CHARACTERISTICS.

I. DYNAMOS AND VOLTAGE REGULATORS.

6 volt equipment :

Make	AZ and AY vehicles		AM and AK vehicles	
	Dynamo	Voltage regulator	Dynamo	Voltage regulator
DUCELLIER	7276 G	8325 A	7301 G	8308 A
PARIS-RHONE	G 11 R 111	XT 212	G 10 C 26	XD 213

12 volt equipment :

Make	Dynamo	Voltage regulator
DUCELLIER	7302 G	8243 F
PARIS-RHONE	G 10 C 51	YT 2116

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Skimming the commutator :

Type of dynamo	7276 G	G 11 R 111	7301 G	G 10 C 26	7302 G	G 10 C 51
min. diameter of commutator after skimming	52.5 mm (2.06 in)	51 mm (2 in)	35 mm (1.37 in)	35.5 mm (1.39 in)	35 mm (1.37 in)	35 mm (1.37 in)

Testing the dynamos on a bench or on the vehicle :

(Dynamo without regulator : « DYN » terminal connected to « EXC » terminal and body of dynamo to earth).

Type of dynamo	7276 G	G 11 R 111	7301 G G 10 C 26	7302 G	G 10 C 51
Cut-in speed at 6.5 V (when cold)	1350 rpm	1200 rpm	950 rpm		
Flow at 6.5 V (when cold)	12 A at 1800 rpm 21 A at 2200 rpm	13 A at 1600 rpm 25 A at 2200 rpm	8 A at 1500 rpm 22 A at 2000 rpm		
Cut-in speed at 13 V (when cold)				1520 rpm	1700 rpm
Flow at 13 V (when cold)				12 A at 2000 rpm 25 A at 3000 rpm	19 A at 2200 rpm 33 A at 3000 rpm

TESTING VOLTAGE REGULATORS ON A BENCH.

A - 8325 A regulator :

Pull in voltage : 6 to 6.5 volts *(when cold).*
Drop out voltage : at least 1 volt less than the pull in voltage.
Return current : 5 amperes at 6 volts *(when cold).*
REGULATION ; (with the dynamo turning at 3500 rpm) :

a) Current limiting section :
Set the voltage to 6.6 volts, the current should be 23 to 25 amperes.

b) Voltage regulating section :
Set the current to 4 amperes, the voltage should be 7.1 to 7.5 volts.
Set the current to 18 amperes, the voltage should be 6.9 to 7.3 volts.

B - XT 212 regulator :

Pull in voltage : 6 to 6.5 volts *(when cold).*
Drop out voltage : at least 1 volt less than pull in voltage.
Return current : 3 to 7 amperes at 6 volts *(when cold).*
REGULATION : (with dynamo turning at 3500 rpm)

a) Current limiting section :
Set the voltage to 6.6 volts, the current should be 23 to 25 amperes.

b) Voltage regulating section :
Set the current to 5 amperes, the voltage should be 7.3 to 7.7 volts.
Set the current to 1 8 amperes, the voltage should be 7.1 to 7.5 volts.

C - 8308 A and XD 213 regulators :

Pull in voltage : 6 to 6.5 volts.
Drop out voltage : at least 1 volt less than the pull in voltage.
REGULATION : (with dynamo turning to 3500 rpm) :

a) Current limiting section :
Set the voltage to 6.5 volts, the current should be 25 to 32 amperes.

b) Voltage regulating section :
Set the current to 5 amperes, the voltage should be 7.5 to 8.3 volts.
Set the current to 25 amperes, the voltage should be 6.6 to 7.2 volts.

D - 8343 F and YT 2116 regulators :

Pull in voltage : 12 to 13.6 volts.
Drop out voltage : at least 1 volt less than the pull in voltage.
Return current : 5 amperes max. at 13 volts.
REGULATION : (Dynamo turning at 3500 rpm) :

8343 F regulator :

a) Current limting section :
Set the voltage to 13.2 volts, the current should be 20 to 22 amperes.
b) Voltage regulating section :
Set the current to 2 amperes, the voltage should be 14 to 14.4 volts.
Set the current to 17 amperes, the voltage should be 13.5 to 14.4 volts.

YT 2116 regulator :

Set the voltage to 12.5 volts, the current should be 30 to 33 amperes.
Set the voltage to 13.5 volts, the current should be 18 to 33 amperes.
Set the voltage to 14 volts, the current should be 5 to 28 amperes.

II. ALTERNATORS AND REGULATORS (12 volts).

IMPORTANT :
- Never rotate the alternator unless it is connected to the battery.
- Never connect the alternator to a battery with reversed posts.
- Never check the operation of the alternator by short circuiting the « + » terminal and the earth or the « EXC » terminal and the earth.
- Never recharge the battery and never use an arc welder on the chassis unless both cables (positive and negative) have been disconnected and the earth positive cable has been insulated.

A. DUCELLIER 7522 B alternator :

On AK vehicles (3/1966 ⟶ 5/1968) and on AM « AMI 6 » vehicles (7/1966 ⟶ 5/1968).

DUCELLIER 7542 A alternator (identical to the preceeding one, except for the alternative outlet terminals to the transistorised relay for charging warning lamp).

On AYA 3 « Dyane 6 » vehicles (1/1968 ⟶ 9/1968)
On AYM « Mehari » vehicles (8/1968 ⟶ 7/1969).

Nominal rating : 260 watts.
Nominal current at 13 volts : 20 amperes at 5000 rpm (alternator speed)
Resistance of rotor : 7.4 Ω
Pull in speed : 1500 rpm (alternator speed).
Ratio of alternator rotating speed/engine rotating speed : 2.1/1.

DUCELLIER 7542 G alternator :

ON AYA 3 « Dyane 6 » vehicles fitted with the « FROID -20° » heating system.
Nominal rating : 320 watts.
Nominal current at 13 volts = 25 amperes at 6000 rpm (alternator speed).

DUCELLIER 8347 B alternator (single stage «J» type) for above mentioned alternators.

B. DUCELLIER 7534 A alternator :

PARIS-RHONE A 11 M 4 alternator :

On following vehicles
- *AY CA « Mehari » (7/1969 ⟶ 9/1973)*
- *AK (5/1968 ⟶ 7/1970)*
- *AY « Dyane 4 » (3/1968 ⟶ 2/1970)*
- *AYB « Dyane 6 » (9/1968 ⟶ 2/1970)*

PARIS-RHONE A 11 M 11 alternator :

On AY CA « Mehari » vehicles (9/1973 ⟶ 9/1974)

DUCELLIER 7532 alternator
PARIS-RHONE A 11 M 6 alternator *(⟶ 9/1973)*
PARIS-RHONE A 11 M 12 alternator *(9/1973 ⟶)*

Identical to the three preceding ones, but without alternative output connections for charging warning lamp.

On following vehicles
- *AY « Dyane 4 » (2/1970 ⟶)*
- *AY CB « Dyane 6 » (2/1970 ⟶)*
- *AK (7/1970 ⟶)*
- *AZA 2 « 2 CV 4 » and AZ KA « 2 CV 6 » (2/1970 ⟶)*
- *AZU (7/1972 ⟶)*
- *AM « AMI 6 » (5/1968 ⟶ 3/1969) and AM 3 « AMI 8 » (3/1969 ⟶)*
- *AY CA « Mehari » (9/1974 ⟶)*

FEMSA ALN 12-1 alternators on all A vehicles *(2/1975 ⟶)*

Output	: 400 watts
Voltage	: 14 volts
Nominal current	: 28 amp. at 8000 rpm (alternator speed)
Resistance of rotor	: 7 Ω
Pull in speed	: 1450 rpm (alternator speed)
Ratio of alternator rotating speed/engine rotating speed	: 1.8/1

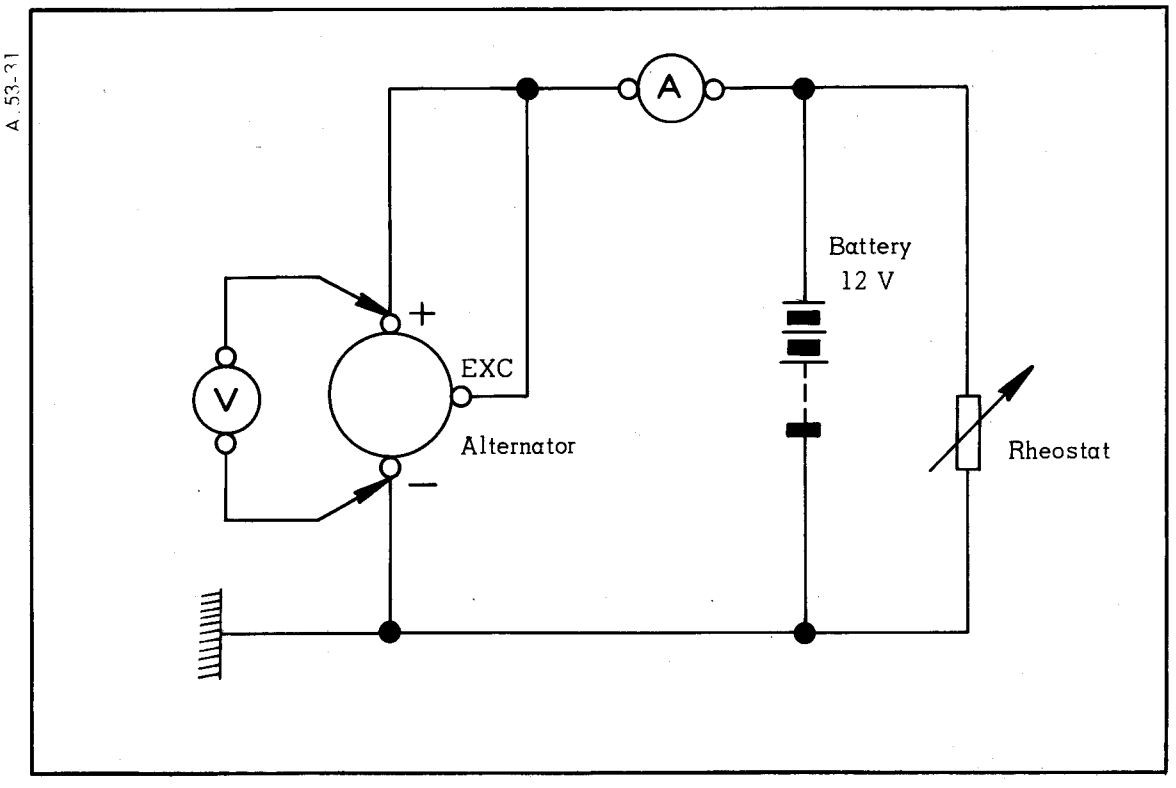
DUCELLIER 8347 C regulator
PARIS-RHONE AYA 213 regulator

Suitable for all seven alternators mentioned above.

C. DUCELLIER 8363 transistorized relay :

Fitted on vehicles equipped with alternators having alternative output connections : alternator 7542 A - 7542 G- 7534 A - A 11 M 4 - A 11 M 11 .
This relay switches off the charging warning lamp when the alternator is delivering the normal current.

CHECKING THE OUTPUT OF AN ALTERNATOR.



Connect up as per diagram, using a voltmeter **V**, an ammeter **A** and a rheostat, or better still, using a combined « Voltmeter-ammeter-rheostat », now available commercially.

Checking the output : (with a fully charged battery)

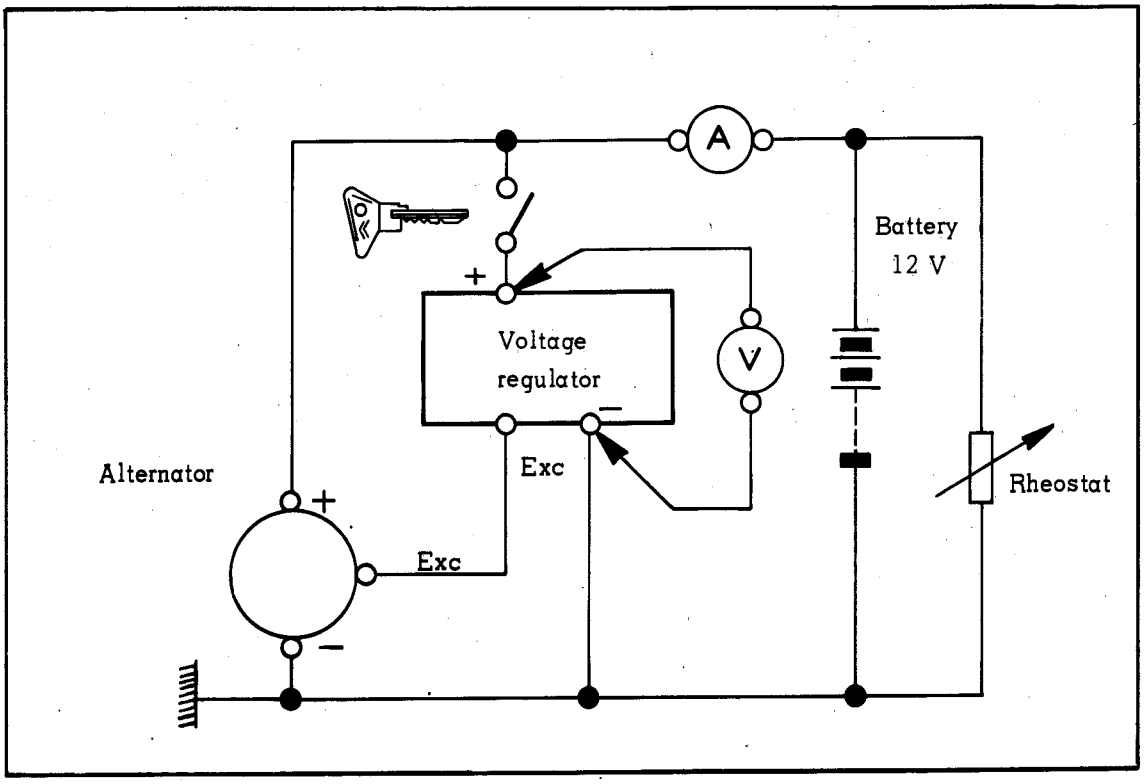
a) 7522 B and 7542 A alternators :
In order to measure the output of the alternator, **progressively increase** the alternator speed and actuate the rheostat to *maintain the voltage at 13 volts.*
Output : 5 amperes at 900 rpm engine speed (1900 rpm alternator speed) and at 13 volts.
17 amperes at 1800 rpm engine speed (3800 rpm alternator speed) and at 13 volts.
20 amperes at 2400 rpm engine speed (5000 rpm alternator speed) and at 13 volts.

b) 7542 G alternator :
Output : 7.5 amperes at 1300 rpm engine speed (2700 rpm alternator speed) and at 13 volts.
24 amperes at 2900 rpm engine speed (6000 rpm alternator speed) and at 13 volts.

c) 7542 A - 7532 A - A 11 M 4 - A 11 M 6 - A 11 M 11 - A 11 M 12 - ALN 12-1 alternators :
In order to measure the output, progressively increase the alternator speed and actuate the rheostat *to keep the voltage at 14 volts.*
Output : 6 amperes at 1050 rpm engine speed (1900 rpm alternator speed) and at 14 volts.
22 amperes at 2350 rpm engine speed (4200 rpm alternator speed) and at 14 volts.
28 amperes at 4450 rpm engine speed (8000 rpm alternator speed) and at 14 volts.

CHECKING A 8347 OR AYA 213 TYPE VOLTAGE REGULATOR.

A. 53-30



Manual 816-1

Connect up as per diagram, using an ammeter **A**, a voltmeter **V** and a rheostat, or, better still, using a combined « voltmeter - ammeter - rheostat », now available commercially.

Run the engine so as to obtain an alternator speed of 5000 rpm, ie :
- 2400 rpm engine speed for vehicles fitted with the following types of alternators : 7522 B - 7542 A - 7542 G
- 2800 rpm engine speed for vehicles fitted with the following types of alternators : 7534 A - 7532 A - A 11 M 4 A 11 M 6 - A 11 M 11 - A 11 M 12 – ALN 12-1

Actuate the rheostat so as to obtain an output of 15 amperes.

Cut off the output by switching off the ignition *for a very short time* in order demagnetize the voltage regulator.

Wait until the engine has regained its speed. The voltmeter should then indicate a voltage lying between :
- 14 and 14.6 volts at 20° C (⟶ *11/1975*)
- 13.6 and 14.2 volts at 22° C (*11/1975* ⟶)

NOTE : These figures depend on temperature. The voltage varies inversely to the temperature by an average of 0.2 volts for each 10° C.

If the voltage measured is not within tolerance, the regulator is defective.

III. STARTER MOTORS.

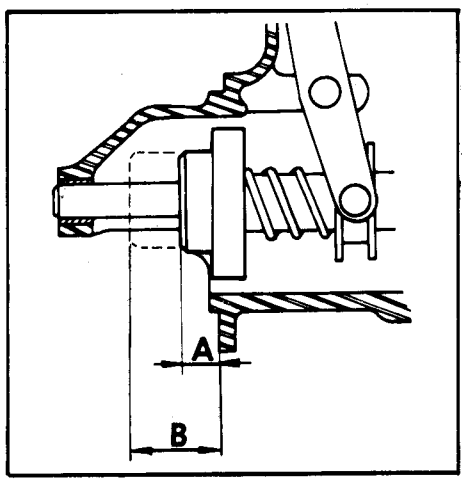
6 volt starter motors (operated by pull knob) :

Make and type	Minimum dia. of commutateur after skimming	Current taken		Fitted on vehicles
		off load	when starting	
DUCELLIER 6112 A	31.5 mm (1.24 in)	30 to 35 A	70 to 90 A	AM (→ 7/1966) AZ (→ 2/1970) AK (→ 2/1966) AY (→ 3/1968) AZU (→ 7/1972)
PARIS-RHONE D 8 L 38	34.5 mm (1.35 in)	30 to 35 A	70 to 90 A	
ISKRA-KRANJ ZC 4	32 mm (1.25 in)	30 to 35 A	70 to 90 A	
DUCELLIER 6188 A	31.5 mm (1.24 in)	30 to 35 A	70 to 90 A	AY (3/1968 → 2/1970)
PARIS-RHONE D 8 L 79	34.5 mm (1.35 in)	30 to 35 A	70 to 90 A	

12 volt starter motors (operated by pull knob) :

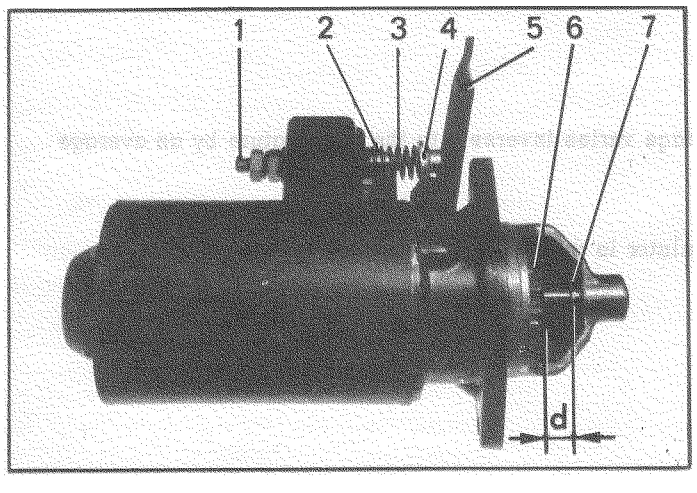
Make and type	Min. dia. of commutateur after skimming	Current taken		Fitted on vehicles
		off load	when starting	
DUCELLIER 6134	31.5 mm (1.24 in)	25 to 30 A	45 to 60 A	AY (12 volts) (→ 2/1970) AK (2/1966 → 7/1973) AYA 3 « Dyane 6 » (→ 10/1968) AM (7/1966 → 5/1968) DUC AM (7/1966 → 3/1969) P.R.
PARIS-RHONE D 8 L 67	34.5 mm (1.35 in)	25 to 30 A	45 to 60 A	
DUCELLIER 6174	30.5 mm (1.26 in)	25 to 30 A	45 to 60 A	AZ (12 volts) (→ 2/1970) AYA 2 (12 volts) (3/1968 → 2/1970) AYB (→ 9/1969) AY CA «Mehari» (→ 12/1971)
PARIS-RHONE D 8 L 80	34.5 mm (1.35 in)	25 to 30 A	45 to 60 A	
DUCELLIER 6195 A	32 mm (1.25 in)	25 to 30 A	45 to 60 A	AM (5/1968 → 3/1969)

Adjustment of starter drive :



A 53-27

6 Volts		12 Volts	
DUCELLIER	PARIS-RHONE	DUCELLIER	PARIS-RHONE
6112 6188	D 8 L 38 D 8 L 79	6134 6195 A	D 8 L 67 D 8 L 80
A = 19.7 mm (0.77 in) B = 31.7 mm (1.24 in)	A = 21 mm (0.82 in) B = 31.7 mm (1.24 in)	A = 19.7 mm (0.77 in) B = 31.7 mm (1.24 in)	A = 21 mm (0.82 in) B = 31.7 mm (1.24 in)



2953

Adjusting a 6134 D and D 8 L 67 starter switch :

1. Connect a 12 volt supply between the supply terminal (1) and the frame, *while switching in a test lamp in series.*
2. Operate lever (5) until the lamp comes on. At this point, the front face of the central pinion (6) should be located at a distance d = 1 ± 0.2 mm (0.39 ± .0078 in) from the thrust washer (7).
   NOTE : The thrust washer (7) has been fitted on these types of starter motor since January 1967.
3. Otherwise adjust the travel of the push rod (2) by turning the thrust stop (4) of the lever (5). Compress the spring (3) to release the slot of the stop (4) from the lever (5).

12 volt starter motors with solenoid :

Make and type	Min. dia. of commutator after skimming	Current taken		Fitted on vehicles
		off load	when starting	
DUCELLIER 6202 A or B	31 mm (1.22 in)	30 to 40 A	150 A	AZ - AYA 2 *(2/1970 →)* AZU → *(7/1972 →)* AYB *(9/1969 → 2/1970)* AY-CB *(2/1970 →)* AY-CA *(12/1971 →)* AK *(7/1973 →)* AM 3 *(3/1969 →)*
PARIS-RHONE D 8 E 99 or D 8 E 116 *(6/78 → 11/78)* D 8 E 148 *(11/78 →)*	34.5 mm (1.35 in)	30 to 40 A	150 A	
ISKRA ZB 4 *(11/71 → 9/76)* ISKRA AZE 0305 *(9/76 →)*	31 mm (1.22 in)	30 to 40 A	150 A	
FEMSA MTA 12-30 *(7/73 →)*		30 to 40 A	150 A	
DUCELLIER 6202 C	(flat commutator)	30 to 40 A	150 A	All A vehicles *(12/1974 →)*

CHECKING A DUCELLIER 6202 OR AN ISKRA ZB 4 STARTER MOTOR.

1. Test on vehicle :

a) Make sure that the battery is correctly charged and measure :
- the current taken with pinion locked : ..... 280 amperes

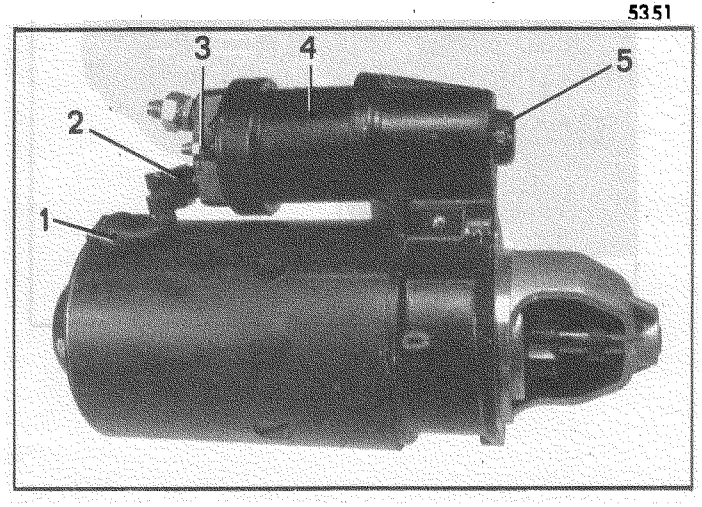
b) Remove the starter motor and measure :
- the current taken off load : ..... 30 to 40 amperes

2. Bench test :

a) Average torque at 1000 rpm : ..... 0.4 da Nm
Current taken at this torque : ..... 215 amperes

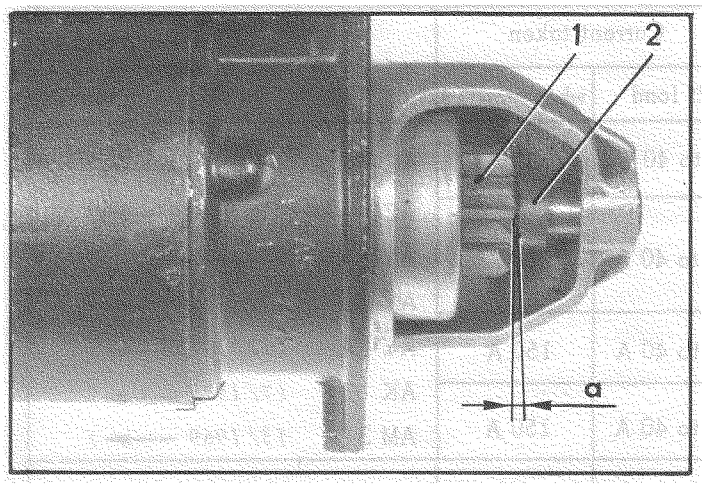
b) Maximum power : ..... 589 watts
Corresponding torque : ..... 0.25 watts
Current taken at this torque : ..... 150 amperes

ADJUSTING THE CONTROL PINION OF A DUCELLIER 6202 OR AN ISKRA ZB 4 STARTER MOTOR.



1. Disconnect the earth cable from the negative terminal of the battery.
2. Remove the starter motor.
3. Remove the plastic plug (5) of the solenoïd (4).
4. Disconnect the inductor supply wire (1) from the terminal (2) (marked « DEM ») of the solenoïd.
5. Energize the solenoïd (4). For that purpose, connect :
   a) a battery positive terminal to the solenoïd supply terminal (3).
   b) the battery negative terminal to the terminal (2) (marked « DEM ») of the solenoïd.

5370

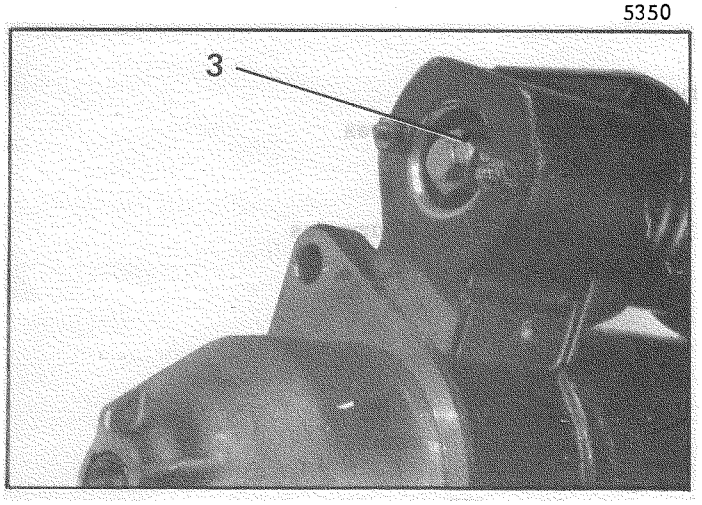


With control pinion (1) in forward position, measure the distance « a » between the end of pinion (1) and stop (2).

This distance should be : « a » = 1 mm (0.039 in).
Otherwise reset the adjusting screw (3).

6. Disconnect the battery from the solenoid supply terminals (6) and from the inductor supply terminals (5).
The control pinion (1) will return to its free position. Measure the distance « b » between the thrust face of the flange for starter motor which bears on the clutch housing and the end of the control pinion (1).
This distance should be : « b » = 21 mm (0.82 in).
Otherwise recondition the starter motor.

5350



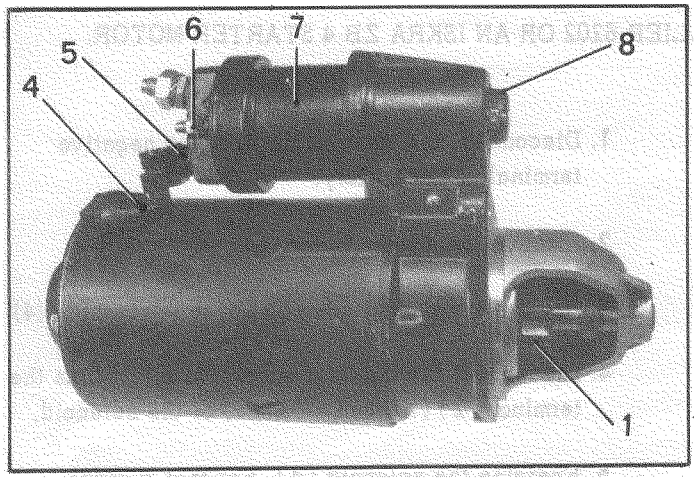
7. Connect the inductor supply wire (4) to the terminal (5) (marked « DEM ») of the solenoid (7).

8. Fit the plastic plug (8).

9. Refit the starter motor on the vehicle.

10. Connect the earth cable to the battery negative terminal.

5351



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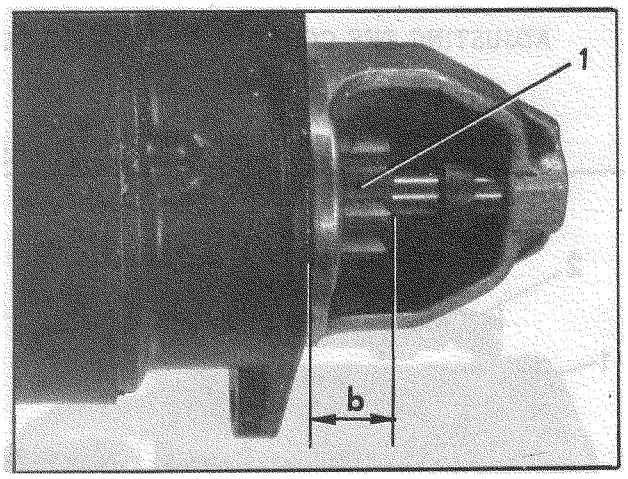

CHECKING A PARIS-RHONE D 8 E 99 (or D 8 E 116 *Juin 1972* ⟶) STARTER MOTOR.

	D 8 E 99	D 8 E 116
1. Test on vehicle :		
a) Make sure that the battery is correctly charged and measure : - the current taken with pinion locked	330 to 340 A	360 A
b) Remove the starter motor and measure : - the current taken off load :	30 to 40 A	30 to 40 A
2. Bench test :		
a) Average torque at 1000 rpm	0.6 da Nm (0 023 ft.lbs)	0.5 da Nm (0.019 ft.lbs)
- Current taken at this torque	220 A	220 A
b) Maximum power :	736 W	662 W
- Corresponding torque	0.38 da Nm (0.011 ft.lbs)	0.35 da Nm (0.013 ft.lbs)
- Current taken at this torque	180 A	175 A

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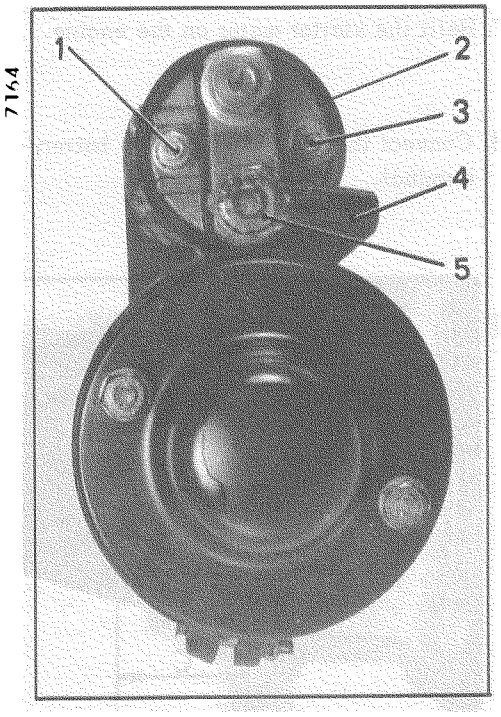
ADJUSTING THE CONTROL PINION ON A PARIS-RHONE D 8 E 99 or D 8 E 116 STARTER MOTOR WITH A CED 402 SOLENOID CONTACTER.



1. Disconnect the earth cable from the battery negative terminal.

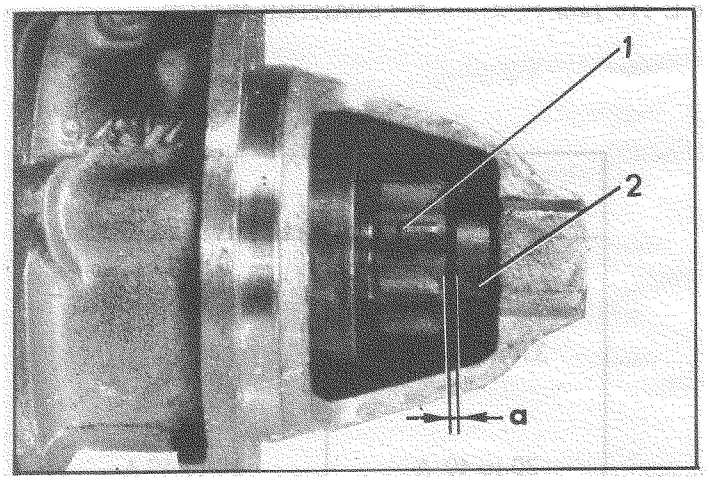
2. Remove the starter motor.

3. Disconnect the inductor supply lead (4) from the solenoïd terminal (5).

4. Energize the solenoïd. For that purpose, connect :

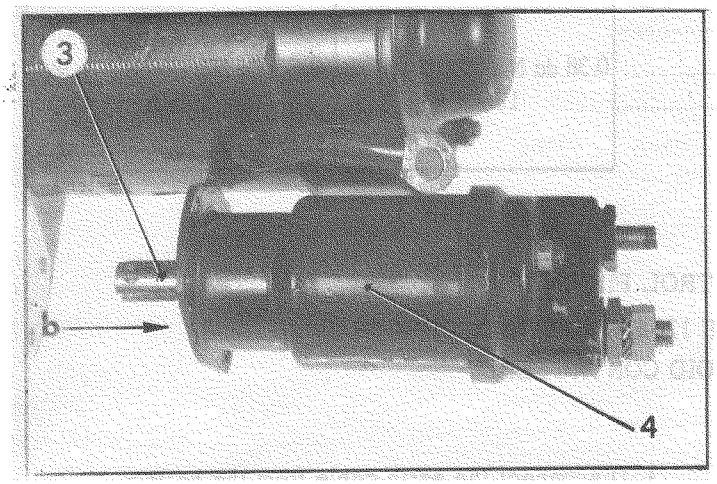
   a) the positive terminal of a battery to the solenoïd supply terminal (1)

   b) the negative terminal of the battery to the solenoïd terminal (3).



With the control pinion (1) in forward position, measure the distance « a » between the end of the control pinion (1) and the stop (2).

This distance should be : « a » = 1 mm (0.039 in).
If it is not, proceed as follows :
- Remove the solenoïd from the starter motor.
- Press in the spring cup (in the direction indicated by arrow « b ») and hold the yoke (3). Screw it in or out on the solenoïd spindle so as to obtain the distance « a ».
  If « a » > 1 mm (0.039 in) : screw the yoke in.
  If « a » < 1 mm (0.039 in) : screw the yoke out.
  (Screw it in or out by half a turn at a time).
  Connect the solenoïd and the starter motor.

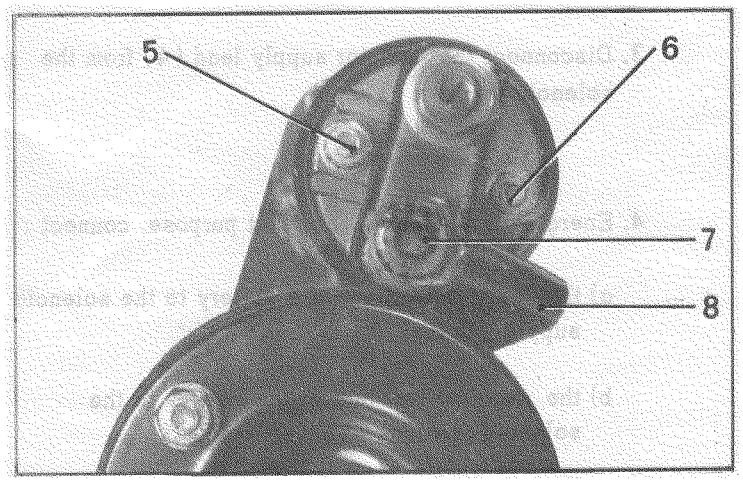


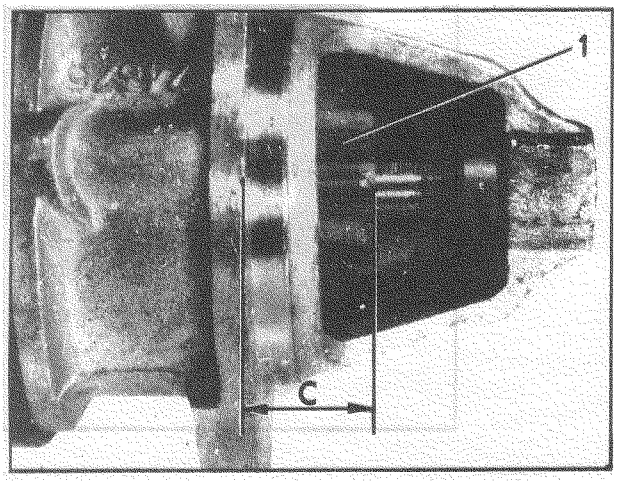
5. Disconnect the battery from the solenoïd terminals (5) and (6).
The control pinion (1) will return to its free position. Measure the distance « c » between the thrust face of the starter motor flange bearing on clutch housing and the end of the control pinion (1).
The distance should be : « c » = 21 mm (0.82 in) max. (D 8 E 99 starter motor) *or « c » = 21.6 mm (0.85 in)* (D 8 E 116 starter motor).
Otherwise recondition the starter motor.

6. Connect the inductor supply wire (8) to the terminal (7) of the solenoïd (4).

7. Refit the starter motor on the engine.

8. Connect the earth cable to the battery negative terminal.





7167

IV. 24 volt EQUIPMENT

(Special for MEHARI vehicles - MILITARY type)

This vehicle differs from the standard version in a 24 volt system designed to operate a special radio equipment (transceiver).

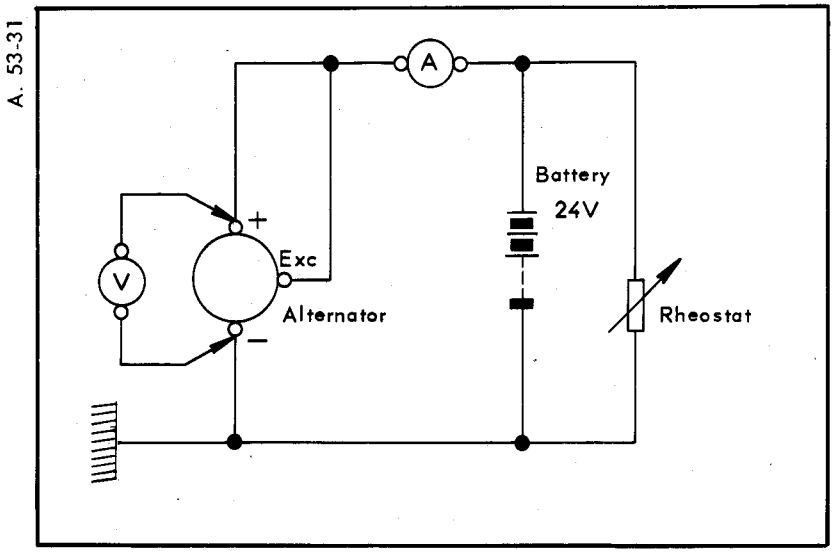
BATTERIES.

Two 12 volt batteries connected in series.
Make : STECO, 12 volts, 43 Ah (200/40 Ah).
Type : 2 HN military.
Reference : 6140 - 14 - 238 - 9715.
An ARELCO terminal provided on the positive terminal enables the connection of the supply cables from the starter motor and the junction box.
ARELCO reference : P 1 M 64.
Tightening torque of the upper nut : 0.35 da Nm (2.52 ft.lbs).
A Ro 80 A 1 type DUCELLIER battery switch has been fitted on the scuttle panel (Reference : 1034 A).
NOTE : One of the batteries is in the standard position. The fitting of the second one against the dashboard panel, on passenger side, has entailed :
- The fitting of a dashboard panel support.
- The modification of the dashboard panel (a glove compartment has been added).
- The fitting of a battery inspection plate.
- The fitting of a support and of a cover for this new battery.

ALTERNATOR.

PARIS-RHONE single phase alternator - 24 volts - 20 A
Reference : A 11 M 9 (⟶ *3/1974*) or A 11 M 13 (*3/1974* ⟶).
Maximum power as from 8000 rpm : 580 watts.
Resistance of inductors : 21 ± 5 % Ω.
Brushes : minimum length after wear : 13 mm (0.51 in).
Strength of strings on new brushes : 2.85 ± 10 % N.
Ratio alternator speed/engine speed : 1.8/1.

CHECKING THE ALTERNATOR (*with fully charged batteries*).



Connect up as per diagram, using a voltmeter **V**, an ammeter **A**, and a rheostat.
In order to measure the output of the alternator, progressively increase the alternator speed and actuate the rheostat to **maintain the voltage at 28 volts.**

Cut-in speed : 1030 rpm engine speed (1850 rpm alternator speed) at 28 volts
Alternator output : 7.5 amperes at 1670 rpm engine speed (3000 rpm alternator speed) at 28 volts
15.5 amperes at 2830 rpm engine speed (5100 rpm alternator speed) at 28 volts
18.5 amperes at 4440 rpm engine speed (8000 rpm alternator speed) at 28 volts

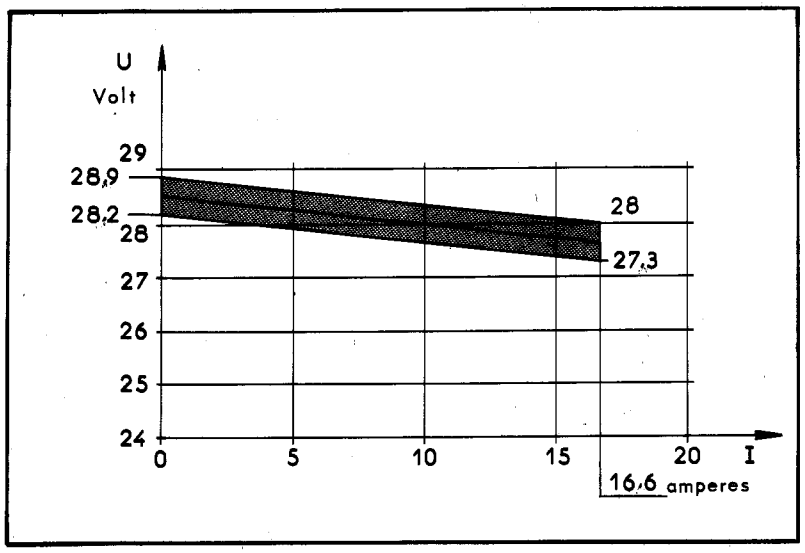
VOLTAGE REGULATOR.

PARIS-RHONE electronic voltage regulator, 24 volts, L 21 type, reference ZL 210.

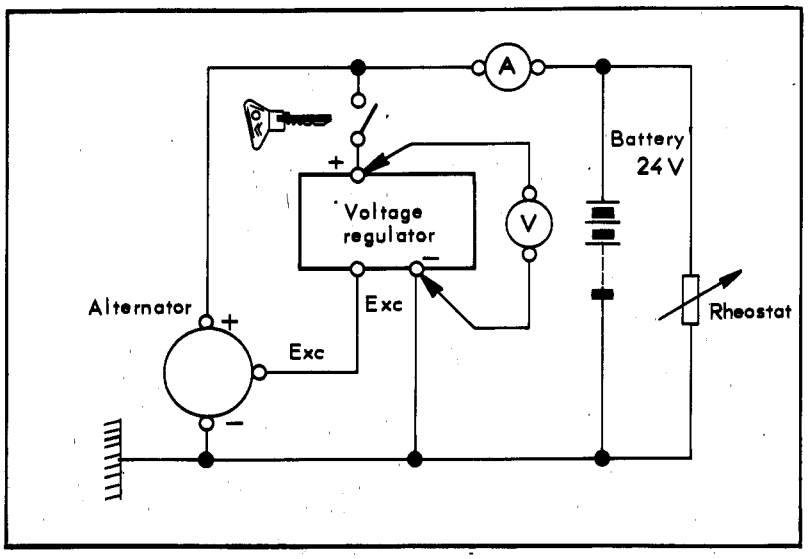
NOTE :
It is most essential to avoid certain mishandlings which would damage the voltage regulator :
a) Make sure that the earth lead is connected to the earth shunt (securing screw) of the regulator.
b) Avoid connecting the energizing circuit to earth.
c) Never interchange the leads connected to the « + » and « EXC » terminals of the regulator.
d) Never stop the engine by means of the battery switch.
The battery switch should be turned off only when the engine is stopped.

Checking the voltage regulator :
Connect up as per diagram below using an ammeter **A**,a voltmeter **V** and a rheostat.
Run the engine at a speed of 3330 rpm (corresponding to 6000 rpm alternator speed).
Actuate the rheostat, **without turning it back**, in order to increase the current supplied by the alternator and read the corresponding voltage.

A.53-30



A.53-29



Take several measurements and mark them on the graph represented above.They should fall within the shaded area.
Otherwise, the regulator is defective.

NOTE : For this graph, the measurements have been red at a temperature of 20° C.
If the ambiant temperature « t » is different, the values indicated on the graph must be modified.
The voltage varies inversely to temperature « t ». The voltage correction to be applied is given by the formula :

$$U\ (\text{volts}) = \frac{20° - t}{10} \times 0.18$$

STARTER MOTOR.

PARIS-RHONE electromagnetically triggered starter motor, with positive control, 24 volts, reference : D 8 E 110.

Brushes : minimum length after wear ..... 7 mm (0.27 in)
Inductor resistance ..... 0.034 Ω
Armature : - minimum diameter of commutator after skimming ..... 35.5 mm (1.39 in)
- lateral play ..... 0.5 to 1 mm (0.023 to 0.039 in)

Starter drive (adjustment) :

With starter motor removed, disconnect the inductor supply lead from the solenoïd. Energize the solenoïd and measure the distance between the stop washer and the end of the control pinion. This distance should lie between 0.5 and 1.5 mm (0.019 to 0.059 in). Otherwise turn the solenoïd adjustment screw.

Solenoïd :

Resistance of pull-in coil ..... 1.16 Ω
(Heavy-gauge wire winding connected in series with the starter motor inductors)
Resistance of hold-in coil ..... 3.5 Ω
(Light-gauge wire winding connected in parallel)

CHECKING THE STARTER MOTOR.

1°) Test on vehicle :

Make sure that the batteries are correctly charged and measure :
- The current taken with pinion locked ..... 300 amp.
- The current taken when starting ..... 150 amp. approximately at 20° C
- The current taken off load, with starter motor removed ..... less than 50 amp.

2°) Test bench :

a) Minimum torque at 1000 rpm ..... 0.55 da Nm (3.97 ft.lbs)
Current taken at this torque ..... 220 amp.
b) Minimum power at 20.2 volts ..... 1000 watts
Corresponding torque ..... 0.35 da Nm (2.52 ft.lbs)
Current taken at this torque ..... 180 amp.

Manual 816-1

IGNITION

DISTRIBUTOR.

Screened DUCELLIER distributor, 24 volts, reference : 4407 A.
Centrifugal advance curve and contact breaker setting identical with those of standard vehicles.
The fitting of this type of distributor entails the modification of the air intake cowl (the hole for passage of the screened supply lead to the distributor has been enlarged and the cut-out has been eliminated).

IGNITION COIL.

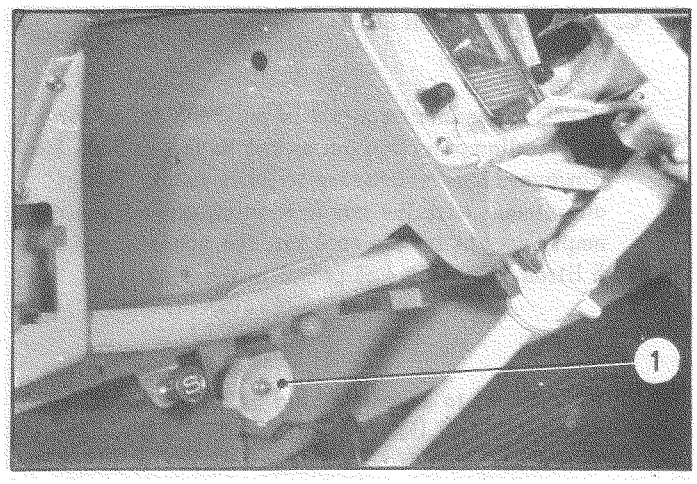
Screened A.B.G. ignition coil - 24 volts - reference : 177 267
Two screened high tension leads :
- left-hand lead : A.B.G. ; reference : 177 264
- right-hand lead : A.B.G. ; reference : 177 263
Tightening torque for screened lead unions on to coil and sparking plugs ..... 0.6 to 0.8 da Nm (4.32 to 5.77 ft.lbs)
Filter on primary circuit of A.B.G. ; reference : 177 265.

SPARK PLUGS.

Two screened A.B.G. spark plugs, reference : M C Y 78 L
Electrode gap ..... 0.5 to 0.6 da Nm (0.019 to 0.023 ft.lbs)
Tightening torque when cold ..... 2 to 2.5 da Nm (14 to 18.05 ft.lbs)

ADJUSTING THE HEADLAMPS.

4025



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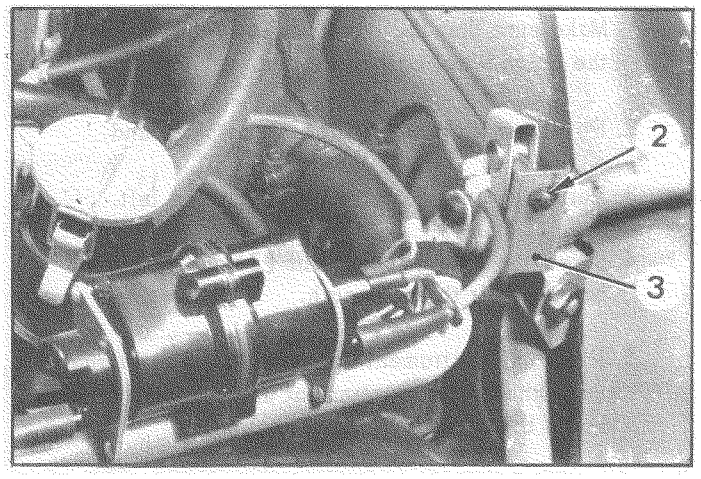
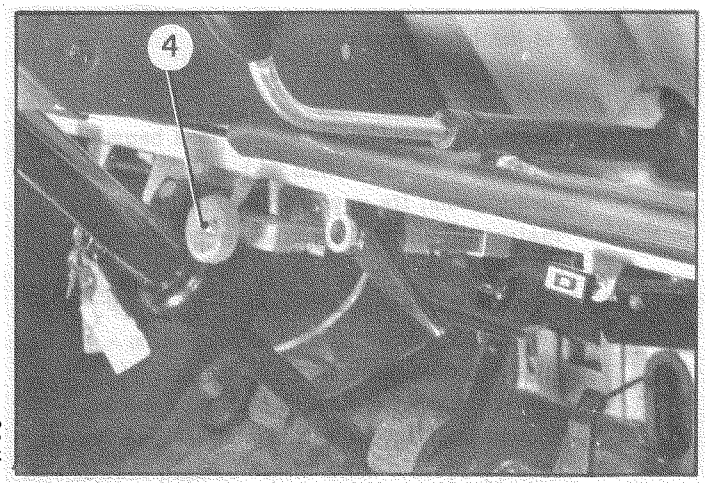


Manual 816-1



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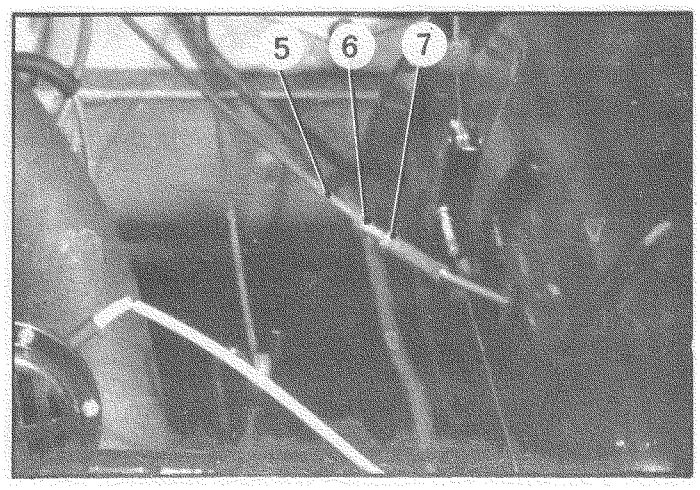


3928

NOTE : A manual control is provided for correcting the headlamp setting according to the vehicle load. However, it is necessary to carry out an initial adjustment with the car in running order (vehicle empty except for the tool kit, the spare wheel and 5 litres (1 gallon) of petrol in the tank).

A. HEADLAMP CONTROL (RODS).
(AZ Vehicles)

1. Check the lateral play of the manual control :
If necessary, insert washers (2) until the clearance between the control lug (3) for headlamp bracket and the first washer is 0.5 mm (0.019 in).

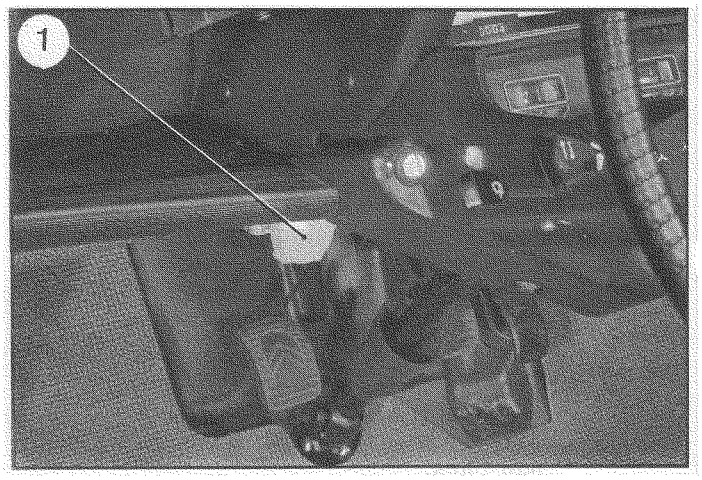
2. Adjust the headlamps :
a) Put the vehicle on a flat horizontal ground.
b) Turn the control knob (1) from left to right as far as it will go.
Turn the knob from right to left by two and a half turns.
c) Make sure that the tyres are correctly inflated and the heights are correctly adjusted. The headlamp setting must be carried out using a « REGLOSCOPE » , « REGLOLUX » or similar instrument.
Tighten nut with ball-joint of the headlamp bracket.
Check that the instrument and the vehicle are on the same level.

B. HEADLAMP CONTROL (CABLES).
(AY Vehicles)

3. Adjust the flexible cable of each headlamp :
a) Make sure that the flexible cables (5) are not kinked.
b) Turn the control knob (4) clockwise until it locks.
c) Place the headlamp unit on its stop.
For that matter :
- Slacken the lock nut (7).
- Gradually unscrew tensioner (6) until the headlamp unit is fully in.
(To make sure that this operation has been correctly carried out, press the top of the headlamp unit).

4. Adjust the headlamps :
a) Place the vehicle on a flat horizontal ground, and make sure that the tyres are correctly inflated and the heights are correctly adjusted.
b) Make sure that the control knob (4) has been screwed fully in.
c) The headlamp setting must be carried out with an instrument like « REGLOSCOPE » or « REGLOLUX », by tightening the screws located under the headlamp flange :
- upper screw for height adjustment,
- lower screw for direction adjustment.

5151



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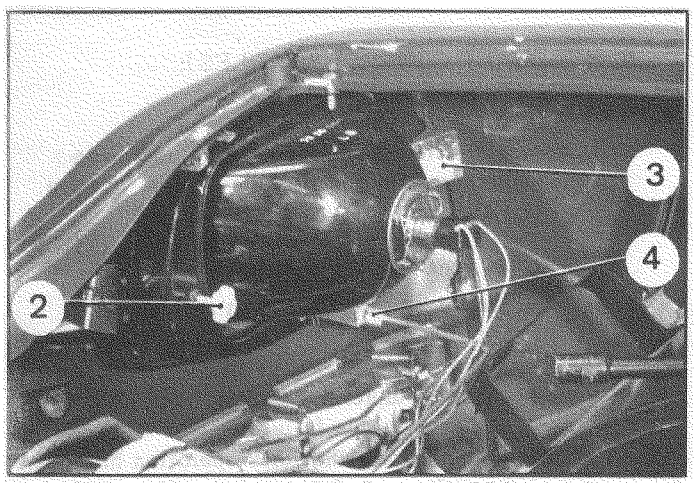

C. HEADLAMP CONTROL :

(AM vehicles)

NOTE : A manual control is provided for correcting the headlamp setting according to the vehicle load. However, it is necessary to carry out an initial adjustment with the car in running order (vehicle empty except for the tool kit, the spare wheel and 5 litres (1 gallon) of petrol in the tank).

Adjustment to be carried out using an instrument like « REGLOLUX » or « REGLOSCOPE ».

1. Make sure that the tyres are correctly inflated and the heights correctly adjusted.

2. Put the vehicle on a flat horizontal ground.

3. Turn the control knob (1) fully to the left.

4. Screw the adjustment knobs (2) and (3) in by half of their thread length.

5. Place the instrument opposite to the headlamp unit (the setting instrument and the vehicle must be on the same level).

6. **Adjust the headlamps :**

a) *Height adjustment :*
- Switch the headlamps on « dipped beam ».
- Using the knurled knob (4), adjust the height of the beam. Its upper limit must reach the instrument in the indicated area.

b) *Direction adjustment :*
- Switch the headlamps on « main beam ».
- By simultaneously turning the knobs (2) and (3) (in opposite direction, but by the same amount), bring the centre of the light spot on the appropriate mark of the setting instrument.

7. Adjust the other headlamp.

NOTE : In case there is a dark area in the middle of the beam, replace the bulb.