موتور دیزل : Volvo	ژنراتور : Leroy Somer

	Standby		Prime	
	KVA	KW	KVA	KW
دیزل ژنراتور	400	500	440	550

موتور دیزل		
Manufacturer	VOLVO	تولید کننده
Type	TAD 1640GF	تیپ
Number of cylinders	6	تعداد سیلندر ها
Cylinder arrangement	inline	آرایش سیلندر ها
Displacement , Liters	18.273	جا به جایی
Bore × Stroke , mm	144x165	قطر سیلندر × کورس پیستون
Compression Ratio	17,5:1	نسبت تراکم

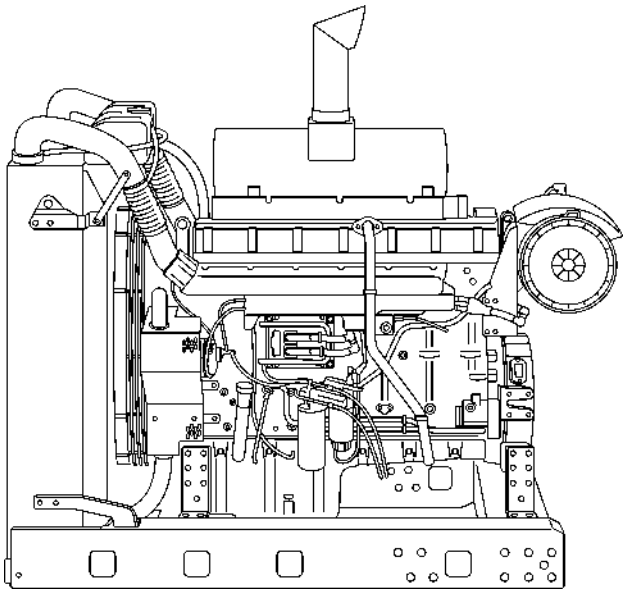
ژنراتور		
Manufacturer	Leroy Somer	تولید کننده
Type	LSA47.2M7	تیپ
Frequency, Hz	50	فرکانس
Speed, Rpm	1500	سرعت
Voltage, V	400	ولتاژ
Excitation	Shunt	سیستم تحریک
Stator windings	2/3 Pitch factor	سیم پیچ استاتور
Rotor	Dynamic balanced	روتور
Over speed, Rpm	2250	حداکثر سرعت مجاز
Insulation class	H	کلاس عایق
Protection class	IP 23	کلاس حفاظتی
Power factor	0.8	ضریب قدرت
Phase	3	فاز
Voltage Regulation, %	± 0.5 %	تنظیم ولتاژ

Technical data

Engine

TAD1640GE, TAD1641GE, TAD1642GE
TAD1641VE, TAD1642VE

Contents



Technical data

General

Designation	TAD1640GE	TAD1641GE	TAD1642GE	TAD1641VE	TAD1642VE
Power, Prime/Stand-by	See sales literature				
Torque, Prime/Stand-by	See sales literature				
No. of cylinders	6	6	6	6	6
Bore	144	144	144	144	144
Stroke, mm	165	165	165	165	165
Cylinder volume, dm^3	16,12	16,12	16,12	16,12	16,12
Weight, dry (kg)	1440	1440	1480	1480	1480
Weight, wet (kg)	1510	1510	1550	1550	1550
Injection sequence	1-5-3-6-2-4	1-5-3-6-2-4	1-5-3-6-2-4	1-5-3-6-2-4	1-5-3-6-2-4
Compression-ratio	17,5:1	16,5:1	16,5:1	17,5:1	17,5:1
Low idle, rpm	900	900	900	600	600
High idle, rpm	1500/1800	1500/1800	1500/1800	1800-2000	1800-2000

Engine

Engine block

Length ..... 1156 mm (45.51")
Height, upper block plane - crankcase centerline ... 453 mm (17.83")
Height lower block plane - crankcase centerline ..... 120 mm (4.72")
Crankcase pressure,
normal value, irrespective of engine speed ..... max 0.5 kPa (0.07 psi)

Cylinder head

Type ..... 6 cyl
Length ..... 1194 mm (47.2")
Width ..... 438 mm (17.24")
Height ..... 135 mm (5.31")
Max. out-of-flatness (base plane)* ..... 0.02 mm (0.000787")
*on 100 mm (3.937") measured length

Cylinder head bolts

Number of bolts 38
Dimension, thread M18
Length ..... 188 mm (7.40")

Cylinder liner

Type ..... Wet, replaceable
Height, total. ..... 288 mm (11.34")
Sealing surface height above block plane ..... 0.15 - 0.21 mm (0.00612 - 0.00862")
No. of seal rings per cylinder liner 3

Piston

Type ..... aluminum
Height above engine block plane ..... 0.15 - 0.65 mm (0.00612 - 0.0256")
Diameter, combustion chamber ..... 98 mm (3.86")
Depth, piston bowl:
TAD1640GE ..... 19.35 mm (0.76")
TAD1641GE ..... 21.15 mm (0.83")
TAD1642GE ..... 21.15 mm (0.83")
TAD1641VE ..... 19.35 mm (0.76")
TAD1642VE ..... 19.35 mm (0.76")
No. of ring grooves 3
Front marking ..... Arrow towards front
Gudgeon pin diameter ..... 63 mm (2.48")

Piston rings

Compression rings

Specification
Quantity 2
Piston ring clearance in groove:
upper compression ring ..... -
lower compression ring ..... 0.07 mm (0.00276") Wear tolerance 0.1 mm (0.003937")
Piston ring gap, measured at ring opening:
upper compression ring ..... 0.62 mm (0.00244") Wear tolerance 0.85 mm (0.003346")
lower compression ring ..... 1.1 mm (0.0433") Wear tolerance 1.35 mm (0.0531")

Oil scraper ring

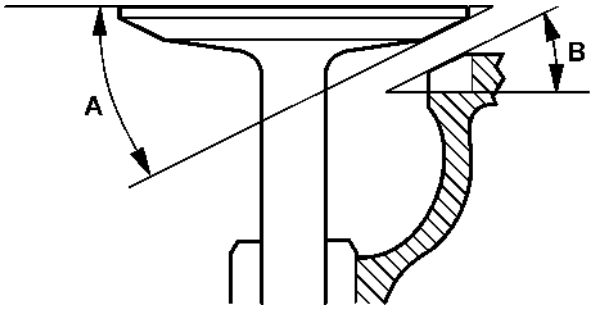
Quantity 1
Width, incl. spring ..... 4.55 mm (0.179")
Piston ring clearance in groove, ... 0.04 mm (0.00157") Wear tolerance 0.1 mm (0.00393")
Piston ring gap, measured at ring opening ..... 0.55 mm (0.0216") Wear tolerance 0.9 mm (0.00354")

Valve mechanism

Valves

Valve head, diameter:
- Inlet ..... 49 mm (1.93")
- Exhaust ..... 46 mm (1.81")

Valve stem, diameter:
- Inlet ..... 10 mm (0.394")
- Exhaust ..... 10 mm (0.394")



Valve seat angle (A):
- Inlet ..... 19,5°
- Exhaust ..... 44,5°

Seat angle in cylinder head (B):
- Inlet ..... 20°
- Exhaust ..... 45°

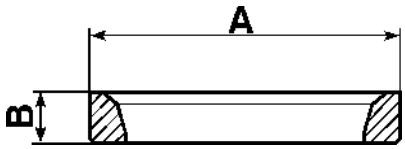
Dimension between valve head and cylinder head plane:
- Inlet ..... 0.9 - 1.4 mm (0.0354 - 0.0551")
  - Wear tolerance, max ..... 1.5 mm (0.059055")
- Exhaust ..... 1.4 - 1.9 mm (0.0551 - 0.0748")
  - Wear tolerance, max ..... 2.0 mm (0.07874")

Note! When the valve seats are changed, the valves must be changed at the same time.

Valve clearance, cold engine, setting value:
- Inlet ..... 0.3 mm (0.0118")
- Exhaust ..... 0.6 mm (0.0236")

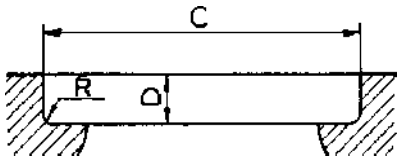
Valve clearance, cold engine, check value:
- Inlet ..... 0.25 -0.35 mm (0.00984 - 0.0138")
- Exhaust ..... 0.55 -0.65 mm (0.0216 - 0.0256")

Valve seats



Outer diameter **(A)**
Standard:
Inlet ..... 52 mm (2.05")
Exhaust ..... 49 mm (1.93")
Oversize:
Inlet ..... 52.2 mm (2.06")
Exhaust ..... 49.2 mm (1.94")
Height **(B)**:
Inlet ..... 7.7 mm (0.303")
Exhaust ..... 7.9 mm (0.311")

Valve seat bed



Diameter **(C)** standard:
Inlet ..... 52.0 mm (2.05")
Exhaust ..... 49.0 mm (1.93")
Diameter **(C)** oversize:
Inlet ..... 52.2mm (2.06")
Exhaust ..... 49.2 mm (1.94")
Depth **(D)**:
Inlet ..... 11.7 mm (0.46")
Exhaust ..... 11.7 mm (0.46")
Seat base radius **(R)**:
Inlet ..... max 0.8 mm (0.315")
Exhaust ..... max 0.8 mm (0.315")

Valve guides

Length:
- Inlet ..... 83.5 mm (3.29")
- Exhaust ..... 83.5 mm (3.29")

Inner diameter:
- Inlet ..... 10 mm (0.39")
- Exhaust ..... 10 mm (0.39")

Height above cylinder head spring plane:
- Inlet ..... 24.4 ± 1.0 mm (1.00 ± 0.157")
- Exhaust ..... 24.4 ± 1.0 mm (1.00 ± 0.157")

Clearance, valve stem - guide*:
- Inlet ..... 0.025 - 0.054 mm (0.00098 - 0.00213")
  - Wear tolerance max ..... 0.4 mm (0.01575")
- Exhaust ..... 0.058 - 0.087 mm (0.00228 - 0.00342")
  - Wear tolerance max ..... 0.4 mm (0.01575")

* The dimensions have been calculated for the method of measurement described in the workshop manual (Group 21).

Rocker arms

Bearing clearance ..... max 0.1 mm (0.00394")
Clearance rocker arm roller ..... max 0.1 mm (0.00394")

Valve springs

Inlet
- Uncompressed length ..... 67.5 mm (2.66")
- With 522 N (117.45 lbf) load ..... 57.0 mm (2.24")
- With 1205 N (271.13 lbf) load ..... 43.3 mm (1.70")
- Coilbound length, max ..... 40.3 mm (1.59")

Exhaust

Outer valve springs:
- Uncompressed length ..... 69.3 mm (2.73")
- With 930 N (209 lbf) load ..... 54.0 mm (2.13inches)
- With 1813 N (408 lbf) load ..... 39.5 mm (1.56")
- Coilbound length, max ..... 37.0 mm (1.46")

Inner valve spring:
- Uncompressed length ..... 67.0 mm (2.64")
- With 465 N (105 lbf) load ..... 51.0 mm (2.01")
- With 887 N (200 lbf) load ..... 36.5 mm (1.44")
- Coilbound length, max ..... 34.0 mm (1.34")

Leroy Somer LSA 47.2 M7 Alternator

Standard Features

Top of the Range Electrical Performance

Class H insulation
Standard 12-wire re-connectable winding, 2/3 pitch
High efficiency and motor starting capacity
R 791 interference suppression conforming to standard EN 55011 group 1 class B standard for Europen zone (CE marking)

Protection System Suited to the Environment

The LSA 47.2 is IP23

Reinforced Mechanical Structure Using Finite Element Modelling

Standard direction of rotation: clockwise when looking at the drive end view
Running unit anti-clockwise: a derate of 5% must be applied.
Compact and rigid assembly to better withstand generator-set vibrations
Steel frame
Cast iron flanges and shields
Two bearing and single bearing versions designed to be suitable for engines on the market
Half-key balancing
Greased for life beraing

Accessible Terminal Box Proportioned for Optional Equipment

Easy access to the voltage regulator and to the connections
Possible clusion of accessories for paralelling, protection and measurement
8-way terminal block for voltage reconnection

Compliant with International Standards

The LSA 47.2 alternator conforms to the main international standards and regulations:
IEC 60034, NEMA MG 1.22, ISO 8528, CSA, CSA/UL
It can be integrated into a **CE** marked generator set
The LSA 47.2 is designed, manufactured and marketed in an ISO 9001 environment

Model	Standby		Prime	
	kVA	kW	kVA	kW
LSA 47.2 M7	**570**	**456**	**500**	**400**

Technical Specifications

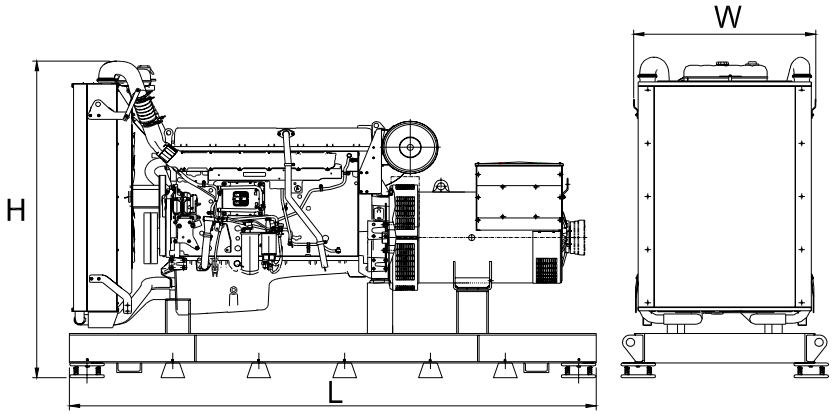
Manufacturer	LEROY SOMER
Model	LSA 47.2 M7
Type	4-Poles, Rotating Field, Brushless
Standby power at rated voltage, kVA	570
Efficiency, %	94,3
Power factor	0.8
Phase	3
Frequency, Hz	50
Speed, Rpm	1500
Voltage, V	400
Excitation	Shunt
Stator windings	2/3 Pitch factor
Regulation	AVR, Automatic Voltage Regulator
Voltage Regulator	R 230
Voltage Regulation, %	± 0.5
Total HarmonicTGH / THC	at no load<1.5% - on load<2%
Waveform: NEMA = TIF	< 50
Waveform: I.E.C = THF,	< 2%
Insultion class	H
Overspeed, Rpm	2250
Construction	Single bearing, direct coupled
Coupling	Flexible
Amortisseur Windings	Full
Connection	WYE
Rotor	Dynamic balanced
Protection class	IP23
Air flow, m³ / min	0.9

Optional Equipment

- Filters on air inlet and air outlet (IP44)
- Windign protection for clean environmetns with relative humidity greater than 95%
- Space heaters
- Thermal protection for winding
- Digital voltage regulator
- PMG system

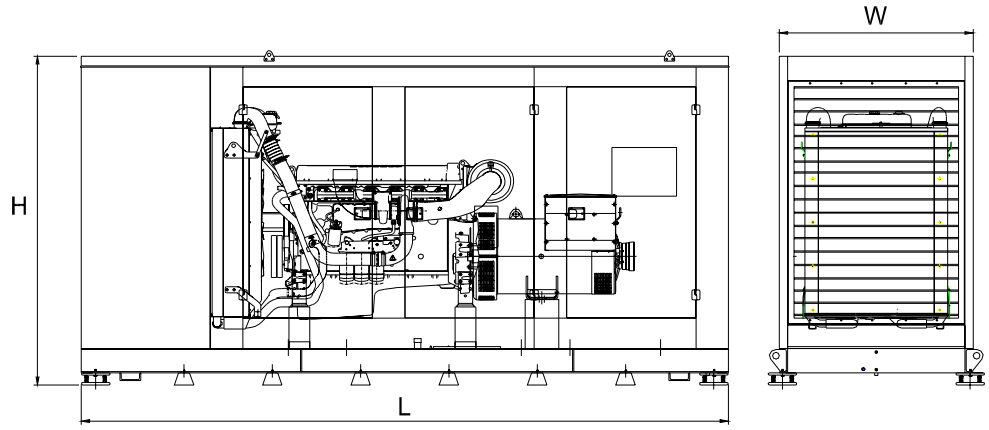
General Dimensions

Standard Generator



Length, L	3,35 m
Heigth, H	2,2 m
Width, W	1,2 m
Weight, Total	3700 kg

Generator with Soundproof Canopy



Length, L	5 m
Heigth, H	2,8 m
Width, W	1,5 m
Weight, Total	5400 kg

Generator Room Layout