GROUP 05

CONTENTS

6 cylinders Alfa 90 2.0 6V iniezione

BATTERY

CAUTION:
a. Do not touch positive and negative battery poles simultaneously with bare hands.
b. When starting engine with jumper leads through auxiliary battery, source voltage should not exceed 12 V.

INSPECTION

a. Check battery container for cracks.
b. Ensure that electrolyte level is 4 to 5 mm (0.15 to 0.20 in) above top of plates.
c. Check that battery top is clean and that contacts are free from oxidation.
d. Check terminal clamps for tightness, to ensure efficient contact.

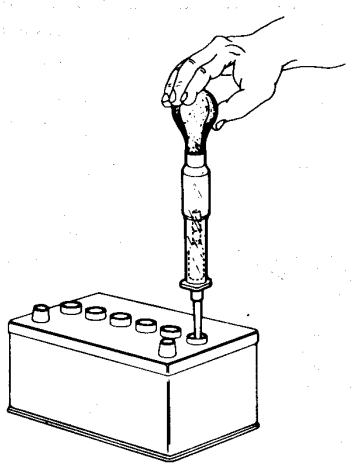
CLEANING

a. Clean battery top, posts and clamp using a solution of water and sodium bicarbonate.
b. Prior to installing clamps, coat with the specified type of grease (REINACH: E10 Tac).

NOTE:
Do not allow cleaning solution to mix with electrolyte, as the two react chemically. Remember that electrolyte is an acid and constitutes a hazard for eyes, hands and clothes.

DENSITY CHECK

a. Check electrolyte level.
b. Use a hydrometer to check density in each element.



c. Measure electrolyte temperature «t» by dipping a thermometer bulb in the fluid.
d. Check density at 25°C (77°F) using the following formula:

$$d_{25} = d_t + 0.0007\ (t—25)\ (kg/dm^3)$$

where d_t is density at temperature t°C

Examples:

1. **Reading at 15°C (59°F):**
   1.290 kg/dm³
   Density at 25°C (77°F) will be:

   $$d_{25} = 1{,}290 + 0.0007\ (15—25)$$
   $$= 1.283\ kg/dm^3$$

2. **Reading at 35°C (95°F):**
   1.275 kg/dm³
   Density at 25°C (77°F) will be:

   $$d_{25} = 1.275 + 0.0007\ (35—25)$$
   $$= 1.282\ kg/dm^3$$

e. Compare calculated density at 25°C (77°F) to reading required for an efficient battery.

Electrolyte density of efficient battery
$d = 1.28 \pm 0.01\ kg/dm^3$

f. Recharge battery as necessary.

Batteries left in storage or fitted to vehicles remaining inoperative for long periods are subject to slow discharging, and should be recharged immediately before use.

RECHARGING

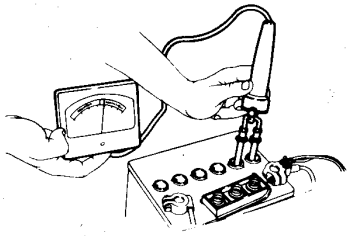
NOTE:
a. Prior to recharging batteries disconnect negative terminal.
b. Make sure that electrolyte temperature does not exceed 45°C (139°F) during recharging.

CAUTION:
a. Do not use open flames in the neighbourhood of battery when recharging.
b. When using a battery charger, connect leads to battery first, and then activate charger.

ELEMENT TESTING

To be carried out after hydrometer test to ensure that density is correct.

Check discharge voltage across terminals of each element proceeding as follows:
a. Remove filler caps.
b. Dip tester prongs in two adjacent holes (positive and negative) as shown and check that needle moves over the green sector, indicating a good state of charge.
c. Repeat the above operation on the two remaining pairs of filler holes.



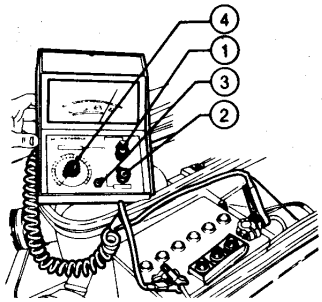
d. If needle dwells over red sector (insufficient charge) and the three readings are equal, the battery should be recharged.
e. If needle remains over red sector (low charge) and the three readings are considerably different from one another, the battery should be replaced.

ELECTRONIC TEST (MOTOROLA TESTER)

Connect positive tester clip to battery positive terminal post and negative clip to negative post.
Turn switch (3) to 12 V, temperature compensator (2) to estimated battery temperature and selector (4) to current rating depending on type of battery under test.

Voltage test

a. Turn selector (1) to «VOLT».
b. Check reading on voltage scale.
The voltage is correct if the reading is higher than 12.4 V.



1. Selector
2. Temp. compensator
3. Battery voltage switch
4. Calibration switch

c. If battery voltage is below 12.4 V, rechargè battery and repeat voltage test. If the trouble persists, element short circuit (S/C) may be the cause. Replace battery without hesitation.

Battery condition check

a. Turn selector to «Cond. Batt.».
b. Check on RED-GREEN scale that needle lies over GREEN sector.
c. If needle lies over RED sector replace battery.

Output test

a. Turn selector to «kW» on tester.
b. Check that needle reads 2 to 4 kW.
c. If reading is not as specified replace battery.

Charging test

a. Turn selector to «VOLT».
b. Start engine and run in no-load condition until tester needle stabilizes.
c. Needle should read 13.6 to 15 V.
d. If reading is lower or higher check for alternator anomalies, paying particular attention to voltage regulator (see: Recharging - Inspection).

Also check alternator belt tension. (For servicing and adjustment data refer to «Inspection Specifications» paragraph in individual Group of this manual. For **Alfa 90** vehicles, see also Group 00 of publication: PA360300000000).

Starting test

a. Move tester selector to «VOLT».
b. Neutralize ignition system by disconnecting coil H.T. lead.
c. Start engine and check on «VOLT» scale that needle does not read below 9 V.
d. If reading is lower than specified check starting system (see: Starting).

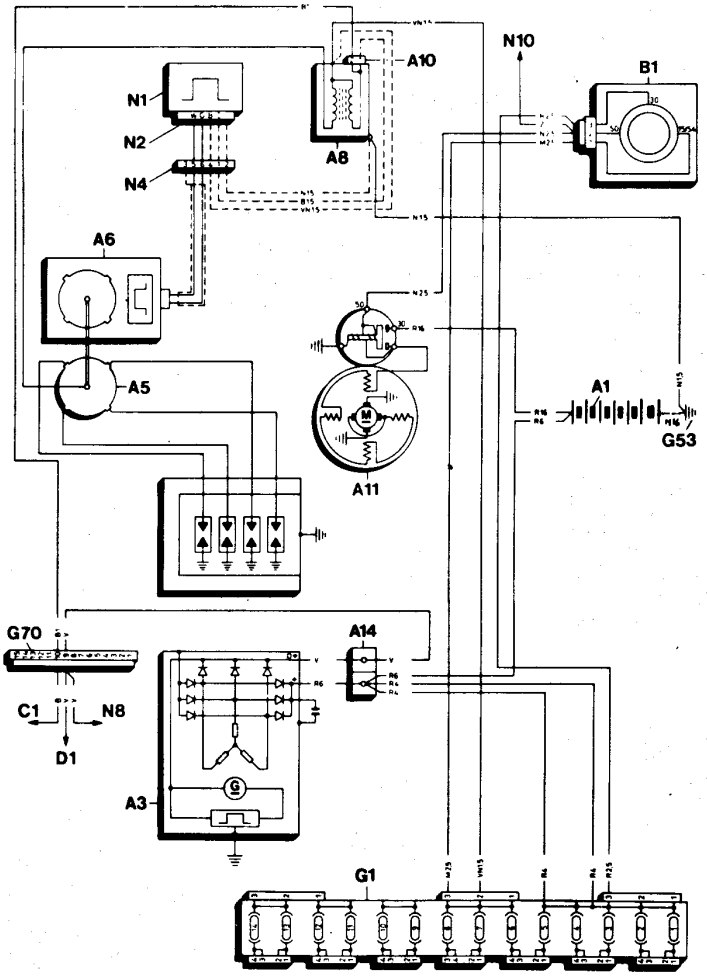
ELECTRICAL SYSTEM

ENGINE IGNITION

Giulietta 1.6 1.8 2.0

Alfetta 1.6 1.8 2.0

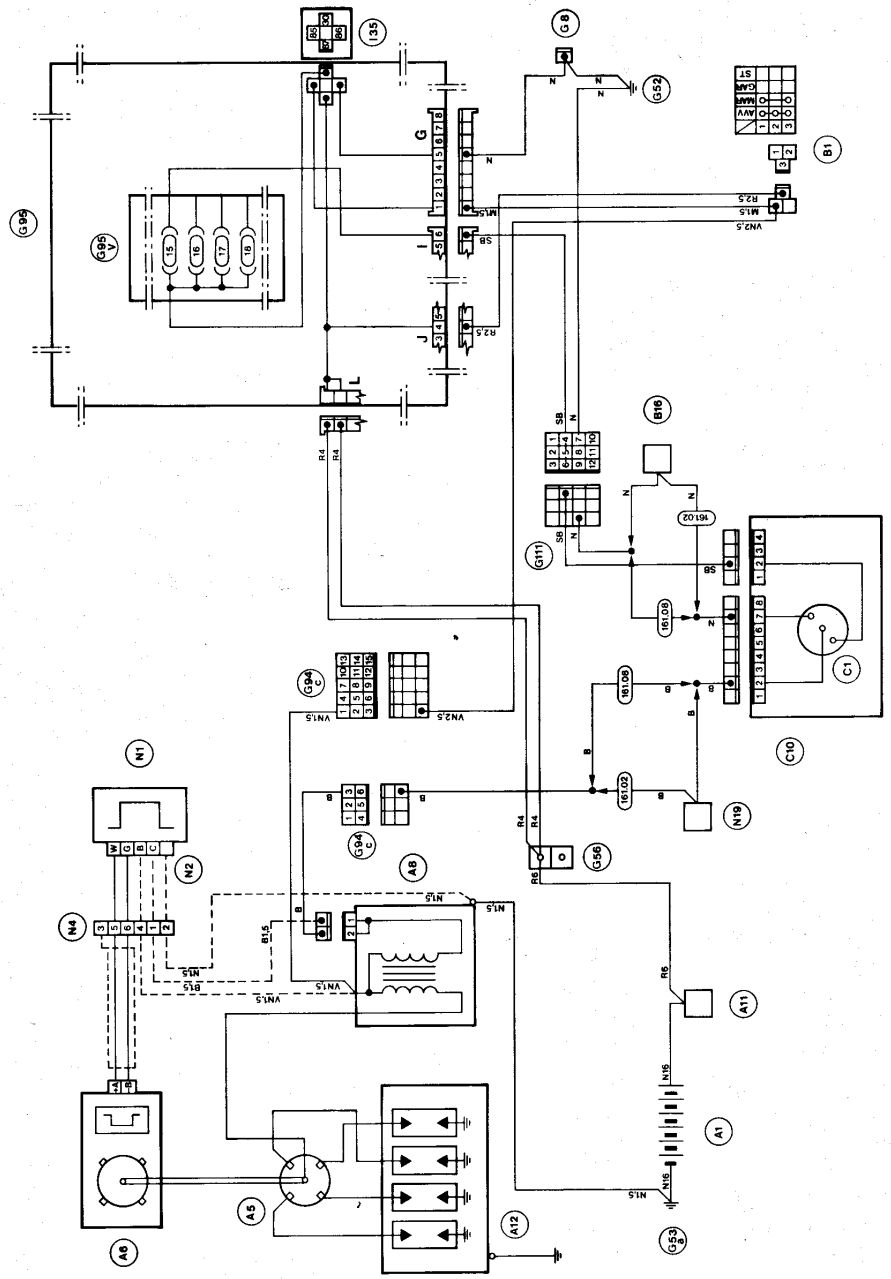
GTV 2.0



NOTE:
Leads shown in broken lines apply to BOSCH ignition system.
On MARELLI ignition system these leads are pre-wired in coil-electronic unit.

A1 Battery
A3 Alternator with integral voltage regulator
A5 Ignition distributor
A6 Pulse generator
A8 Ignition coil
A10 Two-way coil connector
A11 Starter
A14 Alternator terminal block
B1 Ignition switch
C1 Electronic rev-counter
D1 Alternator warning lamp
G1 Fuse unit
G53 Engine compartment ground
G70 Connection C with cabling loom
N1 Electronic ignition module
N2 Connector for Marelli module
N4 Connector for Bosch module
N8 Alfa Romeo control
N10 Courtesy light timer

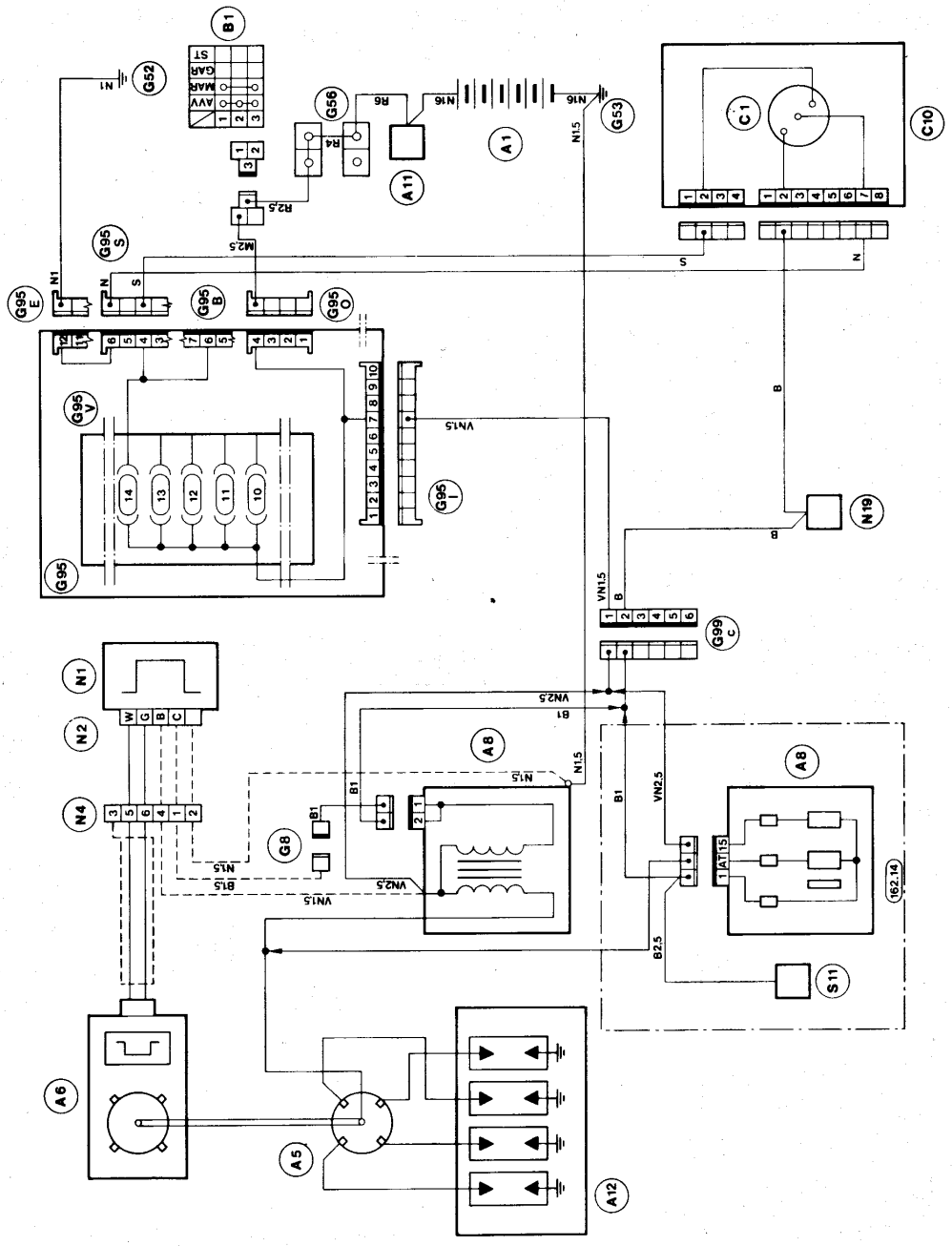
ENGINE IGNITION Alfa 75 1.6 1.8 2.0



A1 Battery
A5 Ignition distributor
A6 Impulse generator
A8 Ignition coil
A11 Starter motor
A12 Spark plugs
B1 Ignition switch
B16 Cluster lighting dimmer rheostat
C1 Electronic rev-counter
C10 Cluster
G8 Single connector
G52 Fusebox ground
G53a Engine compartment ground - Right
G56 Branch terminal board
G94c Engine compartment connector - Right
G95 Central fusebox
G95V Fuses
G111 Connector for dashboard instruments wiring
I35 Key-operated supply relay
N1 Electronic ignition module
N2 Connector for Marelli module
N4 Connector for Bosch module
N19 Performance gauge control unit

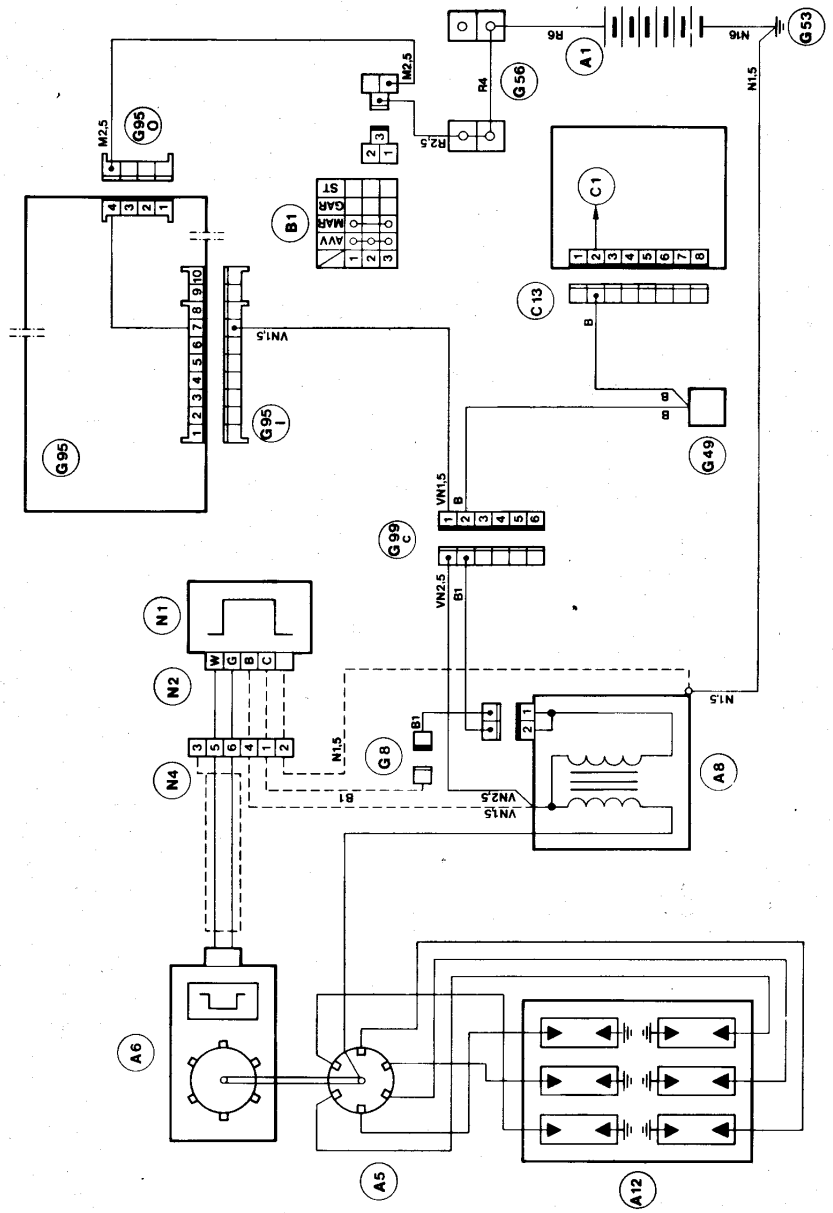
ENGINE IGNITION Alfa 90 1.8 2.0 2.0 iniezione

Alfetta 2.0



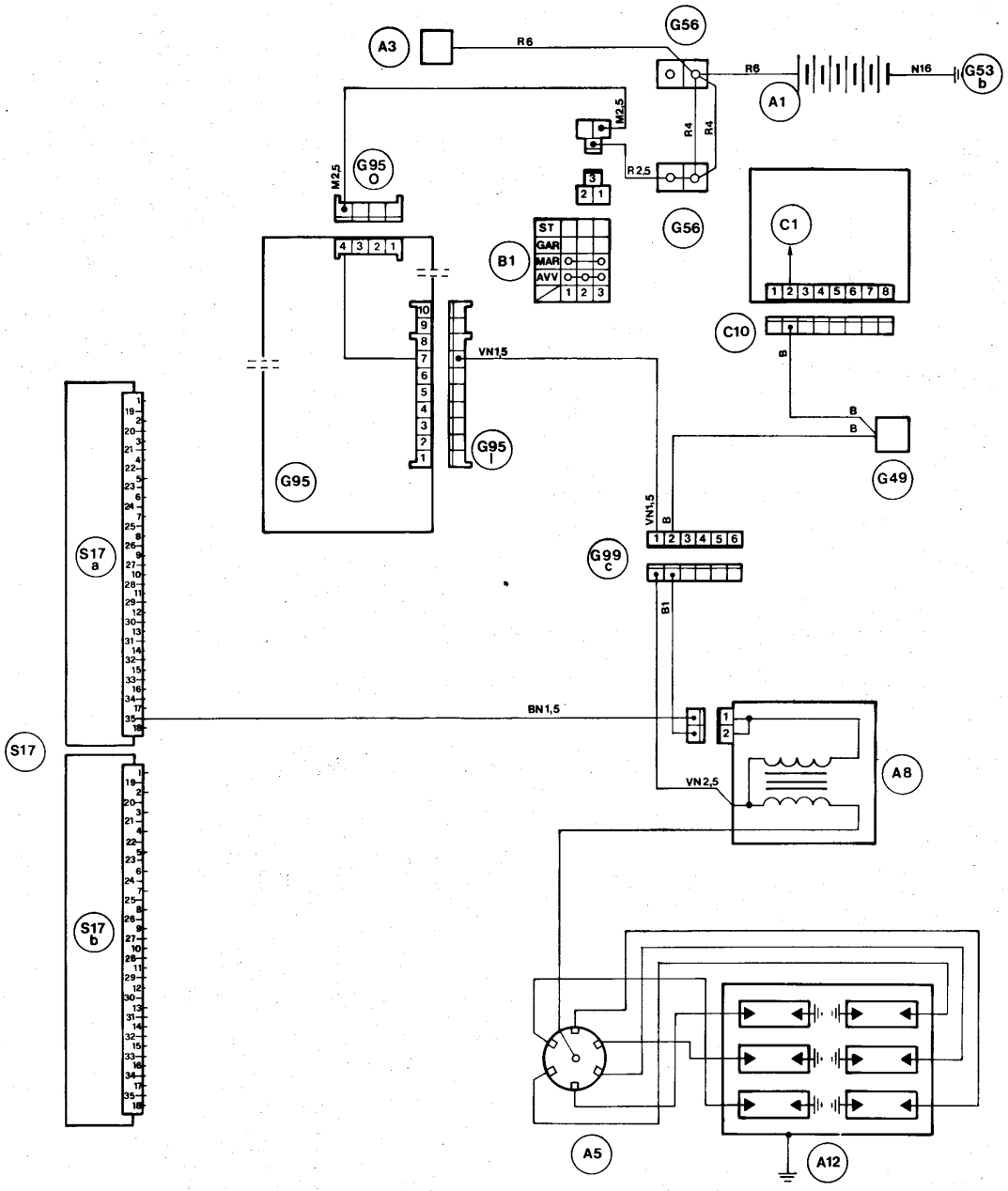
A1 Battery
A5 Ignition distributor
A6 Impulse generator
A8 Ignition coil
A11 Starter motor
A12 Spark plugs
B1 Ignition switch
C1 Electronic rev-counter
C10 Instrument panel
G8 Single connector
G52 Fuse box earth
G53 Engine compartment earth
G56 Branch terminal board
G95 Centralized fuse box
G95B Switch connector
G95E Console connector
G95I DX interface connector
G95O Ignition switch connector
G95S Instrument panel connector
G95V Fuses
G99c Engine bulkhead C connector
N1 Electronic ignition module
N2 Connector for Marelli module
N4 Connector for Bosch module
N19 Performance gauge
S11 Motronic unit

ENGINE IGNITION Alfa 90 2.5 iniezione



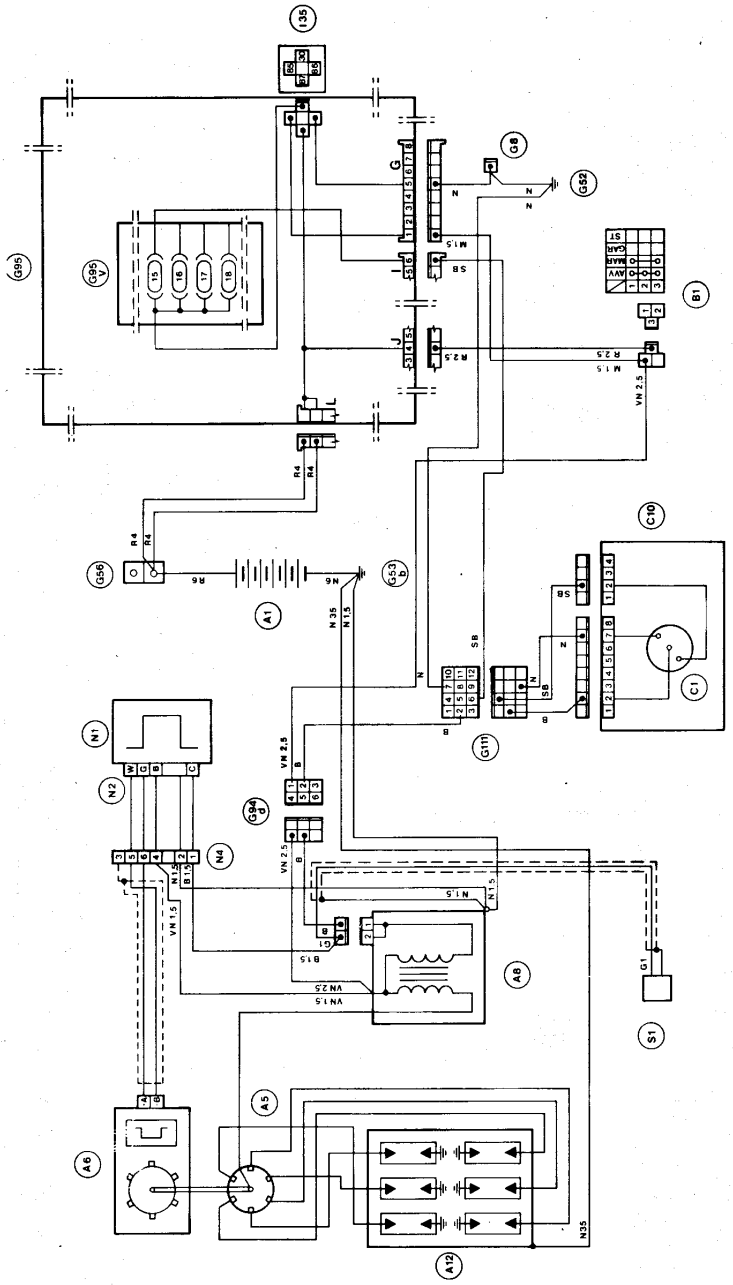
A1 Battery
A5 Ignition distributor
A6 Impulse generator
A8 Ignition coil
A12 Spark plugs
B1 Ignition switch
C1 Electronic rev-counter
C13 Opto-electronic instrument panel
G8 Single connector
G49 Provision for connection
G53 Engine compartment ground
G56 Branch terminal board
G95 Centralized fuse box
G95I Interface connector - Right
G95O Ignition switch connector
G99c Engine bulkhead C connector
N1 Electronic ignition module
N2 Connector for Marelli module
N4 Connector for Bosch module

ENGINE IGNITION Alfa 90 2.0 6V iniezione



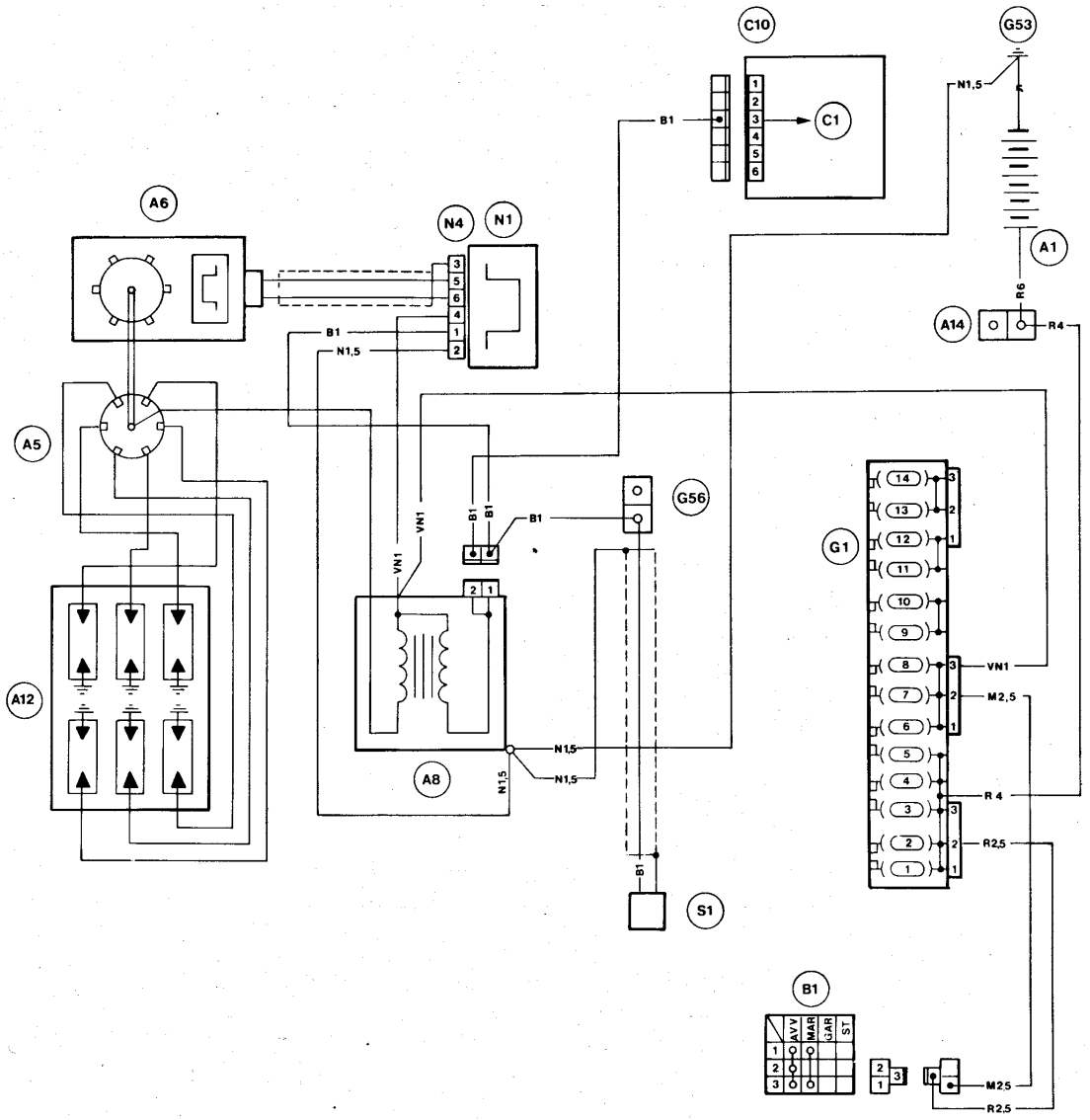
A1 Battery
A3 Alternator with electronic regulator
A5 Ignition distributor
A8 Ignition coil
A12 Spark plugs
B1 Ignition switch
C1 Electronic rev-counter
C10 Cluster
G49 Connection
G53b Engine compartment ground, left
G56 Branch terminal board
G95 Central fusebox
G95I Interface connector, right
G95O Ignition switch connection
G99c Engine bulkhead C connector
S17 ECU
S17a ECU WHITE connector
S17b ECU BLACK connector

ENGINE IGNITION Alfa 75 6V iniezione



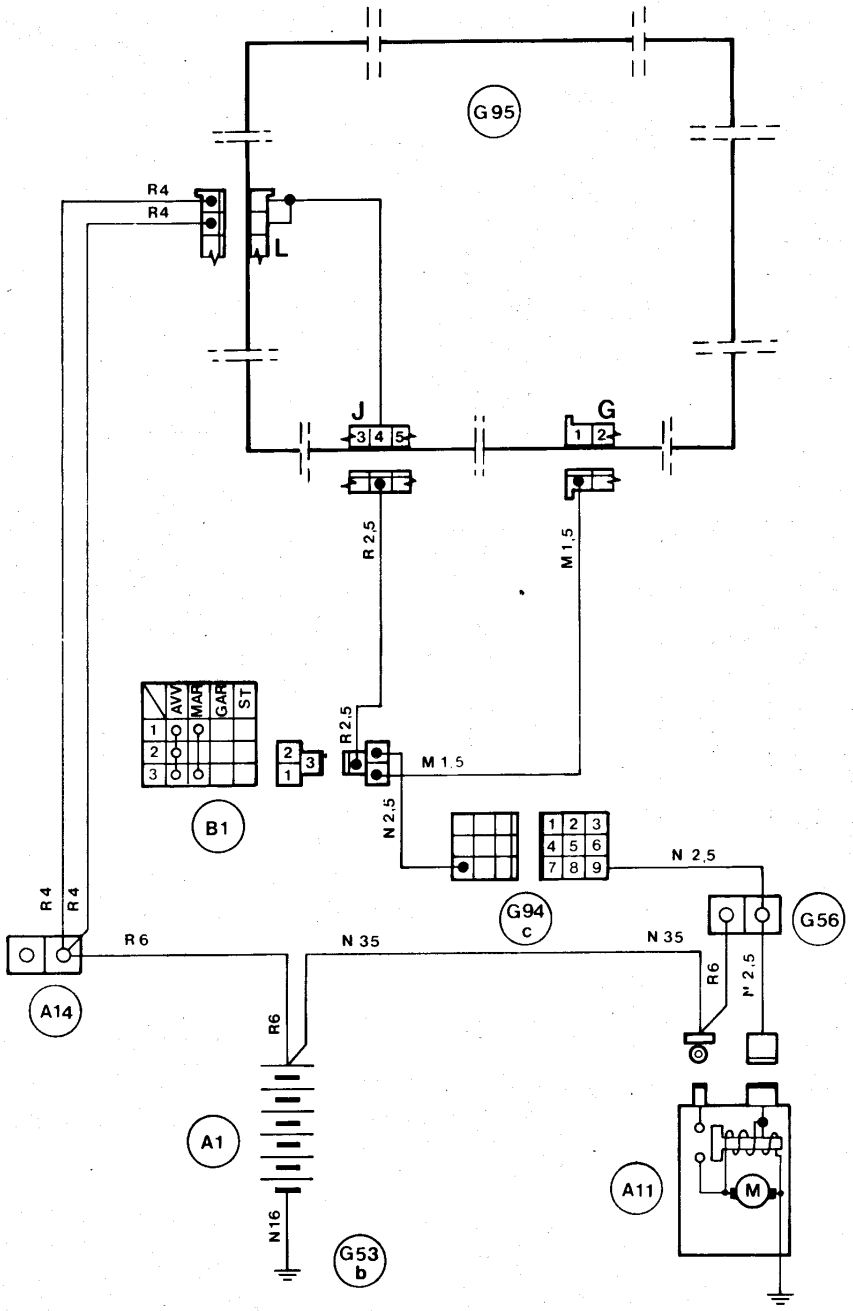
A1 Battery
A5 Ignition distributor
A6 Impulse generator
A8 Ignition coil
A12 Spark plugs
B1 Ignition switch
C1 Electronic rev-counter
C10 Cluster
G8 Single connector
G52 Fusebox ground
G53b Engine compartment ground - Left
G56 Branch terminal board
G94d Engine compartment connector - Left
G95 Central fusebox
G95V Fuse
G111 Connector for dashboard instruments wiring
I35 Key-operated supply relay
N1 Electronic ignition module
N2 Connector for Marelli module
N4 Connector for Bosch module
S1 Injection control unit

ENGINE IGNITION GTV 6 2.5



A1 Battery
A5 Ignition distributor
A6 Impulse generator
A8 Ignition coil
A12 Spark plugs
A14 Alternator cable terminal board
B1 Ignition switch
C1 Electronic rev-counter
C10 Cluster
G1 Fusebox
G53 Engine compartment ground
G56 Branch terminal board
N1 Electronic ignition module
N4 Connector for Bosch module
S1 Ignition control unit

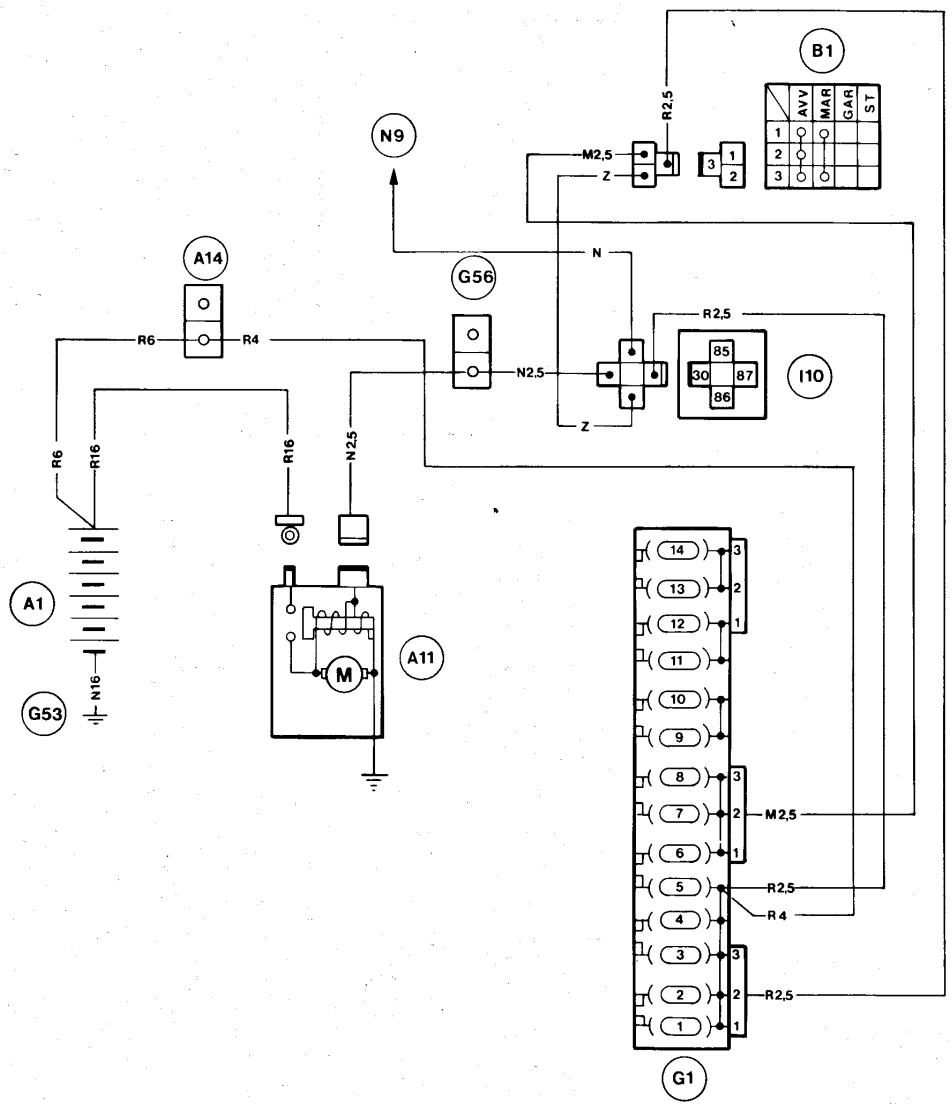
ENGINE STARTER Alfa 75 6V iniezione



A1 Battery
A11 Starter motor
A14 Alternator cable terminal board
B1 Ignition switch

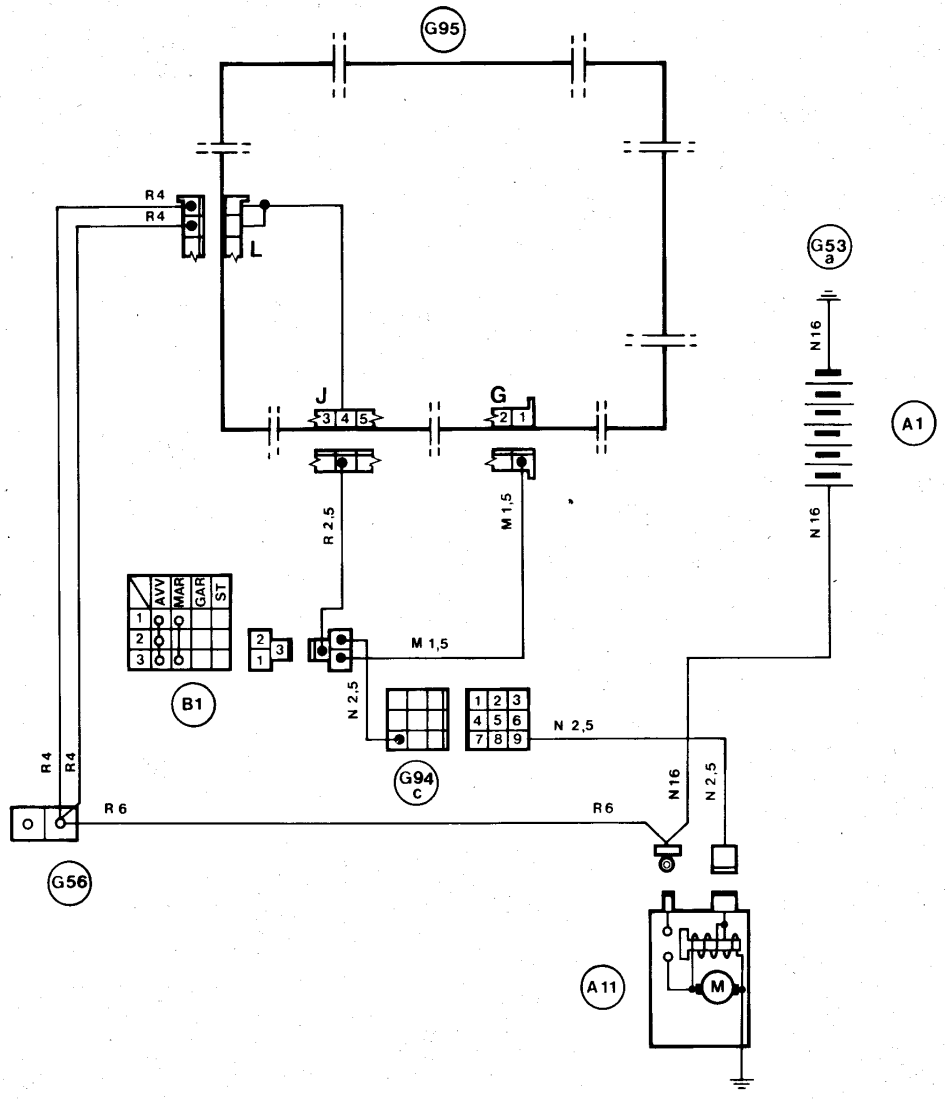
G53b Engine compartment ground - Left
G56 Branch terminal board
G94c Engine compartment connector - Right
G95 Central fusebox

ENGINE STARTER GTV 6 2.5



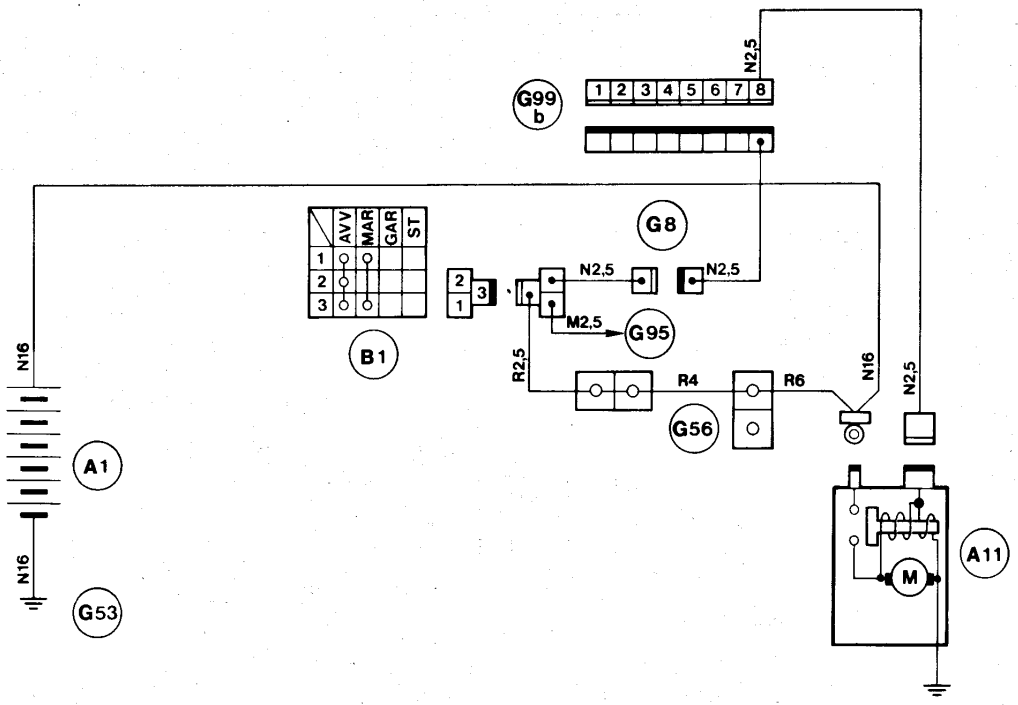
A1 Battery
A11 Starter motor
A14 Alternator cable terminal board
B1 Ignition switch
G1 Fusebox
G53 Engine compartment ground
G56 Branch terminal board
I10 Starter inhibitor relay
N9 Brake pad wear control unit

ENGINE STARTER Alfa 75 1.6 1.8 2.0 1.8 turbo



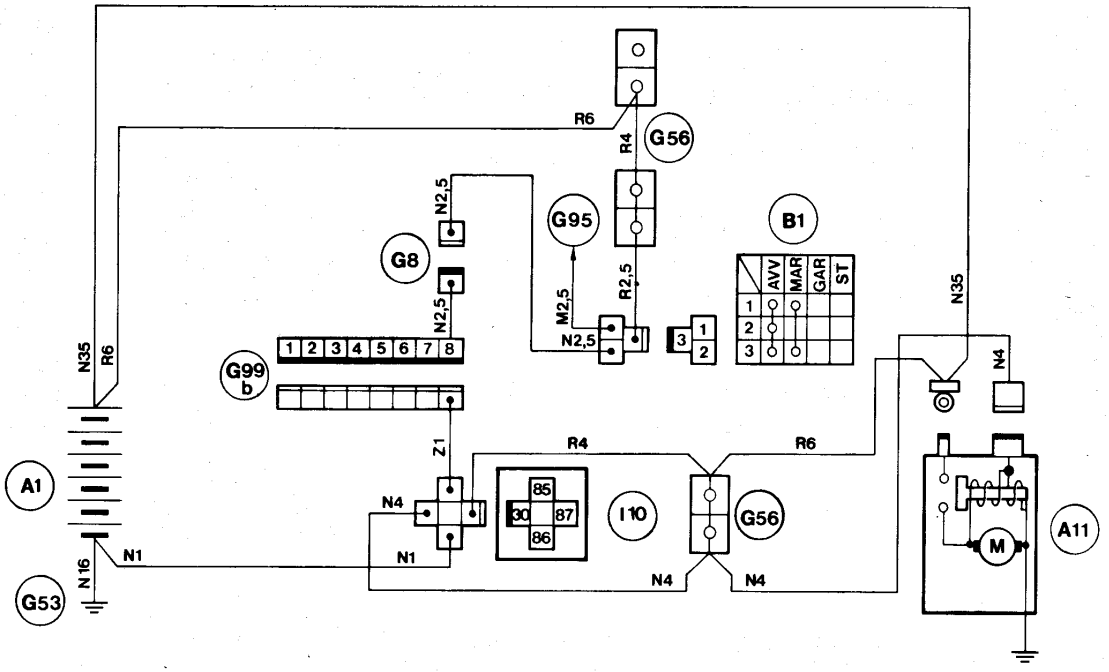
A1 Battery
A11 Starter motor
B1 Ignition switch
G53a Engine compartment ground - Right
G56 Branch terminal board
G94c Engine compartment connector - Right
G95 Central fusebox

ENGINE STARTER Alfa 90 1.8 2.0 2.0 Iniezione



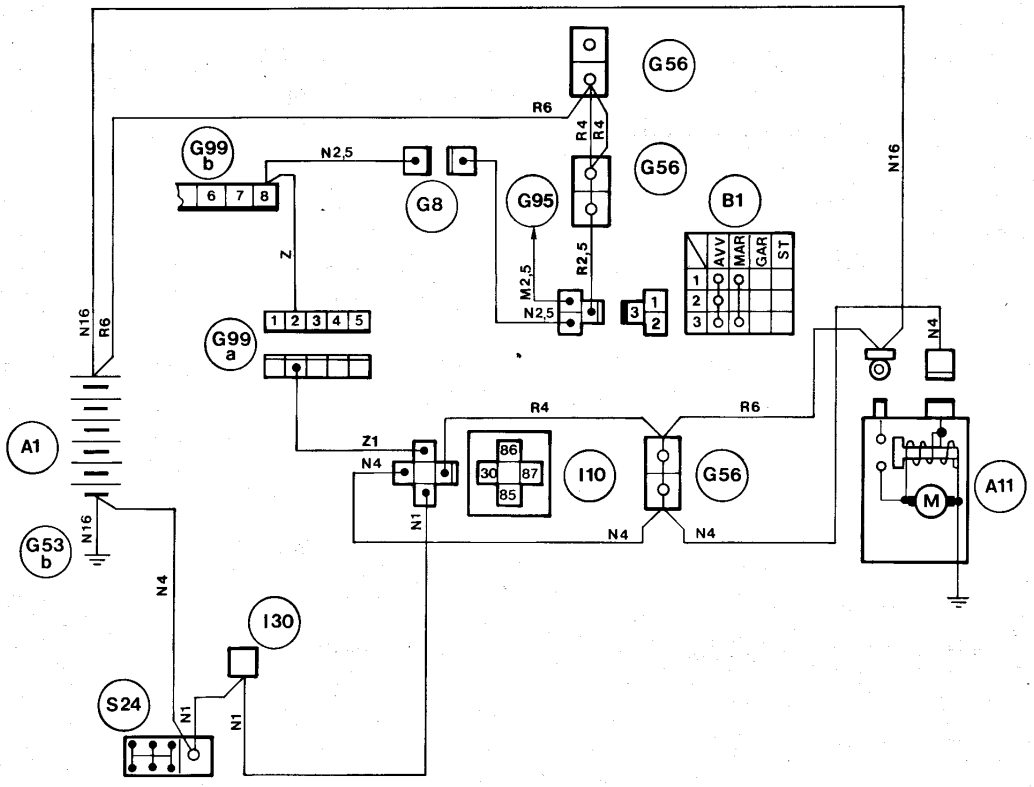
A1 Battery
A11 Starter motor
B1 Ignition switch
G8 Single connector
G53 Engine compartment ground
G56 Branch terminal board
G95 Centralized fusebox
G99b Engine bulkhead B connector

ENGINE STARTER Alfa 90 2.5 iniezione



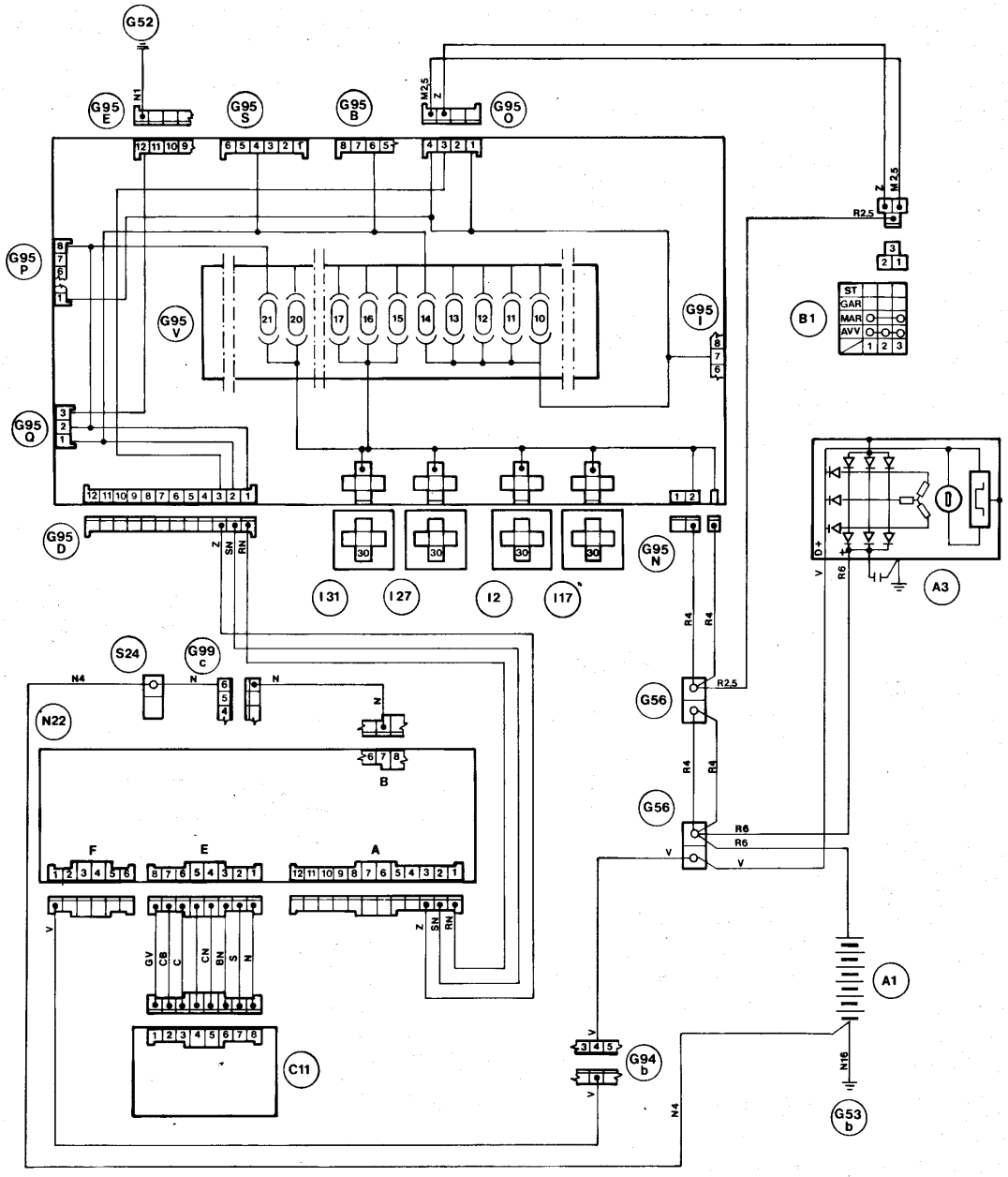
A1 Battery
A11 Starter motor
B1 Ignition switch
G8 Single connector
G53 Engine compartment ground
G56 Branch terminal board
G95 Central fusebox
G99b Engine bulkhead B connector
I10 Starter inhibitor relay

ENGINE STARTER Alfa 90 2.0 6V iniezione



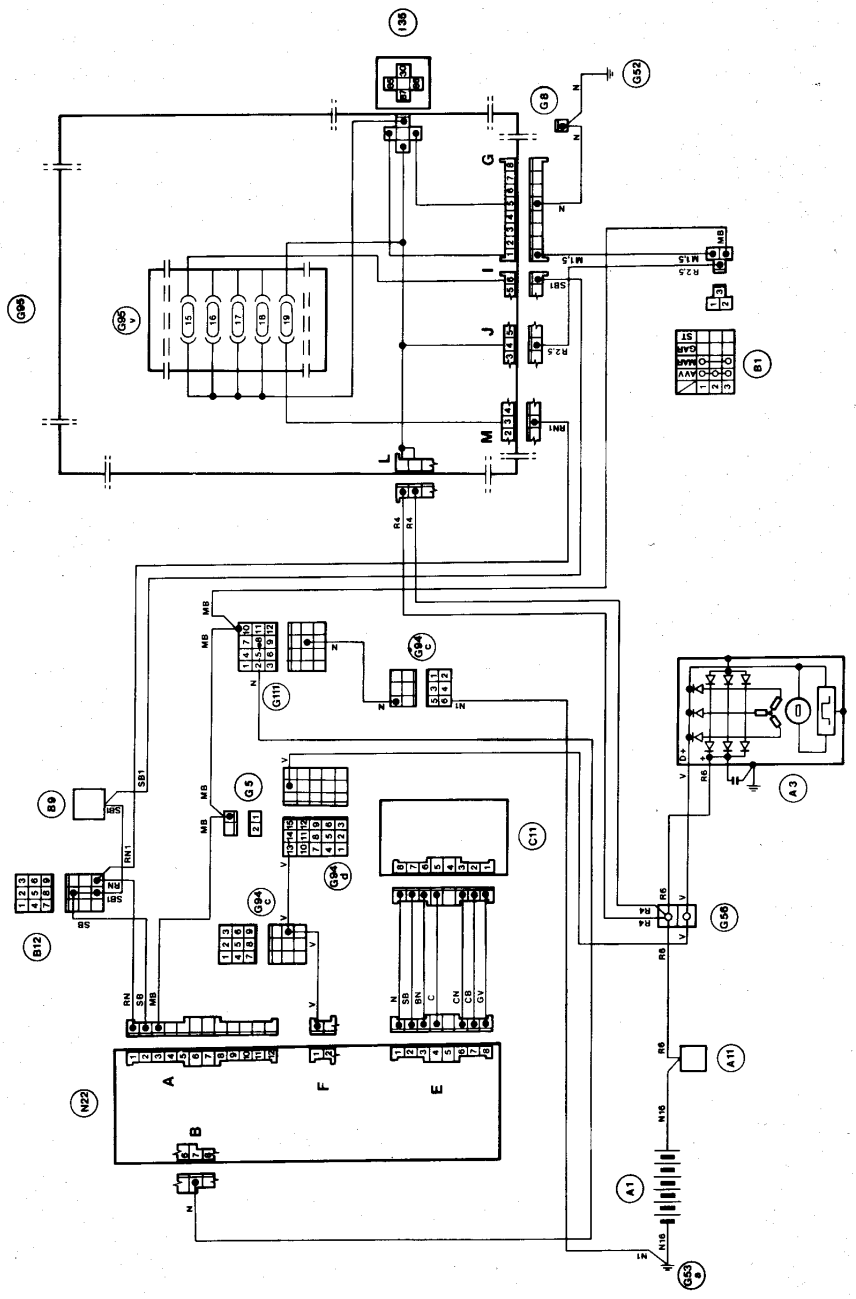
A1 Battery
A11 Starter motor
B1 Ignition switch
G8 Single connector
G53b Engine compartment ground, left
G56 Branch terminal board
G95 Central fusebox
G99a Engine bulkhead A connector
G99b Engine bulkhead B connector
I10 Starter inhibitor relay
I30 CEM relay and diode
S24 Injector terminal

ENGINE CHARGING Alfa 90 2.0 6V iniezione



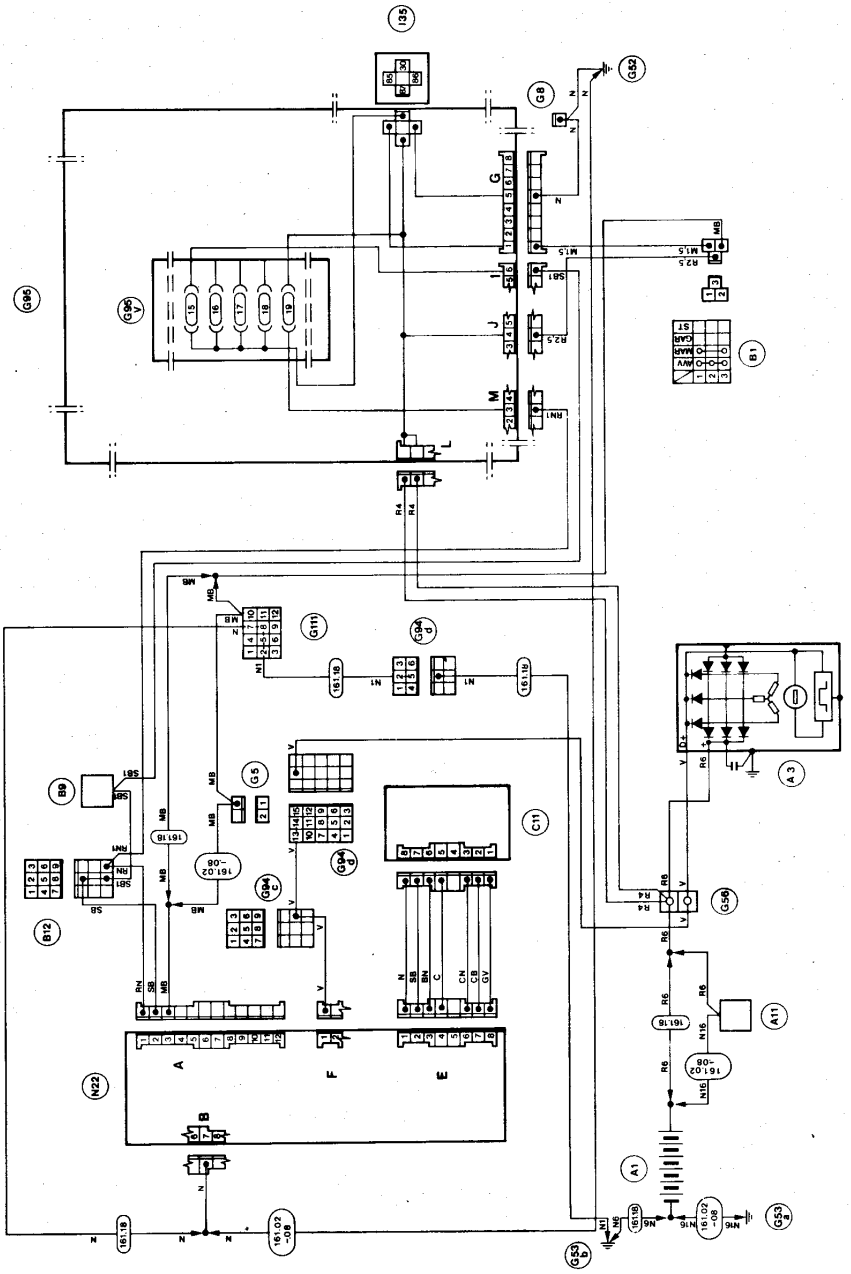
A1 Battery
A3 Alternator with electronic regulator
B1 Ignition switch
C11 Alfa Romeo Control display
G52 Fusebox ground
G53b Engine compartment ground, left
G56 Branch terminal board
G94b 8-way engine compartment connector
G95B Switch connector
G95D Alfa Romeo Control display connector
G95E Console connector
G95I Interface connector, right
G95N Battery connector
G95O Ignition switch connector
G95P Door circuit connector
G95Q Efficiency meter connector
G95S Instrument panel connector
G95V Fuses
G99c Engine bulkhead C connector
I2 Heated rear window relay
I17 Fog-light relay
I27 Seat lift relay
N22 Alfa Romeo Control display unit
S24 Injector terminal

ENGINE CHARGING Alfa 75 1.8 turbo



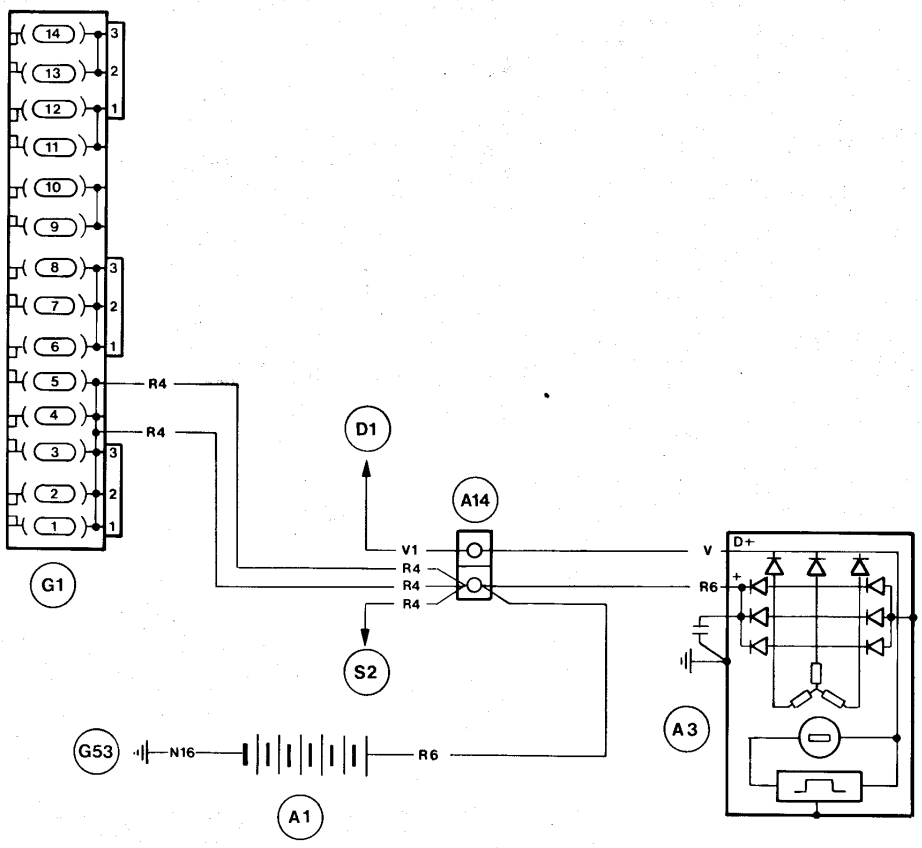
A1 Battery
A3 Alternator with electronic regulator
A11 Starter motor
B1 Ignition switch
B9 Heated rear window control switch
B12 Road hazard lights control switch
C11 Alfa Romeo Control display
G5 Multiple connector
G8 Single connector
G52 Fusebox ground
G53a Engine compartment ground - Right
G56 Branch terminal board
G94c Engine compartment connector - Right
G94d Engine compartment connector - Left
G95 Central fusebox
G95V Fuses
G111 Connector for dashboard instruments wiring
I35 Key-operated supply relay
N22 Alfa Romeo Control control unit

ENGINE CHARGING Alfa 75 1.6 1.8 2.0 6V iniezione



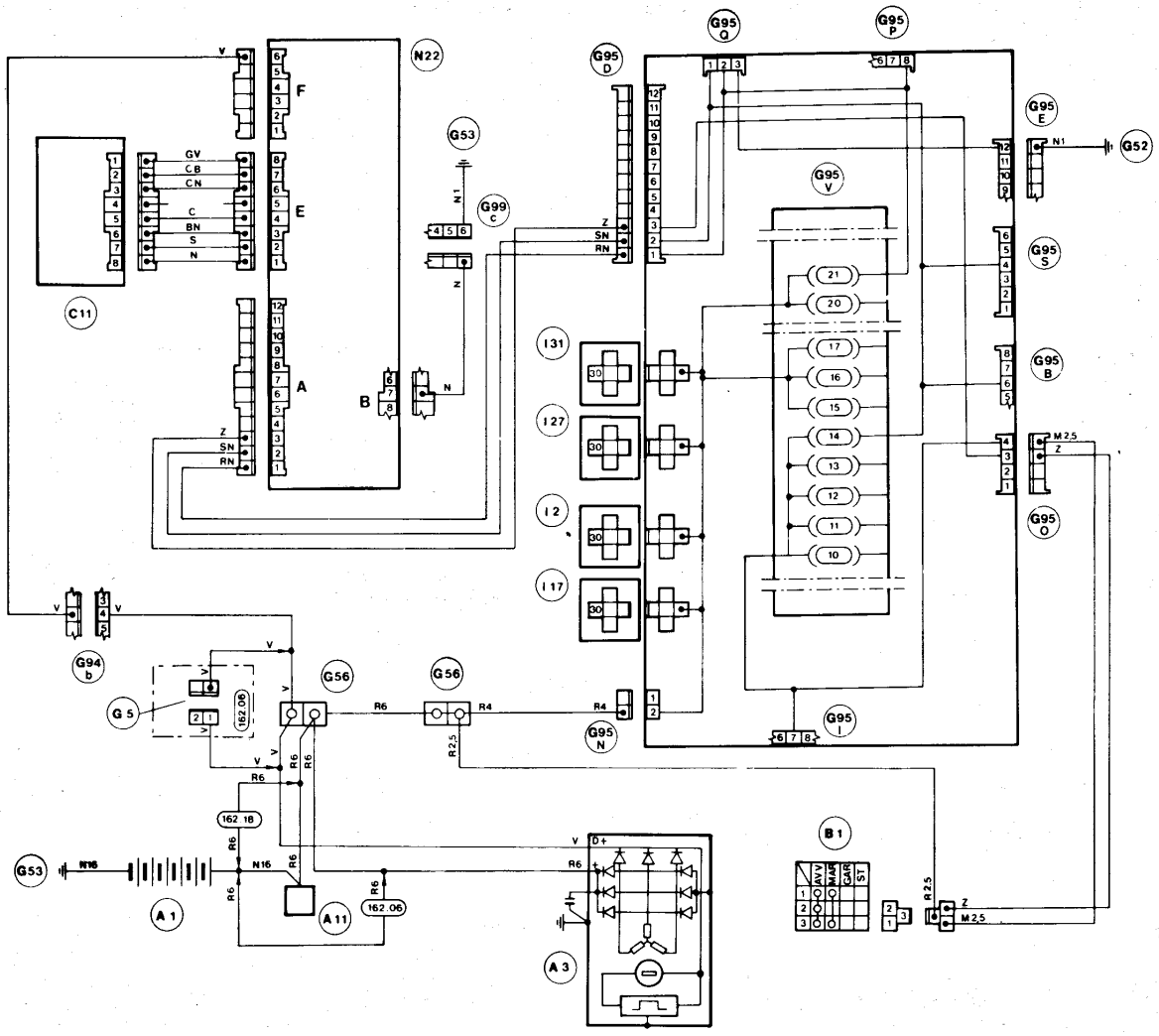
A1 Battery
A3 Alternator with electronic regulator
A11 Starter motor
B1 Ignition switch
B9 Heated rear window control switch
B12 Road hazard lights control switch
C11 Alfa Romeo Control display
G5 Multiple connector
G8 Single connector
G52 Fusebox ground
G53a Engine compartment ground - Right
G53b Engine compartment ground - Left
G56 Branch terminal board
G94c Engine compartment connector - Right
G94d Engine compartment connector - Left
G95 Central fusebox
G95V Fuses
G111 Connector for dashboard instruments wiring
I35 Key-operated supply relay
N22 Alfa Romeo Control control unit

ENGINE CHARGING GTV 6 2.5



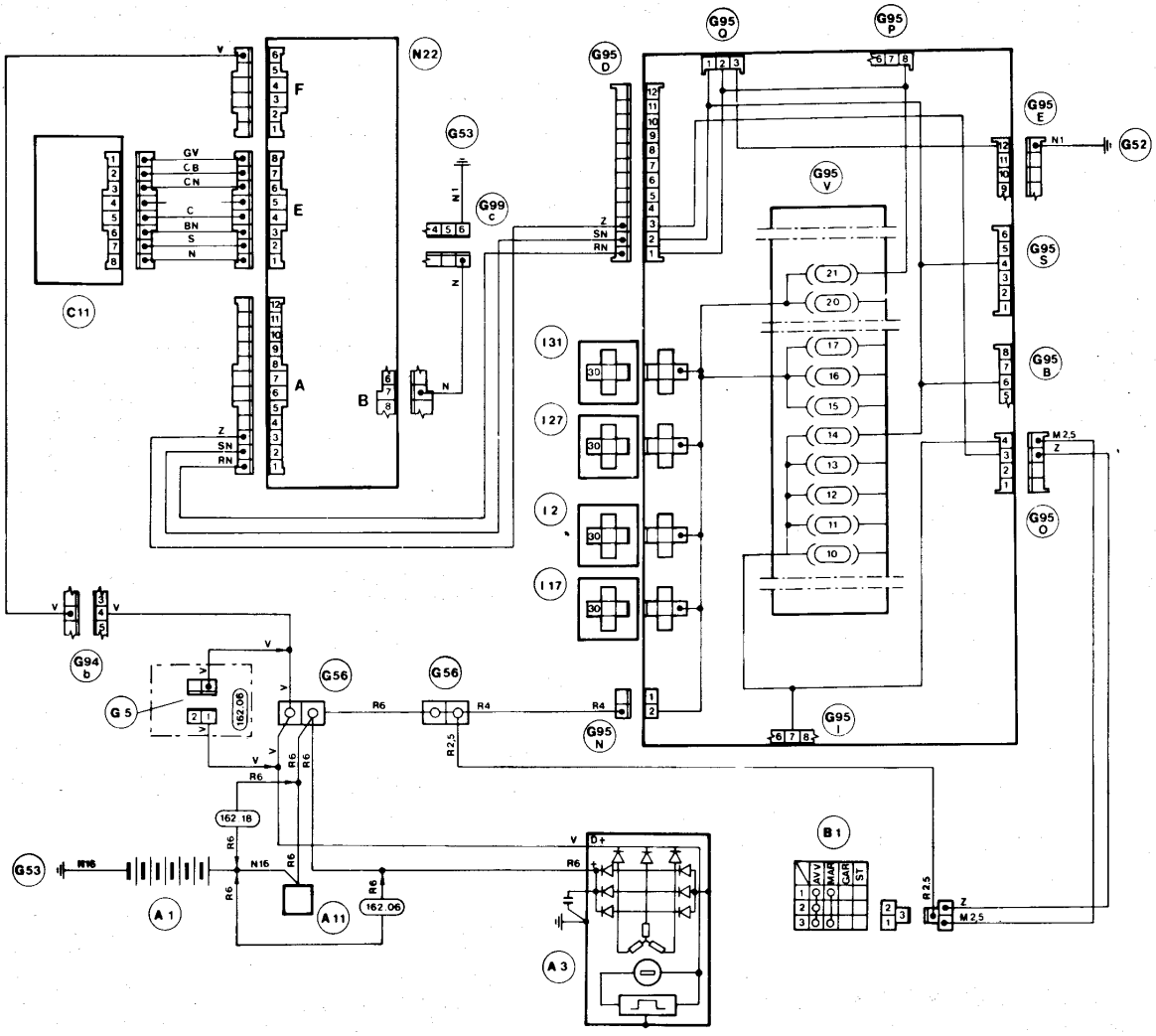
A1 Battery
A3 Alternator with electronic regulator
A14 Alternator cable terminal board
D1 Alternator warning lamp
G1 Fusebox
G53 Engine compartment ground
S2 Relay set

ENGINE CHARGING Alfa 90 1.8 2.0 2.0 iniezione 2.5 iniezione



A1 Battery
A3 Alternator with electronic regulator
A11 Starter motor
B1 Ignition switch
C11 Alfa Romeo control display
G5 Multiple connector
G52 Fusebox ground
G53 Engine compartment ground
G56 Branch terminal board
G94b 8-way engine compartment connector
G95B Switch connector
G95D Alfa Romeo control display connector
G95E Console connector
G95I Interface connector, right
G95N Battery connector
G95O Ignition switch connector
G95P Door circuit connector
G95Q Efficiency meter connector
G95S Instrument panel connector
G95V Fuses
G99c Engine bulkhead C connector
I2 Heated rear window relay
I17 Fog-light relay
I27 Seat lift relay
I31 Front electric window/heater fan relay
N22 Alfa Romeo Control control unit

ENGINE CHARGING Alfa 90 1.8 2.0 2.0 iniezione 2.5 iniezione



A1 Battery
A3 Alternator with electronic regulator
A11 Starter motor
B1 Ignition switch
C11 Alfa Romeo control display
G5 Multiple connector
G52 Fusebox ground
G53 Engine compartment ground
G56 Branch terminal board
G94b 8-way engine compartment connector
G95B Switch connector
G95D Alfa Romeo control display connector
G95E Console connector
G95I Interface connector, right
G95N Battery connector
G95O Ignition switch connector
G95P Door circuit connector
G95Q Efficiency meter connector
G95S Instrument panel connector
G95V Fuses
G99c Engine bulkhead C connector
I2 Heated rear window relay
I17 Fog-light relay
I27 Seat lift relay
I31 Front electric window/heater fan relay
N22 Alfa Romeo Control control unit

INSPECTION SPECIFICATIONS

DATA

	Car model		
	1600	1800	2000
Battery	**113.48 - 113.49 - 117.18 161.00 - 161.01**	**113.50 - 113.51 - 117.17 161.02 - 161.03**	**117.13 - 117.14 - 117.01 162.02 - 162.12 - 162.14 113.17 - 113.18 161.08 - 161.09**
Voltage (V)	12		
Capacity (Ah)	50 or 60 (1)		60 or 66 (1)
Discharge rating (A)	240 or 275 (1)		275 or 290 (1)
Electrolyte density (kg/dm³)	1.28 to 0.01		

(1) Air conditioned version

	Car model		
	2000	2500	1800
Battery	**162.10**	**162.46 - 161.80 - 161.190**	**161.34**
Voltage (V)	12		
Capacity (Ah)	66		60
Discharge rating (A)	290		255
Electrolyte density (kg/dm³)	1.28 to 0.01		

General requirements

FLUIDS AND LUBRICANTS

Description	Type	Recommended product	Quantity
Battery terminal	GREASE	Grease REINACH: E10 Tac Part No. 3671-69812	As necessary

COMPONENTS Alfa 75 Alfa 90 Alfetta GTV 6 2.5

Engine	Starter	Alternator (1)	Distributor	Coil/electronic module	Spark plug
1600 (016.00)	116.00.05.030.09 PARIS-RHONE D8E 145	116.10.05.060.08 BOSCH 0.120.489.549 K1→14V55A20	116.97.05.011.00 BOSCH 0.237.002.018	116.97.65.079.00 BOSCH 0.221.600.002	105.14.05.106.01 LODGE 2HL
1600 (061.00)	116.00.05.030.10 MAGNETI MARELLI E95-0,9/12				
1800 (016.78)	116.08.05.030.00 BOSCH 0.001.211.207 EF→12V-0,7CV				
	116.08.05.030.03 DUCELLIER DmE124P1				
1800 (062.02)	113.48.05.030.00 (3) BOSCH 12V-0,8 kW		116.97.05.011.01 MAGNETI MARELLI SM802BX	116.55.65.079.02 MAGNETI MARELLI AEI200B	
2000 (016.55)	105.12.05.030.03 BOSCH 0.001.311.110 GF→12V-1,1CV	116.10.05.060.12 PARIS-RHONE A13R192			
1600 (061.00) 2000 (062.12)	117.01.05.030.00 BOSCH 0.001.108.024 12V-1,4 kW				
2000 (017.13) (5)	105.12.05.030.03 BOSCH 0.001.311.110 GF→12V-1,1CV	116.55.05.060.00 MAGNETI MARELLI	115.44.05.011.00 BOSCH 0.237.051.002	195.00.65.079.00 (2) BOSCH 0.221.122.344	119.00.05.106.01 SILVER LODGE 2HL-E
2000 (017.13) (6)	117.01.05.030.000 BOSCH 0.001.108.024 12V-1,4 kW 116.55.05.030.03 BOSCH 0.001.108.011 12V-1,4 kW				
2000 (062.10)	116.46.05.030.00 BOSCH 0.001.311.139 GF→12V-1,1kW	119.13.05.060.00 BOSCH 0.120.489.715.716 K1→14V65A21	195.15.05.011.00 (4) MAGNETI MARELLI DT454A	117.20.05.079.00 (2) MAGNETI MARELLI BAE209C	105.14.05.106.01 LODGE 2HL
2500 (016.46)	116.46.05.030.00 BOSCH 0.001.311.139 GF→12V-1,5CV		116.46.05.011.00 BOSCH 0.237.301.008	116.97.65.079.00 BOSCH 0.221.600.002	119.00.05.106.01 SILVER LODGE 2HL-E

(1) Integral electronic voltage regulator
(2) Coil
(3) Models 161.00 - 161.02 and 162.02 only
(4) Integral Master Reset sensor
(5) Models 117.13
(6) Models 162.14

COMPONENTS (GIULIETTA)

Engine	Starter	Alternator [Regulator]	Distributor	Coil	Spark plug
1600 (016.00)	116.08.05.030.00 BOSCH 0.001.211.207 EF→12V0,7CV 116.00.05.030.10 MARELLI E95-0,9/12 116.00.05.030.09 PARIS RHONE D8E 145	116.10.05.060.03 BOSCH 0.120.400.848 K1→14V45A22 [105.36.65.028.00 BOSCH AD1] 116.10.05.060.01 PARIS RHONE A13R121 [116.10.65.028.01 PARIS RHONE AYC2112] 116.10.05.060.18 SEV MARCHAL A14/55A 71212702 [116.10.65.028.05 SEV MARCHAL-blue dot]	116.55.05.011.00 BOSCH 0.231.170.229 116.55.05.011.01 MARELLI S168BX	105.26.65.079.00 BOSCH 0.221.119.008 116.42.65.079.00 MARELLI BE 200H 105.48.65.079.00 KLITZ G 53 SB 105.12.65.079.02 SEV MARCHAL-3H	105.14.05.106.01 LODGE 2HL
1800 (016.78)	116.00.05.030.09 (1) PARIS RHONE D8E 145 116.08.05.030.03 (1) DUCELLIER DmE 124P1	116.10.05.060.08 (2) BOSCH 0.120.489.549 K1→14V55A20 116.10.05.060.12 (2) PARIS RHONE A13R192 116.55.05.060.00 (2) MARELLI	116.55.05.011.03 DUCELLIER 4533 A	105.12.65.079.03 ISKRA ATA-0105 105.12.65.079.01 DUCELLIER 2792 A	
2000 (016.55)	105.12.05.030.03 BOSCH 0.001.311.110 GE→12V1,1PS 116.55.05.030.00 PARIS RHONE D10E70 116.55.05.030.01 MARELLI E 100-1,3-1,2	116.10.05.060.08 (2) BOSCH 0.120.489.549 K1→14V55A20 116.10.05.060.12 (2) PARIS RHONE A13R192 116.55.060.00 (2) MARELLI	116.55.05.011.00 BOSCH 0.231.170.229 116.55.05.011.01 MARELLI S168BX 116.55.05.011.03 DUCELLIER 4533A	116.33.65.079.00 MARELLI BZR 202 B 116.55.65.079.01 BOSCH 0.221.119.044	105.14.05.106.01 LODGE 2HL

(1) 1600 engine only (016.00)
(2) Integral electronic voltage regulator

Electronic ignition

Engine	Coil with electronic module	Magnetic distributor	
1600 (016.00)	116.55.65.079.02 MAGNETI MARELLI AEI 200 B	116.97.05.011.01 MAGNETI MARELLI SM 802 EX	
1800 (016.78) 2000 (016.55)	116.97.65.079.00 BOSCH 0.221.600.002	116.97.05.011.00 BOSCH 0.237.02.018	
2500 (016.46)		—	

COMPONENTS GTV 2.0

Engine	Starter	Alternator [Regulator]	Distributor	Coil	Spark plug
2000 (016.55)	105.12.05.030.03 BOSCH 0.001.311.110 GF→12V-1,1PS	116.10.05.060.03 BOSCH 0.120.400.848 K1→14V45A22 [105.36.65.028.00 BOSCH AD1] 116.10.05.060.01 PARIS RHONE A13R121 [116.10.65.028.01 PARIS RHONE AYC2112]	116.55.05.011.00 BOSCH 0.231.170.229 116.55.05.011.01 MARELLI S168BX	116.55.65.079.00 BOSCH 0.221.119.044 116.33.65.079.01 MARELLI BZR202B	105.14.05.106.01 LODGE 2HL
	116.55.05.030.00 PARIS RHONE D10E70	116.10.05.060.18 SEV MARCHAL A14/55A 71212702 [116.10.65.028.05 SEV MARCHAL-blue dot]	116.55.05.011.03 DUCELLIER 4533 A	116.55.65.079.01 BOSCH 0.221.119.044	
	116.55.05.030.10 MARELLI E100-1,3-1,2	116.10.05.060.08 (1) BOSCH 0.120.489.549 K1→14V55A20 116.10.05.060.12 (1) PARIS RHONE A13R192 116.55.05.060.00 (1) MARELLI	116.97.05.011.01 (2) MARELLI SM802BX 116.97.05.011.00 (2) BOSCH 0.237.002.018	116.55.65.079.02 (3) MARELLI AEI 200B 116.97.65.079.00 (3) BOSCH 0.221.600.002	

(1) Integral electronic voltage regulator
(2) Electonic ignition engines
(3) Coils with electronic module for electronic ignition

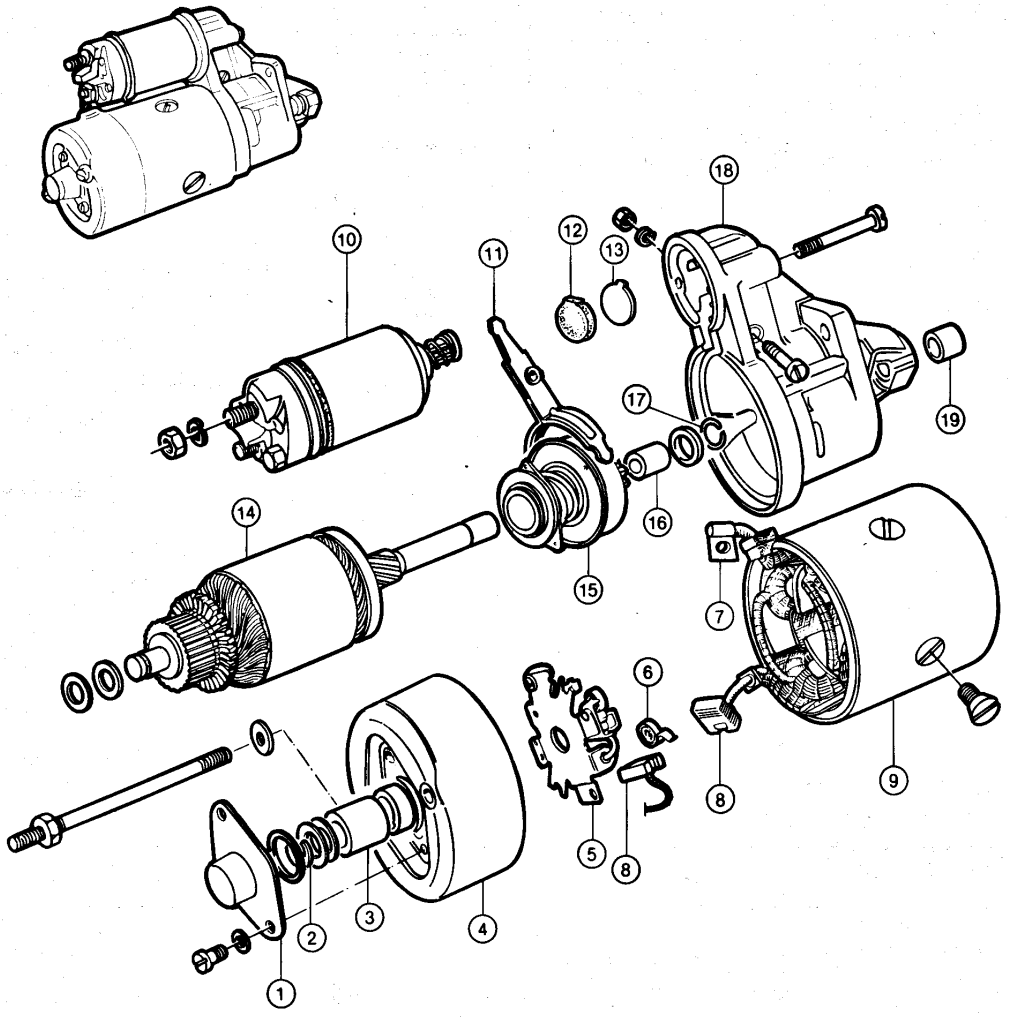
COMPONENTS Alfa 75 1.8 turbo

Engine	Starter	Alternator (1)	Distributor	Coil/electronic module	Spark plug
1800 (061.34)	116.00.05.030.09 PARIS-RHONE D8E 145	116.10.05.060.08 BOSCH 0.120.489.549 K1→14V55A20	195.05.05.011.02 BOSCH 0.237.520.001	116.97.65.079.00 BOSCH 0.221.600.002	195.05.05.106.00 TURBO LODGE 2XL
	116.00.05.030.10 MAGNETI MARELLI E95-0,9/12				
	116.08.05.030.00 BOSCH 0.001.211.207 EF→12V-0,8CV	116.10.05.060.12 PARIS-RHONE A13R192			
	116.08.05.030.03 DUCELLIER DmE124P1	116.55.05.060.00 MAGNETI MARELLI			
	113.48.05.030.00 BOSCH 12V-0,8 kW				

(1) Integral electronic voltage regulator

STARTING

BOSCH STARTER



1. Dust excluder
2. Retaining ring
3. Bush
4. Commutator end support
5. Brush carrier
6. Brush spring
7. Field winding terminal
8. Brush
9. Yoke
10. Solenoid
11. Fork
12. Rubber plate
13. Backing plate
14. Armature
15. Starter drive
16. Bush
17. Pinion stop ring
18. Drive end support
19. Bush

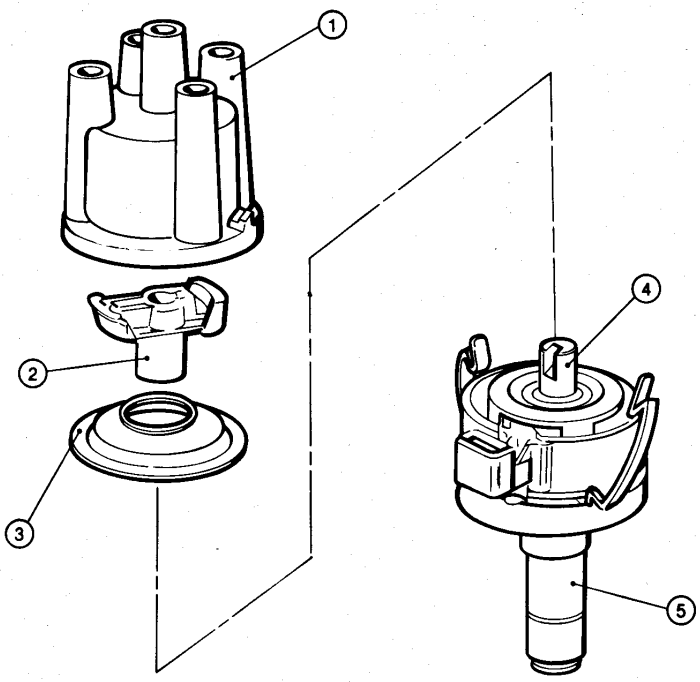
Starter	Alfa Romeo Part No.	117.01.05.030.00	113.48.05.030.00	116.55.05.030.00	116.00.05.030.09
	Type	BOSCH 12 V 1.4 kW 0.001.108.024	BOSCH 12 V 0.8 kW	PARIS-RHONE D10E70	PARIS-RHONE D8E145 12 V 0.92 kW
Rated voltage	V	12	12	12	12
Rated output	kW (HP)	1.4 (1.9)	0.8 (1.1)	—	0.92 (1.25)
Max. brush length	mm	11	11	9	9
	(in)	(0.43)	(0.43)	(0.35)	(0.35)
Max. commutator eccentricity	mm	0.06	0.06	0.05	0.05
	(in)	(0.0024)	(0.0024)	(0.002)	(0.002)
Armature shaft running clearance	mm	0.02 to 0.05 (0.001 to 0.002)			
Running torque test (pinion meshing with braked ring gear)					
— Voltage	V	9	9.3	9.2	9.3
— Current consumption	A	≤315	≤250	≤280	≤230
— Speed	rpm	≥1700	≥1300	1450	1600 to 1700
— Torque	Nm	7.5	6	8	5
	(kgm)	(0.75)	(0.60)	(0.8)	(0.5)
	(ft.lb)	(5.5)	(4.4)	(5.9)	(3.7)
Lock torque test (pinion meshing with locked ring gear)					
— Voltage	V	4	7.1	6.8	7.2
— Current consumption	A	≤750	≤480	510	≤410
— Torque	Nm	≥16	≥9.5	20	11.8
	(kgm)	(≥1.6)	(≥0.95)	(2)	(1.2)
	(ft.lb)	(≥11.8)	(≥7.0)	(14.8)	(8.7)
Freewheel overrunning torque	Ncm	12 to 18	12 to 18	12 to 19	12 to 19
	(kgcm)	(1.2 to 1.8)	(1.2 to 1.8)	(1.2 to 1.9)	(1.2 to 1.9)
	(in.lb)	(1.1 to 1.6)	(1.1 to 1.6)	(1.1 to 1.7)	(1.1 to 1.7)
Starter-mounted switch test					
— Max. draw at rated voltage	A	≤40		≤55	≤55
— Min. cut-in voltage	V	≤7.8 (*)	≤7.8 (*)	≤12.5	—
Pinion teeth module		2.1167	2.1167	2.116	2.116

(*) At 20 to 25°C (68 to 77°F)

Starter	Alfa Romeo Part No.	116.46.05.030.00	116.55.05.030.03	
	Type	BOSCH GF 12 V 1.4 kW 0.001.311.139	BOSCH 12 V 1.4 kW 0.001.108.011	
Rated voltage	V	12	12	
Rated output	kW (HP)	1.1 (1.5)	1.4 (1.9)	
Max. brush length	mm	—	—	
	(in)	—	—	
Max. commutator eccentricity	mm	—	—	
	(in)	—	—	
Armature shaft running clearance	mm	0.02 to 0.05	0.02 to 0.05	
	(in)	(0.001 to 0.002)	(0.001 to 0.002)	
Running torque test (pinion meshing with braked ring gear)				
— Voltage	V	9	9	
— Current consumption	A	290 max.	≤315	
— Speed	rpm	1200 min.	≥1700	
— Torque	Nm	8	7.5	
	(kgm)	(0.8)	(0.75)	
	(ft.lb)	(5.9)	(5.4)	
Lock torque test (pinion meshing with locked ring gear)				
— Voltage	V	6	4	
— Current consumption	A	500 max.	≤750	
— Torque	Nm	13	≥1.6	
	(kgm)	(1.3)	(≥0.16)	
	(ft.lb)	(9.6)	(≥1.2)	
Freewheel overrunning torque	Ncm	14 to 20	12 to 18	
	(kgcm)	(1.4 to 2.0)	(1.2 to 1.8)	
	(in.lb)	(1.2 to 1.8)	(1.04 to 1.6)	
Starter-mounted switch test				
— Max. draw at rated voltage	A	38	≤40	
— Min. cut-in voltage	V	7.5 (*) 9.5 (**)	≤7.8 (***)	
Pinion teeth module		2.1167	2.1167	

(*) At —20°C (—4°F)
(**) At +80°C (+176°F)
(***) At 20 to 25°C (68 to 77°F)

BOSCH DISTRIBUTOR Alfa 75 1.8 turbo



1. Cap
2. Rotor arm
3. Dust cover
4. Drive shaft
5. Distributor body

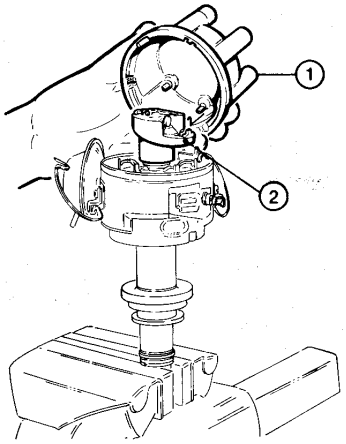
BOSCH DISTRIBUTOR

2.5 iniezione

Clamp distributor in a vice provided with protective jaw liners.

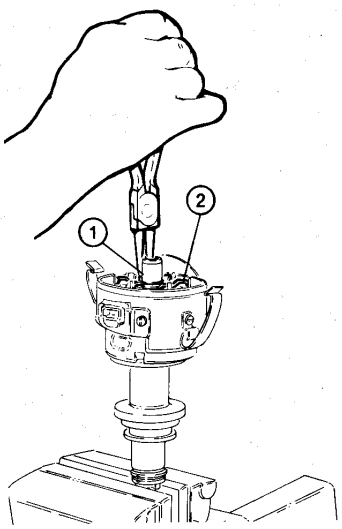
a. Remove cap (1) and take off rotor arm (2) with associated rpm limiter and then the lubricating felt.

The rpm limiter is a centrifugal device situated on the head of the rotor arm used to cut off ignition when the engine exceeds 6300 ± 150 rpm.



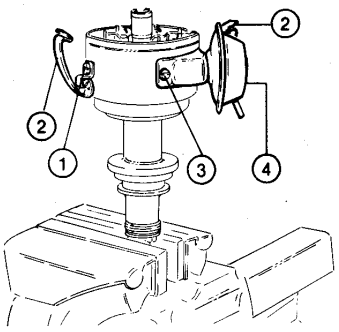
1. Distributor cap
2. Rotor arm with rpm limiter device

b. Proceeding as shown below, take off retaining ring (1) from timer (2) and retrieve the washer below.



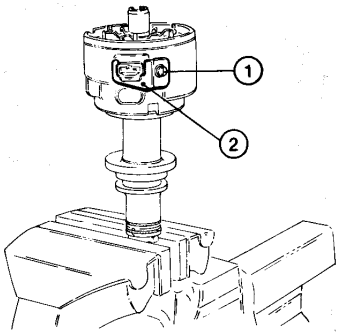
1. Retaining ring
2. Timer

c. Back off screws (1) and remove distributor cap springs (2).
Back off screws (3) retaining advance device (4) to distributor body.



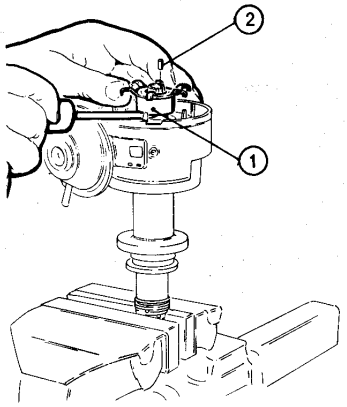
1. Spring retaining screw
2. Spring
3. Advance device retaining screw
4. Advance device

d. Remove connector (2) from distributor body by backing off screw (1).



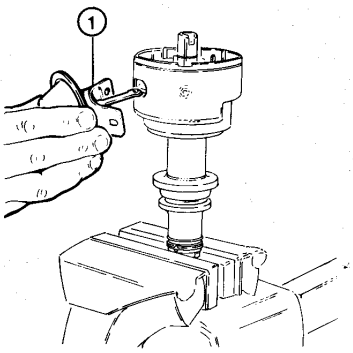
1. Connector retaining screw
2. Connector

e. Remove timer (1) from distributor shaft and retrieve the associated drive roller (2) as shown.



1. Timer
2. Drive roller

f. Remove advance device (1) releasing it from the field winding.



1. Advance device

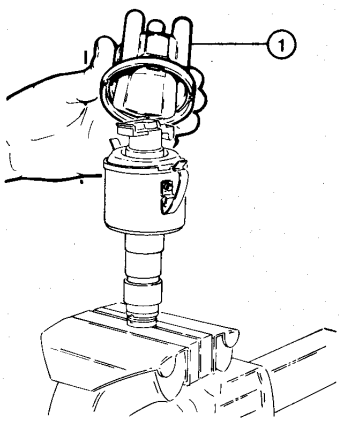
BOSCH DISTRIBUTOR

2.0 iniezione

1.8 turbo

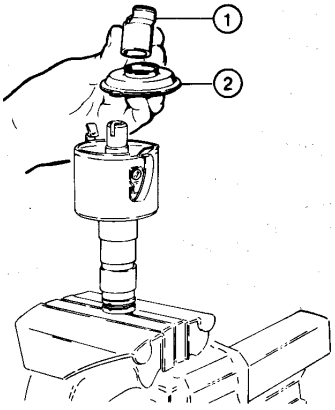
Clamp distributor in a vice provided with soft jaw liners.

a. Remove cap (1) from distributor body.



1. Cap

b. Remove rotor arm (1) and dust cover (2) from distributor shaft.



1. Rotor arm
2. Dust cover

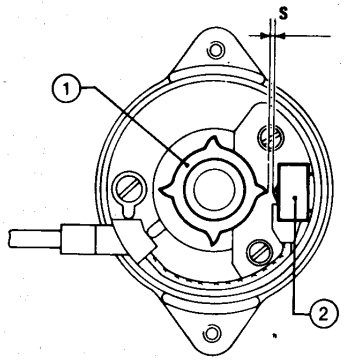
INSPECTION

1.6 1.8 2.0 2.5 iniezione

Using a suitable feeler gauge check the air gap between pulse generator (2) and timer (1).

Gap S should be as specified.

4-CYLINDER DISTRIBUTOR

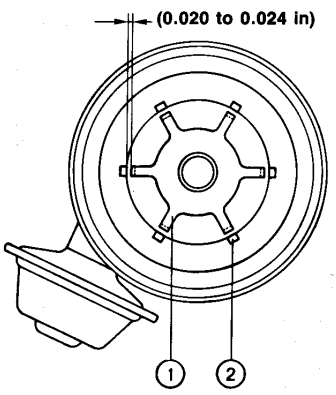


Gap S:
0.5 to 0.6 mm (0.020 to 0.024 in)
(model SM802BX)

1. Timer
2. Pulse generator

6-CYLINDER DISTRIBUTOR

S = 0.5 to 0.6 mm
(0.020 to 0.024 in)



1. Timer
2. Pulse generator

ASSEMBLY

To assembly reverse the disassembly procedure, noting the following points:

a. **Lubricate** the following components using distributor grease:
— Flyweight springs
— Flyweights

b. **Moisten** distributor shaft felt with a few drops of oil.

NOTE:
Marelli distributor
Whenever the magnetic pulse generator is removed or replaced remember to insert the magnetic spacer on installation.

BENCH TEST

1.6 1.8 2.0 2.5 iniezione

a. **Vacuum advance**
— Install distributor on tester and establish the necessary connections.
— Zero the spark on angle dial on tester turning distributor by hand or through tester motor.
Do not exceed 50 rpm.
— Connect vacuum pipe to tester vacuum gauge.
— Read advance curve in a condition of increasing vacuum (see: Inspection Specifications).
— If the curve obtained is not as specified, replace vacuum advance device.

b. **Centrifugal advance**
— Carry out the first two operations specified for vacuum advance test.
— With vacuum advance device disconnectted from tester, read automatic advance curve at increasing rpm rate (see: Inspection Specifications).
— If advance characteristics are not as specified, inspect distributor with particular reference to flyweights and springs, timer and pulse generator. Replace any inefficient components.

ON-VEHICLE DISTRIBUTOR INSTALLATION

1.6 1.8 2.0

To install the ignition distributor on the engine proceed as follows:

a. Turn the crankshaft to bring piston number 1 on compresion stroke, i.e. with both valves closed.

To this end, turn crankshaft pulley (1) so that reference mark «F» stamped on the pulley, lines up with reference pointer (2) attached to water pump.

b. Remove the cap and install the distributor in the engine front cover.

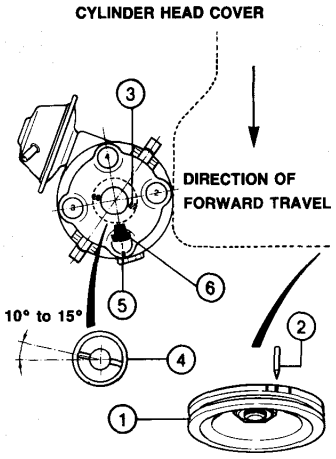
Insert drive coupling (3) in the groove provided on the spigot of oil pump (4).

c. Position the distributor correctly by suitably rotating it until reference mark (5) on the edge of distributor body lines up with the centerline of rotor arm (6) as shown.

d. Fasten the distributor in this position through the clamp provided.

e. Install cap on distributor and connect the spark plug leads in the correct ignition sequence (1-3-4-2).

f. Carry out ignition timing using a stroboscopic lamp.



1. Crankshaft pulley
2. Reference pointer
3. Drive coupling
4. Oil pump spigot
5. Reference mark
6. Rotor arm

ON-VEHICLE DISTRIBUTOR INSTALLATION

2.0 iniezione

To install the ignition distributor on the engine proceed as follows:

a. Turn crankshaft to bring piston number 1 on compression stroke, i.e. with both valves closed.

To this end, turn crankshaft pulley (1) so that reference mark «F», stamped on pulley, lines up with reference pointer (2) attached to water pump.

b. Remove the cap and install distributor on front engine cover.

Insert drive coupling (3) in the groove on the spigot of oil pump (4).

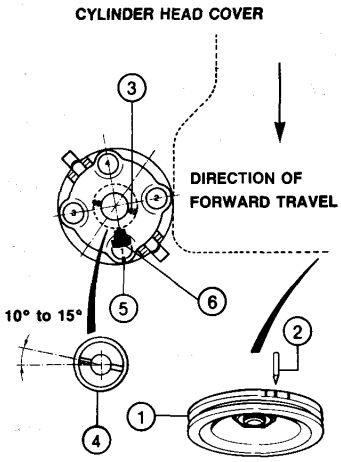
c. Correctly position the distributor turning it until reference mark (5) on the edge of the body lines up with the centerline of rotor arm (6) as shown.

d. Fasten the distributor in this position using the clamp provided.

e. Install the cap on the distributor and connect the spark plug leads in the correct sequence (1-3-4-2).

f. Warm up engine and check with a stroboscopic gun that at 900 ± 50 rpm idle speed, ignition occurs with reference mark «F» (10° ± 1° before T.D.C.) aligned to the pointer.

CAUTION:
The system does not require and does not permit any ignition advance adjustment.
Therefore, DO NOT TURN the distributor, otherwise the ignition sequence might be altered with extremely serious consequences.



1. Crankshaft pulley
2. Reference pointer
3. Drive coupling
4. Oil pump spigot
5. Reference mark
6. Rotor arm

ON-VEHICLE DISTRIBUTOR INSTALLATION

Alfa 75 1.8 turbo

To install the ingition distributor on the engine proceed as follows:

a. Turn crankshaft to bring piston number 1 on compression stroke, i.e. with both valves closed.

To this end, turn crankshaft pulley (1) so that reference mark «F», stamped on pulley, lines up with reference pointer (2) attached to the water pump.

b. Remove the cap and install distributor on front engine cover.

Insert drive coupling (3) in the groove on the spigot of oil pump (4).

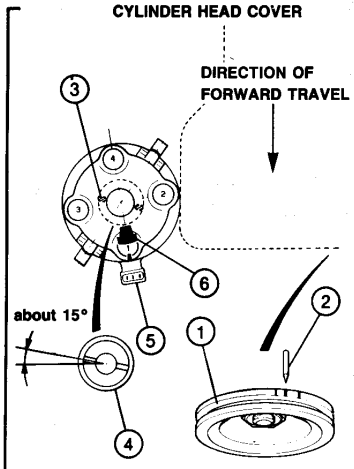
Ensure that the reference mark is facing as indicated in the figure.

c. Position the distributor correctly by suitably rotating it until connection point (5) for supply cable connector lines up with the centreline of rotor arm (6) as shown.

d. Fasten the distributor in this position using the clamp provided.

e. Install the cap on the distributor and connect the spark plug leads in the correct ignition sequence (1-3-4-2).

f. Warm up engine and check with a stroboscopic gun that at 900 ±50 rpm idle speed, ignition occurs with reference mark «F» (9° before T.D.C.) aligned to the pointer.

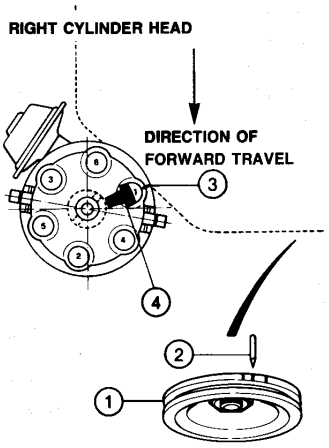


1. Crankshaft pulley
2. Reference pointer
3. Drive coupling
4. Oil pump spigot
5. Connection point
6. Rotor arm

e. Install cap on distributor and connect the spark plug leads in the correct ignition sequence (1-4-2-5-3-6).

f. Carry out ignition timing using a stroboscopic lamp.

CAUTION:
The distributor rotor arm is provided with a rpm limiter that cuts off ignition when the engine speed exceeds 6300 ± 150 rpm.



1. Crankshaft pulley
2. Reference pointer
3. Reference mark
4. Rotor arm

ON-VEHICLE DISTRIBUTION INSTALLATION

2.5 iniezione

To install the ignition distributor on the engine proceed as follows:

a. Turn the crankshaft to bring piston number 1 on compression stroke, i.e. with both valves closed.

To this end, turn crankshaft pulley (1) so that reference mark «F» stamped on the pulley, lines up with reference pointer (2)

b. Remove the cap and install the distributor with the rotor arm pointing toward cylinder number 1.

c. Position the distributor correctly by suitably rotating it until reference mark (3) on the edge of distributor body lines up with the centerline of rotor arm (4) as shown.

d. Fasten the distributor in this position through the clip provided.

INSPECTION SPECIFICATIONS

IGNITION DISTRIBUTOR Alfa 75 Alfa 90 Alfetta GTV 6 2.5

Distributor	Alfa Romeo Part No.	116.97.05.011.00	115.44.05.011.00 (1)	116.97.05.011.01	116.46.05.011.00 (2)
	Type	BOSCH 0.237.002.018	BOSCH 0.237.501.002 (1)	MARELLI SM802BX	BOSCH 0.237.301.008 (2)
Firing order		1-3-4-2			1-4-2-5-3-6
Pulse generator coil resistance	Ω	1000 ± 5%	—	730 ± 5%	—
Rotor arm internal resistance	Ω	1000 ± 0.2	—	5000 ± 1	—
Gap	mm	—	—	0.5 to 0.6	—
	(in)	—	—	(0.020 to 0.024)	

(1) Distributor fitted to engine 017.13 (Motronic)
(2) Distributor fitted to engine 016.46 (2500)

IGNITION DISTRIBUTOR Giulietta GTV 2.0

Distributor	Alfa Romeo Part No.	116.55.05.011.00	116.55.05.011.01	116.55.05.011.03
	Type	BOSCH 0.231.170.229	MARELLI S168BX	DUCELLIER 4533A
Firing order		1-3-4-2		
Pulse generator coil resistance	Ω	—	—	—
Rotor arm internal resistance	Ω	≥ 4500	5000 ± 1	5000
Contact gap	mm	0.35	0.37 to 0.43	0.35
	(in)	(0.014)	(0.015 to 0.017)	(0.014)
Contact dwell angle		62° ± 3°	55° ± 3°	57° ± 3°
Contact load	g	500	475 ± 50	450 ± 50
	(oz.)	(17.6)	(16.7 ± 1.8)	(15.8 ± 1.8)

Distributor	Alfa Romeo Part No.	116.97.05.011.01 (1)	116.97.05.011.00 (1)	
	Type	MARELLI SM802BX	BOSCH 0.237.002.018	
Firing order		1-3-4-2		
Pulse generator coil resistance	Ω	730 ± 5%	1000 ± 5%	
Rotor arm internal resistance	Ω	5000 ± 1	1000 ± 0.2	
Gap	mm	0.5 to 0.6	0.5 to 0.6	
	(in)	(0.020 to 0.024)	(0.020 to 0.024)	

(1) Distributor fitted to electronic ignition engines

ECU

Supply voltage ..... 4 to 16 V
Max. current ..... 6 A
Heat sink temperature gauge ..... —30 to +125°C (—22 to +257°F)

IGNITION ADVANCE

Advance (1)	Engines			
	016.00 - 016.78 - 016.55 061.00 - 062.02 - 062.12	017.13	016.46	061.34
Static advance (2)	7° ±1° B.T.D.C. at idle	10° ±1° B.T.D.C. at idle	7° ±1° B.T.D.C. at idle	9° B.T.D.C. at idle
Max. advance (3)	38° $^{+0°}_{-3°}$ B.T.D.C. at 5100 rpm	—	31° $^{+0°}_{-3°}$ B.T.D.C. at 5100 rpm	—

(1) Check static and max. advance with distributor vacuum pipe disconnected
(2) Static advance position: Align pointer to ref. mark «F»
(3) Max. advance position: Align pointer to ref. mark «M»

AUTOMATIC AND VACUUM ADVANCE CURVES

BOSCH 0.237.002.018

Speed (rpm)	Auto. advance curve		Vacuum mmHg (inHg)	Vacuum advance curve	
	Max.	Min.		Max.	Min.
100	15'	1°30'	0 (0)	30'	—30'
230	—30'	45'	60 (2.36)	45'	—30'
280	0°	0°	90 (3.54)	2°	—30'
330	15'	—45'	101 (3.98)	2°45'	—30'
380	0°	—1°	150 (5.91)	6°	3°
470	1°	—1°15'	195 (7.68)	8°30'	5°45'
900	6°	3°30'	210 (8.27)	8°45'	6°30'
1900	11°15'	9°	225 (8.86)	8°45'	6°45'
2500	15°15'	12°45'	300 (11.81)	8°45'	6°45'
2700	15°30'	13°30'			
3000	15°	13°			

BOSCH 0.231.170.229

Speed (rpm)	Auto. advance curve		Vacuum mmHg (inHg)	Vacuum advance curve	
	Max.	Min.		Max.	Min.
150	Start	Start	0 (0)	30'	—30'
200	30'	—30'	50 (1.97)	30'	—30'
400	30'	—30'	100 (3.94)	4°15'	—30'
550	2°30'	—30'	212 (8.35)	9°45'	6°45'
800	5°45'	2°15'	320 (12.60)	9°45'	6°45'
1000	7°30'	4°30"			
1500	10°	7°			
2550	16°30'	13°30'			
3000	16°30'	13°30'			

BOSCH 0.237.301.008

Speed (rpm)	Auto. advance curve		Vacuum mmHg (inHg)	Vacuum advance curve	
	Max.	Min.		Max.	Min.
100	—15'	45'	0 (0)	30'	—30'
300	—30'	30'	90 (3.54)	30'	—30'
350	—15'	—15'	105 (4.13)	1°	—30'
400	15'	—45'	128 (5.04)	2°30'	—30'
450	15'	—45'	165 (6.50)	5°	2°15'
600	2°15'	—10'	180 (7.09)	5°45'	3°15'
1300	10°45'	8°	196 (7.72)	6°	4°
1500	12°	9°45'	300 (11.81)	6°	4°
1900	13°30'	11°30'			
2100	14°	12°			
2400	13°45'	11°45'			
3000	13°	11°			

MARELLI SM802BX

Speed (rpm)	Auto. advance curve		Vaccum mmHg (inHg)	Vacuum advance curve	
	Max.	Min.		Max.	Min.
250	0°	0°	0 (0)	30'	—30'
300	15'	—15'	40 (1.58)	30'	—30'
450	30'	—1°	100 (3.94)	2°30'	—30'
550	1°30'	—30'	212 (8.35)	9°45'	6°45'
800	4°15'	2°	300 (11.81)	9°45'	6°45'
1000	6°15'	4°30"			
1900	11°30'	9°			
2550	15°30'	13°30'			
3000	15°15'	13°15'			

MARELLI S168BX

Speed (rpm)	Auto. advance curve		Vacuum mmHg (inHg)	Vacuum advance curve	
	Max.	Min.		Max.	Min.
150	Start	Start	0 (0)	30'	—30'
200	45'	—30'	70 (2.76)	30'	—30'
450	45'	—30'	100 (3.94)	2°30'	—30'
550	2°45'	—30'	212 (8.35)	9°45'	6°45'
700	6°	1°30'	320 (12.60)	9°45'	6°45'
800	7°	2°45"			
1000	8°15'	5°15'			
2550	16°30'	13°30'			
3000	16°30'	13°30'			

DUCELLIER 4533A					
Speed (rpm)	Auto. advance curve		Vacuum mmHg (inHg)	Vacuum advance curve	
	Max.	Min.		Max.	Min.
150	Start	Start	0 (0)	30'	—30'
200	45'	—30'	70 (2.76)	30'	—30'
450	45'	—30'	100 (3.94)	2°30'	—30'
550	2°45'	—30'	212 (8.35)	9°45'	6°45'
700	6°	1°30'	300 (12.60)	9°45'	6°45'
800	7°	2°45'			
1000	8°15'	5°15'			
2550	16°30'	13°30'			
3000	16°30'	13°30'			

IGNITION COIL Alfa 75 Alfa 90 Alfetta GTV 6 2.5

Coil	Alfa Romeo Part No.	116.97.65.079.00 (1)	195.00.65.079.00 (2)	116.55.65.079.02 (1)	
	Type	BOSCH 0.221.600.002	BOSCH 0.221.122.344	MAGNETI MARELLI BAE207B	
Primary winding resistance [at 20°C (68°F)]	Ω	0.7 to 1	0.5 ± 10%	0.72 ± 10%	
Secondary winding resistance [at 20°C (68°F)]	Ω	6700 to 9600	6000 ± 10%	7900 ± 10%	

(1) Coil with ECU
(2) Coil fitted to engine 017.13 (Motronic)

IGNITION COIL Giulietta

Coil	Alfa Romeo Part No.	105.26.65.079.00	116.42.65.079.00	105.48.65.079.00	105.12.65.079.02
	Type	BOSCH 0.221.119.008	MARELLI BE200H	KLITZ G53SB	SEV MARCHAL 3H
Primary winding resistance [at 20°C (68°F)]	Ω	2.9 to 3.4	3.14 ± 4%	2.9 to 3.2	>3
Secondary winding resistance [at 20°C (68°F)]	Ω	6000 to 10000	9400 ± 10%	5400 to 8000	5250 to 6000

Coil	Alfa Romeo Part No.	105.12.65.079.03	105.12.65.079.01	116.33.65.079.00	116.55.65.079.01
	Type	ISKRA ATA-0105	DUCELLIER 2792A	MARELLI BZR202B	BOSCH 0.221.119.044
Primary winding resistance [at 20°C (68°F)]	Ω	3.2	2.8 to 3.4	1.70 ± 4% (1)	1.7 to 2.2 (2)
Secondary winding resistance [at 20°C (68°F)]	Ω	6740	6000 to 10000	8500 ± 10%	7000 to 12000

Coil	Alfa Romeo Part No.	116.55.65.079.02 (3)	—		
	Type	MARELLI BAE207B	BOSCH (3) 1.227.020.010		
Primary winding resistance [at 20°C (68°F)]	Ω	0.72 ± 10%	0.82		
Secondary winding resistance [at 20°C (68°F)]	Ω	7900 ± 10%	8.25		

(1) Fitted to 2000 engine (016.55) r = 0.8 ± 10%
(2) Fitted to 2000 engine (016.55) r = 0.9 ± 5%
(3) Coil with ECU fitted to electronic ignition engine

IGNITION COIL (GTV 2.0)

Coil	Alfa Romeo Part No.	116.55.65.079.00	116.33.65.079.01	116.55.65.079.01	116.55.65.079.02 (3)
	Type	BOSCH 0.221.119.044	MARELLI BZR202B	BOSCH 0.221.119.044	MARELLI BAE207B
Primary winding resistance [at 20°C (68°F)]	Ω	1.7 to 2.2	1.70 ± 4% (1)	1.7 to 2.2 (2)	0.72 ± 10%
Secondary winding resistance [at 20°C (68°F)]	Ω	7000 to 12000	8500 ± 10%	7000 to 12000	7900 ± 10%

Coil	Alfa Romeo Part No.	116.97.65.079.00 (3)
	Type	BOSCH 0.221.600.002
Primary winding resistance [at 20°C (68°F)]	Ω	0.7 to 1
Secondary winding resistance [at 20°C (68°F)]	Ω	6700 to 9600

(1) Resistance r = 0.8 ± 10%
(2) Resistance r = 0.9 ± 5%
(3) Coil with ECU fitted electronic ignition engine

SPARK PLUGS

Alfa Romeo Part No.	105.14.05.106.01	119.00.05.106.01 (1)	— (2)
Type	LODGE 2 HL	SILVER LODGE 2 HL-E	TURBO LODGE 25XL

(1) Spark plug fitted to engines 017.13 (Motronic), 062.10 and 016.46 (2500)
(2) Spark plug fitted to engine 061.34 (1800)

FLUID AND LUBRICANTS

Description	Type	Type of product	Quantity
Spark plug thread	OIL	ISECO Molykote A Part No. 4500-18304	As required

TIGHTENING TORQUES

Description	Unit of measure		
	Nm	kgm	ft.lb
Spark plug (wet, ISECO Molykote A)	25 to 34	2.5 to 3.5	18.4 to 25.1

TROUBLESHOOTING

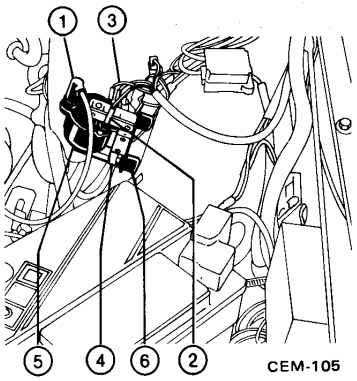
Defect	Probable Cause	Remedy
Engine misfires	• Erratic HT connections	Replace or fasten HT connections
	• Ignition coil cap sparking or burnt	Replace coil
	• Distributor cap sparking or burnt	Replace distributor cap
	• Rotor arm sparking or burnt	Replace rotor arm
	• Coil secondary S/C or O/C (coil sparks weak)	Replace coil
	• Mechanical fault in distributor (visually check for gap between rotor and stator)	Disassemble distributor and replace defective parts. If necessary, replace entire distributor
	• Pulse generator resistance inside distributor not as specified	Replace pulse generator coil
	• Incorrect ignition timing	Check and adjust ignition timing
	• Defective fuel supply system	Remedy as necessary
	• Defective ECU	Replace ECU
Engine will not fire	• Connections O/C	Trace and rectify O/C or replace connections
	• Ignition coil cap burnt through by HT or grounded	Replace ignition coil
	• Distributor cap burnt through by HT or grounded	Replace ignition distributor cap
	• Rotor arm burnt through or grounded	Replace rotor arm
	• Coil primary S/C or grounded	Replace ignition coil
	• Coil secondary O/C	Replace ignition coil
	• Distributor gap incorrect	Disassemble distributor and replace any defective parts

IGNITION COIL

6 cylinders Alfa 90 2.0 iniezione

DESCRIPTION

Closed core coil is characterized by reduced primary winding resistance and inductance.
Because of this, primary current signal must be strictly controlled in terms of both peak and RMS values.
Control is effected directly by ECU, which also regulates charging time as a function of engine rpm rate, thereby providing optimum spark power characteristics.



1. HT lead
2. Coil secondary lead
3. Coil primary lead
4. Retaining nuts
5. Coil
6. Cushion pads

ELECTRICAL TESTS

a. Connect a voltmeter across ground and coil positive 15.
b. Turn ignition key to ON position and check for +12 V signal.
c. Turn off ignition key and, using the ohmmeter, check for open circuits across coil negative 1 and pin 35 of WHITE connector on ECU.
d. Disconnect conductors from coil.
e. Using the ohmmeter, check that secondary resistance across positive 15 and HT terminal is **3.7 Ohm ±10%**.
f. Using the ohmmeter, check that primary resistance across positive 15 and negative is virtually nil (**0.344 Ohm**).

INSTALLATION

For installation adopt a reversal of the removal sequence, and note the following points:

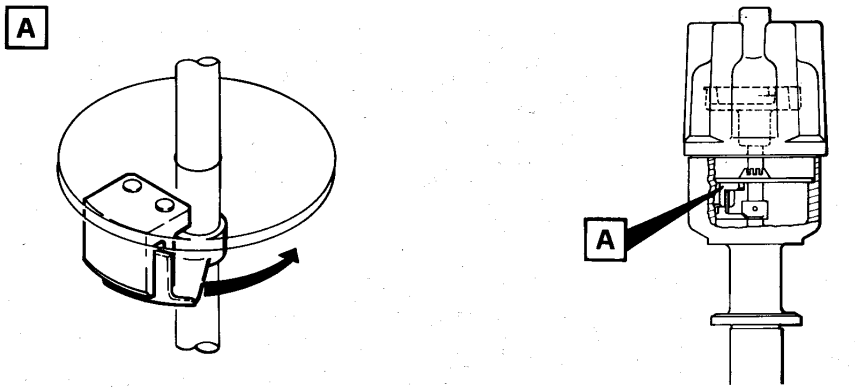
— Interpose **new** cushion pads between coil and vehicle left side wall.
— Ensure that HT and primary and secondary winding connectors are tight.

REPLACEMENT

a. Disconnect battery negative terminal.
b. Disconnect HT lead (1) from coil.
c. Disconnect lead (2) from positive coil secondary terminal 15.
d. Disconnect leads (3) from negative coil primary terminal 1.
e. Back off nuts and washers (4) retaining coil to vehicle left side wall.
f. Remove coil (5) and two cushion pads (6).

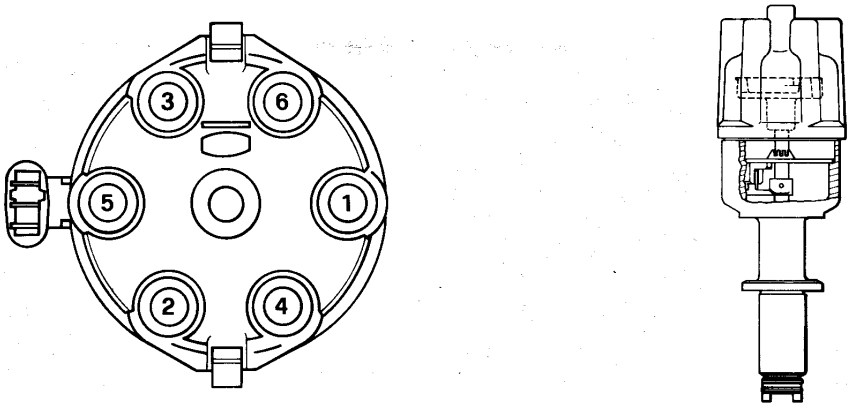
SPECIFICATIONS

MASTER RESET SENSOR



Description	Unit of measure
Supply voltage (d.c.)	5 V ± 0.25 V
Max. permissible load	40 mA
Signal initiation (advance angle relative to TDC cylinder No. 1)	113°
Signal on angle	23° to 31°
Low voltage level (I ≤10 mA)	≤0.4 V
High voltage level (I ≤10 μA)	3.5 to 5 V

DISTRIBUTOR



Distributor	Alfa Romeo Part No.	195.15.05.011.00 (1)	
	Type	MARELLI DT 454A	
Firing order		1-4-2-5-3-6	

(1) Distributor with integral master reset sensor