

# 41 042 – AN – 01.1999

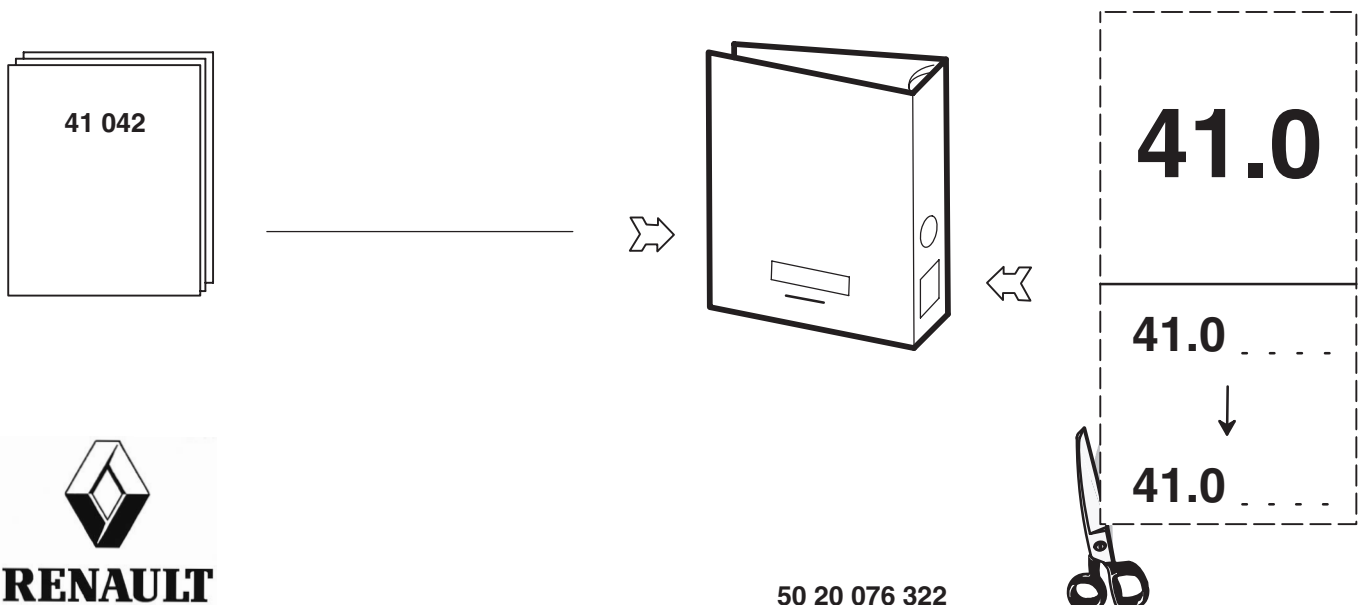
## STEERING

STEERING	VEHICLE
TRW TAS 87	KERAX (8x4)
TRW TAS 85	KERAX (4x2)
ZF 8098 955 424	KERAX (8x4) (6x4) (4x2)
ZF 8098 955 323	KERAX (6x4) (6x6) (4x4)

### NOTE

The above information may change in the course of time.

Only the "Consult" section of the workshop manuals repertory in standard N° 10320 serves as reference.



**STEERING****CONTENTS**

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**TECHNICAL DATA**

**Technical data**

<b>Steering box type:</b> .....	TRW TAS 87605
Steering gear ratio .....	21/1
Number of steering wheel turns .....	5.5
Maximum torque at a pressure of <b>150</b> bars .....	6650 Nm
Normal operating flowrate .....	25 l/min
Operating pressure .....	150 bar
Maximum permissible pressure .....	160 bar
Weight: .....	49.8 kg

<b>Steering box type:</b> .....	TRW TAS 85629
Steering gear ratio .....	21/1
Number of steering wheel turns .....	5.5
Maximum torque at a pressure of <b>150</b> bars .....	6650 Nm
Normal operating flowrate .....	21 l/min
Operating pressure .....	150 bar
Maximum permissible pressure .....	160 bar
Weight: .....	47.5 kg

<b>Steering box type:</b> .....	ZF 8098955323
Steering gear ratio .....	22.2/1→26.2/1
Number of steering wheel turns .....	6.2
Maximum torque at a pressure of <b>150</b> bars .....	5717→6726 Nm
Normal operating flowrate .....	16→20 l/min
Operating pressure .....	150 bar
Maximum permissible pressure .....	165 bar
Weight: .....	41 kg

<b>Steering box type:</b> .....	ZF 8098955424
Steering gear ratio .....	22.2/1→26.2/1
Number of steering wheel turns .....	6.2
Maximum torque at a pressure of <b>150</b> bars .....	5717→6726 Nm
Normal operating flowrate .....	16→20 l/min
Operating pressure .....	150 bar
Maximum permissible pressure .....	165 bar
Weight: .....	41 kg

**Consumables and capacities** (see Servicing Handbook)

**Tightening torques**

There are several types of tightening:

- Tightening to torque (in **Nm.**)
- Tightening to angle (in °)
- Tightening to torque–angle (in **Nm. + °**)

Torques given in **Nm** are nominal torques (average value calculated on the basis of the minimum torque and the maximum torque).

The tightening accuracy class defines the tolerance of this torque in percent as a function of the nominal torque applied.

**Tightening accuracy classes:**

- **Class I:** Special threaded hardware (tolerances variable depending on assembly)
- **Class II:** Reserved for precise tightening (tolerance  $\pm 10\%$  of the nominal torque)
- **Class III:** Reserved for normal standard tightening (tolerance  $\pm 20\%$  of the nominal torque)

For standard threaded hardware indicated in the table below, use tightening class **III**.

For other torques, see page **A5**.

<b>Tightening torques for conventional nut and bolt hardware to “METRIC system” standard 01.50.4002</b>		
<b>Dia. and pitch of nuts and bolts (in mm)</b>	<b>Quality class 8.8</b>	<b>Quality class 10.9</b>
	<b>Tightening class III (+ 20 %)</b>	<b>Tightening class III (+ 20 %)</b>
6 x 1.00	7.4	10.8
7 x 1.00	12.1	17.8
8 x 1.00	19.2	28.2
8 x 1.25	17.9	26.3
10 x 1.00	39.4	58
10 x 1.25	37.4	55
10 x 1.50	35.4	52
12 x 1.25	67	98
12 x 1.50	64	94
12 x 1.75	61	90
14 x 1.50	105	155
14 x 2.00	98	143
16 x 1.50	161	237
16 x 2.00	151	222
18 x 1.50	235	346
18 x 2.50	210	308
20 x 1.50	328	481
20 x 2.50	296	435
22 x 1.50	444	652
22 x 2.50	406	596

**STEERING LINKAGE**

Tighten to torque.

Lock the nut.

Retighten to allow locking. **Never loosen.**

## CONVENTIONAL SYMBOLS



Tighten to torque (Nm) (right-hand thread)



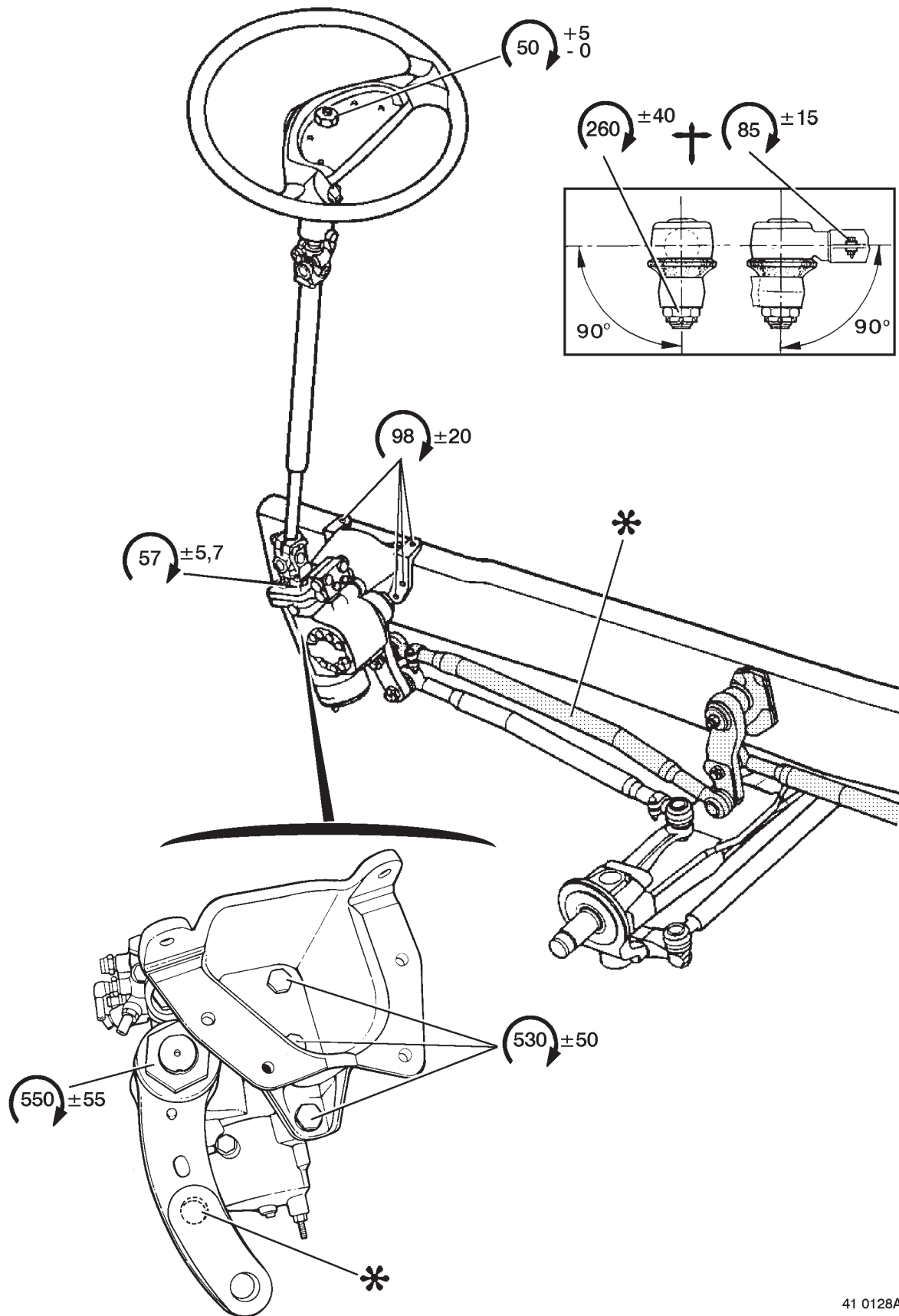
Mark – Assemble as per marking



Part to be replaced



Depending on versions or options



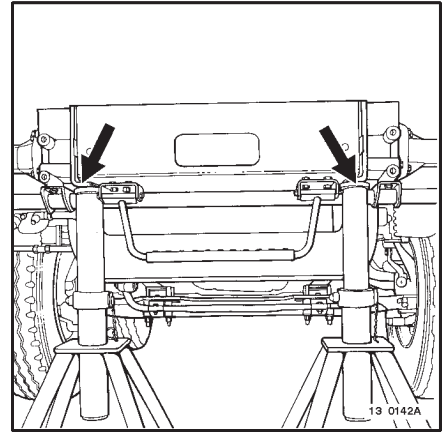
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**REMOVAL**



## Removal

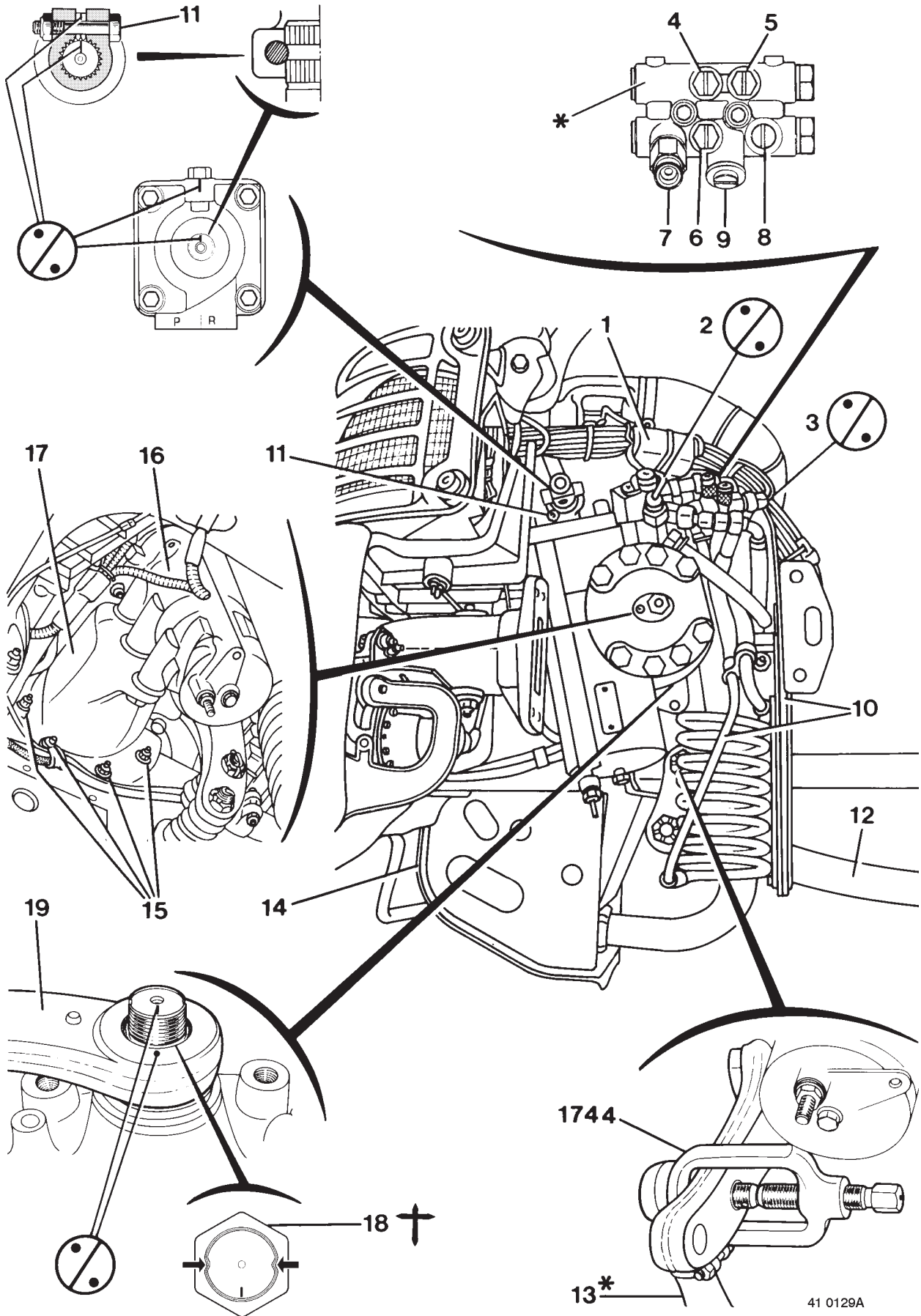
Immobilize the vehicle.  
 Remove the bumper.  
 Tilt the cab.  
 Place the front end of the vehicle on axle stands.  
 Remove the step.  
 Clean the pipes (4-5-6-7-8-9).  
 Mark.  
 Blank off the ports.  
 Mark (2-3).



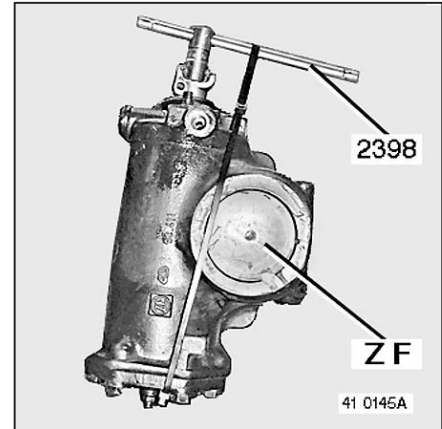
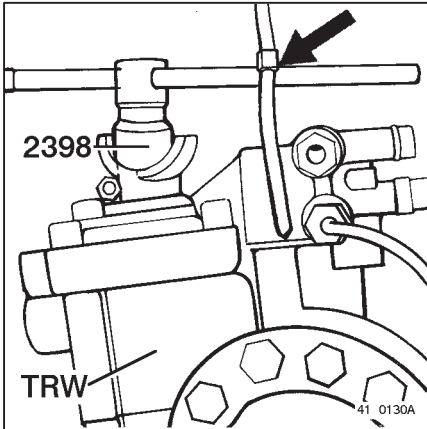
The item numbers indicated on the drawing on page **B3** correspond to the **sequence of disassembly**.

The table indicates the designation and the reference number of tools necessary for assembly / disassembly of the itemized parts.

Item	Tool Designation	Reference N°	Assembly	Disassembly
12-13	Puller	1744		X
18	Wrench	2398	X	X
19	Puller	0833		X



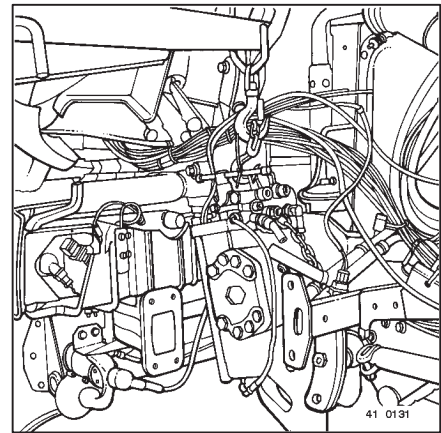
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**IMPORTANT**

*Steering box with automatic adjustment hydraulic stops: Do not manoeuvre the steering box when its mechanical deflection is not limited (risk of maladjustment of hydraulic stops).*

Immobilize the steering box input shaft.  
Use tool(s) **2398**.

Use lifting tackle.  
Remove the steering box (**16**) complete with bracket (**17**).  
Remove drag link (**13**).

**Fitting**

To fit, proceed in the reverse sequence to removal.  
Install tool **2398**.  
Position the drop arm (**19**).  
Respect the position.  
Screw up the nut (**18**).  
Tighten to torque.  
Lock the nut (**18**).  
Fit bracket (**17**).  
Tighten to torque.  
Fasten the bracket to the chassis.  
Tighten to torque.  
Set the steering box to the mid-point position (aligned marks).  
Couple up the steering universal joint.  
See page(s) (**B3**).  
Fit the nut and bolt (**11**).  
Respect the position.  
Tighten to torque.

Adjust the steering linkage.  
See page(s) (**C2**).  
Correct the position of the steering wheel, if necessary.

Fill the steering hydraulic system and bleed the air from the circuit.

For hydraulic system filling and bleeding and filter replacement operations (See Driving and Servicing Handbook **NE 1/3783**).

**TESTING**

### Preliminary checks

Before carrying out any work, proceed with the following checks :

- Condition and pressure of tyres.
- Condition and height of suspension.
- Efficiency of shock absorbers.
- Play of front axle wheel hub bearings, swivel pins and joints.

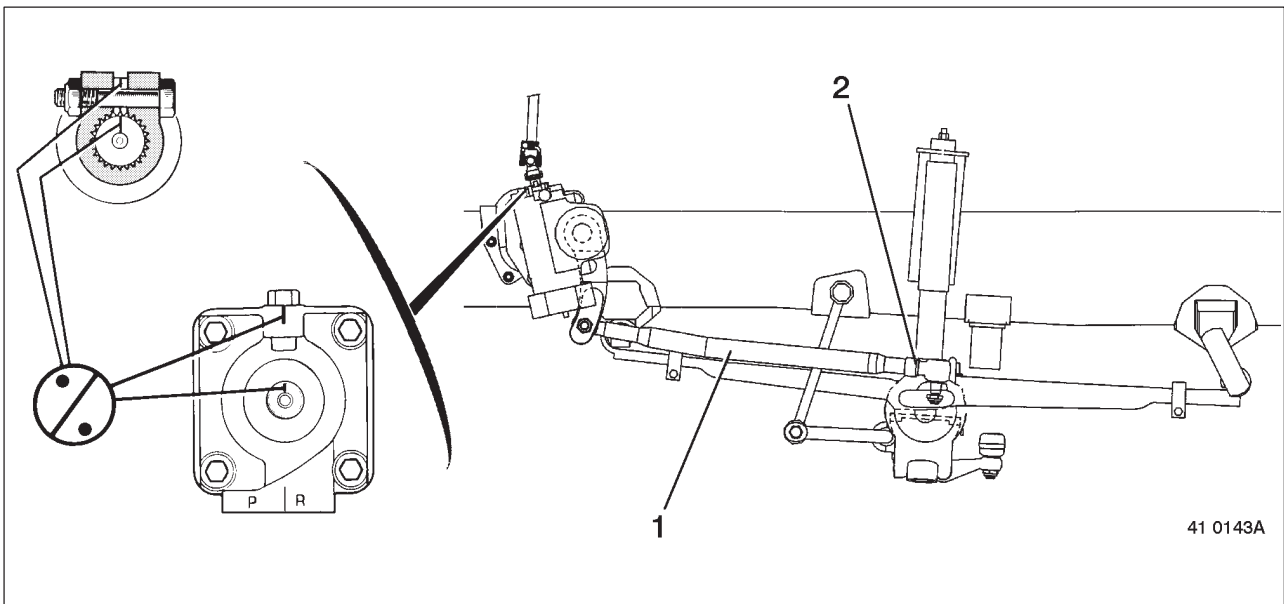
With the front wheels in the "straight ahead" position, check the wheel alignment.

Check that the steering is in the "mid-point" position. For power-assisted steering systems, make sure there is no hydraulic pressure when the steering is in the "mid-point" position.

Carry out a road test after making adjustments found to be necessary during the above checks. If necessary, check the axle geometry angles.

### Inspection conditions :

- Vehicle unladen and in running order.
- Cab in "road" position (for vehicles with tilt cab).
- Vehicle on flat ground, steering axle wheels on pivoting plates.
- Vehicle equipped with lift-up axle: the axle must be lowered.
- Luminous projector.



### Adjusting the drag link

With the wheel alignment adjusted, move the roadwheels to the straight ahead position.

Uncouple the drag link (1).

Move the steering box to the mid-point position.

Adjust the drag link (1) to the necessary length (ball-joints perpendicular to the track rod).

Tighten drag link clamp bolt (2).

Tighten to torque.

On 8x4, vehicle, see MR 41 039.

## Testing

Check the steering lock angles.

(See "MR").

### Adjusting the mechanical steering lock stops

With the wheel alignment adjusted, screw the steering lock stops fully home.

Turn the steering wheel carefully to the right until the required steering lock angle is obtained, without exceeding the angle so as not to maladjust the hydraulic lockover limitation stops on the steering box.

Unscrew the mechanical steering lock stop in question until contact is made with the axle stop shoulder. Tighten the locknut (depending on the assembly).

Turn the steering wheel to the left and adjust the other steering lock stop in the same way.

Check that the tyres do not enter into contact with the chassis mechanical elements.

Check the hydraulic lockover limitation stops.

On "ZF" steering box, see MR **41 623**.

On "TRW" steering box, see MR **41 628**.

To fully test the hydraulic system, see MR **41 032**.

On 8x4, vehicle, see MR **41 039**.

## TOOLS

**RENAULT TRUCKS** divide tools into 3 categories :

- **General-purpose tools** : Commercially available tools.
  - . **50 00 26 .... reference number** (possibility of purchasing through the RENAULT TRUCKS Spare Parts department).
  - . **4-figure reference number** (tools with RENAULT TRUCKS reference number, but available from the supplier).
- **Special tools** : Specially created tools, distributed by the RENAULT TRUCKS spare parts division.
- **Locally manufactured tools** : these tools are classified differently according to their degree of sophistication :
  - . **4-figure reference number** (represented by a drawing) : tools that are simple to make without need for special qualification.
  - . **50 00 26 .... reference number** (possibility of purchasing through the RENAULT TRUCKS Spare Parts department) : a certain skill is needed to make these tools.

**Three levels** (or echelons) determine their assignment :

- **LEVEL 1** : Tools for servicing and minor tasks.
- **LEVEL 2** : Tools for major repairs.
- **LEVEL 3** : Tools for refurbishment.

General-purpose tools				
Ref. RENAULT TRUCKS	Description	Category	Quantity	Page
50 00 26 0833	Puller	1	1	B2
50 00 26 1744	Puller	1	1	B2

Locally manufactured tools				
Ref. RENAULT TRUCKS	Description	Category	Quantity	Page
2398	Spanner	1	1	B2-B4

