

Technical data TAD734GE

General

In-line four stroke diesel engine with direct injection. Rotation direction, anti-clockwise viewed towards flywheel.
Turbocharged

Number of cylinders			6
Displacement, total		litre in ³	7,15 436,0
Firing order			1-5-3-6-2-4
Bore		mm in	108 4,25
Stroke		mm in	130 5,12
Compression ratio			17
Dry weight	Engine only, excluding cooling system	kg lb	764 1684
	Including cooling system	kg lb	954 2103
Wet weight	Engine only, excluding cooling system	kg lb	788 1737
	GenPac	kg lb	1021 2251

Performance		r/min	1500	1800
Standby Power	without fan	kW hp	250 340	263 357
	with fan	kW hp	241 327	247 336
Prime Power	without fan	kW hp	225 306	236 321
	with fan	kW hp	216 293	220 299
Torque at:	Standby Power	Nm lbft	1592 1174	1393 1027
	Prime Power	Nm lbft	1432 1056	1252 923
Mean piston speed		m/s ft/sec	6,5 21,4	7,8 25,7
Effective mean pressure at:	Standby Power	MPa psi	2,8 406	2,4 355
Effective mean pressure at:	Prime Power	MPa psi	2,5 365	2,2 319
Max combustion pressure at:	Standby Power	MPa psi	19,6 2843	19,7 2857
Max combustion pressure at:	Prime Power	MPa psi		
Total mass moment of inertia, J (mR ²)		kgm ² lbft ²	2,60 61,7	
Degree of irregularity at:	Standby Power			
	Prime Power			
Friction Power		kW hp	17 22,576	23 31,552

Engine noise emission

Test Standards: ISO 3744-1981 (E) sound power (without fan, intake and exhaust noise)

Tolerance ± 0.75 dB(A)

		r/min	1500	1800
Measured sound power Lw	No load	dB(A)	95,1	97,9
	Standby Power	dB(A)	116,7	118,2
		dB(A)		
Calculated sound pressure Lp at 1 m	No load	dB(A)	99	104,5
	Standby Power	dB(A)	108,5	109,5
		dB(A)		

Unsilenced exhaust noise

Data calculated as sound pressure Lp.

Assumed microphone distance 1 m

	r/min	1500	1800
Standby Power	dB(A)	116,7	118,2
	dB(A)		

Test conditions for load acceptance data

Warm engine.	Generator	Model	Type of AVR
	mecc alte spa	ECO 38-2L/4	

Load acceptance performance can vary due to actual alternator inertia, voltage regulator, type of load and local ambient conditions.

Single step load performance at 1500 rpm

Load (%)	Speed diff (%)		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-20	2,3	2,6	1,5	1,4	30-100	8,3	-	2,0	-
0-40	4,2	4,7	1,5	1,5	40-100	6,3	6,2	1,5	3,3
0-50	5,1	6,9	1,5	1,7	50-100	4,7	5,3	1,5	3,0
0-60	7,8	10,0	2,0	2,1	60-100	4,0	4,5	1,0	2,5
0-70	11,9	16,9	2,5	3,1	70-100	3,3	3,5	0,5	2,0
0-80	17,7	21,7	3,5	3,6					
0-90	20,7	-	4,0	-					
100-0	7,7	8,3	2,0	2,0					

Single step load performance at 1800 rpm

Load (%)	Speed diff %		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-20	1,7	1,8	1,0	1,0	20-100	8,0	8,7	3,1	3,5
0-40	2,8	2,9	1,5	1,3	40-100	4,1	5,2	2,3	3,0
0-50	3,9	4,1	1,4	1,6	60-100	2,9	2,9	1,3	2,0
0-60	4,5	5,3	1,4	1,6	80-100	2,3	2,3	1,0	1,8
0-70	6,3	7,7	1,7	2,0	90-100	0,9	1,0	1,0	1,0
0-80	7,7	9,2	2,0	2,0					
0-90	9,9	13,3	2,3	2,4					
100-0	5,8	6,5	2,0	2,0	0-100	12,1	16,0	2,3	3,9

Cold start performance

		r/min	1500	1800	
Time from start to no load speed at ambient temperature:	°C	20	s	6,6	7,6
		5	s	7,0	8,4
		-15*	s	10,5	12,0
Time from start to stay within 0.5% of no load speed at ambient temperature:	°C	20	s	6,0	7,0
		5	s	6,2	7,7
		-15*	s	9,6	11,5

* With manifold heater kW engaged, lubrication oil 15W/40

Usage of manifold heater:	Time preheating, minutes	Time post heating, minutes

Lubrication system		r/min	1500	1800
Lubricating oil consumption	Standby Power	litre/h US gal/h	0,01 0,003	0,01 0,004
	Prime Power	litre/h US gal/h		
Oil system capacity including filters		litre US gal	29 7,7	
Oil sump capacity:	max	litre US gal	24 6,3	
	min	litre US gal	20 5,3	
Oil change intervals/specifications:		h	500	
		h		
		h		
Engine angularity limits:	front up	°	10	
	front down	°	10	
	side tilt	°	10	
Oil pressure at rated speed		kPa psi	420 - 450 61 - 65	
Oil pressure shut down switch setting		kPa psi	100 15	
Lubrication oil temperature in oil sump:	max	°C	130	
		°F	266	
Oil filter micron size		μ	17,000	

* See also general section in the sales guide

Fuel system		r/min	1500	1800
Specific fuel consumption at:	25%	g/kWh lb/hph	247 0,400	259 0,420
	50%	g/kWh lb/hph	235 0,381	239 0,387
	75%	g/kWh lb/hph	217 0,352	225 0,365
	100%	g/kWh lb/hph	205 0,332	207 0,336
Prime Power Specific fuel consumption at:	25%	g/kWh lb/hph	244 0,396	257 0,417
	50%	g/kWh lb/hph	233 0,378	237 0,384
	75%	g/kWh lb/hph	217 0,352	222 0,360
	100%	g/kWh lb/hph	204 0,331	205 0,332

Fuel system	r/min 1500 1800		
Fuel to conform to	EN 590 / 2-D (US)		
System supply flow at:	litre/h	300,0	300,0
	US gal/h	79,3	79,3
Fuel supply line max restriction	kPa	0,1	0,1
	psi	0,0	0,0
Fuel supply line max pressure, engine stopped	kPa	35,0	35,0
	psi	5,1	5,1
System return flow	litre/h	300,0	300,0
	US gal/h	79,3	79,3
Fuel return line max restriction	kPa	50,0	50,0
	psi	7,3	7,3
Maximum allowable inlet fuel temp	°C	70	70
	°F	158	158
Prefilter / Water separator micron size	μ	10,000	
Fuel filter micron size	μ	5,000	
Governor type/make, standard	EMS II		
Injection pump type/make	EMS II		
Injection timing std.	°B.T.D.C	5	9
Injection timing	°B.T.D.C		

Intake and exhaust system			r/min 1500 1800		
Air consumption at:	Standby Power		m ³ /min	16,3	18,9
			cfm	576	667
	Prime Power		m ³ /min	16,1	18,3
			cfm	569	646
Max allowable air intake restriction including piping			kPa	3	3
			in wc	12,0	12,0
Air filter type	NA				
Air filter cleaning efficiency			%	NA	
Heat rejection to exhaust at:	Standby Power		kW	177	189
			BTU/min	10066	10748
	Prime Power		kW	160	174
			BTU/min	9099	9895
Exhaust gas temperature after turbine at:	Standby Power		°C	550	510
			°F	1022	950
	Continuous Standby		°C	495	475
			°F	923	887
Max allowable back pressure in exhaust line			kPa	10,0	10,0
			In wc	40,2	40,2
Exhaust gas flow at:	Standby Power		m ³ /min	33,4	37,9
			cfm	1180	1338
			m ³ /min	33,0	36,7
			cfm	1165	1296

Cooling system		r/min	1500	1800
Heat rejection radiation from engine at:	Standby Power	kW	26	28
		BTU/min	1479	1592
	Prime Power	kW	24	25
		BTU/min	1365	1422
Heat rejection to coolant at:	Standby Power	kW	122	130
		BTU/min	6955	7393
	Continuous Standby	kW	111	118
		BTU/min	6312	6711
Coolant				
Radiator cooling system type	Closed circuit			
Standard radiator core area	m ²		0,916	
	foot ²		9,86	
Fan diameter	mm		870	
	in		34,25	
Fan power consumption	kW		9,2	15,8
	hp		13	21
Fan drive ratio	1			
Coolant capacity,	engine	litre	8	
		US gal	2,11	
	std radiator with hoses	litre	24	
		US gal	6,34	
Coolant pump	drive/ratio	2,56		
Coolant flow with standard system	l/s		4,08	4,91
	US gal/s		1,08	1,30
Minimum coolant flow	l/s		3,6	4,4
	US gal/s		0,95	1,16
Maximum outer circuit restriction, including piping	kPa		33	45
	in wc		132	181
Thermostat	start to open	°C	83	
		°F	181	
	fully open	°C	98	
		°F	208	
Maximum static pressure head (expansion tank height + pressure cap setting)	kPa		85	
	in wc		341	
Minimum static pressure head (expansion tank height + pressure cap setting)	kPa		75	
	in wc		301	
Standard pressure cap setting	kPa		75	
	in wc		301	
Maximum top tank temperature	°C		103	
	°F		217	
Draw down capacity				

Charge air cooler system		r/min	1500	1800
Heat rejection to charge air cooler	Standby Power	kW	48	55,3
		BTU/min	2730	3145
	Prime Power	kW	43,6	51,7
		BTU/min	2479	2940
	Continuous Standby Power	kW	40	46,1
		BTU/min	2275	2622
Charge air mass flow	Standby Power	kg/s	0,3	0,35
	Prime Power	kg/s	0,29	0,34
	Continuous Standby Power	kg/s	0,29	0,34
Charge air inlet temp. (Charge air temp after turbo compressor)	Standby Power	°C	207	205
		°F	405	401
	Prime Power	°C	196	199
		°F	385	390
Charge air outlet temp. (Charge air temp after intercooler)	Standby Power	°C	42	42
		°F	108	108
	Prime Power	°C	40	40
		°F	104	104
Maximum pressure droop over charge air cooler incl. piping		kPa	15	
		psi	2,18	
Charge air pressure 1500rpm (After charge air cooler)		kPa	250	
		psi	36,26	
Charge air pressure 1800rpm (After charge air cooler)		kPa	240	
		psi	34,81	
Standard charge air cooler core area		m ²	0,512	
		foot ²	5,51	

Cooling performance

Cooling air flow and external restriction at different radiator air temperatures based on 103°C TTT and 50% antifreeze (radiator and cooling fan, see optional equipment) and sea level.

Engine speed rpm	Air on temp °C	PRIME POWER		STANDBY POWER	
		Air flow kg/s	External restriction Pa	Air flow kg/s	External restriction Pa
1500	50	3,8	450	4,0	400
	55	4,0	360	4,8	230
	60	4,7	150	5,3	0
1800	55	5,1	420	5,0	450
	60			5,6	300

Note! Calculated values >0 Pa

Engine management system

Functionality	Alternatives	Default setting
Governor mode	Isochronous/droop Switchable during operation	Isochronous
Governor droop	0 - 8%	0% (4% when switched)
Governor response	Adjustable PID-constants	Not adjusted
Dual speed	1500 / 1800rpm	1500rpm
Idle speed	600 -1200rpm	900rpm
Stop function	Energized to run / stop	Energized to stop
Preheat on ignition	ON/OFF *	OFF *
Lamp test	ON/OFF	ON

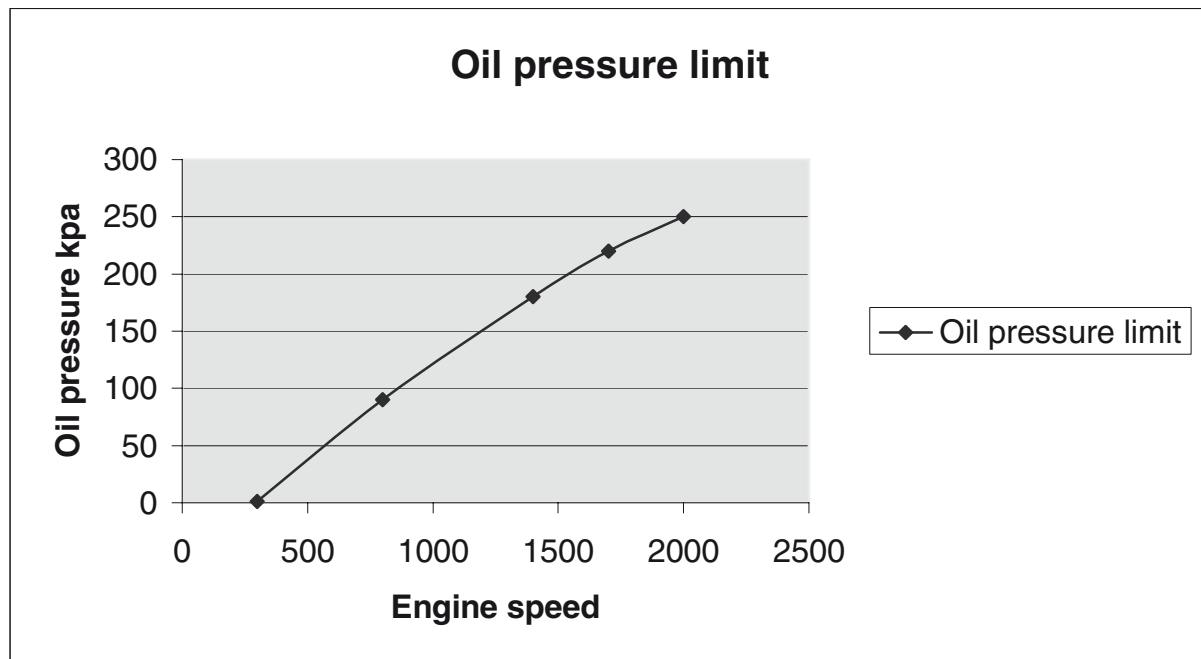
* = Option

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Engine protection		Alarm level		Engine protection		
Parameter	Unit	Setting range	Default setting	Level	Action. Default/Alternative	
Oil temp	°C	NA	NA	NA	NA	
Oil pressure	Low idle	kPa	NA	100	15,0	Shut down
	1500 rpm	kPa	NA	200	115,0	Shut down
	1800 rpm	kPa	NA	230,0	145,0	Shut down
Oil level		NA	NA	NA	NA	
Piston cooling pressure >1000 rpm	kPa	NA	NA	NA	NA	
Fuel feed pressure	Low idle	kPa	NA	NA	NA	NA
	>1400 rpm		NA	NA	NA	NA
Water in fuel		Switch	Switch	NA	NA	
Crank case pressure	kPa	NA	NA	NA	NA	
Air filter pressure droop	kPa	NA	NA	NA	NA	
Engine protection		Alarm level		Engine protection		
Altitude, above sea	m	NA	NA	NA	NA	
Charge air temp	°C	NA	75	85,0	Shut down	
Charge air pressure	kPa	NA	380	395,0	Shut down	
Engine speed	rpm	NA	NA	NA	NA	

* Off means no shut down, alarm only

Engine protection settings			
Parameter	"Yellow lamp"	"Red lamp"	Forced shut down
Coolant temperature	104°C (-1°C)	113°C (±0°C)	113°C (±0°C)
Oil temperature	128°C	> 135°C	> 135°C
High boost temp	75°C	> 85°C	> 85°C
High boost pressure	380 kPa	> 395kPa	> 395kPa
Low oil pressure	Limit	< 85 kPa	< 85 kPa



Electrical system		r/min	1500	1800
Voltage and type		24V / insulated from earth		
Alternator:	make/output	Amp	80	
	tacho output	Hz/alt. Rev		
	drive ratio		3	
Starter motor	make	Melco		
	type	M008T62471		
	kW	5,0		
Number of teeth on:	flywheel		129	
	starter motor		10	
Inrush current at +20°C		Amp	1750	
Cranking current at +20°C		Amp	400	
Crank engine speed at 20°C		rpm	200	
Starter motor battery capacity:	max	Ah	135	
	min at +5°C	Ah	NA	
Inlet manifold heater (at 20 V)		kW	NA	
Power relay for the manifold heater		Amp	2	

Power take off		r/min	1500	1800
Front end in line with crank shaft max:		Nm lbft	1200 885	
Front end belt pulley load. Direction of load viewed from flywheel side:	max left	kW hp	NA	NA
	max down	kW hp	NA	NA
	max right	kW hp	NA	NA
Timing gear at compressor PTO max:		Nm lbft	187 138	
Speed ratio direction of rotation viewed from flywheel side			1,116 ccw	
Timing gear at servo pump PTO max:		Nm lbft	NA	
Speed ratio direction of rotation viewed from flywheel side			NA	
Timing gear at hydraulic pump PTO max:		Nm lbft	NA	
Speed ratio direction of rotation viewed from flywheel side			NA	
Max allowed bending moment in flywheel housing		Nm lbft	1100 811	
Max. rear main bearing load		N lbf	5000 1124,0	