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Instructions for the use of the body-checking jig

GIULIA T.I. – GIULIA T.I. Super – GIULIA Sprint G.T.

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6 SPECIAL INSTRUCTIONS FOR CHASSIS WITH AN AXLE BASE OF 2350 mm.

(Chassis 105.02 GIULIA Sprint GT)
(" 105.04 GIULIA Sprint GT RHD)

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F O R E W O R D

The tooling described herein is produced EXCLUSIVELY FOR CHECKING the exact position of the attachment points of the mechanical components of the chassis: it is not intended as a re-aligning jig involving stress or the application of force.

Fig. 1 gives a general picture of the complete jig for checking GIULIA TI chassis, and fig. 16 for GIULIA Sprint GT.

In the figs. 2 and 17 are shown detailed plans of the benches only (details (1)) with particulars of the location of the cross-members, jacks and supports for the GIULIA TI and GIULIA Sprint GT respectively.

The dimensions shown, relating to the first hole, indicate the precise location of the relevant parts.

Further detailed instructions, relating to the assembly and actual use of the jig, are given in subsequent chapters.

DESCRIPTION OF THE JIG

2.1 GENERAL INFORMATION

The jig (figs. 1 and 16) consists of:

- one welded steel bench (shown in fig. 1 as No. 1)
- four jacks (shown as Nos. 2 and 3)
- one front cross-member and one rear cross-member (Nos. 4 and 6) for attaching the supports
- two front supports for checking the front suspension attachment points (Nos. 7 and 8)
- two rear supports for checking the rear suspension attachment points (Nos. 9 and 10)
- one central support for checking the attachment of the gearbox cross-member and the interconnection of the chassis central cross-member (No. 5)
- one telescopic bracket for checking the attachment of the steering box and idler (No. 11)
- one box containing the dowels for checking the holes (No. 12)

In the following schedule are shown the ordering numbers of the individual parts mentioned above.

Ref.	Ordering No.	Description
1	A.8.0007	Chassis checking bench (common to the bench for the Renault CAR 08-A)
2	A.8.0016	Front jacks for supporting the chassis (two parts)
3	A.8.0017	Rear jacks for supporting the chassis (two parts)
4	A.8.0008	Cross-member for locating the supports for checking the front suspension
5	A.8.0053	Support for checking the attachment of the gearbox cross-member and the interconnection of the central cross-member
6	A.8.0013	Cross-member for locating the supports for checking the attachment points of the rear suspension
7	A.8.0052	Support for checking the attachment points of the right hand front suspension

Ref.	Ordering No.	Description
8	A.8.0051	Support for checking the attachment points of the left hand front suspension
9	A.8.0054	Support for checking the attachment points of the right hand rear suspension
10	A.8.0055	Support for checking the attachment points of the left hand rear suspension
11	A.8.0056	Telescopic bracket for checking the attachment of the steering box and idler
12	A.8.0801	Box containing 28 steel dowels as specified hereunder (the dowels are not supplied <u>individually</u> but as a complete set):
	A.8.0057	Plain round dowel for front lower suspension wishbone front hole (two parts)
	A.8.0058	Plain round dowel for front lower suspension wishbone rear hole (two parts)
	A.8.0059	Plain round dowel for the transverse arm attachment hole of the front upper suspension wishbone (two parts)
	A.8.0060	Threaded dowel 8 MA, comprising 8 parts: <ul style="list-style-type: none"> - 4 for the attachment holes of the upper strut diagonal arm of the front suspension - 4 for the attachment holes of the gearbox cross-member
	A.8.0061	Threaded dowel 6 MA, for the attachment holes of the chassis <u>central</u> cross-member (6 parts)
	A.8.0062	Plain round dowel for the attachment holes of the struts (2 parts)
	A.8.0063	Plain round dowel for the attachment holes of the rear suspension reaction triangle (6 parts)

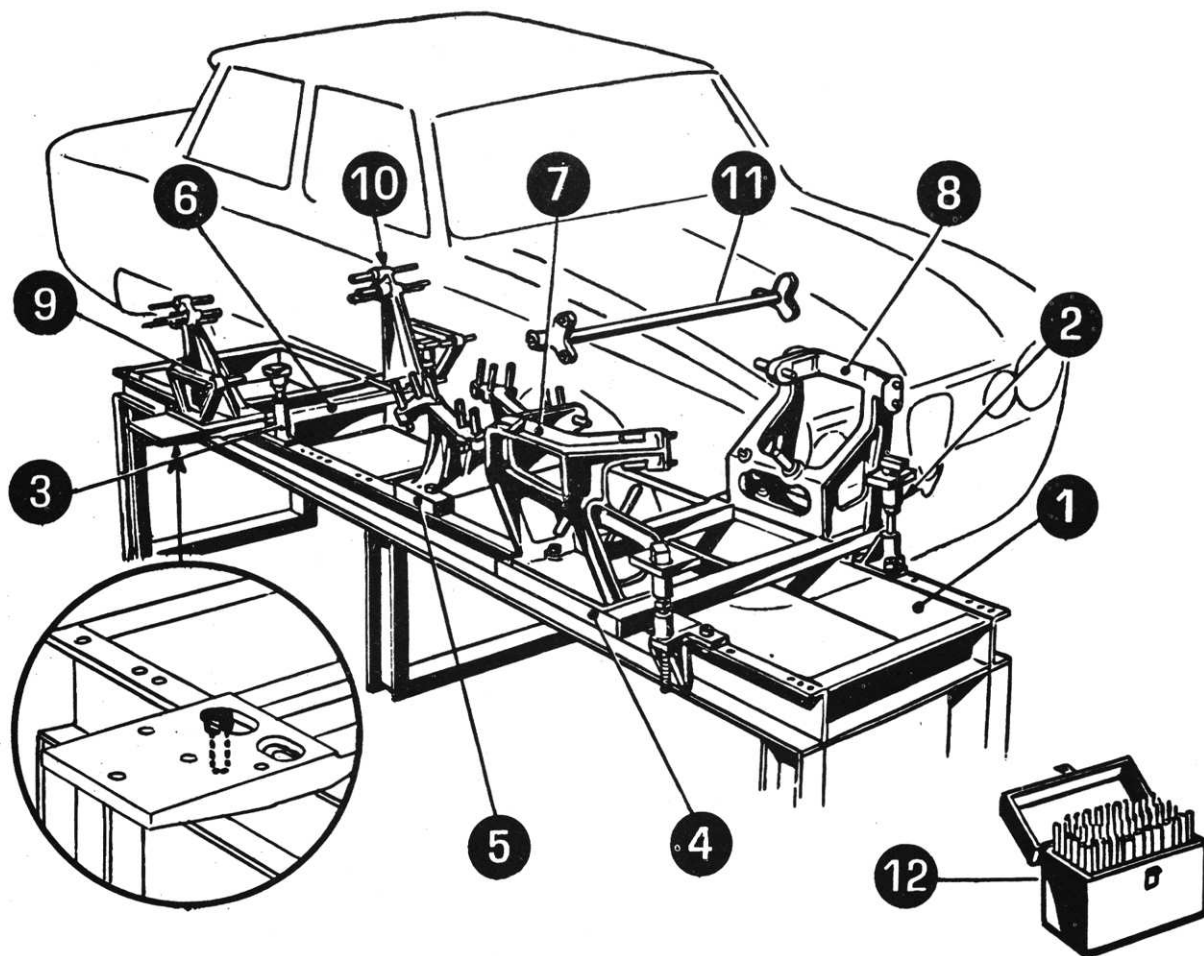


Fig. 1 - ASSEMBLY FOR CHECKING GIULIA TI AND GIULIA TI SUPER CHASSIS

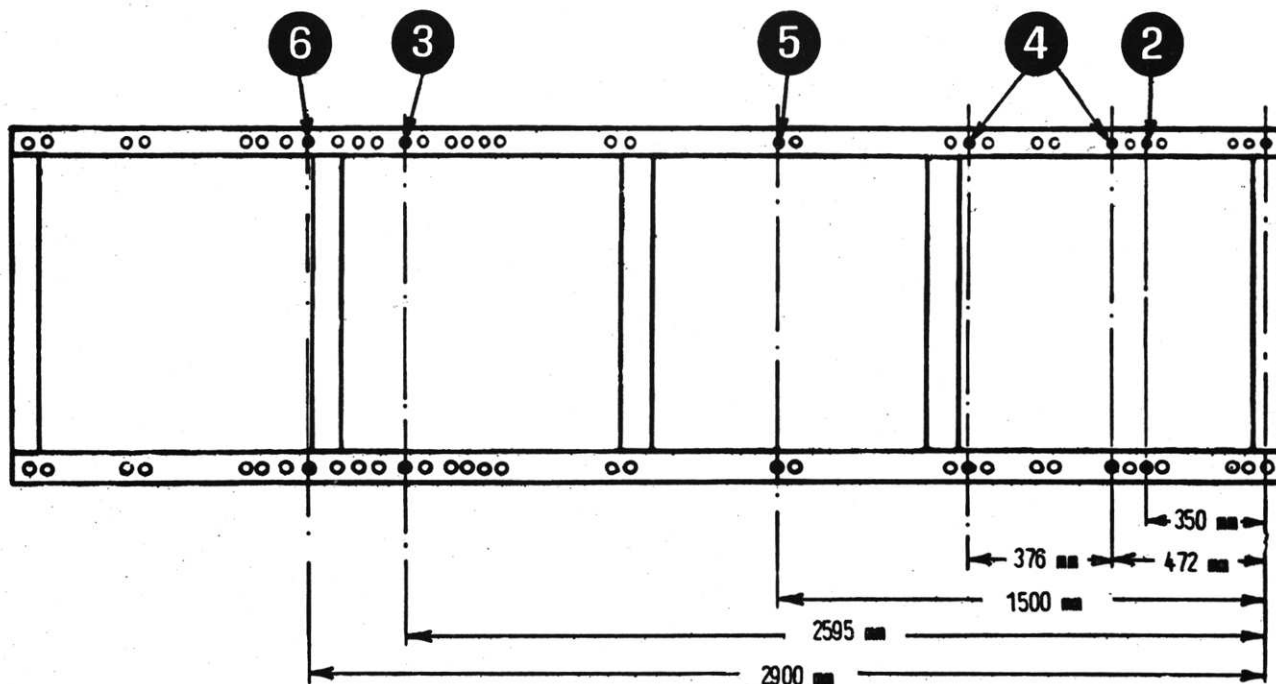


Fig. 2 - PLAN OF DETAIL ① WITH LOCATION OF THE HOLES TO BE EMPLOYED

It should be noted that whilst the supports relate specifically to each model, the cross-members and the jacks are common to the GIULIA and GIULIETTA and their variants.

A distinct colour (gold) is employed for the identification of those parts common to the different models.

2.2 BENCH

(ref. 1 of fig. 1)

It is interchangeable with the bench Renault CAR. 08-A and CAR. 08 used for the Dauphine, R.4, R.8, etc. chassis.

We recall that the type CAR. 08-A differs from CAR. 08 through the addition of hole **B**, in the length of the cross-member **C**, and through the elimination of one support **E** as is shown by reference to figs. 3 & 4.

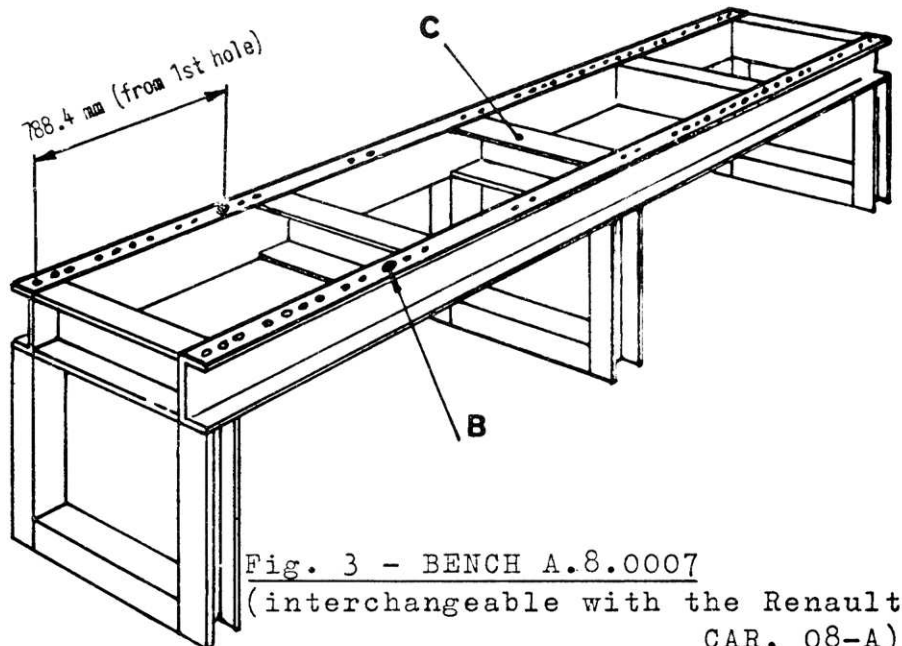


Fig. 3 - BENCH A.8.0007

(interchangeable with the Renault CAR. 08-A)

The hole **B** of the new bench is not required for our checking purposes, consequently either bench may be employed.

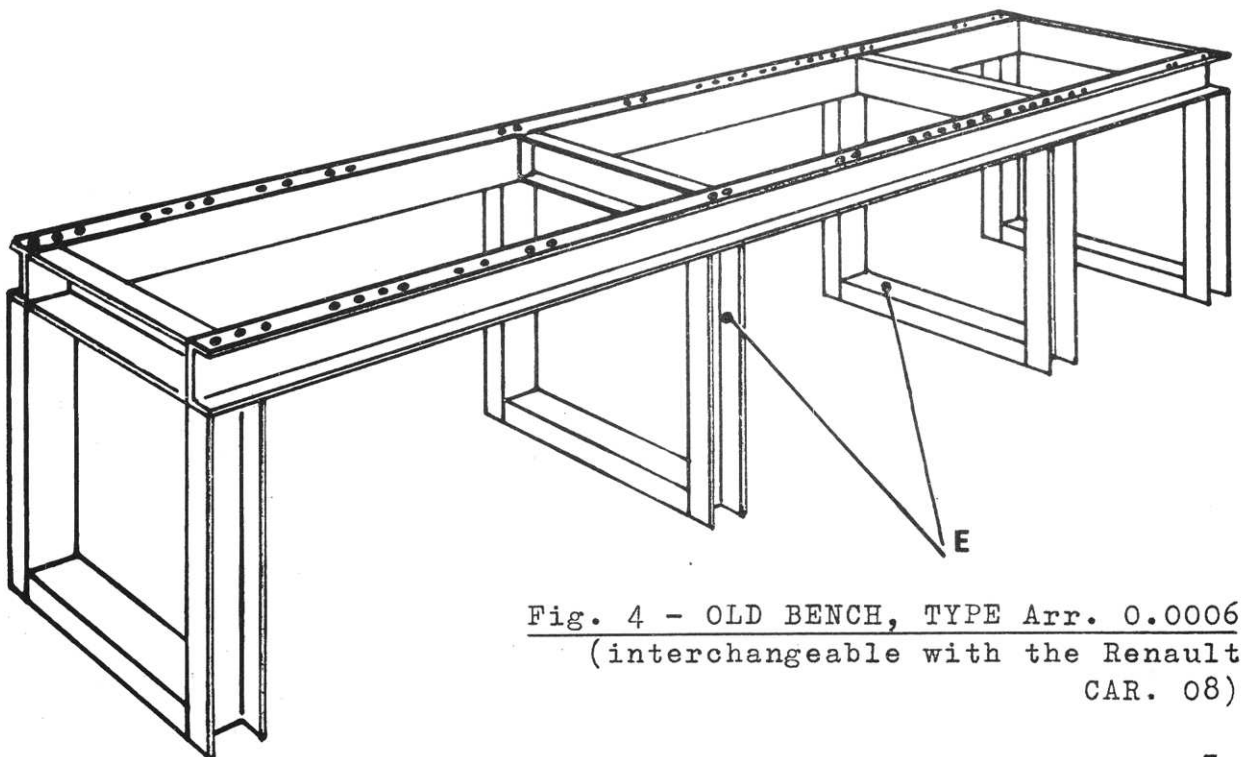


Fig. 4 - OLD BENCH, TYPE Arr. 0.0006

(interchangeable with the Renault CAR. 08)

2.3 CROSS-MEMBERS, SUP PORTS AND JACKS

To avoid errors in their assembly on the bench, on each part are marked the following details:

- the ordering number,
- one or more arrows showing the direction of the car.

Both the number and the arrows are quite distinct because besides being stamped they are painted in red.

The individual colours of the supports are:

- GREEN- for those employed in checking only the bodies of the model 105 and its derivatives GIULIA TI, GIULIA TI Super, GIULIA Sprint GT, etc.
- GOLD - for those employed in checking not only the body for the model 105 but also for the model 101 and its derivatives : GIULIETTA t.i., GIULIETTA Sprint, GIULIETTA Spider, etc.

2.4 DOWELS

(ref. 12 of fig. 1)

The whole set is contained in box A.8.0801.

Each dowel is marked with a serial number as shown in the schedule of paragraph 2.1.

The diameter of the round section of each dowel is slightly less than the corresponding hole of the support; the resulting clearance corresponds to the maximum interference prescribed for the positioning of the hole.

In any properly executed repair, all the dowels should enter freely their corresponding holes or, at most, upon light hand pressure. It is expressly forbidden to hammer or exert force of any kind on the dowels owing to the light construction of the supports.

INSTRUCTIONS FOR THE PREPARATION OF THE JIG
FOR CHASSIS WITH AN AXLE BASE OF 2510 mm.

105.14 GIULIA TI
105.09 GIULIA TI RHD
105.16 GIULIA TI Super
105.20 GIULIA TI Super RHD

3.1 FOREWORD

The following instructions provide, in broad terms, the cycle of operations for the correct assembly of all the supports on the jig. Paragraphs 3.1 to 3.7 relate mainly to the preparation of the bench and the instructions for the fitting of the jacks (A.8.0016-A.8.0017) of the cross-members (A.8.0008-A.8.0013) and of the support A.8.0053 to be fitted directly to it.

3.2 Bench

(ref. 1 of fig. 1)

Arrange it on as level a floor as possible. When using the Renault bench it is good practice to ensure that the upper beam is perfectly flat by means of a spirit level.

Any irregularities should be corrected by the insertion of suitable spacers beneath the supports.

To avoid the necessity of undertaking this operation too often, it is recommended to leave the bench always in the same position.

For the precise and easy identification of the holes as shown in fig. 2 it is advisable to mark them with a different colour paint for each type of chassis.

Figs. 3 and 4 show the benches A.8.0007 and Arr. 0.0006 which are interchangeable with the benches for the Renault CAR. 08-A and CAR. 08 respectively.

It is further advisable to locate the bench where it is possible to utilise a hoist to facilitate the mounting and unloading of the body.

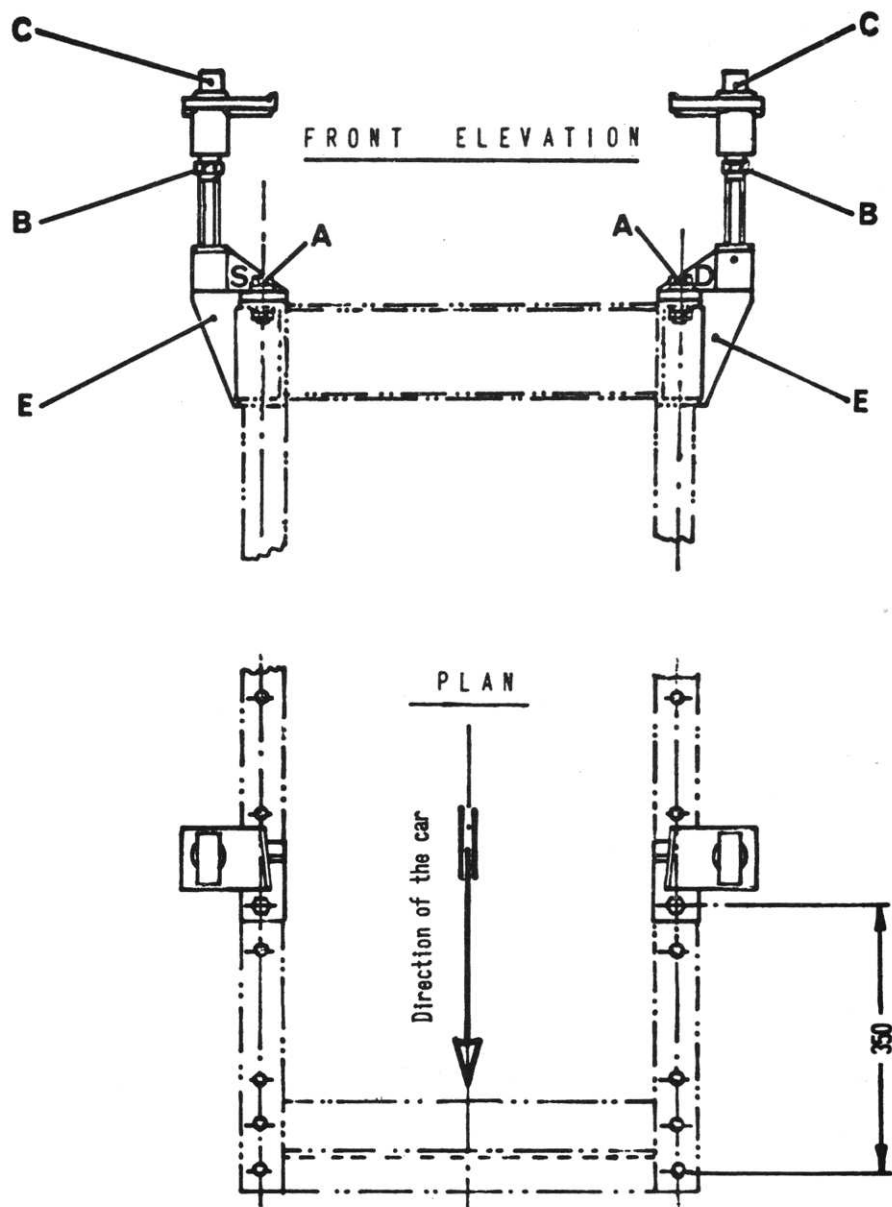


Fig. 5 - FRONT JACKS A.8.0016

3.3 FRONT JACKS

(ref. 2 of fig. 1)

They must be fitted in the position shown in figure 2 and secured with the bolts **A** as shown in fig. 5.

Both jacks are similar and symmetrical in every respect. To distinguish one from the other they have been marked on the upper web with the letter "**S**" on the first and the letter "**D**" on the second.

For the 105 bodies (GIULIA TI, GIULIA Sprint GT, etc.) the jack marked with the letter "**S**" should be fitted on the right-hand side, and the one marked with the letter "**D**" on the left-hand side, as shown in fig. 5. They must be completed with the detachable flange **C**.

Check that, as shown in fig. 5, the rib **E** of the base is towards the outside of the bench.

The vertical adjustment of the jacks is effected on screw **B** with either a 27 mm. spanner or a 10 mm. tommy bar. First of all they should be adjusted to a height of 320-330 mm from the bench, then, after the body has been mounted, they should be lowered until the holes of the chassis coincide with those of the supports; this occurs when their height above the upper beam of the bench is about 310 mm. (see fig. 12).

It is very important for the two jacks to be set at the same height.

3.4 REAR JACKS (ref. 3 of fig. 1)

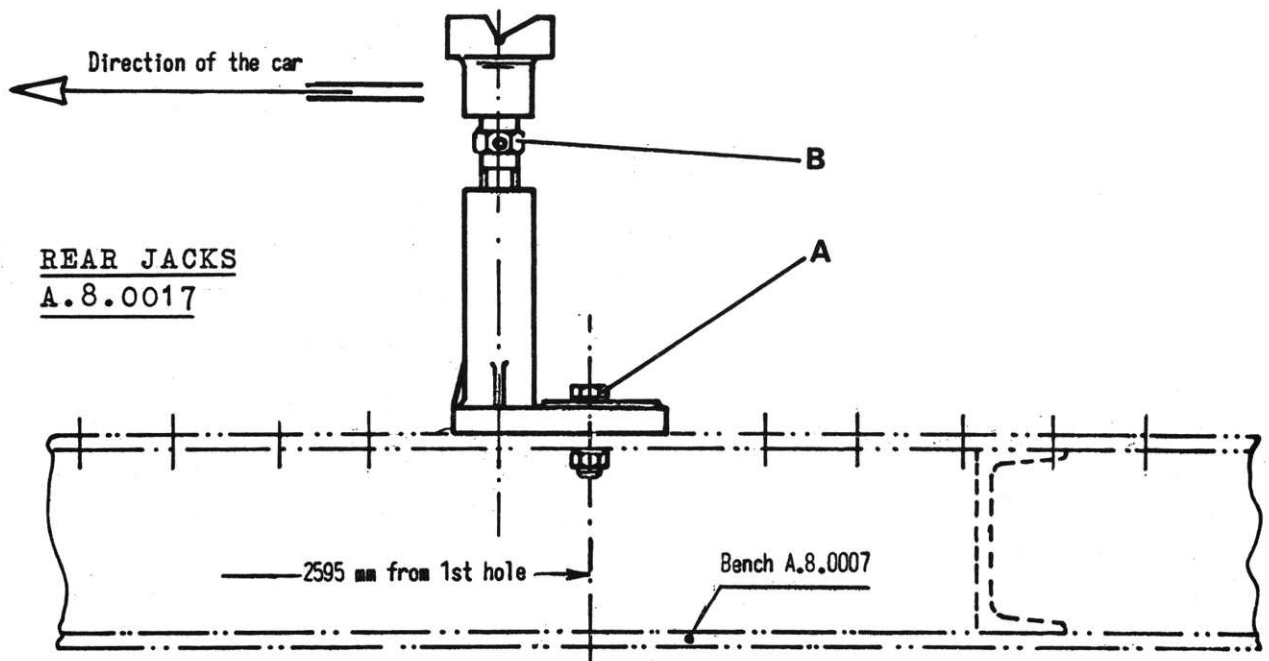
Their position on the jig is shown in fig. 2; for the means of securing see fig. 6.

There are two jacks similar in every respect. There is a slot in the base to facilitate fore and aft adjustment. The nut **A** is locked after the body has been supported or is just touching, so that it is possible to make further adjustments.

For the adjustment in height use a 27 mm. spanner or a 10 mm. tommy bar on screw **B**. Before setting up the body, adjust the jacks to a height of 300 mm., then lower until the chassis holes coincide with those of the supports; this should occur at about 279 mm. (see fig. 14).

It is most important that the two jacks are adjusted to the same height.

Fig. 6. REAR JACKS
A.8.0017



3.5 FRONT CROSS-MEMBER (ref. 4 of fig. 1)

To determine its position on the bench see fig. 2; to lock, tighten bolts **A** (fig. 7). Before locking, it is advisable to ensure, by means of a set-square **B** the trueness of the cross-member on the longitudinal beams of the bench: the success of the entire checking operation depends on the correct positioning of the cross-member.

Centre **C** may be used as a guide to ensure the correct location of the rear cross-member

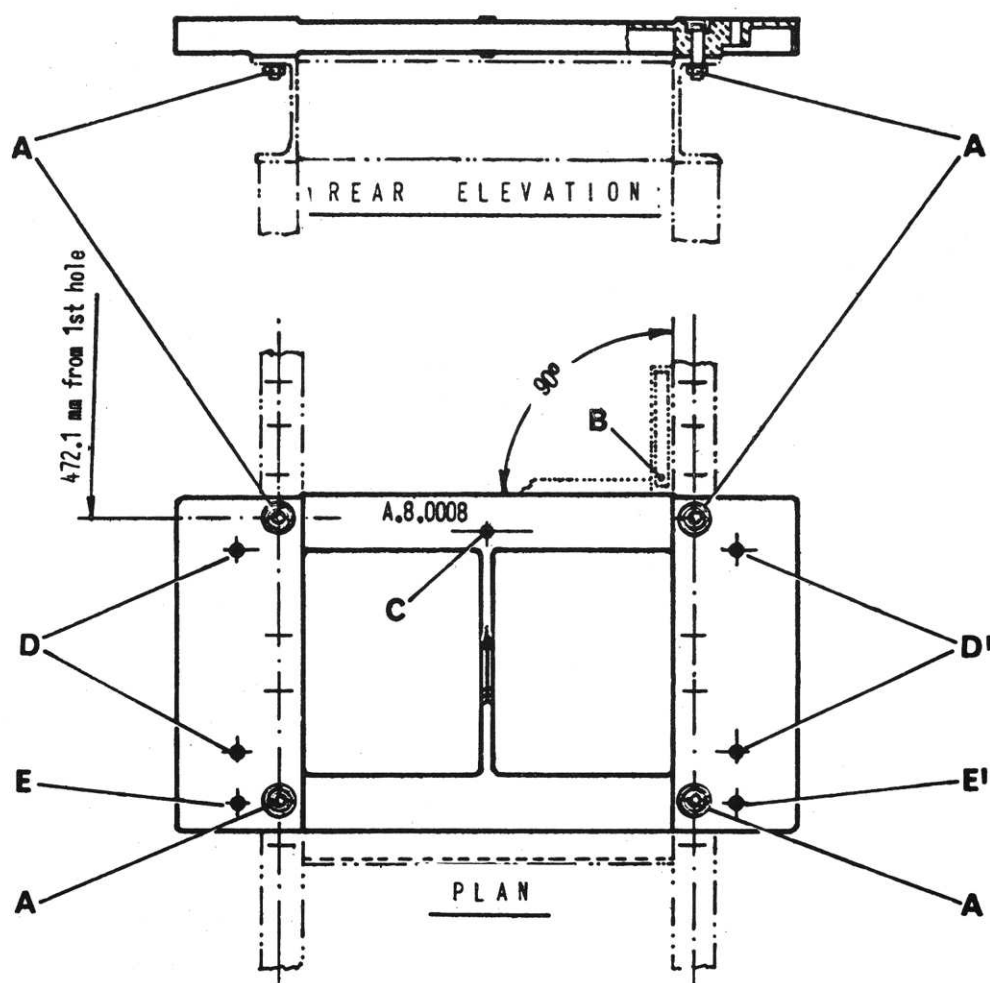
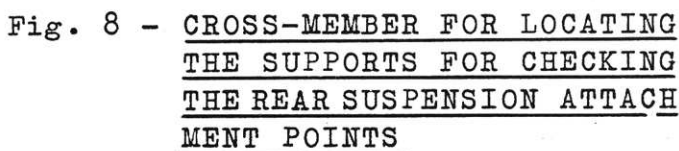


Fig. 7 - FRONT CROSS-MEMBER A.8.0008

On the two upper working surfaces there are three holes on each side; the two front holes, **D** and **D'** are for fitting the supports A.8.0051 and A.8.0052, and the rear holes **E** and **E'** are for the fitting of the support used for checking the attachment points of the cross-member linking the front longitudinal members of the GIULIETTA chassis.

To determine its position on the bench, see fig. 2. To lock, tighten bolts **A** using the third slot as shown in the inset of fig. 1 and fig. 8; this slot is marked with the number 105.14.



By fitting the cross-member at the centre of the slot, an approximation of the theoretical axle base may be assessed. This also corresponds to the dimension indicated in fig. 9 between the centres **C** and **C'** marked on the two cross-members. It is advisable to check this dimension to determine overall discrepancies which might occur when fitting the cross-members.

In any event, before tightening bolts "A", ensure, by means of a set-square "B" as shown in fig. 8, the trueness of the cross-member in relation to the longitudinal beams of the bench.

The other slots in the cross-member are used to check chassis with different axle base.

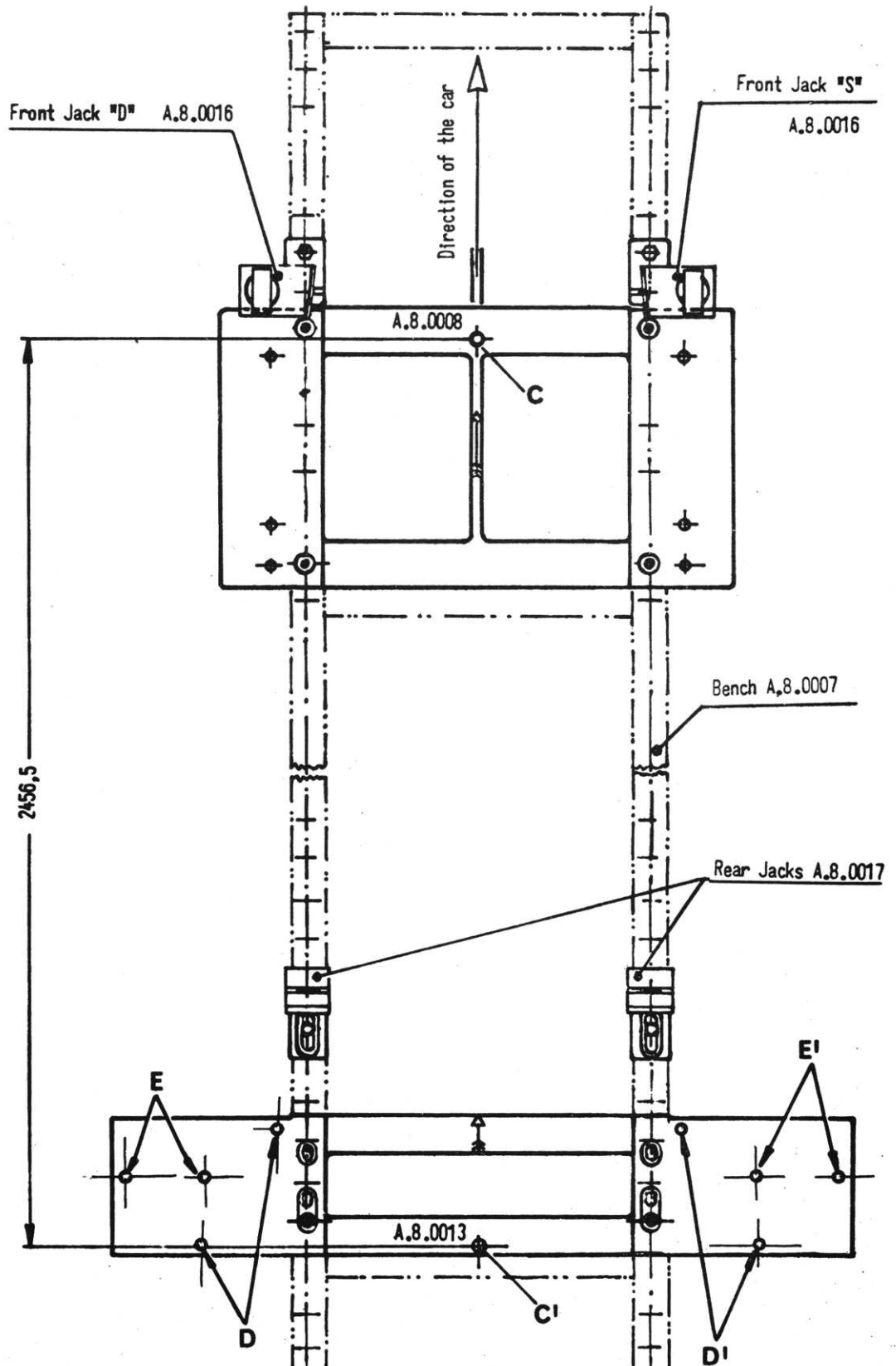


Fig. 9 - LOCATION OF THE FRONT AND REAR CROSS-MEMBERS

On both sides of the two upper working surfaces (see figs. 8 - 9) there are four holes.

The holes **D** and **D'** are employed for fitting the cross-members A.8.0055 (ref. 10 of fig. 1) and A.8.0054 (ref. 9 of fig. 1), respectively.

The holes **E** and **E'** are employed for fitting the supports to check the attachment points of the struts on the GIULIETTA Chassis.

3.7 CENTRAL SUPPORT (ref. 5 of fig. 1)

For its location on the bench see fig. 2. Lock the support to the bench by means of bolts **A** indicated in fig. 10 which shows the support in plan and elevation.

The holes **1** and **2** of flanges **B** and **B'** are for checking the corresponding holes (of the two brackets) for fitting the gearbox supporting cross-member. The holes **3** and **4** of flanges **C** and **C'** are for checking the corresponding holes of the two central half-cross-members. These holes, in turn, are for fitting the fillet which links the two half-cross-members of the chassis central floor section.

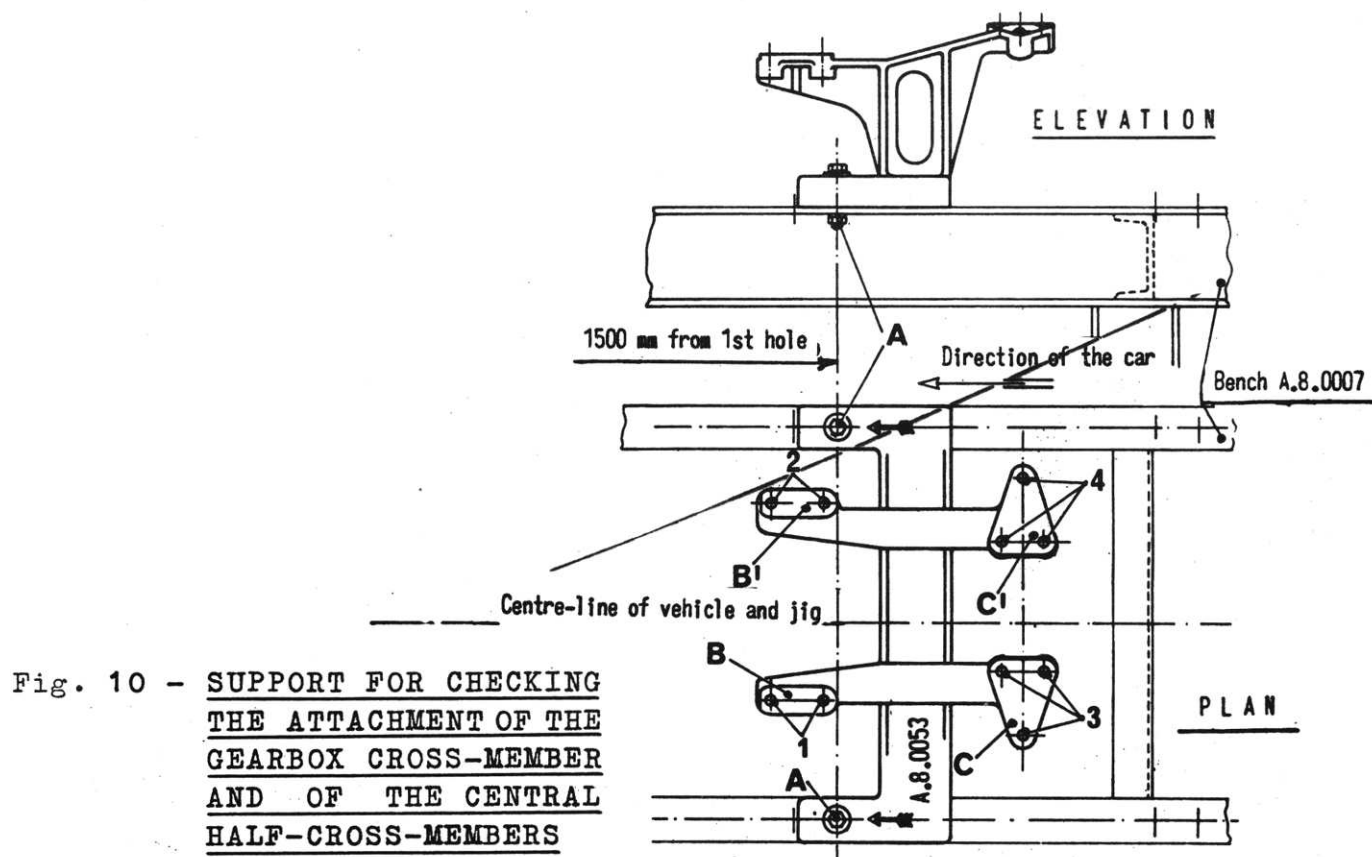


Fig. 10 - SUPPORT FOR CHECKING
THE ATTACHMENT OF THE
GEARBOX CROSS-MEMBER
AND OF THE CENTRAL
HALF-CROSS-MEMBERS

INSTRUCTIONS FOR THE FITTING OF THE BODY AND OF THE SUPPORTS FOR CHECKING THE SUSPENSIONS

4.1 FOREWORD

The equipment arranged as described in the previous chapters is now set for fitting the body.

For this operation it is also advisable to bear in mind the following points.

4.2 FITTING THE BODY

The body must be completely stripped, i.e. all the mechanical components: engine, clutch, gearbox, propeller shaft, rear axle, front suspension, rear suspension, steering box and i dler, must be removed.

By means of a hoist arrange the body on the bench, positioning it carefully on the four jacks: at this point adjust the longitudinal location of the rear jacks A.8.0017, as outlined in paragraph 3.4.

Having completed the adjustment and tightened bolts **A** (see fig. 6) lower the body by means of the adjusters **B** of the four jacks simultaneously (figs. 5 and 6) in order to leave a gap of

4 - 5 mm.

between the central support (ref. 5) and the chassis.

4.3 FITTING THE SUPPORTS FOR CHECKING THE SUSPENSIONS (refs. 7, 8, 9 and 10 of fig. 1)

Offer the four supports to the chassis so that they register on the proper working surfaces of the cross-members. It is recalled that the arrow and the serial number of the supports should face outwards so that it is very easy to determine their exact location; for further clarification here is the list of the supports with details of their functions:

Reference		Ordering Number	D e s c r i p t i o n
No.	Fig.		
8	1	A.8.0051	Support for checking the attachment points of the left hand front suspension
7	1	A.8.0052	Support for checking the attachment points of the right-hand front suspension
9	1	A.8.0054	Support for checking the attachment points of the right hand rear suspension
10	1	A.8.0055	Support for checking the attachment points of the left hand rear suspension

Each support must be fitted to the cross-members by means of the two bolts as can be seen in figs. 12,13,and 14 where indicated by the letter **B**.

These are graded and are supplied complete with the supports. The latter, however, must only be fitted after having established the exact positioning of the body.

It is easy, in the course of assembling the rear supports, to experience certain difficulties which can be avoided by slightly raising the body while fitting the supports.

4.4 FINAL LOCATION OF THE BODY

Fully lower the four jacks in order to leave a gap of approximately

1 - 2 mm.

between the central support and the chassis.

To determine the exact position of the body it is necessary to correlate the bracket holes precisely when the chassis holes align with those of the brackets.

4.5 LOCKING THE SUPPORTS TO THE CROSS-MEMBERS

By means of the special bolts **B** shown in figs. 12, 13 & 14, lock the four supports to the respective cross-members.

The relevant nuts may be tightened and slackened with a 22 mm. spanner.

5.1 FOREWORD

The following instructions are intended first of all for checking the front suspension and then the rear suspension: the cycle of these operations, however, is not binding but depends on the nature of the repair to be carried out. If, for example, the rear section of the chassis has been repaired, the front section must be positioned and then the rear checked. Alternatively, if the front section has been repaired, or there is any doubt about the attachment points of the front suspension, proceed in the reverse order.

To carry out the check, insert the dowels in the corresponding holes of the supports.

The chassis may be considered to be in perfect condition if all the dowels register simultaneously in the holes upon light hand pressure, as already explained in paragraph 2.4.

All the dowels in their correct position can be noted in fig. 11 which, as yet, does not show the chassis to be checked.

In the following paragraphs are listed all the checking points with details, step by step, of the instructions to be borne in mind, and the dowels and supports employed.

5.2 CHECKING THE LEFT-HAND FRONT SUSPENSION

Fig. 12 shows the parts needed for this operation already assembled. The support is that marked with the number

A.8.0051 (ref. 8 of fig. 1)

while the dowels are those marked with the numbers:

A.8.0057 (1 part)	for checking the front connecting hole of the lower wishbone. The dowel is of the plain round type and is inserted from the engine compartment;
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A.8.0058 (1 part)	for checking the front connecting hole of the lower wishbone. The
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dowel is of the plain round type and is inserted from the outside, upwards.

If the chassis hole is perfectly aligned with that of the support, the dowel will be free to fall;

A.8.0059
(1 part)

for checking the connecting hole of the upper wishbone transversal arm.

The dowel is of the plain round type and is inserted from the engine compartment;

A.8.0060
(two parts)

for checking diagonal arm of the upper wishbone.

Both dowels are threaded at the front and are screwed into the chassis holes. Do not use force for fear of damaging the threads.

The support rests on the cross-member A.8.0008 (ref. 4) and is fitted to it by means of bolts **B**.

5.3 CHECKING THE RIGHT -HAND FRONT SUSPENSION

This suspension is perfectly symmetrical with the left-hand side, and the same procedure mentioned in paragraph 5.2 applies here. The only difference lies in the use of that support marked with number

A.8.0052 (ref. 7 of fig. 1)

5.4 CHECKING ATTACHMENTS OF GEARBOX SUPPORT MEMBER AND INTERCONNECTION OF CENTRAL CROSS-MEMBER

Fig. 13 shows the parts already assembled for this operation.

The support is that marked with the number:

A.8.0053 (ref. 5 of fig. 1)

while the dowels are those marked with the number.

A.8.0060
(4 parts)

for checking the attachment holes of the gearbox cross-member.

The four dowels are round, threaded at the front and are screwed into the holes in the chassis : two on the left hand side and two on the right hand side. Do not use force for fear of damaging the threads;

A.8.0061
(6 parts)

for checking the attachment holes of the central cross-member interconnection. The six dowels

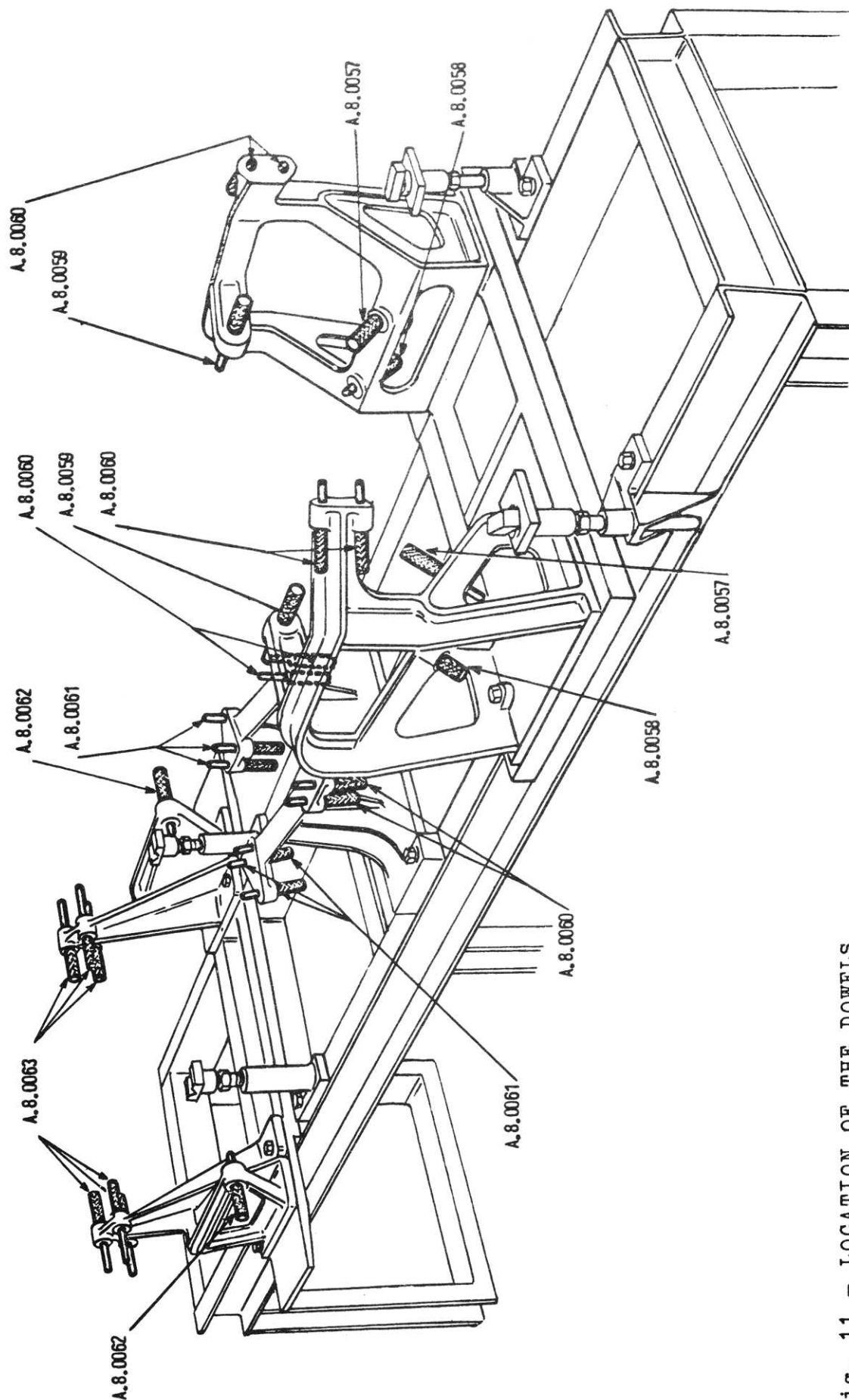


Fig. 11 - LOCATION OF THE DOWELS

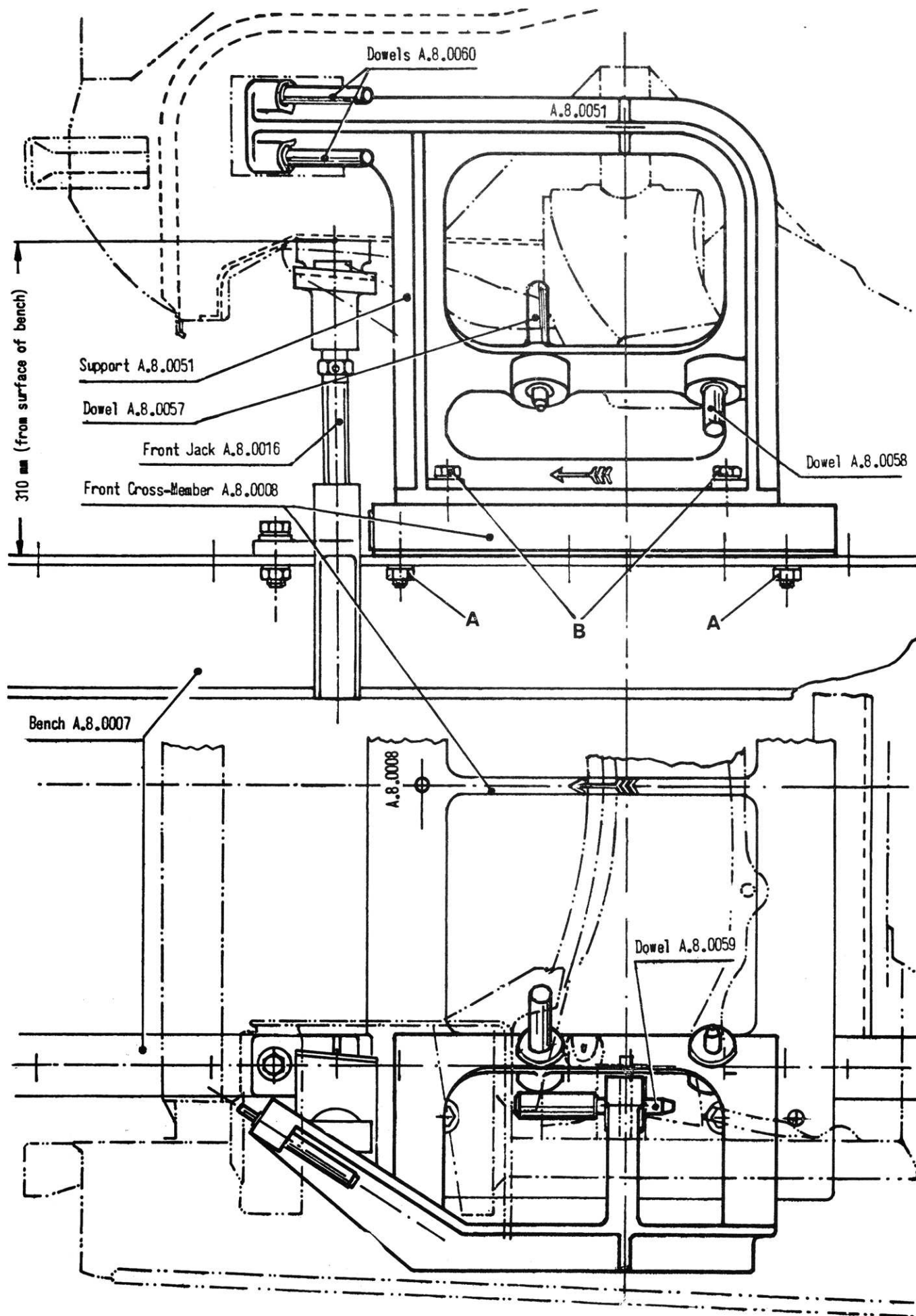


Fig. 12 - CHECKING OF FRONT SUSPENSION

are round and threaded at the front; they are screwed into the holes in the chassis, three on the left hand side and three on the right hand side. These must not be forced, otherwise the threads will be damaged.

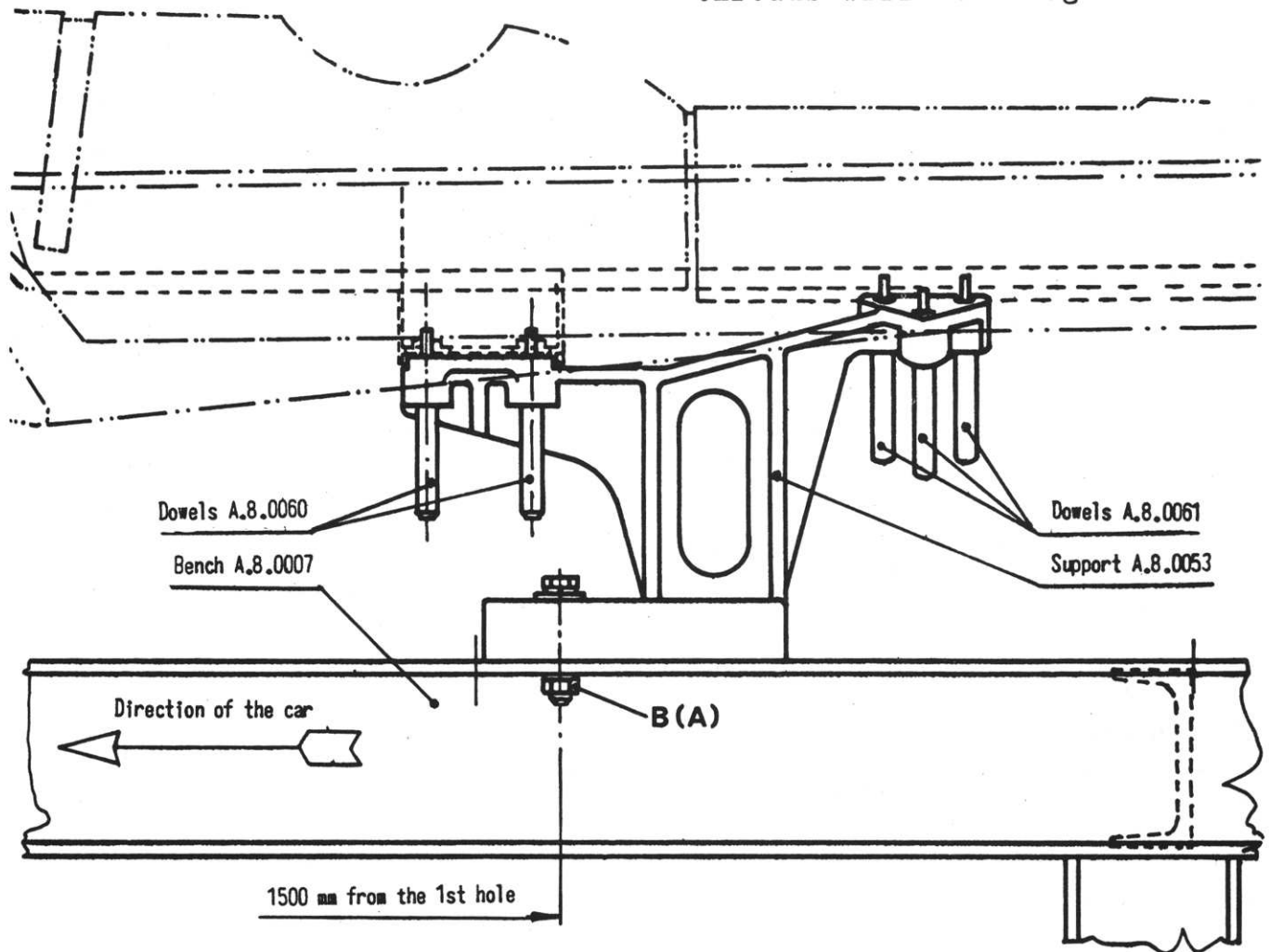


Fig. 13 - CHECKING ATTACHMENTS OF GEARBOX SUPPORT MEMBER AND INTERCONNECTION OF CENTRAL CROSS-MEMBER

5.5 CHECKING THE LEFT-HAND REAR SUSPENSION

Fig. 14 shows the parts already fitted which are required for this operation.

The support is that marked with the number A.8.0055 (ref. 10 of fig. 1)

while the dowels are those marked with the number:

A.8.0062 (1 part) for checking the attachment hole of the strut; the dowel is round and may be inserted either from the outside or the inside;

A.8.0063 (3 parts) for checking the attachment holes of the reaction triangle on

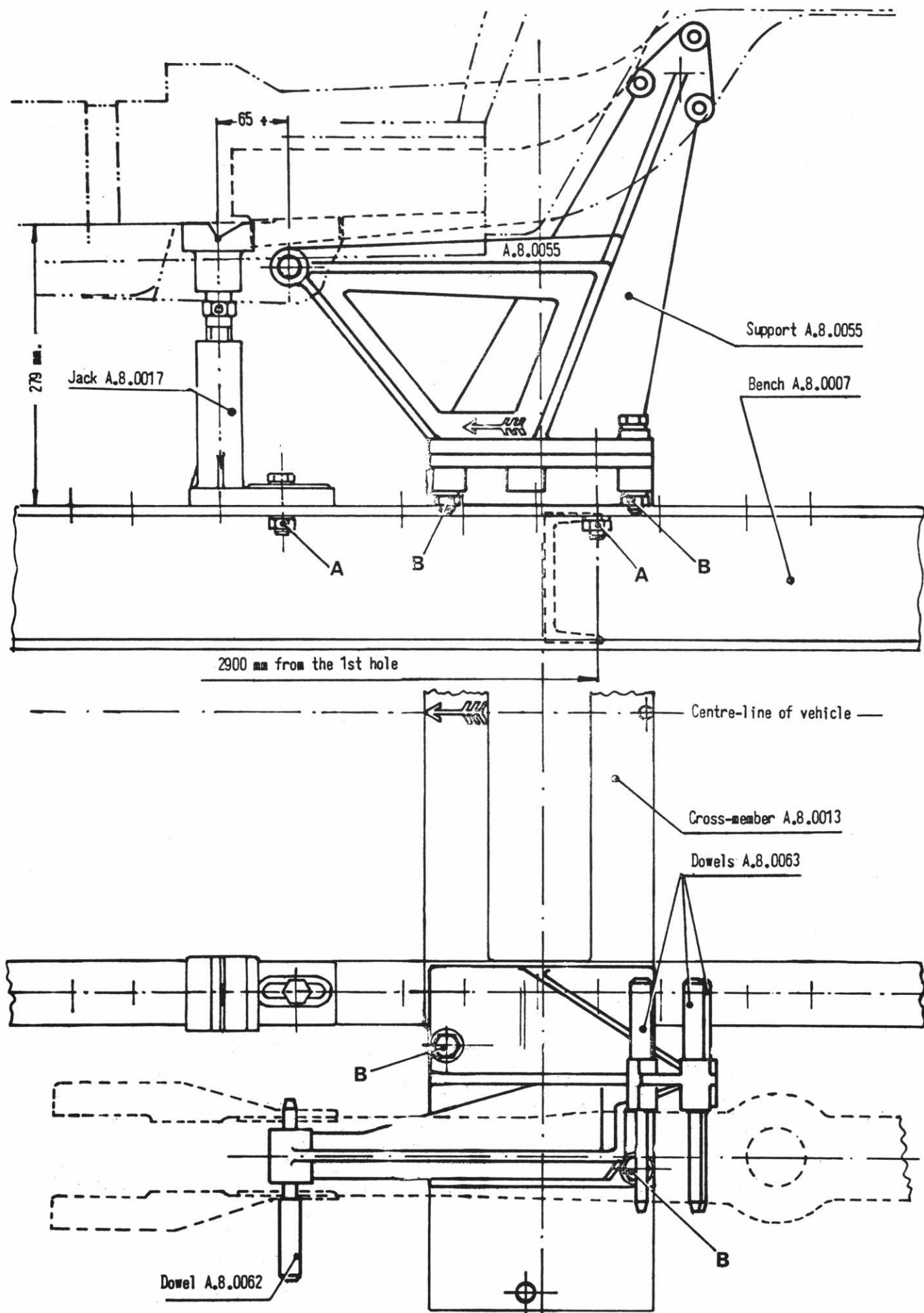


Fig. 14 - CHECKING THE LEFT-HAND REAR SUSPENSION

the left-hand rear chassis member. The three dowels are of the plain round type and are inserted from the inside as shown in fig. 14.

5.6 CHECKING RIGHT-HAND
REAR SUSPENSION

This suspension is symmetrical in every respect with the left-hand side and the information in paragraph 5.5 applies equally here. The only difference lies in the support which is that marked with the number:

A.8.0054 (ref. 9 of fig. 1).

5.7 CHECKING ALIGNMENT OF
THE STEERING BOX AND
IDLER ATTACHMENT POINTS

For this operation, use the correct tool:

A.8.0056 (ref. 12 of fig. 1)

working inside the engine compartment.

If the attachment points correspond exactly, the grooves marked on the two tubes comprising the tool should coincide perfectly, as shown in the detailed plan of fig. 15.

However, a tolerance of ± 0.5 mm. is acceptable in the extension of the tool.

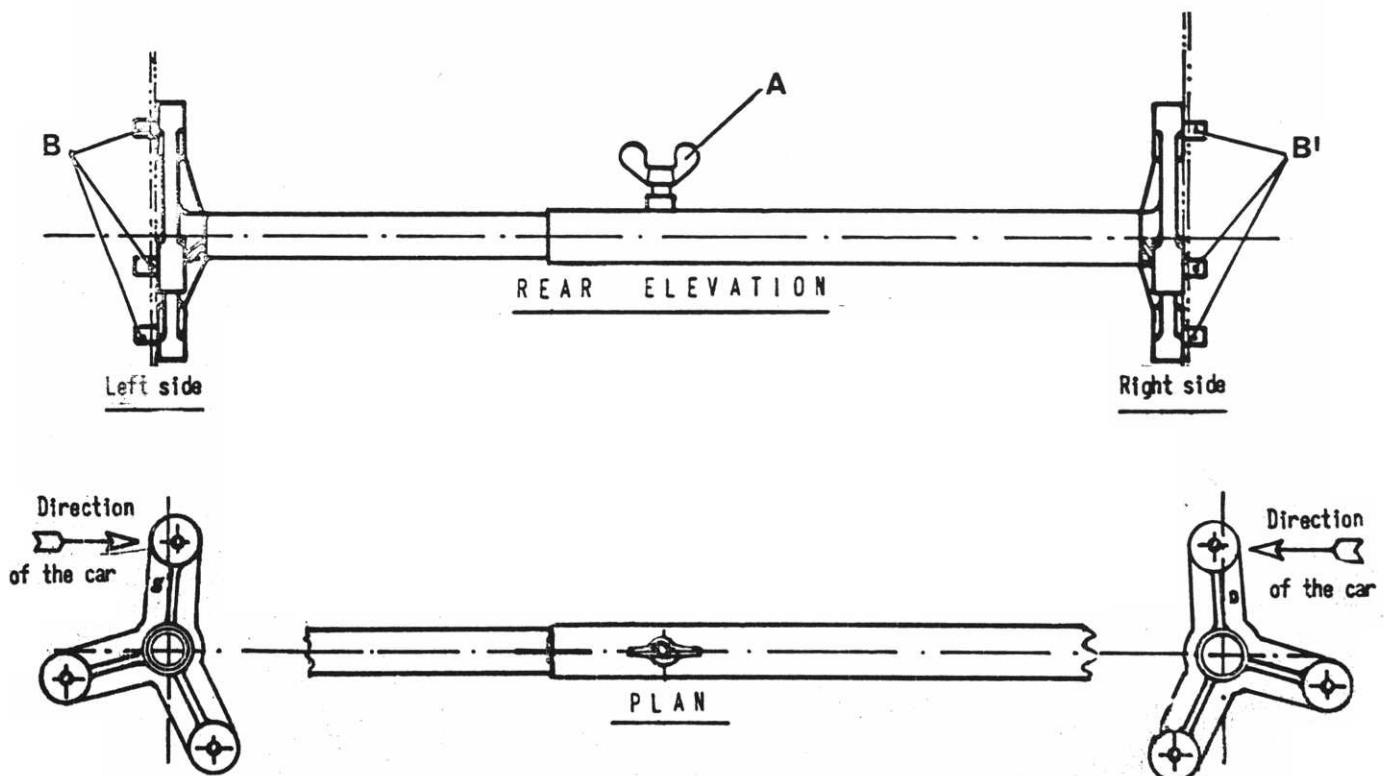


Fig. 15 - CHECKING ALIGNMENT OF THE STEERING BOX AND IDLER
ATTACHMENT POINTS

To use the tool is quite simple:slacken the wingnut **A** , extend the two sections of the tool until the stubs **B** and **B'**, protruding from the flanges,register in the corresponding holes of the side members which are used for fitting the steering box on one side and the idler on the other.

In addition to the number, the letters "**S**" and "**D**" are marked on the flanges of the tool.

The flange marked with the letter **D** must face the right-hand side member and vice versa for the other.

The wingnut must face upwards.

SPECIAL INSTRUCTIONS FOR CHASSIS WITH AN AXLE BASE OF 2350 mm.

105.02 GIULIA Sprint GT

105.04 GIULIA Sprint GT RHD

6.1 FOREWORD

These chassis differ from the 105.14 (GIULIA TI and derivatives) essentially for the length of the axle base; they are 160 mm. shorter.

Therefore, for checking these chassis with out disturbing the front and central supports, reposition forward the rear supports and the rear jacks A.8.0017 by this amount as detailed in the following paragraphs.

All the other operations are exactly the same as those for the chassis 105.14.

Fig. 16 shows the complete assembly together with the chassis to be checked.

Fig. 17 shows the plan of the bench A.8.0007 with an indication of the holes to be employed. By comparison with fig. 2, we note that only the last two holes differ : these are in fact the holes to which the jacks A.8.0017 and the cross-member A.8.0013, are fitted.

6.2 FITTING THE REAR JACKS A.8.0017

The two jacks are fitted in the holes indicated by the number 3 in fig. 17.

To avoid damaging the floor of the body with the jacks it is necessary to insert between the body and the jack a plate of approximately 2 - 3 mm. thickness, or wooden spacer as shown in fig. 18.

The jacks support the body adjacent to the drain holes cut in the rear floor.

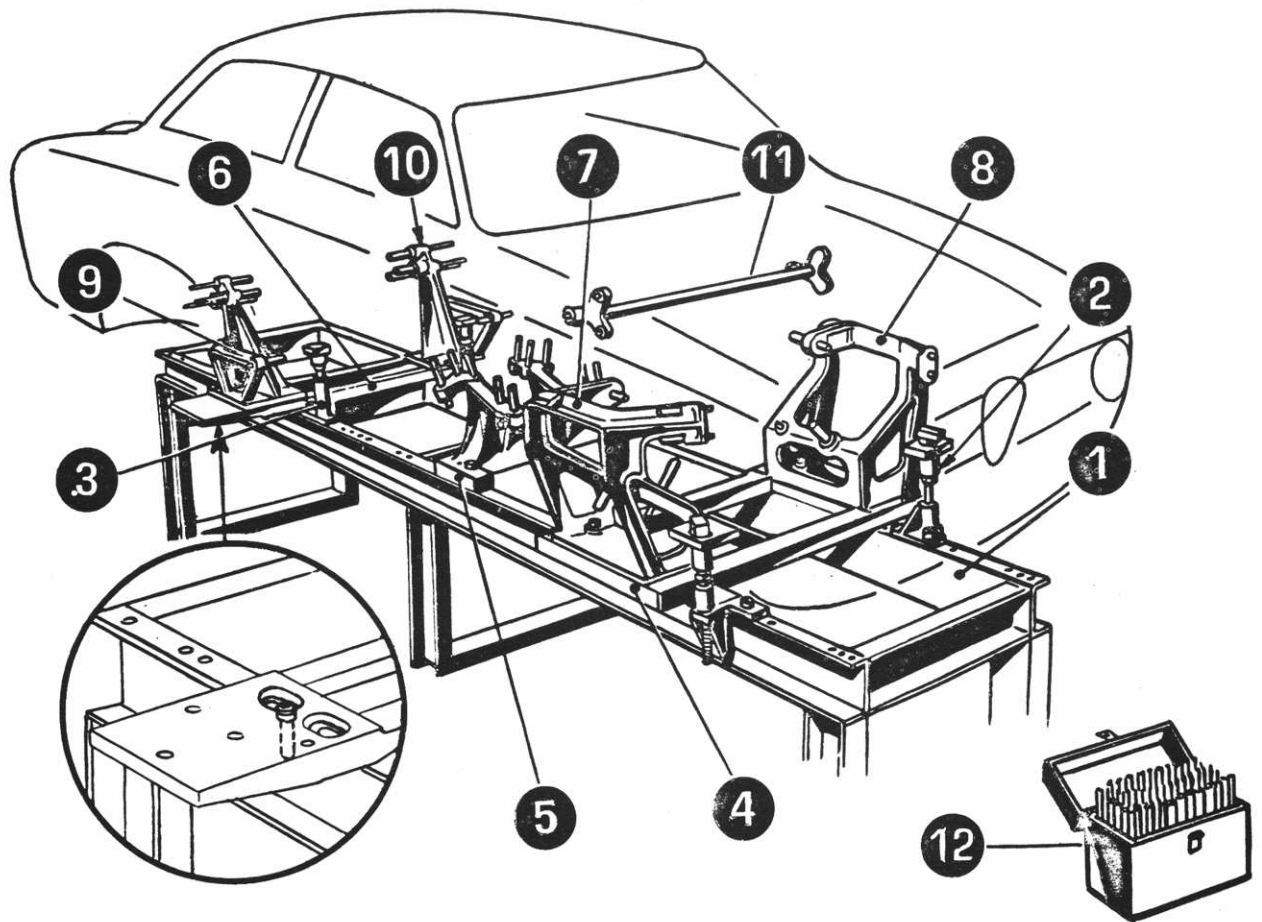


Fig. 16 - GIULIA Sprint GT CHASSIS CHECKING LAYOUT

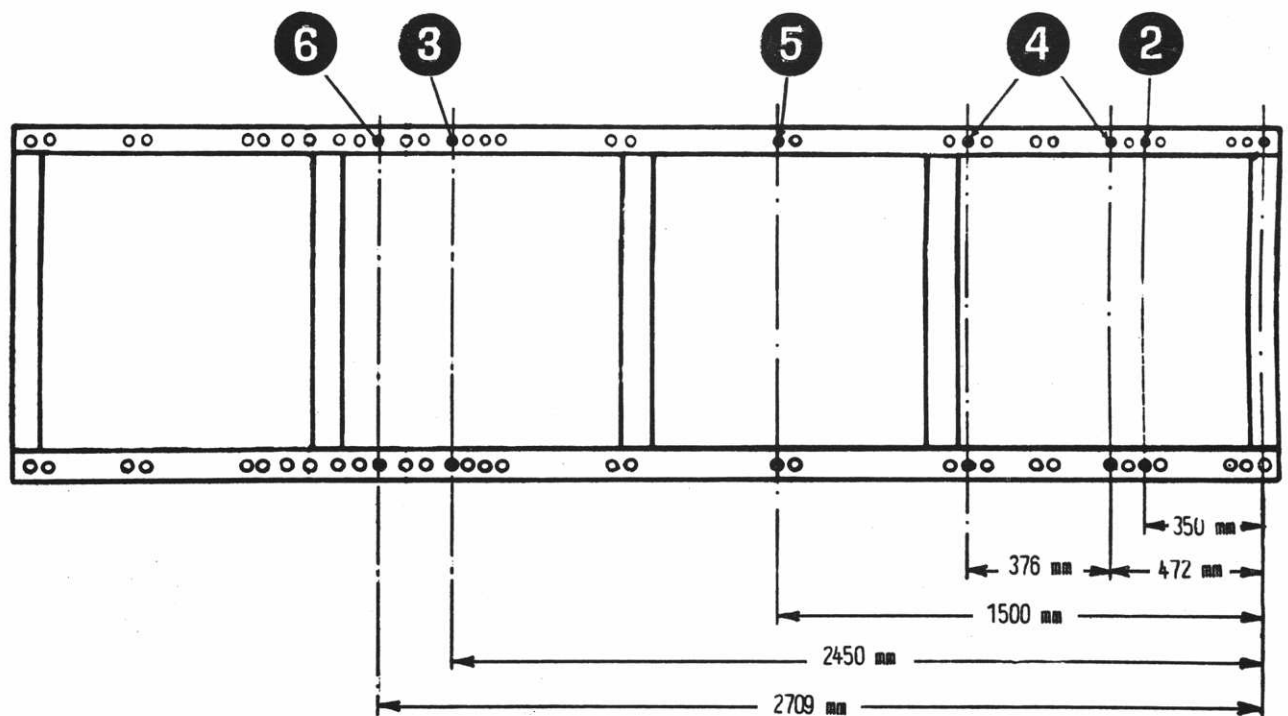


Fig. 17 - PLAN OF DETAIL ① WITH POSITION OF HOLES EMPLOYED

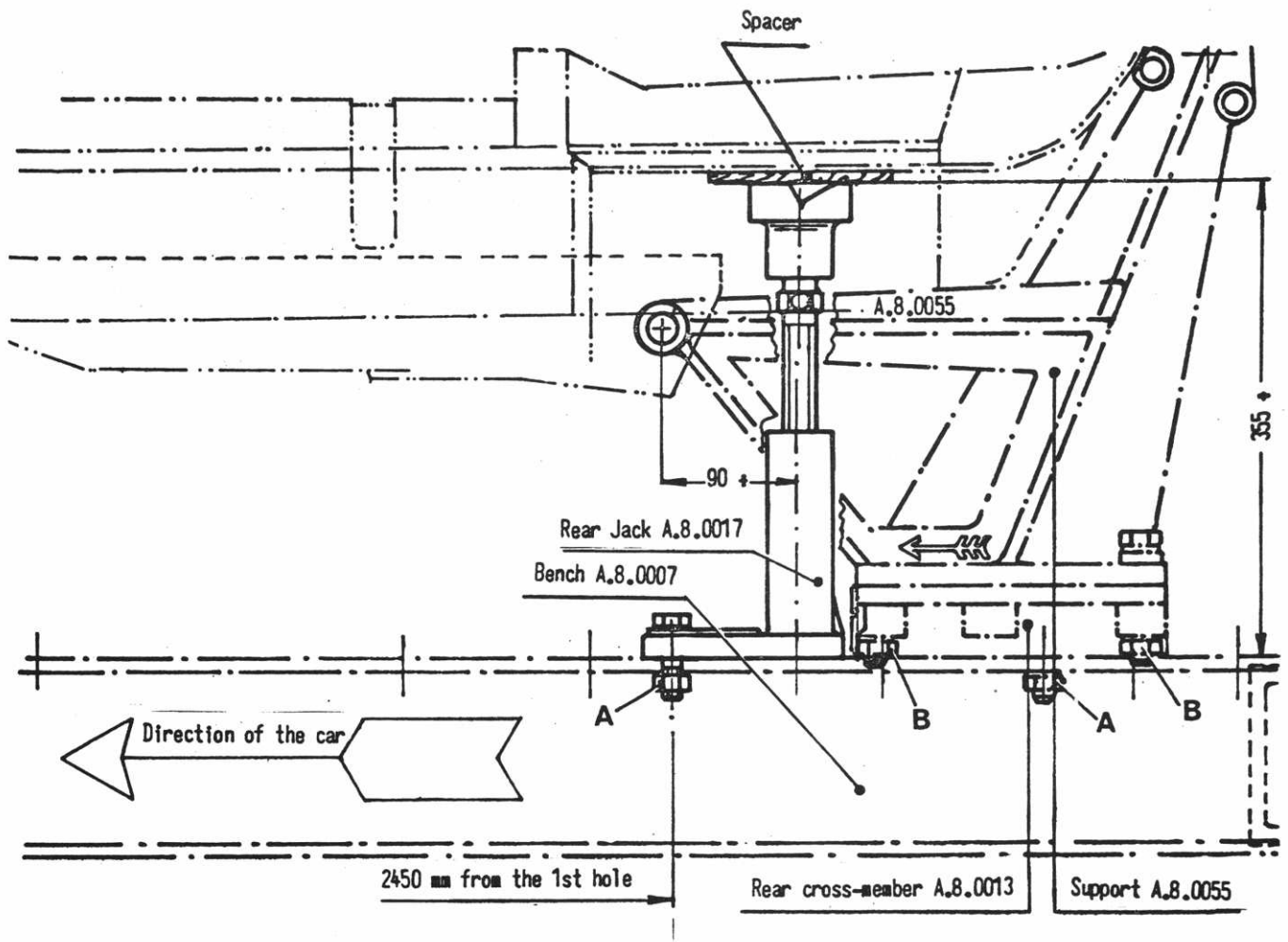


Fig. 18 - FITTING THE REAR JACKS A.8.0017

6.3 FITTING THE REAR CROSS-MEMBER A.8.0013

The cross-member must be fitted in the holes indicated with the number 6 in fig. 17.

The cross-member slots, to be employed for fitting it to the bench are the central ones, i.e. those marked with the number 105.02.

To confirm that its location on the bench is exact, it is advisable to check the distance between the centres **C** and **C'** marked on the front cross-member A.8.0008 as well on the rear cross-member A.8.0013; this amount should correspond to that shown in fig. 19.

For further information regarding the location of the rear cross-member and the checking of the rear suspension, refer to paragraphs 3.6 - 4.5 - 5.5 and 5.6.

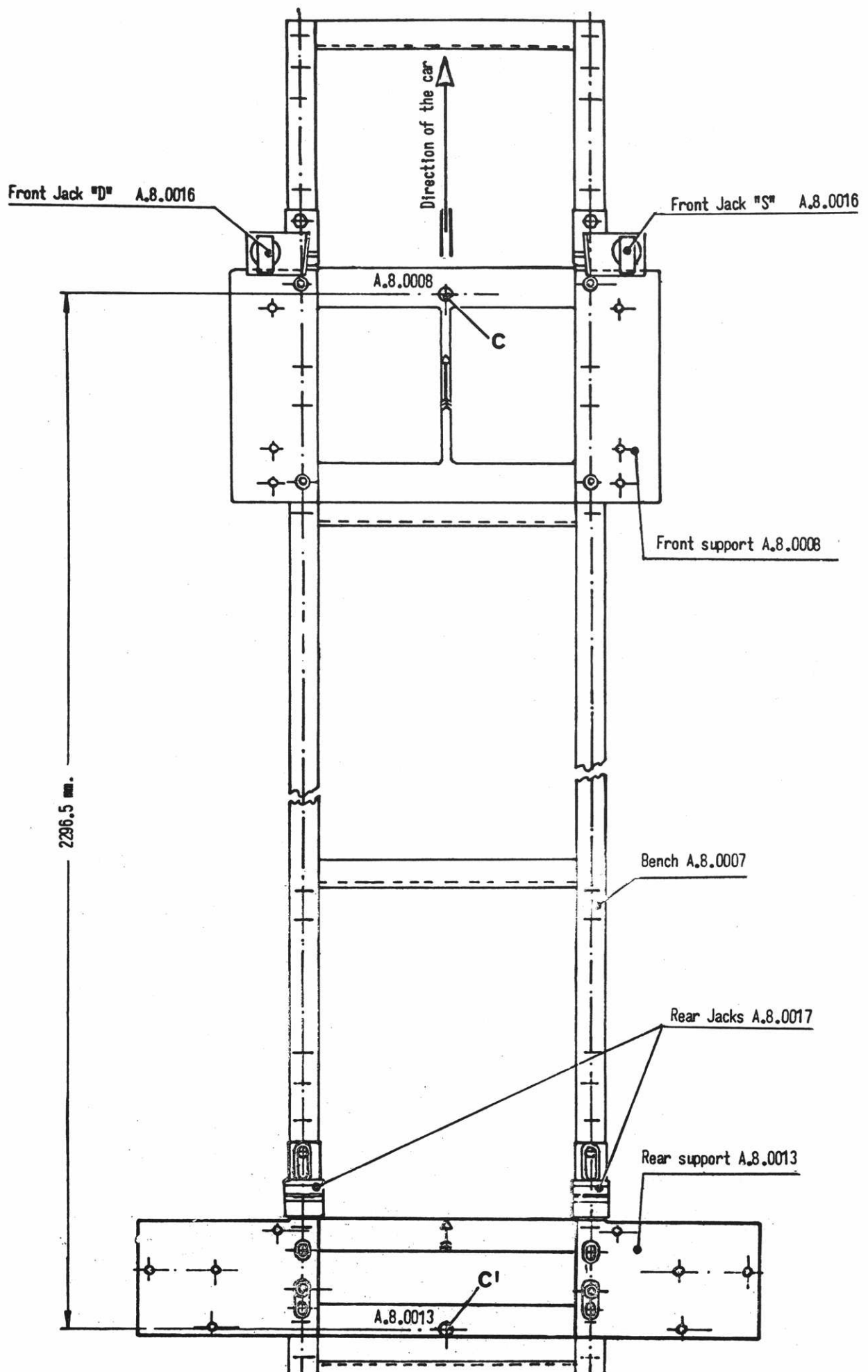


Fig. 19 - POSITION OF THE FRONT AND REAR CROSS-MEMBERS

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