

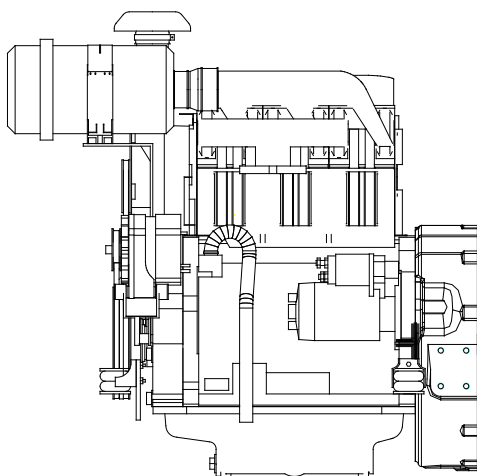
TR Series Air-cooled Engines



TR438G1

**fixed speeds
1500/1800 rpm**

41 – 52 kWm | 56 – 71 bhp



DESIGN FEATURES AND EQUIPMENT

- Air cooling system
- 12V /24V Starter Motor
- 12V /24V charged generator
- Diesel engine electrical shutdown device (Generator application only)
- Automatic belt tensioner
- V-belt broken warning device
- Belt guard (Generator application only)
- 4 Engine elastic supports
- SAE Flywheel and housing
- Oil filter
- Fuel filter
- Air cleaner
- Oil temperature sensor and alarm switch
- Oil pressure sensor and alarm switch
- Electronic governing system

OPTIONAL ITEMS

- Absorption type exhaust silencer suitable for remote mounting
- Spark arrestor type exhaust silencer
- Exhaust manifold-cum-silencer (Non-turbocharger engine only)
- Diesel engine supports suitable for rigidly mountings
- Pre-heating system aim for starting from -5 to -40°C
- 12V/ 24V Diesel engine electrical adjusting speed control device
- Mechanical shutdown lever
- All kinds of meter for diesel engine

OVER VIEW

The engine is designed for Power Generating Application and is suitable for use in any stage II emission territory. It is durable, reliable and easy for maintenance.

Note:

For further information and approval please contact Application Department

Note: The final interpretation is reserved by Lister Petter Engine Company.

POWER OUTPUTS | STAGE II EMISSIONS RATINGS

Model	Speed, RPM	Power	Engine Net		Standard Generator Output*		
			kW	bhp	Power	kVA	kWe
TR438G1	1500	Prime	41	56	PRP	45	36
		Standby	45	61	ESP	50	40
TR438G1	1800	Prime	48	65	PRP	52	42
		Standby	52	71	ESP	58	46

*The suggested continuous power is 80% prime power.

DATA SHEET

General Engine Data

Model	TR438G1
Type	4-stroke in-line, air cooled
	Turbo charging
Combustion System	direct injection
Cylinder type	replaceable cylinder liner
Cylinder No.	4
Bore/ Stroke	100×120mm
Displacement	3.77L
Compression Ratio	17: 1
Firing Order	1-3-4-2
Injection Timing	26°BTDC
BMEP Pressure	2.5~3.0MPa
Direction of Rotation	Anticlockwise from flywheel housing side
Flywheel Housing	SAE3
Flywheel	SAE 10-11.5

Valve system

Type	Overhead valve type
Number of valve	Intake 1, exhaust 1 per cylinder
Valve lashes at cold	Intake 0.15mm
	Exhaust 0.15mm

Valve timing

	Open	Close
Intake valve	32°.BTDC	60°.ABDC
Exhaust valve	70°.BBDC	32°.ATDC

RATING DEFINITIONS TO ISO 3046

ISO Standard Conditions

Barometric pressure 100 kPa
Relative humidity 30%
Ambient air temperature at the intake manifold 25°C

Power Standards

The engine performance corresponds to ISO 3046, BS 5514 and DIN 6271. The technical data applies to an engine without cooling fan and operating on a fuel with calorific value of 42.7 MJ/kg (18360 BTU/lb) and a density of 0.84 kg/liter (7.01 lb/US gal, 8.42 lb/Imp gal).

Rating definition has basis in ISO 3046 & 8258-1, the tolerance of engine power is $\pm 3\%$

Standby power rating is the supply of max emergency power under running variable load for the duration of none availability of the Mains, NO OVERLOAD capacity is adopted at this rating, furthermore, this published standby rating can be operated 500 hour/ year.

Prime Power rating is available for unlimited hours per year with variable load, of which are average engine load factor is 80% of the published prime power rating, incorporation of a 10% overload for 1 hour in every 12 hours of operation is permitted.

Base load is available for continuous published baseload power.

Derating

For non-standard site conditions, reference should be made to relevant BS, ISO & DIN standards.

Notes:

1. Power ratings are measured at the flywheel end.
- 2.. Power ratings and fuel consumption figures apply to a fully run-in, non derated engine without a radiator and fan fitted, and without power absorbing accessories or transmission equipment.

* The power output of the generator data is calculated using a typical efficiency of the AC generator. The kVA and kWe values are converted as per standard power factor 0.8. Generator data is for reference only.

Fuel System	
Injection pump	Inline "A" type
Governor	Electronic governing
Fuel lift pump	Mechanical
Nozzle	Multipoint
Injection pressure	175kg/cm ²
Fuel filter	Paper filter type
Fuel	Diesel
Lubrication system	
Lubrication type	Pressure supply
Oil pump	Gear driven
Oil filter	Paper filter type
Oil pan	Max. 8L min. 6L
Inclination	Fan side 22°
	Flywheel side 22°
	Motor side 38°
	Oil pump side 38°
Lube oil grade	According to operating manual
Cooling system	
Cooling type	Air cooled
Fan	Air suction, aluminum
Electrical system	
Alternator	14V×65A
Voltage regulation	Built-in IC regulator
Starter motor	12V×3.8kW
Intake and exhaust system	
Cooling air flow	1810m ³ /h
Combustion air flow	216.6m ³ /h
Max. intake pressure	50 (10 ² Pa)
Max. exhaust pressure	75 (10 ² Pa)
Exhaust temperature	500°C

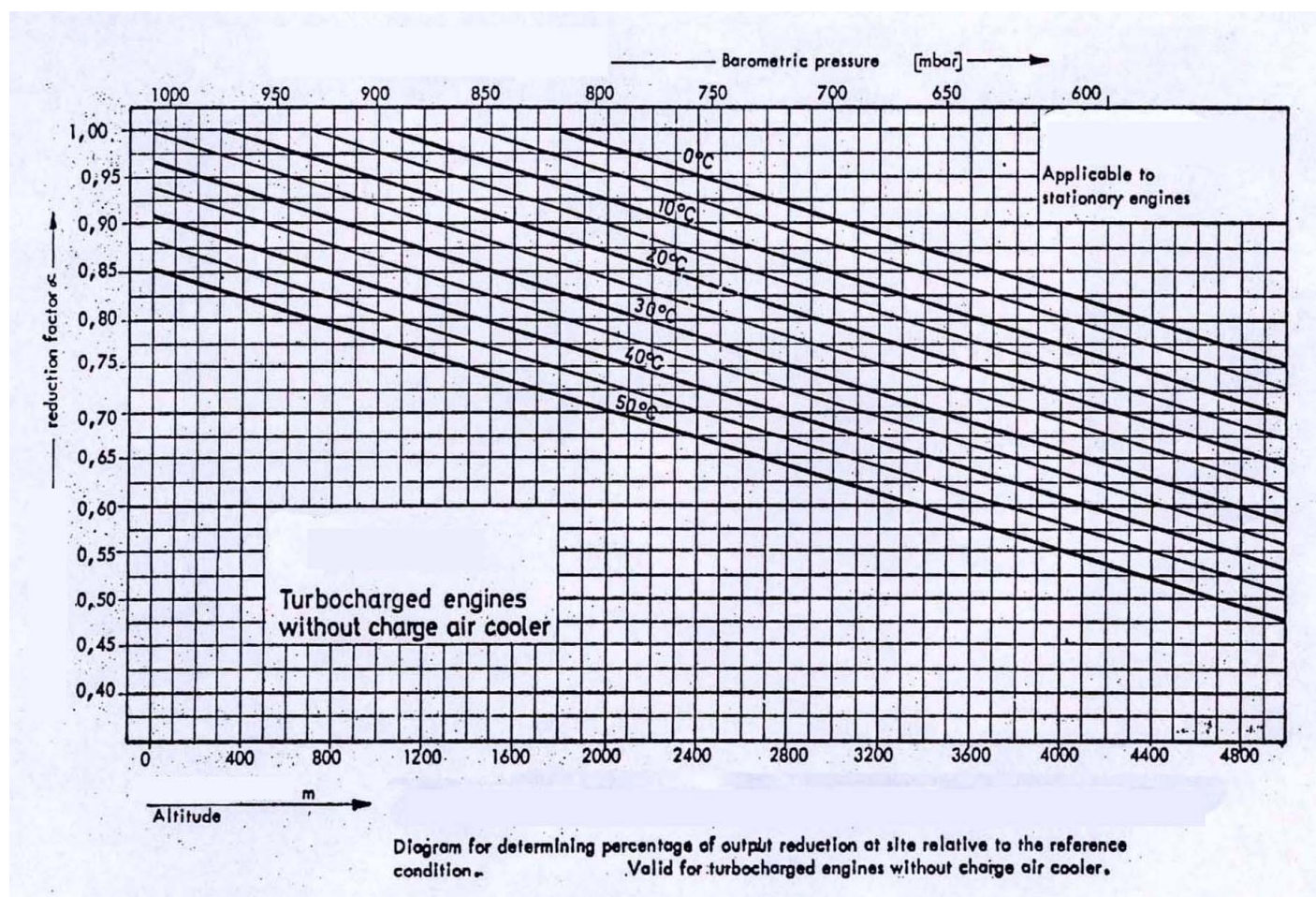
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APPROXIMATE FUEL CONSUMPTION

TR438G1	1500rpm		1800rpm	
LOAD	g/kWh	l/h	g/kWh	l/h
50%	238	5.84	242	6.96
75%	218	8.03	220	9.49
100%	220	10.80	217	12.47
110%	222	11.99	219	13.85

*Diesel fuel density 0.835 g/ cm³

POWER DERATING

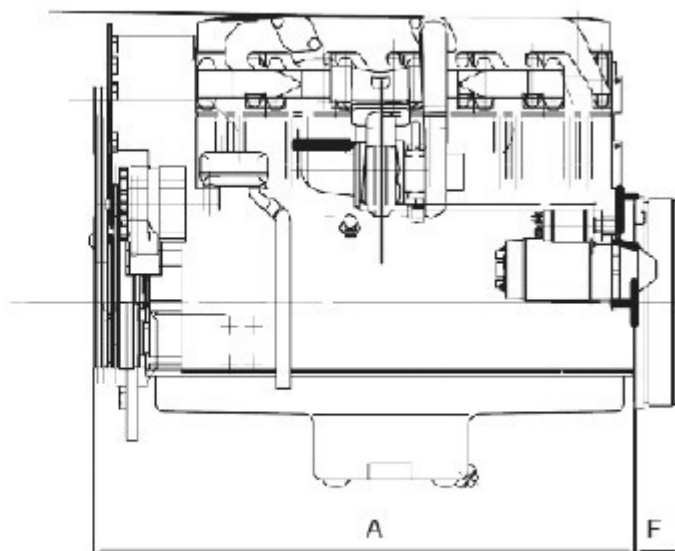
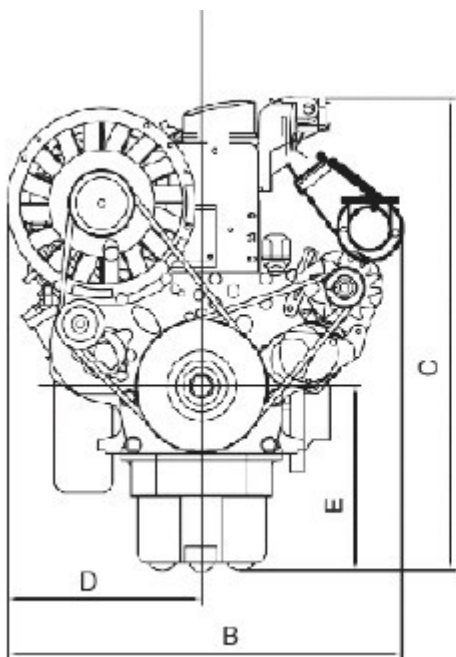


* Estimating the effect of altitude & temperature for the engine output relative to ISO reference condition at sea level.

* Inquiry should always be made to the technical department of the respective manufacturer if the attitude is higher than the diagram.

ENGINE NOISE LEVELS

Parameter	Engine Model
	TR438G1
Sound pressure level at 1m	≤100 dB(A)

APPROXIMATE DIMENSIONS AND WEIGHT

Engine Size(mm)	A	B	C	D	E	F	
						SAE 8-10	SAE 10-11.5
TR438G1	725	700	800	330	287	105	88

Engine Dry Weight	310kg						
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TYPICAL PACKING CASE DIMENSIONS

Engine packing case dimensions	Container quantities		
L*W*H(mm)	20FT	40FT	40HQ
TBA	TBA	TBA	TBA



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