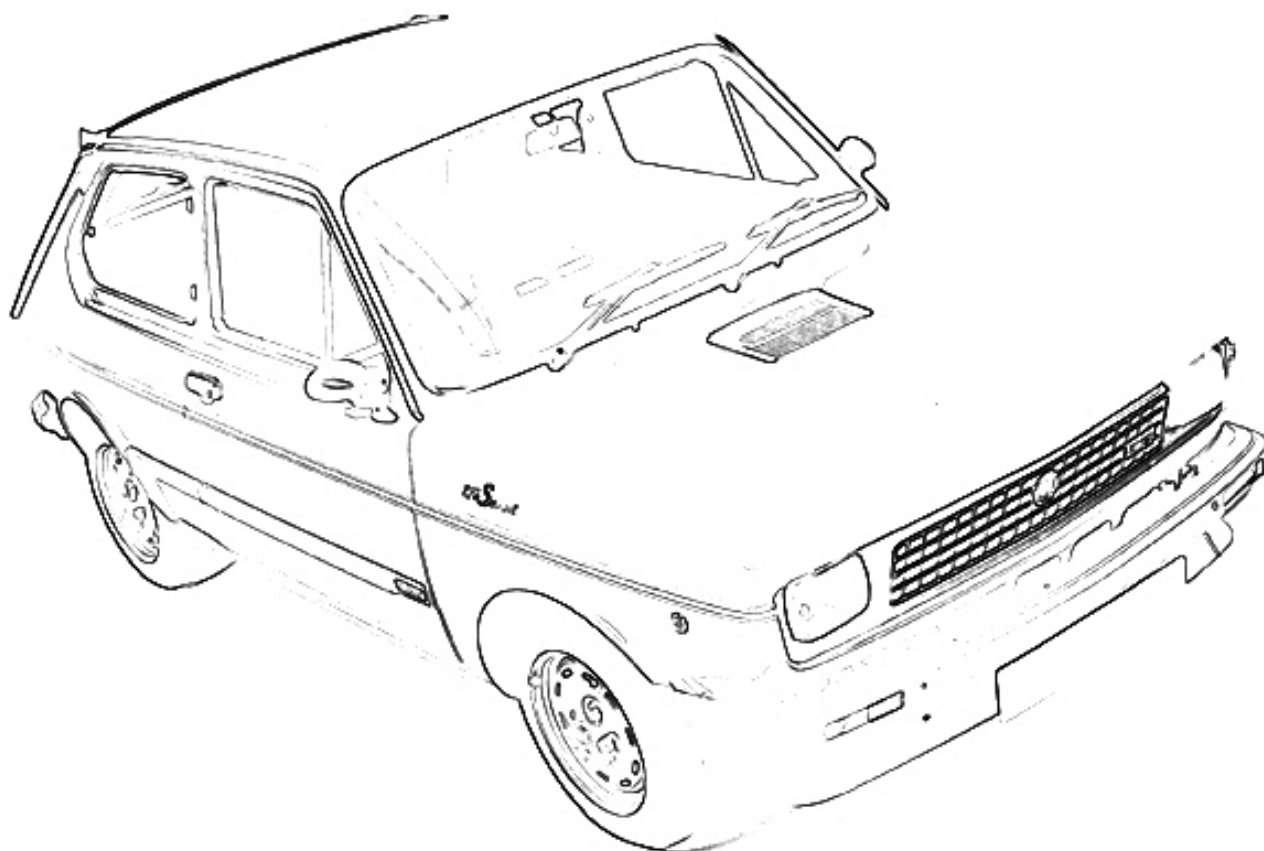


# Fiat 127 1049 cm<sup>3</sup>



*opis časti servisního manuálu*

# Supplement

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## **1. Introduction**

Since its first introduction in 1971 the FIAT 127 has undergone a continuing programme of improvements concerned mainly with styling and trim alterations. However, in 1977 a new model range was introduced which included the option of a larger engine of 1049 cc capacity with a single overhead camshaft. In appearance, cars in the new range are broadly similar to the earlier models but they have a lower bonnet line, larger glass area and redesigned bumpers.

In October 1978, the FIAT 127-Sport was launched. This is a high performance version of the three door hatchback having the 1049 cc

engine with a twin choke carburettor. Apart from minor body styling changes, the Sport is equipped with a larger capacity sump, twin exhaust tailpipes, servo braking, additional instrumentation and a laminated windscreen.

This supplement has been added to cater for some of the production changes which have been made, but principally to cover the 1049 cc engine. The material given in Chapters 1 to 12 still applies unless superseded by information contained in this Supplement. Therefore, always read this Chapter in conjunction with the rest of the book.

## 2. Specifications

### Capacities (1049 cc models)

<b>Engine oil (including filter change)</b>	
L, C and CL	5.5 pints (3.1 litres)
Sport	7.7 pints (4.4 litres)
<b>Coolant</b>	9.7 pints (5.5 litres)
<b>Fuel</b>	6.7 gallons (30.5 litres) including 6.2 pints (3.5 litres) reserve
<b>Transmission oil</b>	4.2 pints (2.4 litres)

### 1049 cc OHC engine

#### General

Type number	127 A 000 (C, L and CL); 127 A1.000 (Sport)
Bore	2.992 in (76 mm)
Stroke	2.276 in (57.8 mm)
Capacity	64 cu in (1049 cc)
Compression ratio	9,3 : 1 (C, L and CL); 9,8 : 1 (Sport)
Maximum horsepower (DIN)	50 HP at 5600 rpm (C, L and CL); 70 HP at 5600 rpm (Sport)

Valve mechanism	C, L and CL	Sport
Inlet :		
Opens	2° BTDC	6° BTDC
Closes	42° ABDC	46° ABDC
Exhaust :		
Opens	42° BBDC	47° BBDC
Closes	2° ATDC	7° ATDC
Valve clearances (cold) :		
For checking valve timing:		
Inlet	0.028 in (0.70 mm)	0.032 in (0.80 mm)
Exhaust	0.028 in (0.70 mm)	0.032 in (0.80 mm)
Adjustment for running (engine cold) :		
Inlet	0.012 in (0.30 mm)	0.016 in (0.40 mm)
Exhaust	0.016 in (0.40 mm)	0.020 in (0.50 mm)

#### Cylinder block and connecting rods

	inches	mm
Cylinder bore diameter *	2.992 to 2.994	76.00 to 76.05
* Cylinder bores are graded and have a variation of 0.0004 inch (0.01 mm) between each grade		
Main bearing housing bore diameter	2.044 to 2.045	51.921 to 51.934
Width of centre main bearing cap between thrust washers	1.088 to 1.091	27.64 to 27.70
Connecting rod big-end diameter	1.85 to 1.8560	47.130 to 47.142
Connecting rod small-end diameter	0.8638 to 0.8646	21.94 to 21.96
Big-end bearing shell thickness	0.0606 to 0.8646	1.539 to 1.55

Big-end bearing shell undersize range	0.01; 0.02; 0.03; 0.04	0.254; 0.508; 0.762; 1.016
Gudgeon pin interference fit in small-end:		
C, L and CL	0.0004 to 0.0017	0.01 to 0.042
Sport	0.0004 to 0.0006	0.01 to 0.016
Crankpin to bearing fit clearance	0.0009 to 0.003	0.022 to 0.076
Maximum misalignment between big and small-end axes measured 4.92 in (125 mm) from		
Connecting rod	± 0.004	± 0.10

**Pistons, rings and pins**

	<b>inches</b>	<b>mm</b>
Standard piston diameter, measured 0.925 inch (23.5 mm) from piston skirt base :		
Grade A	2.989 to 2.9894	75.92 to 75.93
Grade C	2.9898 to 2.9902	75.94 to 75.95
Grade E	2.9906 to 2.9909	75.96 to 75.97
Range of oversize pistons	0.0079; 0.0157; 0.0236	0.2; 0.4; 0.6
Piston boss diameter (C, L and CL):		
Grade 1	0.8654 to 0.8656	21.982 to 21.986
Grade 2	0.8655 to 0.8657	21.986 to 21.990
Grade 3	0.8657 to 0.8659	21.990 to 21.994
Piston boss diameter (Sport):		
Grade 1	0.7874 to 0.7875	19.999 to 20.002
Grade 2	0.7875 to 0.7876	20.002 to 20.005
Ring groove width (C,L and CL) :		
Top groove	0.0604 to 0.0612	1.535 to 1.555
Centre groove	0.0799 to 0.0807	2.030 to 2.050
Bottom groove	0.1562 to 0.1570	3.967 to 3.987
Ring groove width (Sport) :		
Top groove	0.0604 to 0.0612	1.535 to 1.555
Centre groove	0.0793 to 0.0801	2.015 to 2.035
Bottom groove	0.1558 to 0.1566	3.957 to 3.977
Standard gudgeon pin diameter (C, L and CL):		
Grade 1	0.8650 to 0.8651	21.970 to 21.974
Grade 2	0.8651 to 0.8652	21.974 to 21.978
Grade 3	0.8652 to 0.8654	21.978 to 21.982
Standard dudgeon pin diameter (Sport) :		
Grade 1	0.7872 to 0.7873	19.994 to 19.997
Grade 2	0.7873 to 0.7874	19.997 to 20.000
Oversize gudgeon pin diameter	0.0079; 0.0157; 0.0236	0.2; 0.4; 0.6
Piston ring thickness :		
Top compression ring	0.0582 to 0.0587	1.478 to 1.490
2nd oil control ring	0.0779 to 0.0783	1.978 to 1.990
3rd oil scraper ring	0.1545 to 0.1550	3.925 to 3.937
Piston to bore fit clearance	0.0028 to 0.0035	0.070 to 0.090
Gudgeon pin fit clearance in piston	0.0003 to 0.0006	0.008 to 0.016
Piston ring side clearance in groove:		
1st compression ring	0.0018 to 0.003	0.045 to 0.077
2nd oil control ring	0.0010 to 0.0022	0.025 to 0.057
3rd oil scraper ring	0.0008 to 0.002	0.020 to 0.052
Piston ring end gap:		
1st compression ring (C, L and CL)	0.0079 to 0.0157	0.20 to 0.40
1st compression ring (Sport)	0.0118 to 0.0197	0.30 to 0.50
2nd oil control ring	0.0118 to 0.0197	0.30 to 0.50
3rd oil scraper ring	0.0079 to 0.0138	0.20 to 0.35
Piston rings oversize range	0.0079; 0.0157; 0.0236	0.2; 0.4; 0.6

<b>Crankshaft</b>	<b>inches</b>	<b>mm</b>
Main bearing journal diameter	1.8972 to 1.898	48.189 to 48.209
Standard main bearing shell thickness	0.0721 to 0.0726	1.831 to 1.845
Main bearing shell undersize range	0.01; 0.02; 0.03; 0.04	0.254; 0.508; 0.762; 1.016
Standard crankpin diameter	1.7318 to 1.7326	43.988 to 44.008
Main bearing journal fit clearance	0.0009 to 0.033	0.022 to 0.083
Width of centre main bearing cap between thrust washers	1.2785 to 1.2805	32.475 to 32.525
Standard thrust washers thickness	0.0909 to 0.0929	2.31 to 2.36
Thrust washers oversize range	0.0959 to 0.0979	2.437 to 2.487
Crankshaft endfloat	0.0022 to 0.0104	0.055 to 0.265
Maximum misalignment of main bearing journals	0.0012	0.030
Maximum misalignment of main bearing journals to crankpins	0.0138	0.350
Maximum ovality of crankpins and main bearing journals after grinding	0.0002	0.005
Maximum taper of crankpins and main bearing journals after grinding	0.0002	0.005
Maximum run-out of crankshaft flange with dial gauge stylus 31 mm (1.22 ins) from crankshaft rotational axis	0.001	0.025
Maximum run-out between flywheel face and crankshaft flange, and between flywheel face and crankshaft axis	0.0039	0.10
<b>Cylinder head</b>	<b>inches</b>	<b>mm</b>
Standard valve guide housing bore	0.5886 to 0.5896	14.950 to 14.977
Standard valve outside diameter	0.5921 to 0.5928	15.040 to 15.058
Oversize valve guide	0.002; 0.0039; 0.0098	0.05; 0.10; 0.25
Valve guide interference fit	0.0025 to 0.0043	0.063 to 0.108
Fitted valve guide internal diameter	0.3158 to 0.3165	8.022 to 8.040
Valve stem diameter	0.3139 to 0.3146	7.974 to 7.992
Valve stem fit clearance in guide	0.0012 to 0.0026	0.030 to 0.066
Valve head diameter:		
Inlet (C, L and CL)	1.3327 to 1.3445	33.85 to 34.15
Inlet (Sport)	1.4311 to 1.4429	36.35 to 36.65
Exhaust	1.1358 to 1.1476	28.85 to 29.15
Valve seat width	0.0787 to 0.0866	2.0 to 2.2
Valve seat internal diameter:		
Inlet (C, L and CL)	1.1063 to 1.1142	28.1 to 28.3
Inlet (Sport)	1.2244 to 1.2323	31.1 to 31.3
Exhaust (C, L and CL)	0.9882 to 0.9961	25.1 to 25.3
Inlet (Sport)	1.0276 to 1.0354	26.1 to 26.3
Angle of valve seat	45° ± 5'	
Angle of valve face	45° 30' ± 5'	
Valve springs:		
Inner spring part no.	4134900	
Outer spring part no.	4170458	
<b>Valve gear</b>	<b>inches</b>	<b>mm</b>
Camshaft journal diameter:		
Valve gear end	1.1789 to 1.1795	29.945 to 29.960
Centre	1.0630 to 1.0636	27.000 to 27.015
Flywheel end	0.9843 to 0.9848	25.000 to 25.015

Camshaft bearing bore diameter in head:		
Valve gear end	1.1807 to 1.1817	29.990 to 30.015
Centre	1.0648 to 1.0657	27.045 to 27.070
Flywheel end	0.9860 to 0.9870	25.045 to 25.070
Camshaft journals fit clearance	0.0012 to 0.0028	0.030 to 0.070
Cam lift (C, L and CL)	0.3425	8.700
Cam lift (Sport):		
Inlet	0.3622	9.200
Exhaust	0.3642	9.250
Standard tappet bore diameter	1.4567 to 1.4577	37.000 to 37.025
Standard tappet outside diameter	1.4557 to 1.4565	36.975 to 36.995
Tappet fit clearance	0.0002 to 0.0020	0.005 to 0.050
Shim thickness	0.1279; 0.1299; then 0.0039 steps to 0.1850	3.2b; 3.30; then 0.10 steps to 4.70

**Auxiliary shaft**

	inches	mm
Diameter of bush bores in crankcase:		
Front	1.6339 to 1.6350	41.500 to 41.530
Rear	1.5733 to 1.5745	39.962 to 39.992
Fitted bush internal diameter:		
Front	1.5143 to 1.5151	38.464 to 38.484
Rear	1.4553 to 1.4561	36.964 to 36.984
Diameter of shaft journals:		
Front	1.5115 to 1.5125	38.393 to 38.418
Rear	1.4525 to 1.4535	36.893 to 36.918
Bush fit	There must always be an interference fit	
Shaft/bush fit clearance (front and rear)	0.0018 to 0.0036	0.046 to 0.091

**Lubrication system**

Oil pump	Four lobe rotor type	
Pump drive	Through auxiliary shaft	
Oil pressure relief valve	Incorporated in pump	
Pump rotors endfloat	0.0018 to 0.0047	0.045 to 0.120
Outer rotor to body clearance	0.0006 to 0.0022	0.016 to 0.055
Inner to outer rotor clearance	0.0010 to 0.0039	0.025 to 0.100
Oil pressure at 212°F (100°C)	50 to 70 lbf/in <sup>2</sup>	(3.5 to 5 kgf/cm <sup>2</sup> )

**Cooling system****Radiator fan thermal switch**

Cuts in .	194° to 201°F (90° to 94°C)
Cuts out	185° to 192°F (85° to 89°C)

**Engine coolant thermostat**

Starts to open	176° to 183°F (80° to 84°C)
Fully open	205°F (96°C)

**Impellor vanes to pump body fit clearance** 0.0315 to 0.0512 in (0.8 to 1.3 mm)

**Radiator cap relief pressure** 11.4 lbf/in<sup>2</sup> (0.8 kgf/cm<sup>2</sup>)

**Fuel system****Weber 32 ICEV 16/150 carburettor (C, L and CL models)**

Venturi diameter	0.8465 in (21.5 mm)
Main jet .	0.0453 in (1.15 mm)

Air correction jet	0.0728 in (1.85 mm)
Slow running jet	0.0177 in (0.45 mm)
Emulsion tube type	F74
Accelerator pump jet	0.0157 in (0.40 mm)
Needle valve seat	0.0591 in (1.50 mm)
Accelerator pump output (10 strokes)	2 to 3 cm <sup>3</sup>
Cold starting device	Automatic choke
Float level	1.4016 to 1.4213 in (35.6 to 36.1 mm)
CO level	2.5%

**Solex C32 TDI/4 carburettor (C, L and CL models)**

Venturi diameter	0.8465 in (21.5 mm)
Main jet	0.0453 in (1.15 mm)
Air correction jet	0.0768 in (1.95 mm)
Slow running jet	0.0177 in (0.45 mm)
Emulsion tube type	71
Accelerator pump jet	0.0177 in (0.45 mm)
Needle valve seat	0.0630 in (1.60 mm)
Accelerator pump output (10 strokes)	3 to 5 cm <sup>3</sup>
Cold starting device	Automatic choke
Float level	0.8661 to 0.9449 in (22.0 to 24.0 mm)
CO level	2.5%

**Weber 34 DMTR 47/250 carburettor (Sport models)**

	<b>Primary venturi</b>	<b>Secondary venturi</b>
Venturi diameter	0.8661 in (22.0 mm)	0.9449 in (24.0 mm)
Main jet	0.0421 in (1.07 mm)	0.0500 in (1.27 mm)
Air correction jet	0.0728 in (1.85 mm)	0.0866 in (2.20 mm)
Slow running jet	0.0177 in (0.45 mm)	0.0276 in (0.70 mm)
Slow running air bleed	0.0413 in (1.05 mm)	0.0276 in (0.70 mm)
Accelerator pump jet	0.0157 in (0.40 mm)	---
Needle valve seat	0.0689 in (1.75 mm)	
Accelerator pump output (10 strokes)	8.55 cm <sup>3</sup>	
Cold starting device	Manually operated strangler choke	
Float level	0.2657 to 0.2854 in (6.75 to 7.25 mm)	

**Fuel pump**

Output	75 litres/hr (16.5 gal/hr)
Actuating lever stroke (C, L and CL)	2.4 to 2.6 mm (0.0949 to 0.1024 in)
Actuating lever stroke (Sport)	2.4 to 2.9 mm (0.0949 to 0.1142 in)
Delivery pressure at 4000 engine rpm and fuel temp 30°C (86°F)	0.17 kgf/cm <sup>2</sup> (2.55 lbf/in <sup>2</sup> )

**Ignition system****Distributor**

Type and code	Magneti Marelli S155HX
Automatic centrifugal advance	25° ± 2° at 4500 rpm
Condenser capacity (50 to 1000 Hz)	0.20 to 0.25 µF

**Clutch**

Lining outer diameter	181.5 mm (7.146 in)
Lining inner diameter	127.0 mm (5.0 in)



**Maximum run-out of driven plate linings** 0.2 mm (0.008 in)

**Travel of release flange, corresponding to a pressure plate displacement of not less than 0.067 in ~1.7 mm)** 8.5 mm (0.3346 in)

### **Transmission**

#### **Synchromesh**

1st and 2nd, Borg-Warner baulk ring type, 3rd and 4th, Porsche spring ring type

#### **Gear ratios**

First	3.910 : 1
Second	2.055 : 1
Third	1.348 : 1
Fourth	0.963 : 1
Reverse	3.615 : 1

**Final drive ratio (C,L and CL)** 4.071 : 1 (14/57)

**Final drive ratio (Sport)** 4.462 : 1 (13/58)

#### **Overall ratios**

<b>Gears</b>	<b>1<sup>st</sup></b>	<b>2<sup>nd</sup></b>	<b>3<sup>rd</sup></b>	<b>4<sup>th</sup></b>	<b>Reverse</b>
C, L and CL	15.92	8.7	5.49	3.92	14.72
Sport	17.45	9.17	6.01	4.30	16.13

### **Electrical system**

#### **Alternator**

Type (C, L and CL)

Magneti Marelli AA 108-14V-33A

Type (Sport)

Lucas 18ACR-A4V-45A

Maximum output (approx)

570 watts

Maximum current (approx)

40 amps (C, L and CL)

50 amps (Sport)

Cut-in speed at 12V and 20°C (68°F)

1050 to 1150 rpm (C, L and CL)

1100 to 1200 rpm (Sport)

Field winding resistance across slip rings at 20°C (68°F)

3.4 to 3.8 ohms (C, L and CL)

3.18 to 3.22 ohms (Sport)

Direction of rotation (drive end)

Clockwise

Engine/alternator drive ratio

1.8 : 1

Alternator regulator (C, L and CL models)

Type

Magneti Marelli RTT 110 AB

Alternator speed for adjustment

6000 rpm

Current for thermal balance

20 amps

Regulating voltage

14.2 <sup>+0.3</sup><sub>-0.2</sub> volts

**Lamps**

Headlamps (C, L and CL)	40/45 watts
Headlamps (Sport)	55/60 watts (Halogen)
Brake and rear light	5/21 watts
Turn indicators	21 watts
Reversing lights	21 watts
Parking lights	5 watts
Number plate	5 watts
Courtesy light	5 watts
Boot light	5 watts
Turn repeaters	4 watts
Cigar lighter light	4 watts
Instrument panel	3 watts
Ignition warning	3 watts
Turn indicator warning	1.2 watts
Headlamp warning	1.2 watts
Coolant temperature warning (L models)	1.2 watts
Oil pressure warning	1.2 watts
Fuel warning	1.2 watts
Hazard warning	1.2 watts
Sidelamp (out) warning (Sport only)	3 watts
Brake warning (Sport only)	1.2 watts
Heated rear window warning (Sport only)	1.2 watts

**Fuses**

For fuse details (127 Special, L, C, CL and Sport) see Sections 23 or 24

**Steering and suspension (Sport only)****Steering angles**

Inner wheel	34° 50'
Outer wheel	32° 10'

**Front wheel alignment (toe setting)**

Laden	0.079 in (2.0 mm) toe-in to 0.079 in (2.0 mm) toe-out
Unladen	0.138 in (3.5 mm) to 0.217 in (5.5 mm) toe-in

**Roadwheels**

Size	4½ B x 13
Tyres	135 SR-13 or 155/70 SR-13

**All 1049 cc models**

	lbf ft	kgf m
Main bearing cap bolts	59	8.2
Engine mounting securing bolts	43	6
Cylinder head to block bolts and nuts:		
1 st stage	30	4.1
2nd stage	45	6.2
Final stage	61	8.5
Manifold to head nuts	20	2.8
Connecting rod big-end nuts	38	5.2
Flywheel to crankshaft bolts	61	8.5
Driven gear (Plastic) to camshaft retaining bolt	87	12
Driven gear (steel) to camshaft retaining bolt	87	12
Camshaft cap nuts	14	2