

***TECHNICAL SPECIFICATIONS
FOR
ALFA ROMEO GIULIETTA***

Franklin Edward Cunningham Jr.

The information contained within is given for use in research and readers enlightenment in making the many decisions available regarding the tuning and maintenance of the Alfa Giulietta car. The writer in no way makes any claim or assumes any responsibility, that any or all the inclosed data is completely accurate. Only reliable repair manuals for the Alfa Giulietta such as "GLENN'S" and recognized Alfa experts such as "Alfa Ricambi inc. and International Auto Parts, as well as your local Alfa professional, should be final word.

NOTICE

The information herein is true and complete to the best of our knowledge. All recommendations on parts or procedures are made with out guarantees on the part of this writer or publisher.

copyright

1996

INDEX

Introduction	4
Omitted	5
Omitted	6
Main data	
Main data	7
Overall dimensions	9
Weights	9
Performances	10
Capacities	12
Tires	13
Electrical equipment	14
Spark plugs	16
Ignition	17
Carburation	19
Torque wrench data	27
Dimensions	
Camshaft bearing and journals	29
Valve timing	30
Valve clearance	31
Valves and valve guides	33
Valve lift	35
Valve cups	35
Valve springs	35
Cylinder head	36
Connecting rods	37
Pistons and liners	38
Crankshaft	40
Clutch	42
Gear box	43
Propeller shaft	44
Rear axle	44
Front suspension	45
Rear suspension	48
Brakes	50
Tables and formulas	51
Production data	53
Historical references	57

The main base of information for this work is the factory Giulietta's work shop manual. Other follow-up work shop manuals and related articles that have differing information have been included as source of expert opinion. The non-factory data is referenced where necessary by a (*) or/and italicize print. The reader then, at his or her option may choose which limits to use or accept for the application at hand for the car or work in question. This is therefore an example of, in some cases, a diverse set of tolerances and possible limits. This writer does not claim to be an expert and therefore make an opinion on the "right and correct" set to use. It is my intent to report on the experts and by sorting and comparing the data at hand, attempts do one or two things. One, by side by side comparison, helps eliminate confusion caused by quoting conflicting "expert" specs' during bench racing secessions and two, give the reader the opportunity to see where historically work was done so that fine tuning on the car at hand can be made to obtain the best results.

The other goal was to develop a format so that the reader may witness the development of the different spec. engines and models. This should allow one to more appreciate the model changes as well as decode and decipher for oneself the various changes made by the factory and others in your cars past history. I have compiled this list from any and all references to the Giulietta that I could find. I however did not cover the special Giulietta's such as the Sprint Speciale (saving some limited references), or the Zagato models, as each is beyond the scope of this work and would be a study within its self.

Please note that this work is not intended to replace the fine and competent work shop manuals available but to serve as a study to compare the different expert sources and give the reader a base for making the correct choices for the specific car of his or her intent or focuses.

Pages 5 & 6 omitted

NOTES TO SPECIFICATIONS

1. All data shall refer to all models unless noted.
2. All data shall refer to 750 Series except where noted to be for 101 Series.

MAIN DATA

Number of cylinders		4		
Bore and stroke		74 X 75 mm		
Maximum rated H.P.				
	Spider Veloce @ 6000 RPM		90 H.P.	
	Sprint Veloce @ 6000 RPM		90 H.P.	
	Spider @ 6000 RPM		80 H.P.	
	Sprint @ 6000 RPM		80 H.P.	
	Berlina @ 5200 RPM		53 H.P.	
	t.i. @ 5500 RPM		65 H.P.	
Track				101*
	front	1286 mm	4' 2.5"	4' 2.9"
	rear	1270 mm	4' 2"	4' 2"
Wheel base				101*
	Spider Veloce	2200 mm	7' 3"	7' 4.6"
	Sprint Veloce	2200 mm	7' 10"	7' 9.7"
	Spider	2380 mm	7' 3"	7' 4.6"
	Sprint	2380 mm	7' 10"	7' 9.7"
	Berlina	2380 mm	7' 10"	
	t.i.	2380 mm	7' 10"	

*Data from sources other than factory shop manual

MAIN DATA

(cont.)

Minimum turning circle

Spider Veloce	9600 mm..31' 6"
Sprint Veloce	11000 mm..36' 1"
Spider	9600 mm..31' 6"
Sprint	11000 mm..36' 1"
Berlina	11000 mm..36' 1"
t.i.	11000 mm..36' 1"

Number of seats

Spider Veloce	2
Sprint Veloce	4
Spider	2
Sprint	4
Berlina	4
t.i.	4

Fuel Consumption per 100 km
(Italian C.U.N.A. Std. spec.)

Spider Veloce	11 liters.....2.419 gal.
Sprint Veloce	11.....2.419
Spider	9.....1.979
Sprint	9.....1.979
Berlina	8.31.825
t.i.	8.5 1.869

*****NOTES*****

WEIGHTS

Weight of car		750*	101*
Spider Veloce	830 kg.	1,903#	1,903#
Sprint Veloce	850 kg	1,996#	1,991#
Spider	830 kg	1,892#	1,892#
Sprint	850 kg	1,936#	1,991#
Berlina	880 kg	2,013#	
t.i.	880 kg		

OVERALL DIMENSIONS

Dimensions

	length	width	height
Spider Veloce	3,850mm 12' 7 7/32"	1,580mm 5' 2 1/4"	1,335mm w/ top 4' 4 1/2" 1,250mm w/o top 4' 1 1/4"
Sprint Veloce	3,980mm 13' 0 1/2"	1,535mm 5' 0 1/2"	1,320mm 4' 4"
Spider	3,850mm 12' 7 7/32"	1,580mm 5' 2 1/4"	1,335mm w/ top 4' 4 1/2" 1,250mm w/o top 4' 1 1/4"
Sprint	3,980mm 13' 0 1/2"	1,535mm 5' 0 1/2"	1,320mm 4' 4"
Berlina	3,990mm 13' 1"	1,555mm 5' 1/2"	1,405mm 4' 7 1/2"
t.i.	3,990mm 13' 1"	1,555mm 5' 1 1/4"	1,405mm 4' 7 1/2"

* Data compiled from sources other than factory shop manual.

PERFORMANCE

Speed

	1st gear	2nd gear	3rd gear	4th gear	reverse
Spider Veloce with Bev. dr. ratio 10/41	54 kph 34 mph	92 kph 57 mph	113 kph 84 mph	180 kph 112 mph	53 kph 33 mph
Sprint Veloce with Bev. dr. ratio 10/41	54 kph 34 mph	92 kph 57 mph	113 kph 84 mph	180 kph 112 mph	53 kph 33 mph
Spider with Bev. dr. ratio 9/41	48 kph 30 mph	82 kph 51 mph	118 kph 72 mph	165 kph 103 mph	49 kph 30.5 mph
Sprint with Bev. dr. ratio 9/41	48 kph 30 mph	82 kph 51 mph	118 kph 72 mph	165 kph 103 mph	49 kph 30.5 mph
Berlina with Bev. dr. ratio 9/41	42 kph 26 mph	72 kph 45 mph	104 kph 65 mph	140 kph 87 mph	41 kph 25 mph
t.i. with Bev. dr. ratio 9/41	47 kph 29 mph	79 kph 49 mph	114 kph 71 mph	155 kph 97 mph	46 kph 28.5 mph

*****NOTES*****

TECHNICAL SPECIFICATIONS FOR ALFA GIULIETTA

PERFORMANCE
(cont.)

Owners manual*, circ: 1958, list following performance figures a bit different than the above figures from the shop manual.

	1st gear	2nd gear	3rd gear	4th gear	reverse
Sprint Veloce with Bev. dr. ratio 10/41	54 kph 34 mph	92 kph 57 mph	113 kph 83 mph	180 kph 112 mph	53 kph 33 mph
Spider with Bev. dr. ratio 9/41	48 kph 30 mph	82 kph 51 mph	118 kph 72 mph	155 kph 96 mph	47 kph 29 mph
Sprint with Bev. dr. ratio 9/41	48 kph 30 mph	82 kph 51 mph	118 kph 72 mph	160 kpm 100 mph	47 kph 29 mph
Berlina with Bev. dr. ratio 9/41	42 kph 26 mph	70 kph 44 mph	100 kph 62 mph	135 kph 84 mph	40 kph 25 mph

"Road & Track" reported in April 1956 on a Giulietta Spider with a column mounted shifter. The 0 to 60 mph time was 14.8 sec. and 1/4 mile at 20.0 sec. at 70 mph.

*****NOTES*****

TECHNICAL SPECIFICATIONS FOR ALFA GIULIETTA

CAPACITIES

To 1961

OIL

	ENGINE	GEARBOX	REAR AXLE	STEERING BOX
Spider Veloce	13 pts	2.6 pts	2.6 pts	0.5 pts
Sprint Veloce	13 pts	2.6 pts	2.6 pts	0.5 pts
Spider	12 pts	2.8 pts	2.6 pts	0.5 pts

Sprint	12 pts	2.8 pts	2.6 pts	0.5 pts
Berlina	11.5 pts.	2.8 pts	2.6 pts	0.5 pts
t.i.	11.5 pts.	2.8 pts	2.6 pts	0.5 pts

After 1961				
Spider Veloce	13 pts	3.8 pts	3.0 pts	0.5 pts
Sprint Veloce	13 pts	3.8 pts	3.0 pts	0.5 pts
Spider	12 pts	3.8 pts	3.0 pts	0.5pts
Sprint	12 pts	3.8 pts	3.0 pts	0.5 pts
Berlina	11.5 pts.	2.8 pts	3.0 pts	0.5 pts
t.i.	11.5 pts.	2.8 pts	3.0 pts	0.5 pts

Water 7.5 liters 15.8 pints

Fuel tank capacity

Spider Veloce	80 liters	21 gal.
Sprint Veloce	80 liters	21 gal.
Spider	53 liters	14 gal.
Sprint	53 liters	14 gal.
Berlina	40 liters	10.5 gal.
t.i.	40 liters	10.5 gal.

*****NOTES*****

TIRES

155 x 15

	Pirelli Cinturato		Michelin X	
	front	rear (psi)	front	rear (psi)
Spider Veloce	21	22.5 (3)		
	24	25.2 (4)		

	26.8	28	(5)			
Sprint Veloce	21	22.5	(3)			
	24	25.2	(4)			
	26.8	28	(5)			
Spider	21	22.5		19.5	21	
Sprint	21	22.5		19.5	21	
Berlina	19.5	21	(1)	18.2	19.5	
	21	22.5	(2)			
t.i.	21	22.5	(1)	19.5	21	(1)
	22.5	24	(2)			

(1) For touring use and small loads: (2) For sports use and full loads: (3) For road use, up to 100 mph:
(4) For road use, over 100 mph: (5) For race track use.

*****NOTES*****

14 TECHNICAL SPECIFICATIONS FOR ALFA GIULIETTA

ELECTRICAL EQUIPMENT

	MARELLI	LUCAS	BOSH*
Generator	DN 44 A	C 39 PV 2	
Control box	IR 32 A IR 32 B	RB 106/1	
Starter motor	MT 35 E	M 325 BZ 1	AL/EDD 0.5/12R*
	MT 40 B	M 325 BZ 2	
Distributor	S 71 B	DM 2	
Coil	B 17 A	LA 12-B 12/1 45058*	
Battery			
Spider Veloce	30 A/h	Sprint	30 A/h
Sprint Veloce	30 A/h	Berlina	38 A/h
Spider	30 A/H	t.i.	38 A/h

38 A/H, Marelli 6VB7*

Stater motor:*

Lucas*
M325

Marelli*
MT40B

<i>brush spring tension (gr)</i>	28-32	19-25
<i>free running:</i>		
<i>max. amps</i>	50	25
<i>min. RPM</i>	10,000	11,000
<i>mim volts</i>	-	11.6
<i>resistance test:</i>		
<i>max. amps.</i>	250	100
<i>min. volts</i>	8.5	10
<i>torque (M/Kg)</i>	.65	.15
<i>RPM</i>	1,000	3,350
<i>lock test:</i>		
<i>Max amps.</i>	350	300
<i>min. volts</i>	7.25	7.0
<i>Torque (M/kg)</i>	1.11	.75

* Data compiled from source other than factory manual

15

TECHNICAL SPECIFICATIONS FOR ALFA GIULIETTA

ELECTRICAL EQUIPMENT

(cont.)

<i>Generator:*</i>	<i>Lucas*</i> C39PV2	<i>Marelli*</i> DN44A DN44C DN44E
<i>Brush spring tension (gr)</i>	567-708	400-500
<i>Field amperes @ 12 volts</i>	-	5
<i>resistance</i>	6.1	-
<i>Control Box*</i>	<i>Lucas*</i> RB106/2	<i>Marelli*</i> IR32A IR32 B
<i>Cutout relay cut-in voltage</i>	12.7-13.3	11.0-12.5
<i>reverse current</i>	3.5-5.0	2.0-7.5
<i>current regulator amps. under load)</i>	-	20
<i>voltage regulators (voltage on open circuit)</i>	15.6-16.2	15.1-16.0
<i>watts</i>	-	250

* Data compiled from source other than factory manual

16

TECHNICAL SPECIFICATIONS FOR ALFA GIULIETTA

SPARKING PLUGS

	PLUG TYPE	ELECTRODE GAP
Spider Veloce	Marelli CBW 1000 B	0.5mm to 0.55mm
	Lodge RL 47	0.38mm to 0.46mm
	Lodge 2 HLN	0.55mm to 0.65mm
	<i>Lodge HLM*</i>	
	<i>Ch. N5*</i>	
	<i>Ch. N3*</i>	<i>0.55mm to 0.65mm</i>
Sprint Veloce	Marelli CBW 1000 B	0.5mm to 0.55mm
	Lodge RL 47	0.38mm to 0.46mm
	Lodge 2 HLN	0.55mm to 0.65mm
	<i>ChNA12*</i>	<i>0.38mm to 0.46mm</i>
Spider	Marelli CW 225 G	0.6mm to 0.7mm
	Lodge HLM	0.5mm to 0.6mm
	<i>Ch. N3</i>	<i>0.55mm to 0.65mm</i>
Sprint	Marelli CW 225 G	0.6mm to 0.7mm
	Lodge HLM	0.5mm to 0.6mm
	<i>Ch. N3 *</i>	<i>0.55mm to 0.65mm</i>
Berlina	Marelli CW 225 G	0.6mm to 0.7mm
	Lodge HLM	0.5mm to 0.6mm
	<i>Ch. N5*</i>	<i>0.5mm to 0.6mm</i>
t.i.	Marelli CW 225 G	0.6mm to 0.7mm
	Lodge HLM	0.5mm to 0.6mm
	<i>Ch. N5*</i>	<i>0.5mm to 0.6mm</i>

* Data compiled from source other than factory shop manual.

IGNITION

Firing order 1, 3, 4, 2

Point gap 0.35 mm to 0.40 mm

Fixed advance

Spider Veloce	5 degrees to 8 degrees
Sprint Veloce	5 degrees to 8 degrees
Spider	8 degrees
Sprint	8 degrees
Berlina	8 degrees
t.i.	8 degrees

Maximum advance at 5,000 to 5,200 RPM

Spider Veloce	46 to 48 degrees	(43 to 49 degrees) *
Sprint Veloce	46 to 48 degrees	(43 to 49 degrees) *
Spider	44 degrees	(40 to 46 degrees) *
Sprint	44 degrees	(40 to 46 degrees) *
Berlina	44 degrees	(40 to 46 degrees) *
t.i.	44 degrees	(40 to 46 degrees) *

Distributor

	<i>distributor*</i>	<i>point gap*</i>	<i>dwell*</i>
<i>Spider Veloce & Sprint Veloce</i>	<i>Marelli S73A</i>	<i>.42 to .48 mm</i>	
	<i>Marelli S73A</i>	<i>.42 to .48 mm</i>	
	<i>Marelli S73A</i>	<i>.37 to .48 mm</i>	<i>60 deg.</i>
	<i>Bosh 0231 112 060</i>	<i>.35-.40mm</i>	<i>65 deg.</i>
<i>Spider & Sprint</i>	<i>Lucas 40649A</i>	<i>.35 to .40 mm</i>	
	<i>Lucas 40431K</i>	<i>.35 to .40 mm</i>	
	<i>Lucas DM-2</i>	<i>.35 to .40 mm</i>	<i>60 deg.</i>
	<i>Bosh 0231 112 060</i>		
<i>Sprint</i>	<i>Marelli S71B</i>	<i>.37 to .38 mm</i>	<i>60 deg.</i>
<i>Berlina</i>	<i>Marelli S71B</i>	<i>.42 to .48 mm</i>	
<i>t.i.</i>	<i>Marelli S71B</i>	<i>.42 to .48 mm</i>	

* Data compiled from sources other than factory shop manual.

TECHNICAL SPECIFICATIONS FOR ALFA GIULIETTA

IGNITION
(cont.)

	<i>distributor*</i>	<i>pt spring* tension</i>	<i>condenser* capacity</i>	<i>advance* deg - RPM</i>
<i>Spider Veloce</i>	<i>Marelli S73A</i>	<i>26-30 oz</i>	<i>.25 Mfds.</i>	<i>18.5 @ 2650</i>
<i>Sprint Veloce</i>	<i>Marelli S73A</i>	<i>26-30 oz</i>	<i>.25 Mfds.</i>	<i>18.5 @ 2650</i>
<i>Spider & Sprint</i>	<i>Lucas 40649A Lucas 40431K</i>	<i>18-24 oz 18-24 oz</i>	<i>.18-.25 Mfds. .18-.25 Mfds.</i>	<i>19 @ 3000 18 @ 3000</i>
<i>Berlina</i>	<i>Marelli S71B</i>	<i>18-21 oz</i>	<i>.25 Mfds.</i>	<i>18 @ 2500</i>
<i>t.i.</i>	<i>Marelli S71B</i>	<i>18-21 oz</i>	<i>.25 Mfds.</i>	<i>18 @ 2500</i>

* Data compiled from sources other than factory shop manual.

*****NOTES*****

TECHNICAL SPECIFICATIONS FOR ALFA GIULIETTA

CARBURATION

Spider Veloce

CARBURETOR MODEL	Weber 40 DC 03
Choke	28 mm
Main jet	1.10 winter 1.05 summer
Idling jet	0.50
Emulsioner air jet	1.90
Idling air jet	1.75
Accelerator pump jet	0.40
Accelerator pump outlet jet	1.50

Sprint Veloce

CARBURETTOR MODEL	Weber 40 DC 03
Choke	28 mm
Main jet	1.10 winter; 1.05 summer
Idling jet	0.50
Emulsioner air jet	1.90
Idling air jet	1.75
Accelerator pump jet	0.40
Accelerator pump outlet jet	1.50

Spider

CARBURETTER MODEL	Solex 35 APAI-G
Choke No. 1	24 mm
Main jet	1.20
Idling jet	0.40
Emulsioner air jet	1.50
Idling air jet	1.00
Starter jet	1.60
Accelerator pump jet	0.60
Choke No. 2	24 mm
Main jet	1.50
Emulsioner air jet	1.90

20

TECHNICAL SPECIFICATIONS FOR ALFA GIULIETTA

CARBURATION (cont.)

Sprint (fitted to the first 1,000 Giulietta Sprint cars)

CARBURETOR MODEL	Solex 32 PAIAT
Choke No. 1	22 mm
Main jet	1.15
Idling jet	0.45
Emulsioner air jet	2.00
Idling air jet	1.00
Starter jet	1.50
Accelerator pump jet	0.45
Choke No. 2	23 mm
Main jet	1.35
Emulsioner air jet	1.10

Sprint (fitted to Giulietta Sprint cars after the first 1,000)

CARBURETOR MODEL	Solex 35 APIA-G
Choke No. 1	24 mm
Main jet	1.20
Idling jet	0.40
Emulsioner air jet	1.50
Idling air jet	1.00
Starter jet	1.60
Accelerator pump jet	0.60
Choke No. 2	24 mm
Main jet	1.50
Emulsioner air jet	1.40

Berlina

CARBURETOR MODEL	Solex 32 BIC
Choke	21 mm
Main jet	1.05
Idling jet	0.40
Emulsioner air jet	1.60
Idling air jet	1.00
Starter jet	1.30

21

TECHNICAL SPECIFICATIONS FOR ALFA GIULIETTA

CARBURATION (cont.)

t.i.

CARBURETOR MODEL	Solex 35-APAI-G
Choke No. 1	24 mm
Main jet	1.30
Idling jet	0.40
Emulsioner air jet	1.80
Idling air jet	1.80
Starter jet	1.60
Accelerator pump jet	0.60
Choke No. 2	24 mm
Main jet	1.55
Emulsioner air jet	1.10

CARBURATION*SPIDER VELOCE
SPRINT VELOCE

	<i>note 1.*</i>	<i>note 2*.</i>	<i>note 3.*</i>
CARBURETTER MODEL	<i>Weber 40DCOE2</i>	<i>Weber 40DCOE</i>	<i>Weber 40DCOE</i>
<i>Choke</i>	<i>29 mm</i>	<i>30 mm</i>	<i>32 mm</i>
<i>Main jet</i>	<i>1.10</i>	<i>1.20</i>	<i>1.30</i>
<i>Idling jet</i>	<i>F11/.50</i>	<i>F11/.50</i>	<i>F11/.50</i>
<i>Emulsion air jet</i>	<i>F16</i>	<i>F16</i>	<i>F16</i>
<i>Accelerator pump jet</i>	<i>0.35</i>	<i>.50</i>	<i>.50</i>
<i>Air correct jet</i>	<i>2.00</i>	<i>1.50</i>	<i>1.50</i>
<i>Needle valve seat</i>	<i>1.50</i>	<i>1.50</i>	<i>1.50</i>
<i>Float Ht.</i>	<i>8.5 mm</i>		
<i>Drop</i>	<i>15 mm</i>		
<i>Wt.</i>	<i>26 gr.</i>		
<i>Aux. venturi</i>	<i>4.50 mm</i>	<i>4.50 mm</i>	<i>4.50 mm</i>
<i>Starting jet</i>	<i>F5/.60</i>	<i>F5/.60</i>	<i>F5/.60</i>
<i>Return hole @ pump check valve</i>	<i>.70 mm</i>		
<i>Accelerator pump bypass</i>	<i>.50</i>		

NOTE: For maximum acceleration recommend factory settings.

*note 1. Street tune: compiled variations from factory settings.**

*note 2. Fair acceleration. Improved high speed performance.**

*note 3. Poor acceleration. Best for high speed performance, on long courses.**

* Data compiled from sources other than factory manual.

CARBURATION*SPIDER VELOCE
SPRINT VELOCE

	<i>note 1.*</i>	<i>note 2.*</i>	<i>note 3.*</i>
<i>CARBURETTER MODEL</i>	<i>Weber 40DC03</i>	<i>Weber 40DC03</i>	<i>Weber 40DC03</i>
<i>Choke</i>	<i>28 mm</i>	<i>30 mm</i>	<i>32 mm</i>
<i>Main jet</i>	<i>1.05</i>	<i>1.10</i>	<i>1.25</i>
<i>Idling jet</i>	<i>0.50</i>	<i>F11/.50</i>	<i>F11/.50</i>
<i>Emulsion air jet</i>	<i>1.90</i>	<i>TS1211**</i>	<i>TS1211**</i>
<i>Idling air jet</i>	<i>1.75</i>	<i>1.70</i>	<i>1.50</i>
<i>Accelerator pump jet</i>	<i>0.40</i>	<i>.45</i>	<i>.40</i>
<i>Accelerator pump outlet jet</i>	<i>1.50</i>		
<i>Air correct jet</i>	<i>1.90</i>	<i>1.70</i>	<i>1.50</i>
<i>Needle valve seat</i>	<i>1.75</i>	<i>1.75</i>	<i>1.75</i>
<i>Aux. venturi</i>	<i>4.50 mm</i>	<i>4.50 mm</i>	<i>4.50 mm</i>

NOTE: for max. acceleration use factory setting.

note 1. Variation on factory settings.

note 2. Fair acceleration. Improved high speed performance over factory setting.

note 3. Poor acceleration. Best high speed performance, for long courses.

*** 1.5 mm center hole in emulsion tube.*

** Data compiled from sources other than factory shop manual.*

CARBURATION*

Spider

	<i>note 1.*</i>	<i>note 2.*</i>	<i>note 3.*</i>	<i>note 4.*</i>
CARBURETTER MODEL	35APAIG	35APAIG	35APAIG	35APAIG
<i>Choke No. 1</i>	<i>24 mm</i>	<i>22 mm</i>	<i>24 mm</i>	<i>25 mm</i>
<i>Main jet</i>	<i>1.15</i>	<i>1.10</i>	<i>1.30</i>	<i>1.35</i>
<i>Idling jet</i>	<i>0.40</i>	<i>0.40</i>	<i>0.40</i>	<i>0.40</i>
<i>Emulsion air jet</i>	<i>1.50</i>	<i>1.80</i>	<i>1.80</i>	<i>1.80</i>
<i>Idling air jet</i>	<i>1.00</i>	<i>1.00</i>	<i>1.00</i>	<i>1.00</i>
<i>Starter jet</i>	<i>1.60</i>	<i>1.60</i>	<i>1.60</i>	<i>1.60</i>
<i>Accelerator pump jet</i>	<i>.60</i>	<i>.60</i>	<i>.60</i>	<i>.60</i>
<i>Choke No. 2</i>	<i>24 mm</i>	<i>25 mm</i>	<i>24 mm</i>	<i>27 mm</i>
<i>Main jet</i>	<i>1.60</i>	<i>1.55</i>	<i>1.55</i>	<i>1.50</i>
<i>Emulsioner air jet</i>	<i>1.60</i>	<i>1.10</i>	<i>1.10</i>	<i>1.70</i>
<i>Counter weight, incl. screws & washers; no bracket.</i>	<i>27 to 29 grams</i>	<i>58 to 60 grams</i>	<i>39 to 41 grams</i>	<i>25 to 27 grams</i>

note 1. Variation on factory setting.
note 2. Early Giulietta factory setting
note 3. Improved performance
note 4. Maximum power.

* Data compiled from sources other than factory shop manual.

CARBURATION*

SPRINT

	<i>note 1.</i>	<i>note 2</i>	<i>note 3.</i>	<i>note 4.</i>
CARBURETTER MODEL	35APAIG	35APAIG	35APAIG	35APAIG
<i>Choke No. 1</i>	<i>24 mm</i>	<i>22 mm</i>	<i>24 mm</i>	<i>25 mm</i>
<i>Main jet</i>	<i>1.15</i>	<i>1.10</i>	<i>1.30</i>	<i>1.35</i>
<i>Idling jet</i>	<i>0.40</i>	<i>0.40</i>	<i>0.40</i>	<i>0.40</i>
<i>Emulsion air jet</i>	<i>1.50</i>	<i>1.80</i>	<i>1.80</i>	<i>1.80</i>
<i>Idling air jet</i>	<i>1.00</i>	<i>1.00</i>	<i>1.00</i>	<i>1.00</i>
<i>Starter jet</i>	<i>1.60</i>	<i>1.60</i>	<i>1.60</i>	<i>1.60</i>
<i>Accelerator pump jet</i>	<i>.60</i>	<i>.60</i>	<i>.60</i>	<i>.60</i>
<i>Choke No. 2</i>	<i>24 mm</i>	<i>25 mm</i>	<i>24 mm</i>	<i>27 mm</i>
<i>Main jet</i>	<i>1.60</i>	<i>1.55</i>	<i>1.55</i>	<i>1.80</i>
<i>Emulsion air jet</i>	<i>1.60</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>
<i>Counter weight, incl. screw & washers, no bracket.</i>		<i>58 to 60 grams</i>	<i>39 to 41 grams</i>	<i>25 to 27 grams</i>

*note 1. Variation on factory setting.**note 2. Early Giulietta factory setting.**note 3. Improved performance.**note 4. Maximum power.*

* Data compiled from sources other than factory shop manual.

*****NOTES*****

CARBURATION*

*The Webber 36 DCLD3 was recommended best up-grade in 1960's for replacing the factory installed Solex.**

SPIDER
&
SPRINT

	<i>note 1.*</i>	<i>note 2.*</i>	<i>note 3.*</i>
<i>CARBURETTER MODEL</i>	<i>Webber 36 DCLD3</i>	<i>Webber 36 DCLD3</i>	<i>Webber 36 DCLD3</i>
<i>Venturi</i>	<i>24 MM</i>	<i>26 mm</i>	<i>24 mm</i>
<i>Aux. venturi</i>	<i>4.50</i>	<i>4.50</i>	<i>4.50</i>
<i>Main jet</i>	<i>1.30</i>	<i>1.45</i>	<i>1.25</i>
<i>Idle jet</i>	<i>.50</i>	<i>.55</i>	<i>.50</i>
<i>Pump jet</i>	<i>.60</i>	<i>.50</i>	<i>.60</i>
<i>Emulsion tube</i>	<i>F13</i>	<i>F8</i>	<i>F13</i>
<i>Air correction jet</i>	<i>2.10</i>	<i>2.00</i>	<i>1.90</i>
<i>Needle valve</i>	<i>1.70</i>	<i>1.75</i>	<i>1.75</i>
<i>secondary Venturi</i>	<i>24 mm</i>	<i>27 mm</i>	<i>24 mm</i>
<i>secondary Aux. venturi</i>	<i>4.50</i>	<i>4.50</i>	<i>4.50</i>
<i>secondary main jet</i>	<i>1.30</i>	<i>1.5</i>	<i>1.30</i>
<i>secondary emulsion tube</i>	<i>F13</i>	<i>F8</i>	<i>F13</i>
<i>secondary air correction jet</i>	<i>1.50</i>	<i>1.80</i>	<i>2.10</i>
<i>Pump stroke</i>		<i>3 mm</i>	<i>3 mm</i>

note 1. Street driving.

note 2. High speed driving and racing.

note 3. Maximum acceleration and power.

* Data compiled from sources other than factory shop manual.

TORQUE WRENCH DATA

Cylinder-head nuts after 1961	6.0 to 6.5 kgm 5.4 to 5.6 kgm*
Crankshaft bearing cap nuts after 1961	3.0 to 3.25 kgm 3.2 to 3.5 kgm*
Camshaft caps	2.0 to 2.5 kgm*
Sparking plugs	2.5 to 3.5 kgm*
Con-rod big-end nuts	
Spider Veloce	3.9 to 4.1 kgm
Sprint Veloce	3.9 to 4.1 kgm
above after 1961	3.6 to 3.9 kgm*
Spider	3.7 to 4.0 kgm
Sprint	3.7 to 4.0 kgm
Berlina	3.0 to 3.25 kgm
t.i.	3.0 to 3.25 kg*
t.i after 1961	3.4 to 3.6 kgm*

*Other Torque Data**

	<i>normal</i>	<i>750/101 Veloce</i>
<i>Engine</i>		
<i>Cylinder-head nuts</i>		
<i>w/oil</i>		
<i>cold</i>	42 ft#	42 ft#
<i>hot</i>	45 ft#	45 ft#
<i>Cam bearing</i>		
<i>cap nut w/oil</i>	14 ft#	14 ft#
<i>cam cover w/oil</i>	12 ft#	12 ft#
<i>spark plug w/oil</i>	18-25 ft#	18-25 ft#
<i>main bearing</i>		
<i>cap nut w/oil</i>	25 ft#	25 ft#
<i>rod bearing w/oil</i>	26 ft#	29 ft#
<i>flywheel bolts</i>	33 ft#	33 ft#
<i>clutch bolts (dry)</i>	18 ft#	18 ft#

* Data compiled from sources other than factory shop manual.

TORQUE WRENCH DATA
(cont.)

*Split case gear box (all)**

<i>front bell housing nuts</i>	<i>32 ft#</i>
<i>case nuts/bolts</i>	<i>13 ft#</i>
<i>rear cover nuts</i>	<i>15 ft#</i>
<i>layshaft nuts</i>	<i>58 ft#</i>
<i>main shaft yoke nut</i>	<i>87 ft#</i>
<i>input shaft nut</i>	<i>87 ft#</i>

STANDARD BOLT AND NUT TIGHTENING TORQUE*

<i>DI.</i> <i>mm</i>	<i>PITCH</i> <i>mm</i>	<i>6T</i>		<i>8T</i>	
		<i>m-kg</i>	<i>ft-lb</i>	<i>m-kg</i>	<i>ft-lb</i>
6	1	.07-1.0	5.0-7.2	0.8-1.2	5.8-8.8
8	1.25	1.6-2.3	12-17	1.8-2.7	13-20
10	1.25	3.2-4.7	23-34	3.7-5.5	27-40
12	1.5	5.6-8.2	41-59	6.4-9.5	46-69
14	1.5	7.7-10.5	56-76	10-14	75-101
16	1.5	12-16	85-116	16-22	115-156
18	1.5	17-23	123-166	23-31	163-221

* Data compiled from sources other than factory shop manual.

*****NOTES*****

DIMENSIONS

Note: unless noted values given are common to all types.

CAM-SHAFT BEARING AND JOURNAL

Cam-shaft journal diameter	26.959 to 26,980 mm
Cam-shaft journal seat diameter	27.000 to 27.021 mm
Clearance between cam-shaft journal and seat	
new	0.020 to 0.062 mm
maximum wear	0.10 mm
Axial-play between cam-shaft and thrust bearing	0.10 mm

*Camshaft type**

<i>Spider Veloce</i>	<i>10106 03200 00*</i>
<i>Sprint Veloce</i>	<i>10106 03200 00*</i>
<i>Spider</i>	<i>10100 03200 00*</i>
<i>Sprint</i>	<i>10100 03200 00*</i>
<i>Berlina</i>	<i>10100 03200 00*</i>
<i>t.i.</i>	<i>10100 03200 00*</i>
<i>S.S.</i>	<i>10106 03200 00*</i>

* Data compiled from source other than factory shop manual.

*****NOTES*****

DISTRIBUTION

VALVE TIMING

	inlet starts opening	inlet finish closing	exhaust starts opening	exhaust finish closing
	B.T.D.C	A.T.D.C.	B.T.D.C.	A.T.D.C
(degrees)				
Spider Veloce	34	63	63	30
Sprint Veloce	34	63	63	30
Spider	22	65	55	12
Sprint	22	65	55	12
Berlina	22	65	55	12
t.i.	22	65	55	12

For camshafts marked between first and second cam lobes by a circle with a cross in the center, use the following:

	B.T.D.C	A.T.D.C.	B.T.D.C.	A.T.D.C
Spider	25 deg 20 min	68 deg	61 deg 20 min	18 deg 40 min
Sprint	25 deg 20 min	68 deg	61 deg 20 min	18 deg 40 min
Berlina	25 deg 20 min	68 deg	61 deg 20 min	18 deg 40 min
t.i.	25 deg 20 min	68 deg	61 deg 20 min	18 deg 40 min

VALVE CLEARANCE

Cold, new valves:

	Inlet		Exhaust	
	mim.	max.	min.	max.
Spider Veloce	0.375mm	0.40mm	0.535mm	0.56mm
Sprint Veloce	0.375mm	0.40mm	0.535mm	0.56mm
Spider	0.425mm	0.45mm	0.475mm	0.50mm
Sprint	0.425mm	0.45mm	0.475mm	0.50mm
Berlina	0.425mm	0.45mm	0.475mm	0.50mm
t.i.	0.425mm	0.45mm	0.475mm	0.50mm

For camshafts marked between first and second cam lobes by a circle with a cross in the center, use the following.

Cold, new valves:

	Inlet		Exhaust	
	mim.	max.	min.	max.
Spider	0.475mm	0.50mm	0.525mm	0.55mm
Sprint	0.475mm	0.50mm	0.525mm	0.55mm
Berlina	0.475mm	0.50mm	0.525mm	0.55mm
t.i.	0.475mm	0.50mm	0.525mm	0.55mm

*****NOTES*****

VALVE CLEARANCE

(cont.)

Cold, valves worn to maximum:

	Inlet		Exhaust	
	min.	max.	min.	max.
Spider Veloce	0.35mm	0.425mm	0.51mm	0.585mm
Sprint Veloce	0.35mm	0.425mm	0.51mm	0.585mm
Spider	0.4mm	0.475mm	0.45mm	0.525mm
Sprint	0.4mm	0.475mm	0.45mm	0.525mm
Berlina	0.4mm	0.475mm	0.45mm	0.525mm
t.i.	0.4mm	0.475mm	0.45mm	0.525mm

For camshafts marked between first and second cam lobes by a circle with a cross in the center, use the following:

Spider	0.45mm	0.525mm	0.5mm	0.575mm
Sprint	0.45mm	0.525mm	0.5mm	0.575mm
Berlina	0.45mm	0.525mm	0.5mm	0.575mm
t.i.	0.45mm	0.525mm	0.5mm	0.575mm

*****NOTES*****

VALVES AND VALVE GUIDES

Valves

diameter		
inlet		37 mm
exhaust		34 mm
stem diameter		
inlet		7.976 to 8.001 mm
exhaust		7.950 to 7.976 mm
total length		
inlet		97.75 mm
exhaust		96.85 mm

Valve guides

I.D. when fitted		8.014 to 8.026 mm
O.D. when fitted		13.028 to 13.039 mm

clearance at guide to valve stem when fitted

new, fitted	inlet	0.013 to 0.050 mm
	exhaust	0.038 to 0.076 mm
maximum wear	inlet	0.10 mm
	exhaust	0.13 mm

Valve guide I.D. at cylinder head		13.000 to 13.011 mm
-----------------------------------	--	---------------------

interference fit between valve guide O.D. and I. D. at head		0.017 to 0.39 mm
---	--	------------------

VALVES AND VALVE GUIDES

(cont.)

Dimensions given in inches:

<i>Valves*</i>	<i>750*</i>	<i>101*</i>
<i>diameter</i>		
<i>inlet*</i>	<i>1.463"</i>	<i>1.463"</i>
<i>exhaust*</i>	<i>1.344"</i>	<i>1.344"</i>
<i>stem diameter</i>		
<i>inlet*</i>	<i>.3140 to .3150"</i>	<i>.3528 to .3538"</i>
<i>exhaust*</i>	<i>.3130 to .3140"</i>	<i>.3518 to .3520"</i>
<i>total length</i>		
<i>inlet*</i>	<i>3.848"</i>	<i>4.291"</i>
<i>exhaust*</i>	<i>3.813"</i>	<i>4.274"</i>
 <i>clearance at guide to valve stem when fitted</i>		
<i>new, fitted</i>		
<i>inlet*</i>	<i>.0005 to .0020"</i>	<i>.0005 to .0021"</i>
<i>exhaust*</i>	<i>.0015 to .0030"</i>	<i>.0016 to .0031"</i>
 <i>Valve guide *</i>		
<i>O.D.*</i>	<i>.5129 to .5133"</i>	<i>.5525 to .5529"</i>
<i>I.D. installed*</i>	<i>.3155 to .3160"</i>	<i>.3543 to .3549"(int)</i>
<i>(1300 & 1600 GTA)*</i>		<i>.3346 to .3352"(ex.)</i>
<i>bore di. in head*</i>	<i>.5118 to .5122"</i>	<i>.5508 to .5519"</i>
<i>interference*</i>		
<i>guide to head</i>	<i>.0007 to .0015"</i>	<i>.0007 to .0021"</i>

* Data compiled from source other than factory manual.

VALVE LIFT

Valve lift

Spider Veloce	8.5 mm
Sprint Veloce	8.5 mm
Spider	8.0 mm
Sprint	8.0 mm
Berlina	8.0 mm
t.i.	8.0 mm

VALVE CUPS

Valve cups

Cup diameter	standard	32.479 to 32.495 mm
	enlarged	32.679 to 32.695 mm
cup seat diameter	standard	32.500 to 32.516 mm
	enlarged	32.700 to 32.716 mm
play, assembled, new		0.005 to 0.037 mm
play at maximum wear		0.06 mm

VALVE SPRINGS

valve springs

outer spring

free length	43.0 to 44.6 mm
compressed length at load of 24 to 25 kg.	22.5 mm

inner spring

free length	39.35 to 40.95 mm
compressed length at load of 14 to 15 kg	21.0 mm

CYLINDER HEAD

CYLINDER HEAD

head height

Spider Veloce	101.5 mm
Sprint Veloce	101.5 mm
Spider	103 mm
Sprint	103 mm
Berlina	103 mm
t.i.	103 mm

*head height**

750

101

*Spider Veloce**

3.995"

4.350"

*Sprint Veloce**

3.995"

4.350"

*Spider**

4.055"

4.410"

*Sprint**

4.055"

4.410"

*Minimum clearance between piston and valve.***intake**.070"**exhaust**.075"*

* Data compiled from source other than factory manual.

*****NOTES*****

CONNECTING RODS

Length of connecting rod		132.955 to 133.045 mm
Internal diameter of small-end bearing		20.005 to 20.015 mm
Clearance between small-end bearing bore and gudgeon pins:	prescribed	0.005 to 0.020
	max. wear	0.05
Diameter of bearing seats		48.658 to 48.671 mm
Bearing thickness	standard	1.822 to 1.829 mm
	1st re-grind	1.949 to 1.956 mm
	2nd re-grind	2.076 to 2.083 mm
	3rd re-grind	2.203 to 2.210 mm
Radial clearance between pins and bearings		0.025 mm to 0.064 mm
Axial clearance between con-rod & crank		0.20 to 0.30 mm

*****NOTES*****

PISTON & LINERS

Cylinder liner, standard diameter* 74.00 to 74.019 mm

Ovality

new liner (tolerance)	0.014 mm
worn liner (maximum limit)	0.050 mm

Liner projection beyond the cylinder block 0.000 to 0.06 mm

Piston *

Standard diameter (measured at 11 mm from bottom edge of skirt)

Spider Veloce	73.835 to 73.865 mm
Sprint Veloce	73.835 to 73.865 mm
Spider	73.925 to 73.955 mm
Sprint	73.925 to 73.955 mm
Berlina	73.935 to 73.965 mm

Clearance between cylinder liner and piston *

	Prescribed, when coupled	at maximum wear
Spider Veloce	0.14 to 0.159 mm	0.18 mm
Sprint Veloce	0.14 to 0.159 mm	0,18 mm
Spider	0.05 to 0.069 mm	0.12 mm
Sprint	0.05 to 0.069 mm	0.12 mm
Berlina	0.04 to 0.059 mm	0.12 mm

Compression and oil scraper rings:

standard diameter. 74.00 mm

Clearance between the ends of compression or oil scraper rings (when rings are placed inside liner)

compression	0.30 to 0.45 mm
oil scraper	0.25 to 0.40 mm
max. wear	1.0 mm

* NOTE

The dimensions stated for the pistons and liners are the maximum limits. When assembling, mix and match pistons and liners so as to ensure the prescribed amount of clearance.

PISTON & LINERS
(cont.)

Thickness of rings

compression	1.972 to 1.984 mm
oil scraper	3.958 to 3.970 mm

Axial play between seats and rings

compression	0.041 to 0.068 mm
oil scraper	0.045 to 0.072 mm
max. wear	0.10 mm

Diameter of piston pins

19.994 to 20.000 mm

Diameter of piston pin bore

20.000 to 20.003 mm

Clearance between piston-pin and piston-pin bore

prescribed	0.000 to 0.008 mm
maximum wear	0.004 mm

* NOTE

The dimensions stated for the pistons and liners are the maximum limits. When assembling, mix and match pistons and liners so as to ensure the prescribed amount of clearance.

*****NOTES*****

CRANKSHAFT

standard	1st re-grind	2nd re-grind	3rd re-grind
crank shaft journal di.			
57.074 to 57.086 mm	56.820 to 56.832 mm	56.566 to 56.578 mm	56.312 to 56.324 mm
Crank pin diameter			
44.963 to 44.975 mm	44.709 to 44.721 mm	44.445 to 44.447 mm	44.201 to 44.223 mm
Thickness of crankshaft Journal			
1.829 to 1.835 mm	1.956 to 1.962 mm	2.083 to 2.089 mm	2.210 to 2.216 mm
Maximum permitted ovality of crank pins and crankshaft journal			0.05 mm
Maximum lack of alignment between crank pins and crankshaft journals			0.07 mm
Diameter of crankshaft bearing seats			60.769 to 60.782 mm
Diametral clearance between crankshaft journal and bearing (prescribed)			0.013 to 0.050 mm

CRANKSHAFT
(cont.)

	standard	1st re-grind	2nd re-grind	3rd re-grind
Length of crankshaft center journal	30.000 to 30.035 mm	30.127 to 30.162 mm	30.254 to 30.289 mm	30.381 to 30.416 mm

Thickness of thrust rings for the crankshaft center journal	2.311 to 2.362 mm	2.374 to 2.425 mm	2.438 to 2.489 mm	2.501 to 2.552 mm
--	-------------------------	-------------------------	-------------------------	-------------------------

Axial play of the thrust rings for the crankshaft center bearing (prescribed) 0.076 to 0.263 mm

Axial play of the con-rods (prescribed) 0.200 to 0.30 mm

Crankshaft journal fillets 2.00 mm

CLUTCH

Internal diameter of the driven plate		130 mm
External diameter of the driven plate		200 mm
Clearance between the thrust ring and disengaging ring		
	prescribed	2 mm
	maximum wear	1 mm
Thickness of the driven plate		
	new linings	10 mm
	maximum wear	6 mm
Thickness of clutch lining		
		3.5 mm
Clearance between flywheel and thrust ring face		
		59 to 59.5 mm
Clearance between thrust ring face and plane of outer face of cover		
		26 to 26.3 mm
Number of springs		9
Length of uncompressed springs		43.5 to 45.5 mm
length of springs under load of 45 to 49 kg		29 mm
Free pedal movement		23 mm
Maximum permissible out of balance of clutch unit		20 gr. cm

GEAR BOX
(Transmission)

Length of synchronizer springs when not compressed

1st and 2nd gears	15.3 mm
3rd and top gears	11.5 mm

Springs when loaded

1st and 2nd gears at 1.6 to 1.8 kg	12.5 mm
3rd and top gears at 1.9 to 2.1 kg	9 mm

Gear ratios

1 st gear	1:3.313
2nd gear	1:1.959
3rd gear	1:1.354
top gear	1:1
reverse	1:3.365

Speedometer

No. of teeth on speedometer drive gear-wheel for ratio of	10/41	9
No. of teeth on speedometer pinion for ratio of	10/41	19
No. of teeth on speedometer drive gear-wheel for ratio of	8/41	8
No. of teeth on speedometer pinion for ratio of	8/41	22
No. of teeth on speedometer drive gear-wheel for ratio of	9/41	9
No. of teeth on speedometer pinion for ratio of	9/41	21

PROPELLER SHAFT

(Drive shaft)

Maximum permissible lack of squareness between rear shaft and face of front flange. (Measured at flange extremities)	0.05 mm
Maximum eccentricity of intermediate bracket bearing seat	0.03 mm
Maximum eccentricity of rear shaft	0.02 mm
Maximum permitted lack of balance of rear shaft	10 gr.cm

REAR AXLE

Rear-axle ratio

Spider Veloce	10/41
Sprint Veloce	10/41
Spider	9/41
Sprint	9/41
Berlina	9/41
t.i.	9/41

Backlash, pinion/crown wheel 0.13 to 0.18 mm

Maximum crown-wheel eccentricity 0.025 mm

*Pinion bearing preload with oil seal** 0.145 to .195 m/kg**Carrier bearing preload (total of carrier and pinion bearing preload)** 0.165 to .222 m/kg*

Type of bevel drive. HYPOID

Type of bearing for pinion and differential box. TAPER ROLLER BEARING

Type of rear-axles. HALF-FLOATING

* This data from sources other than factory work shop manual.

FRONT SUSPENSION

Wheel camber* 0 degrees

Toe-in (measured at rims)* 3 mm

King-pin caster slant* 8 degrees 35 min.

King-pin caster angle*

Spider Veloce 1 deg. 20 min. +/- 30 mim.

Sprint Veloce 50 deg. +/- 30 mim.

Spider 1 deg. 20 min. +/- 30 mim.

Sprint 50 deg. +/- 30 mim.

Berlina
up to car no. 148810000

10 deg. +/- 30 mim.

from car no. 148810001

30 deg. +/- 30 mim.

t.i. 30 deg. +/- 30 mim.

* All this above data related to vehicles fully loaded

Steering angle

inner 36 deg.

outer 28 deg. 30 mim.

FRONT SUSPENSION

(cont.)

Length of springs when not compressed

Spider Veloce	364 mm	+/- 5 mm
Sprint Veloce		
standard	371 mm	+/- 5 mm
on request	384 mm	+/- 5 mm
Spider	410 mm	+/- 5 mm
Sprint		
up to car No. 149302800	410 mm	+/- 5 mm
from car No. 149302801	394 mm	+/- 5 mm
Berlina		
up to car No. 148810000	389 mm	+/- 5 mm
from car No. 148810001	396 mm	+/- 5 mm
t.i.	396 mm	+/- 5 mm

FRONT SUSPENSION
(cont.)

Length of springs under load

Spider Veloce

load, 426 +/- 12.8 kg. 267 mm

Sprint Veloce

load, 460 +/- 13.8 kg. 267 mm

Spider

load, 465 +/- 14 kg. 267 mm

Sprint

up to car No. 149302800
load, 525 +/- 15 kg. 2.67 mmfrom car No. 149302801
load, 505 +/- 15 kg. 2.67 mm

Berlina

up to car No. 148810000
load, 500 +/- 15 kg. 267 mmfrom car No. 148810001
load, 500 +/- 15 kg. 274 mm

t.i.

load, 500 +/- 15 kg. 274 mm

REAR SUSPENSION

Length of springs when not compressed (uncompressed)

Spider Veloce	387 mm +/- 5 mm
Sprint Veloce	
up to car No. 149304500	383 mm +/- 5 mm
up to car No. 149304500 (on request)	402 +/- 5 mm
from car No. 149304501	383 +/- 5 mm
Spider	
up to car No. 149501850	436 mm +/- 5 mm
up to car No. 149501850 (on request)	420 mm +/- 5 mm
from car No. 149501851 to car No. 149503250	433 mm +/- 5 mm
from car No. 149503251	418 +/- 5 mm
Sprint	
up to car No. 149302800	461 mm +/- 5 mm
from car No. 149302801 to car No. 149304500	425 mm +/- 5 mm
from car No. 149304501	414 +/- 5 mm
Berlina	
up to car No. 148810000	471 mm +/- 5 mm
from car No. 148810001	463 mm +/- 5 mm
t.i.	463 mm +/- 5 mm

REAR SUSPENSION

(continued)

Length of springs under load

Spider Veloce	load, 155 +/- 4.65 kg.	240 mm
Sprint Veloce	load, 171 +/- 5.13 kg.	240 mm
Spider	up to car No. 149501850 load, 161.5 +/- 4.80 kg.	240 mm
	up to car No. 149501850 (on request) load, 171 +/- 5.10 kg.	240 mm
	from car No. 149501851 up to car No. 149503250 load, 161.5 +/- 4.84 kg.	240 mm
	from car No. 149503251 load 162 +/- 4.86 kg.	240 mm
Sprint	up to car No. 149302800 load, 210 +/- 6.30 kg.	240 mm
	from car No. 149302801 to car No. 149304500 load, 195 +/- 5.85 kg.	240 mm
	to car No. 149304501 load, 185 +/- 5.85 kg.	230 mm
Berlina	up to car No. 148810000 load, 245 +/- 7.35 kg.	260 mm
	from car No. 148810001 load, 245 +/- 7.35 kg.	250 mm
t.i.	load, 245 +/- 7.35 kg.	250 mm

BRAKES

Internal drum diameter

front	266.7 to 266.8 mm
rear	254 to 254.1 mm

Diameter of brake shoes

front	265.8 to 266.1 mm
rear	253.2 to 253.5 mm

Type of lining

FERODO MZ 41

Useful width

front	57 mm
rear	44.45 mm

Useful thickness

front	2.8 mm
rear	2.2 mm

Hydraulic pump diameter

25.4 mm

Brake cylinder diameter

front	25.4 mm
rear	22.22 mm

Useful stroke of brake pedal

120 mm

CONVERSION TABLES & FORMULAS*

Millimeters to inches		Inches to millimeters		
mm	inches		inches	mm
0.01	0.00039		0.001	0.0254
0.02	0.00079		0.002	0.0508
0.03	0.00118		0.003	0.0762
0.04	0.00157		0.004	0.1016
0.05	0.00197		0.005	0.1270
0.06	0.00236		0.006	0.1524
0.07	0.00276		0.007	0.1778
0.08	0.00315		0.008	0.2032
0.09	0.00354		0.009	0.2286
0.1	0.00394		0.01	0.254
0.2	0.00787		0.02	0.508
0.3	0.01181		0.03	0.762
0.4	0.01575		0.04	1.016
0.5	0.01969		0.05	1.270
0.6	0.02362		0.06	1.524
0.7	0.02756		0.07	1.778
0.8	0.03150		0.08	2.032
0.9	0.03543		0.09	2.286
1	0.0394		0.1	2.54
2	0.0787		0.2	5.08
3	0.1181		0.3	7.62
4	0.1575		0.4	10.16
5	0.1968		0.5	12.70
6	0.2362		0.6	15.24
7	0.2756		0.7	17.78
8	0.3150		0.8	20.32
9	0.3543		0.9	22.86
10	0.3927		1	25.4

* Data compiled from source other than factory manual.

TO GO FROM:	MULTIPLY BY:
centimeters to inches	0.3937
centimeters to feet	0.0328
cubic centimeters to cubic inches	0.0610
kilograms to pounds	2.2046
kilometers to miles	0.6214
kilometers/hr to m/p/h	0.6214
liters to gallons	0.2642
liters to cubic inches	61.024
m/p/h to kilometers/hr	1.6093
miles to kilometers	1.6093
pounds to kilograms	0.4536
cubic inches to cubic centimeters	16.387
gallons to liters	3.7854
feet to meters	0.3048
inches to centimeters	2.54
ounces to grams	28.349
ounces to kilograms	0.0283
ounces to pounds	0.0625

*****NOTES*****

* Data compiled from source other than factory manual.

PRODUCTION DATA

Production data. This concept has always intrigued me given that anyone possessing such a list of serial numbers and related dates can find the serial number of a car of interest and verify the date of manufacture, the model, and in some cases type of accessories or option(s) included by the factory, and the country of release etc. I am also intrigued by the fact that every list of said serial numbers, dates and related information that I have had the opportunity to field test, gives me some information but not always the total picture that seems to have been promised. This is the second series of cars that I have attempted to make sense out of the available production date lists. The Giulietta has presented the same curious situation as the my first endeavor. The experts that have published previous studies don't seem to agree with each other for whatever reason. Now please do not misunderstand me here. I am not taking any fault with anyone only making an observation. There are all possible sorts of reasons for discrepancies, editing errors, printing and transposing errors and interpellation errors where no original facts exist. 1954 was very different from today. Record keeping then may not have been, for whatever reason, what it is now.

The following production data is presented in three separate lists. Each of the following production lists is from different and I am certain reliable source. I have not made any attempt to edit this information as I should think that only the Alfa Factory would have the accurate account that is if the files still exist. As I don't have access to the factory and as this is more or less a report on available information, I will only report the expert's testimony on the obviously confusing production history of the ALFA GIULIETTA.

HISTORICAL REFERENCES*

The following information was given in reference to racing engines where the cost of winning may be the risk of damage to the engine. Therefore by following the modifications below or any deviations from competent repair manuals may considerably shorten the life of a street driven engine or race engine for that matter.

Please note that this writer does not, in anyway, under-write, recommend, suggest, or assume that the following is correct or safe for any car. THIS IS A HISTORICAL REPORT and should be used for research only. It is recommended that any repairs or maintenance work be undertaken with the aid of

manuals specifically referencing the make and model of the car in question.

Early Alfa Giulietta racing was very successful in the US and much tuning was done in quest for the checkered flag. The following is included help the reader trace modifications made to an engine or car.

Competition Tuning recommended, circ: 1960
Alfa Giulietta Veloce.

1. Shave head .005" (maintain compression ratio of 9.5 to 1)
2. Piston skirt to cylinder clearance, .006" @ 80 degrees F.
3. Radius top of piston outer edge @ (inside radius) (or top edge grooved) R = .140", and bevel lower edge of radius or grove @ 15 degrees. Note: This gives extra clearance between head and piston at pistons outer edge.
4. Turn down ring lands to .020" less than cylinder bore.
5. Polish and match ports.
6. Weber 40DCO3 with 30 to 32 mm venturi with larger exhausts.
7. 7 mm holes through bowl cover (visible with jet cover plate removed. Early Webers had 4 mm holes.
8. For increased performance above 6,000 RPM, when using carburetors and straight exhaust as described in No. 6 above, set valve clearance at .002" to .003" closer than normally prescribed.
7. Check and maintain minimum clearance at valve to head @ .060"

* Data compiled from source other than factory manual.

58 TECHNICAL SPECIFICATIONS FOR ALFA GIULIETTA

HISTORICAL REFERENCES*
(cont')

9. Valve timing:

	intake	exhaust
open	34 degrees BTDC	63 degrees BBDC
closes	63 degrees ABDC	30 degrees ATDC

For the strong at heart the following was suggested:

80 degrees overlap.

open	46 degrees BTDC	65 degrees BBDC
closes	65 degrees ABDC	34 degrees ATDC

10. Set spark advance at 44 degrees at 6,000 RPM for top end performance, or at 47 degrees at 6,000 RPM for low end performance. It was noted that 47 degrees advance could shorten engine life.

Another racer recommended the following:

Timing for the Veloce at 45-65-65-35 degrees respectively. For the Normale it was suggested to go with a 3 to 6 degree advance on the intake cam on a pre 1959 car and 0 to 3 degree advance on a 1959-1960 car with the larger carburetor.

Over filling of oil in the sump by one quart reduces oil pressure loss in corners on engines with earlier pan designs.

It was also discussed back in 1961 that a 1300cc engine could be turned into a 1500cc engine by replacing pistons, rings, pins, wet sleeves, and head gasket. Serious machine work is required to the block to accept the larger sleeves and sealing O rings. The head also requires mating to the larger chamber. Note that you can not return to the 1300cc configuration due to the removal of material to the block and head. It was estimated that such a conversion by it's self would yield 10 HP in a standard (Normale) and 15 HP in a Veloce.

It should be noted that these recommendations were made also in reference to different tires and gearing in regards to the difference in track shape and length. As this is performance tuning and it is typical to lose on the top end when gaining on the lower end, and vise versa, performance tuning that is tried out on street cars never achieves the over-all performance of the "stock" tuning. Research any contemplated revisions with a competent Alfa Technician before moving into new areas that may be expensive to return from.

END

* Data compiled from source other than factory manual.