9	2.7	Max Allowable Oil Temperature		°F	°C	239	115	
Minimum Operating pressure to EPR	in-H <sub>2</sub> O	kPa	6.8	1.7	Coolant Capacity (Engine only)		gal	L	2.1	8	
Minimum Gas Supply Pipe Size <sup>5</sup>	1-1/4" NPT				Coolant Capacity (Radiator only)		gal	L	2.1	8	
Maximum Pressure Drop Across CAC	psi	kPa	1.7	12.0	Radiator Weight (Dry)		lb	kg	275	125	
Maximum Allowable Intake Restriction	Clean Air Filter	in-H <sub>2</sub> O	kPa	8.0	2.0	Thermostat Operating Temperature Range <sup>9</sup>	Cracking	°F	°C	167	75
	Dirty Air Filter	in-H <sub>2</sub> O	kPa	14.9	3.7		Full Open	°F	°C	194	90
Spark Plug Part Number					ECU Coolant Temp Warning		°F	°C	204.8	96	
Standard Spark Plug Gap <sup>10</sup>	in	mm	.018-.020	0.45-0.5	ECU Coolant Temp Shutdown		°F	°C	212	100	
Spark Plug Coil - Primary Resistance	Ohms		0.59Ω ± 10%		Max External Coolant Friction Head		psi	kPa	7.25	50	
Battery Voltage	Volts		12		CAC Rise Above Ambient Specified		°F	°C	28.8	16	
Starter Motor Power	HP	kW	5.4	4.0							

## Performance Data 60Hz<sup>3,5</sup>

Nominal Engine Speed	RPM		1800	
Mean Piston Speed	ft/min	m/s	1535	7.8
RPM Range (Min-Max) ISO 8528-5 G1	RPM		1778-1823	
Charging Alternator Voltage	Volts		14	
Charging Alternator Current	Amps		90	
Total Engine Coolant Flow	gal/min	L/min	54.2	205
Cooling Fan Power <sup>11</sup>	HP	kW	13.9	10.4
Cooling Fan Speed	RPM		2520	
Cooling Fan Air Flow <sup>11</sup>	SCFM	m <sup>3</sup> /min	9828	278
Maximum Radiator Cooling Air Temp	°F	°C	126	52

## Performance Data 50Hz<sup>3,5</sup>

Nominal Engine Speed	RPM		1500	
Mean Piston Speed	ft/min	m/s	1279	6.5
RPM Range (Min-Max) ISO 8528-5 G1	RPM		1477-1519	
Charging Alternator Voltage	Volts		14	
Charging Alternator Current	Amps		90	
Total Engine Coolant Flow	gal/min	L/min	50.2	190
Cooling Fan Power <sup>11</sup>	HP	kW	10.2	7.6
Cooling Fan Speed	RPM		2085	
Cooling Fan Air Flow <sup>11</sup>	SCFM	m <sup>3</sup> /min	7116	202
Maximum Radiator Cooling Air Temp	°F	°C	122	50

Prime			NG 60Hz		NG 50Hz		LP 60Hz		LP 50Hz	
Power Rating <sup>1,2,3,4</sup> Per ISO 3046	HP	kWm	162	121	142	106	133	99	135	100
MEP (@ rated Load on NG)	psi	bar	173	11.9	183	12.6	142	9.8	173	11.9
Fuel Consumption <sup>3,4,7</sup>	lb/hr	kg/hr	59	27.0	54	24.4	51	23.4	51	23.0
BSFC	lb/(hp-hr)	g/(kW-hr)	0.366	223	0.377	230	0.388	237	0.376	229
Turbine Outlet Temperature	°F	°C	1292	700	1146	619	1303	706	1285	696
Exhaust Flow at Turbine Outlet Conditions (entire engine)	lb/hr	kg/hr	970	441	873	397	814	370	801	364
	ACFM	m <sup>3</sup> /min	716	20.3	593	16.8	612	17.3	590	16.7

## Air Induction System<sup>5</sup>

Combustion Air required (entire engine)	lb/hr	kg/hr	911	414	820	373	763	347	750	341
	ACFM	m <sup>3</sup> /min	189	5.34	170	4.81	158	4.47	155	4.40
Compressor Outlet Temperature <sup>2</sup>	°F	°C	208	98	185	85	181	83	185	85

## Thermal Balance<sup>5</sup>

Total Fuel	BTU/min	kW	20560	362	18580	327
Mechanical Power	BTU/min	kW	6875	121	6039	106
Heat Rejected to Cooling Water at Rated Load	BTU/min	kW	5573	98	4208	74
Heat Rejection CAC at Rated Power	BTU/min	kW	569	10	739	13
Heat Rejection to Exhaust (LHV to 150C)	BTU/min	kW	6199	109	5801	102
Engine Radiated Heat	BTU/min	kW	1194	21	1308	23

<sup>1</sup> Standby and overload ratings based on ISO 3046 gross flywheel power.

<sup>2</sup> Technical data based on ISO 3046-1 standards of 77°F(25°C), absolute pressure 14.5PSia(100kPa) and 30% relative humidity.

<sup>3</sup> Production tolerances in engines and installed components can account for power variations of ± 5%. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations.

<sup>4</sup> All fuel and thermal calculations unless otherwise noted are done at ISO 3046 rated load using LHV for NG of 48.17 MJ/kg.

<sup>5</sup> All values in the following section are provided for informational purpose only and are non-binding.

<sup>6</sup> >1400RPM.

<sup>7</sup> See PSI Energy Technical Spec. 56300019 - Fuel Standard.

<sup>8</sup> Standard Sump Capacity.

<sup>9</sup> ± 2 degrees Celsius.

<sup>10</sup> ± 0.002" or 0.05mm.

<sup>11</sup> At 0.5 in-H<sub>2</sub>O of Package Restriction at STP.