

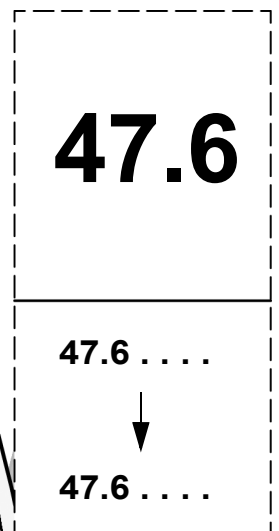
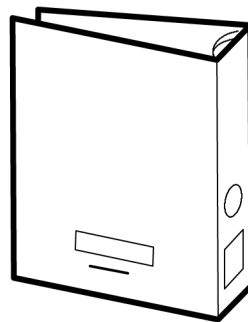
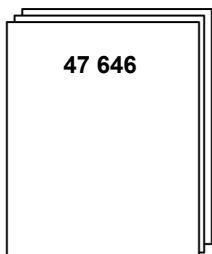
47 646 - GB - 11/2004

DRIVE AXLE 13170

RANGE	FAMILY	VARIANT
RENAULT MAGNUM DXi 12 440 - 480	17RD	152BH
	17SD	
	17TD	



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.



CONTENTS

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Inter-wheel diff. lock	F-1 → 5
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GENERALITIES

APPLICABILITY

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
RENAULT MAGNUM DXi 12 440 - 480	17RD	Warnings	152BH			31/03/2003	A-3
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Conventional symbols	152BH			23/05/2002	A-4
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	General instructions	152BH			07/10/2002	A-6
	17SD						
	17TD						

Warnings

In this document, safety instructions are symbolized as follows:



DANGER! NON-OBSERVANCE OF THE PROCEDURE DESCRIBED OR LACK OF CARE OR ATTENTION, RISK CAUSING SERIOUS INJURY OR EVEN DEATH.



WARNING! Any different or inappropriate working method risks causing damage to the product.








NOTE! Draws attention to particular or important points of the method.













Comply without fail with the regulations in force relative to the recovery and treatment of used parts and waste.

Conventional symbols









Fitting

	Tighten to torque (Nm) (left-hand thread)		Tighten by indicated value
	Tighten to torque (Nm) (right-hand thread)		Loosen by indicated value
	Tightening torque with lubricated threaded hardware		










Dimensioning

	Tightening		... Greater than or equal to ...
	Equal to		Wear limit
	... Less than ...		Machining limit or dimension
	... Greater than ...		Maximum out-of-true
	... Less than or equal to ...		Maximum parallelism error



















Repair

	Force to be exerted in the direction shown (hammer - press)		Smear or coat (see "Consumables" table)
	Heat or cool: Temperature in degrees Celsius (e.g. + 80 °C)		Fill to level (see "Technical Data" and "Consumables" table)
	Weld bead		Grease or oil (see "Consumables" table)
	Repair time - Heating time		Mark - Assemble according to marking

Adjustment

	Rotating friction torque		Turn anti-clockwise
	Turn in alternate directions		Turn anti-clockwise (the figure shows the number of turns)
	Turn clockwise		Turn clockwise (the figure shows the number of turns)
	Place in contact		Move in the direction shown
	Dimension to be assured (mm)		

Various information

	Exhaust - Outlet		Operation with a sequence
	Intake - Inlet		Involves
	Weight in kg (example: 275 kg)		Return to numbered operation - Connected with numbered operation
	Depending on versions or options		Withdraw - Delete
	Wrong		Direction of disassembly (the arrow shows the direction)
	Correct		Direction of assembly (the arrow shows the direction)
	Injection		... to ...
	Repair dimension		Inspect - Check condition of part
	Part to be replaced		Danger for persons, vehicle or equipment

General instructions

Practical advice

Prior to any work:

- Clean the major unit and its surrounds (See Driving Servicing Handbook, "Vehicle washing").
- Ensure the batteries are disconnected.
- Mark the pipes and wiring harnesses, if necessary.
- Protect all ports to prevent the ingress of foreign matter.
- Before disconnecting an air pipe, drop the circuit pressure.
- If liquid is splashed onto the bodywork, clean quickly with a cleaning product recommended by RENAULT TRUCKS.

Preparation prior to assembly:

Carefully clean and check all the parts.

Do not unpack a new bearing until you are ready to install it. Do not clean off the protective grease on new bearings.

Old seals and lock-plates must be discarded and new ones fitted.

Never force fit parts with copper or brass punches or drifts. Always use a specially adapted driver to prevent ingress of metal particles into the casings and bearings. Always oil parts prior to force fitting.

Always apply grease on the inside of seal ring lips.

Shrink fitted parts are to be heated with a hot air blower or in an oven. etc. Flame heating is strictly forbidden.



When using a torque multiplier, calibrate the torque wrench/multiplier unit at the required torque loading.

Fastening, locking, sealing and adhesive products:

Prior to assembly, carefully clean the product application surfaces of the parts. Old product residue is to be removed. Threaded portions are to be brushed, tapped and, if necessary, cleaned with a suitable product.

Using the product:

Always adapt the recommended product while observing the utilization conditions appearing on the pack:

- Surface finish,
- Working temperature,
- Reaction, drying, etc. time,
- Shelf life.

Stick to the assembly method so as to guarantee the quality of the repair.

TECHNICAL DATA

APPLICABILITY

Technical data

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
RENAULT MAGNUM DXi 12 440 - 480	17RD	Identification	152BH			24/11/2004	B1-3
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Central carrier	152BH			25/11/2004	B1-3
	17SD						
	17TD						

Tightening torques

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
RENAULT MAGNUM DXi 12 440 - 480	17RD	Definitions	152BH			27/02/2003	B2-1
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Standard nut and bolt tightening torques table	152BH			06/06/2003	B2-2
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Specific tightening torques	152BH			09/06/2004	B2-3
	17SD						
	17TD						

Technical data

Identification

Drive axle type

13170

Central carrier

Drive pinion - ring gear play

0.20 → 0.45 mm

Differential bearing caps spacing (leg spread)

0.15 → 0.33 mm

Differential bearing caps preload (expansion)

1.7 → 3.9 Nm

Ring gear radial run-out

0.20 mm

Tightening torques

Definitions

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 precision class defines the tolerance of this torque in percent as a function of the nominal torque applied.

Tightening precision classes:

- **Class I:** Special threaded hardware (tolerances $\pm 10\%$ of the final torque).
- **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 the following page(s).



"FIH" type (Nylstop) locknuts must be replaced whenever removed. "DRH" type (oval) locknuts can be re-used. If locknuts (DRH, FIH or other) are re-used, make absolutely certain that the screw-thread of the bolt protrudes least two threads above the top edge of the nut.

Standard nut and bolt tightening torques table

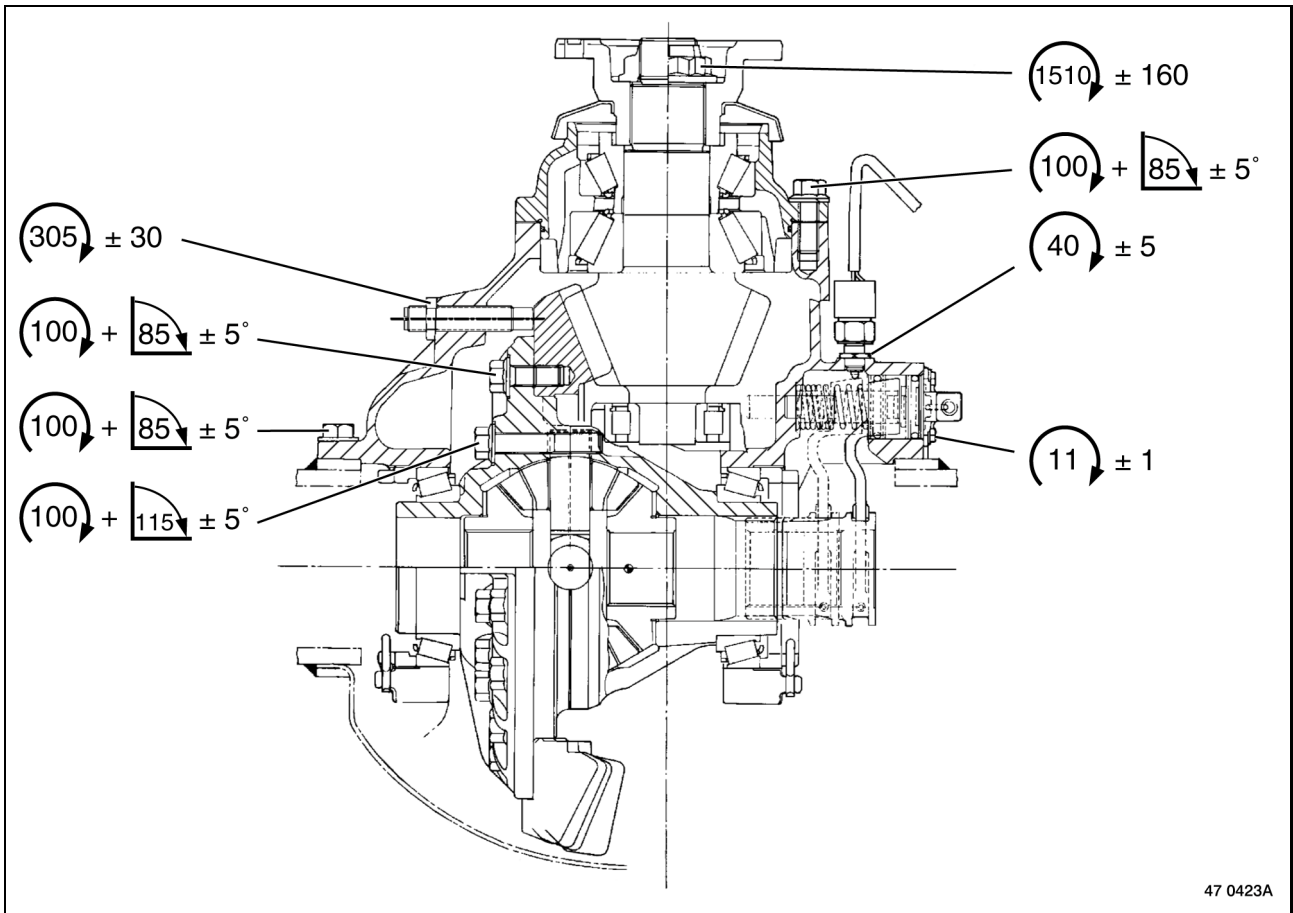


The tightening torque values given in the table are based on standard 01.50.4002 and apply to new nuts and bolts fitted dry and re-used nuts and bolts with oil applied to the screw-threads. If any nuts and bolts are replaced, **it is absolutely essential to use nuts and bolts recommended by the RENAULT TRUCKS Spare Parts Department (coefficient of friction in compliance with standard 01.50.4002).**

Tightening torque values in Nm for conventional "metric system" threaded hardware based on standard 01.50.4002 (H: normal and HE: with flange)		
Diameter and pitch of nuts and bolts	Quality class III	
	Quality class 8.8	Quality class 10.9
6 x 1.00	7.5 ± 1.5	11 ± 2.2
7 x 1.00	15 ± 3	20 ± 4
8 x 1.00	20 ± 4	30 ± 6
8 x 1.25	20 ± 4	27 ± 5.4
10 x 1.00	40 ± 8	60 ± 12
10 x 1.25	40 ± 8	60 ± 12
10 x 1.50	40 ± 8	50 ± 10
12 x 1.25	70 ± 14	100 ± 20
12 x 1.50	65 ± 13	95 ± 19
12 x 1.75	60 ± 12	90 ± 18
14 x 1.50	105 ± 21	155 ± 31
14 x 2.00	100 ± 20	145 ± 29
16 x 1.50	160 ± 32	220 ± 44
16 x 2.00	150 ± 30	220 ± 44
18 x 1.50	240 ± 48	340 ± 68
18 x 2.50	210 ± 42	310 ± 62
20 x 1.50	330 ± 66	480 ± 96
20 x 2.50	300 ± 60	435 ± 87
22 x 1.50	450 ± 90	650 ± 130
22 x 2.50	410 ± 82	595 ± 119
24 x 2.00	560 ± 112	820 ± 164
24 x 3.00	510 ± 102	750 ± 150

Specific tightening torques

Central carrier



Bearing caps securing bolts

730^{+80} Nm

Hubs

Hun securing nut	
Phase 1	150^{±30} Nm
Phase 2 – Turn the hub.	20 tours
Phase 3	1000^{±100} Nm
Half-shaft studs	75^{±15} Nm
Half-shaft securing nuts	150^{±15} Nm

TOOLS / CONSUMABLES

APPLICABILITY

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
RENAULT MAGNUM DXi 12 440 - 480	17RD	Generalities	152BH			24/11/2004	C-3
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Lubricants	152BH			29/05/2002	C-3
	17SD						
	17TD						

Generalities

RENAULT TRUCKS divides tools into three categories:

- **General-purpose tools:** proprietary tools
 - **50 00 26 reference number** (possibility of purchasing through the RENAULT TRUCKS Spare Parts department).
 - **4-figure reference number** (tools classified by RENAULT TRUCKS but available from the supplier).
- **Special tools:** specifically created tools distributed by the RENAULT TRUCKS Spare Parts Department
 - To be ordered according to the reference numbers appearing in the list of tools on the following pages.
- **Locally manufactured tools:**
 - **4-figure reference number** (represented by a drawing): tools that are simple to make without need for special qualification.

Three levels (or echelons) determine their assignment:

- **Level 1:** tools for servicing, maintenance and minor tasks
- **Level 2:** tools for major repairs
- **Level 3:** tools for refurbishment




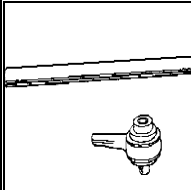
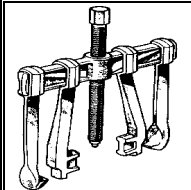
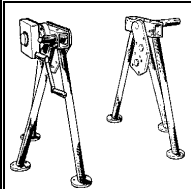
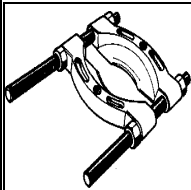
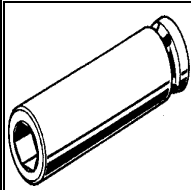
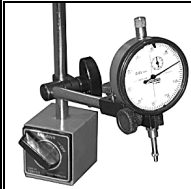
*Proprietary tools mentioned in this manual do not appear in the tools list.
These tools are identified in the standard tools manual (MO) by a 4-figure number.*



Lubricants

Consumables and oil capacity: (see Driving & Servicing Handbook).

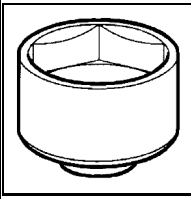
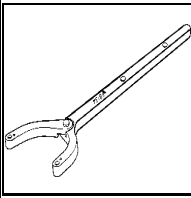
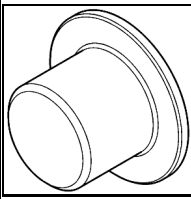
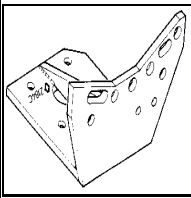
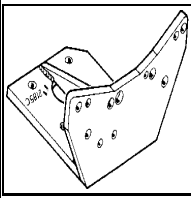
LIST OF TOOLS

General-purpose tools

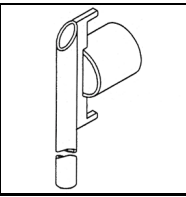
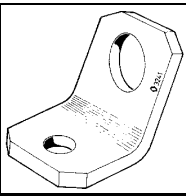
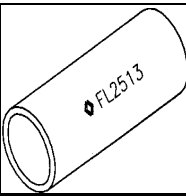
Illustration	RENAULT TRUCKS Ref.	Designation	Manufacturer reference	Manufacturer code	Level	Qty
	5000269804	Strap			1	1
	5000269774	Torque multiplier			1	1
	5000260833	Puller			1	1
	5000261000	Universal stand			2	1
	5000260810	Unsticker			2	1
	5000260960	Socket			2	1
	5000269661	Dial gauge + magnetic foot		AQ	2	2

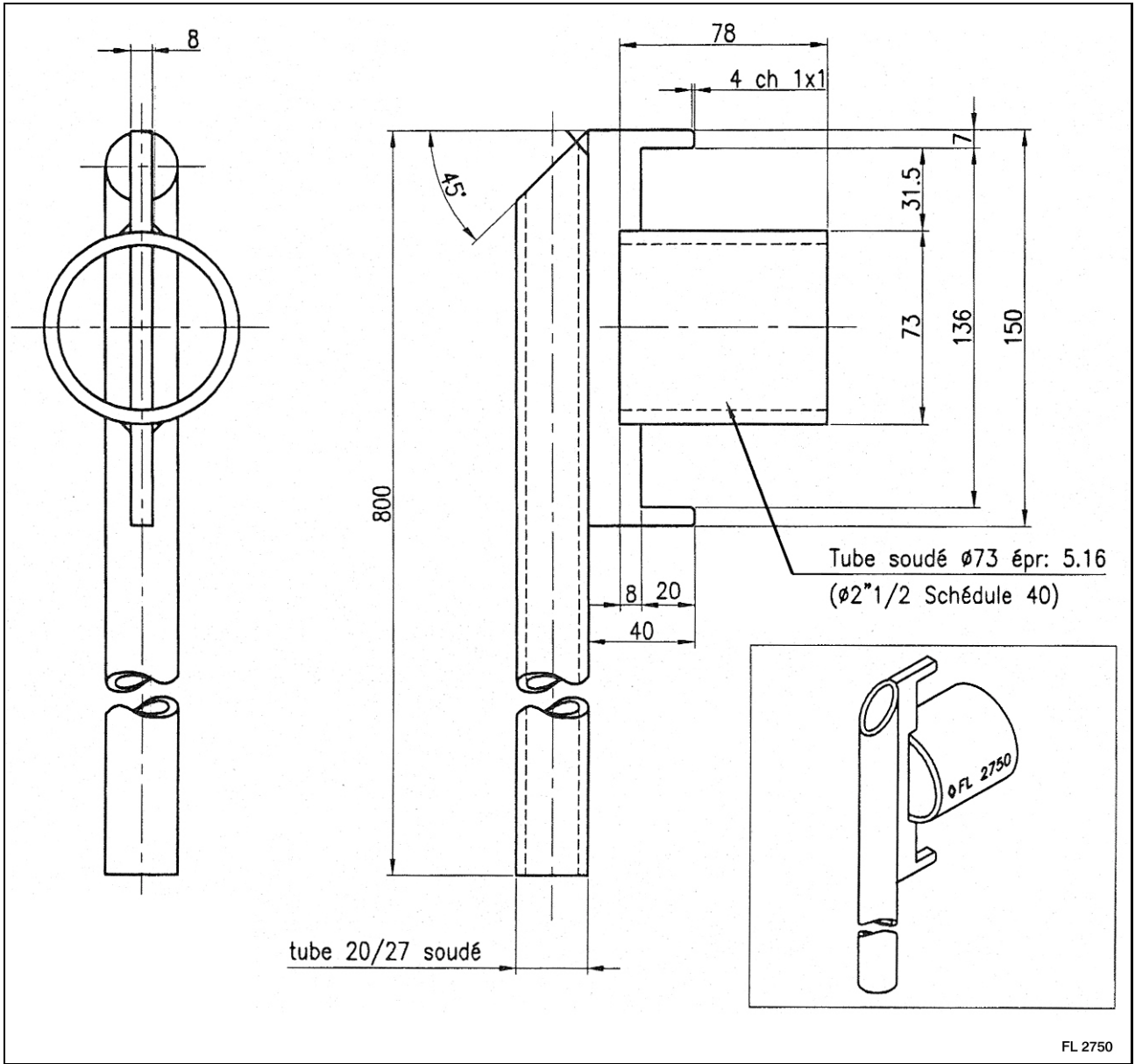
AQ	BROWN SHARP ROCH		
	13-15 avenue Georges de la Tour BP 45		
	54303 LUNEVILLE CEDEX		FRANCE
	 03 83 76 83 76	 03 83 74 13 16	

Special Tools

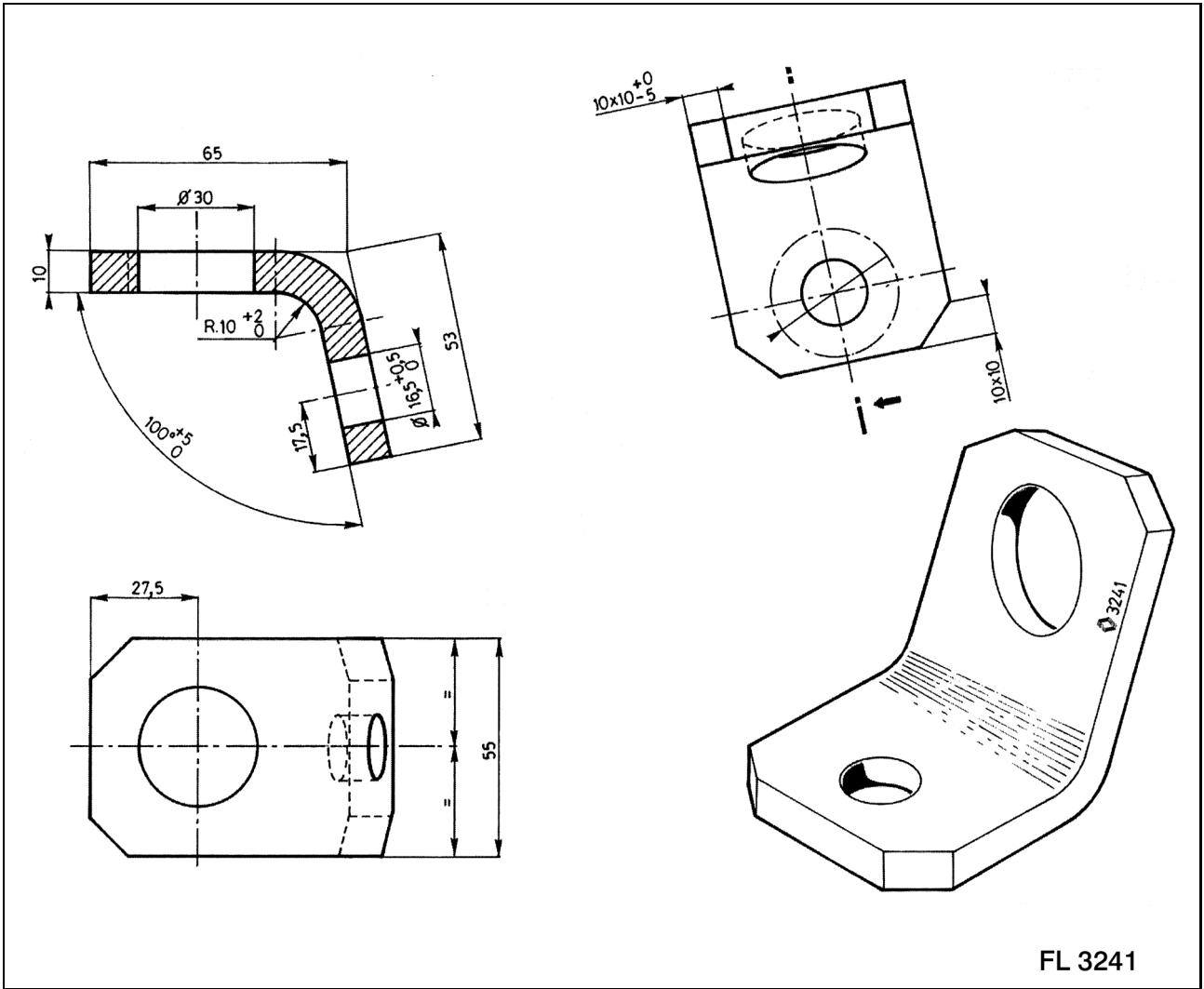
Illustration	RENAULT TRUCKS Ref.	Designation	Manufacturer reference	Manufacturer Code	Level	Qty
	7409998457	Socket			1	1
	5000269134	Holding wrench			1	1
	7409998838	Pusher			1	1
	5000262184	Fitting			2	1
	5000262185	Fitting			2	1

Locally manufactured tools

Illustration	RENAULT TRUCKS Ref.	Designation	Manufacturer Reference	Manufacturer Code	Level	Qty
	2750	Pin wrench			2	1
	3241	Hook			2	2
	2513	Tube			2	1

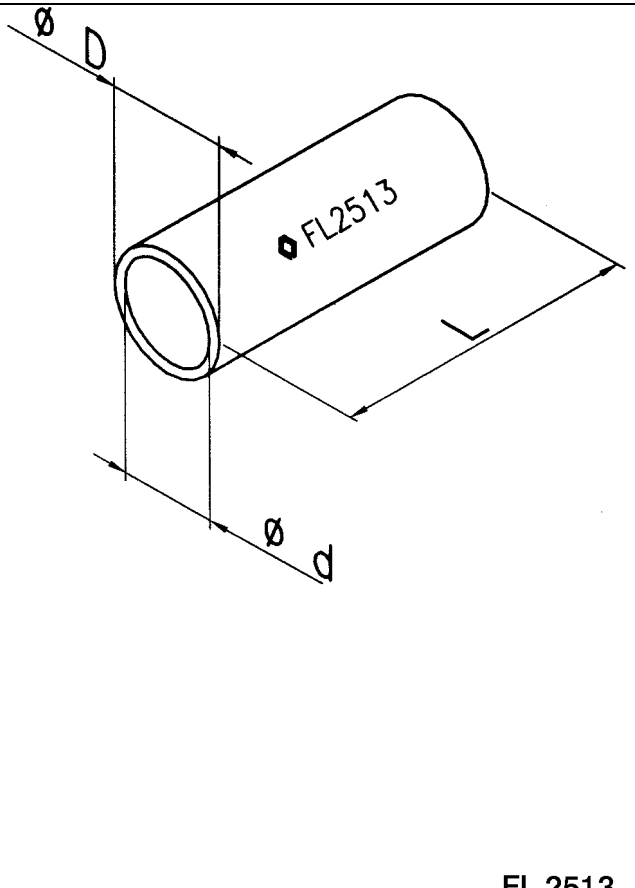


FL 2750



FL 3241

\emptyset D	\emptyset d	L
36	28	200
40	32	200
50	40	200
56	40	200
63	53	250
75	63	250
80	67	250
85	70	250
90	75	250
95	80	250
100	85	250



FL 2513

LIST OF CONSUMABLES

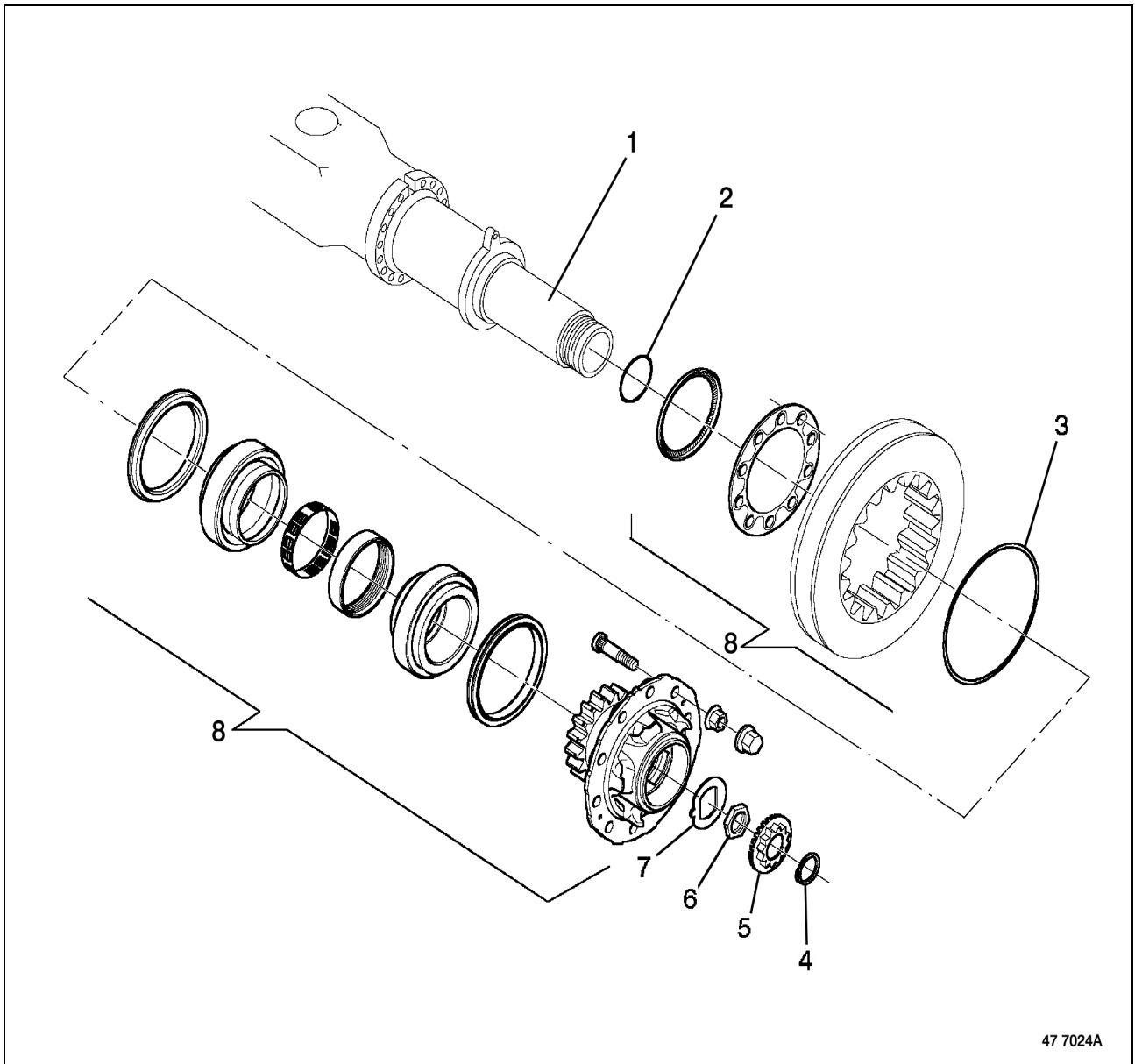
Automotive reference	Industrial reference
SUPEROL HP2	GREASE
LT 573	LOCTITE 573
MOLYCOTE 44	MOLYKOTE 44

HUBS

APPLICABILITY

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
RENAULT MAGNUM DXi 12 440 - 480	17RD	Exploded view	152BH			16/06/2004	D-3
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Removal	152BH			16/06/2004	D-4
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Fitting	152BH			16/06/2004	D-5
	17SD						
	17TD						

Exploded view



47 7024A

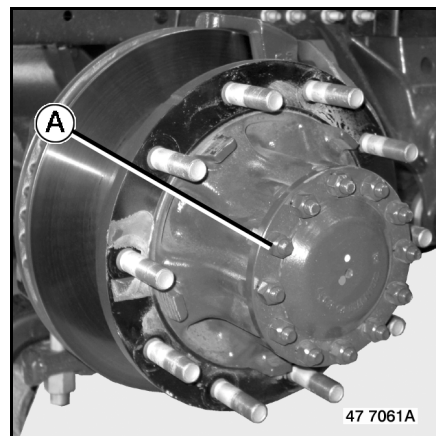
Removal

The item numbers indicated in the text refer to the drawing on page D-3.

Remove the brake caliper.

See workshop manual section MR 50634.

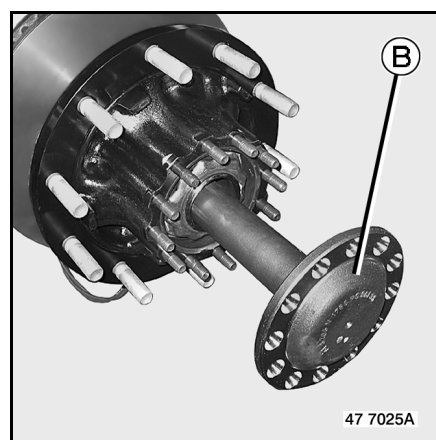
Remove nuts (A).



Withdraw the half-shaft (B).

Remove lip seal (3).

Mark the direction of assembly.



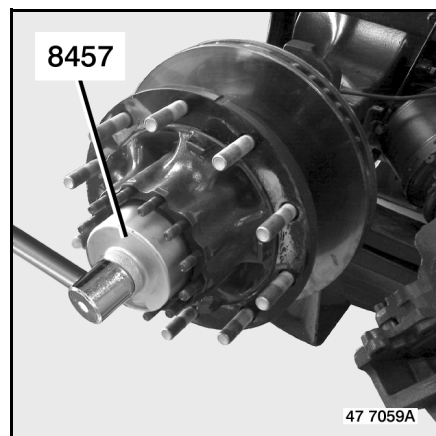
Take off circlip (4).

Remove washer (5).

Loosen nut (6).

Use tool 8457.

Remove washer (7).

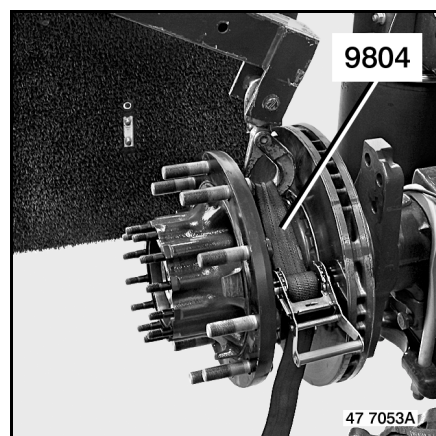


Remove the hub (8).

Use tool 9804.

Use lifting tackle.

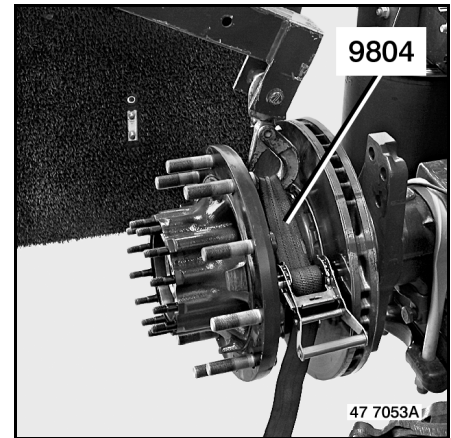
Remove dust guard (2) from the hub.



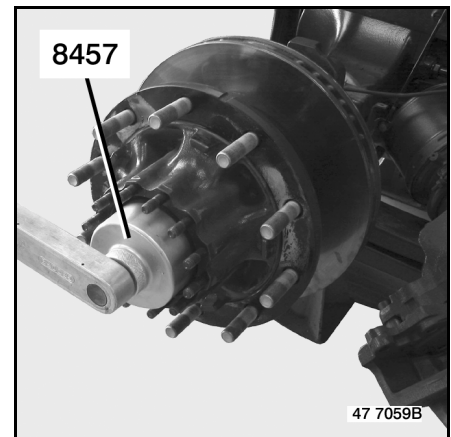
Fitting

The item numbers indicated in the text refer to the drawing on page D-3.
Grease trumpet housing (1) at the level of the bearing contact faces.
Fit dust guard (2) to the hub.

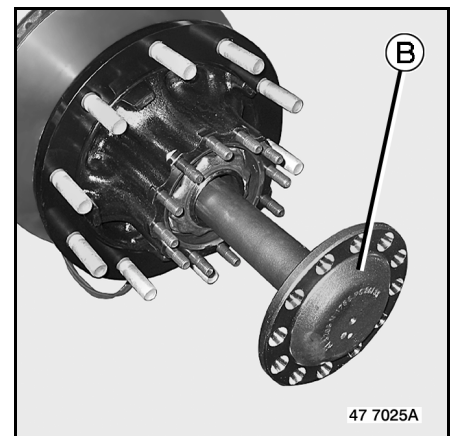
Fit hub (8).
Use tool 9804.
Use lifting tackle.



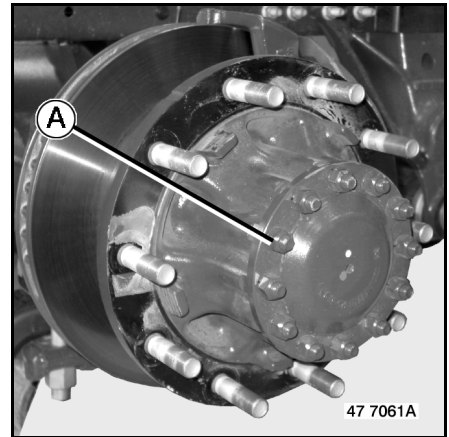
Fit washer (7).
Fit nut (6).
Tighten nut (6) to torque.
Use tool 8457.
See page(s) B-2-3.
Fit washer (5).
Fit circlip (4).
Fit seal (3).



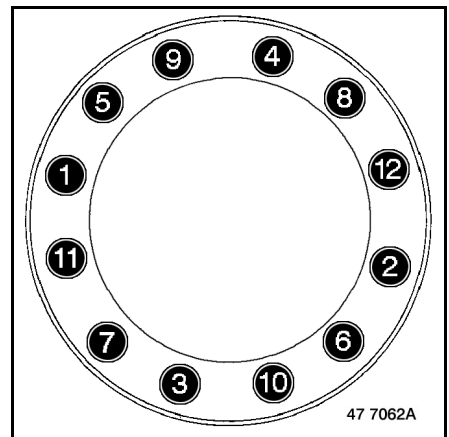
Fit half-shaft (B).



Fit nuts **(A)**.



Tighten nuts **(A)** to torque, following the tightening sequence.
See page(s) B-2-3.



CENTRAL CARRIER

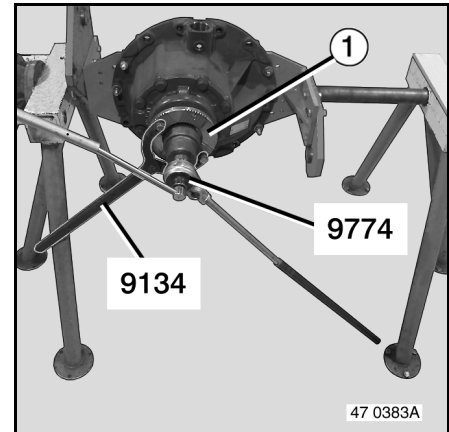
APPLICABILITY

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
RENAULT MAGNUM DXi 12 440 - 480	17RD	Input shaft seal	152BH			28/01/2004	E-3
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Mounting on stand N° 1000	152BH			13/01/2004	E-5
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Removal of differential carrier	152BH			13/01/2004	E-6
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Disassembly of differential	152BH			13/01/2004	E-7
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Inspection	152BH			10/03/2004	E-9
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Disassembly of drive pinion	152BH			14/01/2004	E-10
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Assembly of drive pinion	152BH			20/01/2004	E-12
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Assembly of differential	152BH			19/01/2004	E-14
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Fitting the differential	152BH			21/01/2004	E-17
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Adjustments	152BH			21/01/2004	E-18
	17SD						
	17TD						

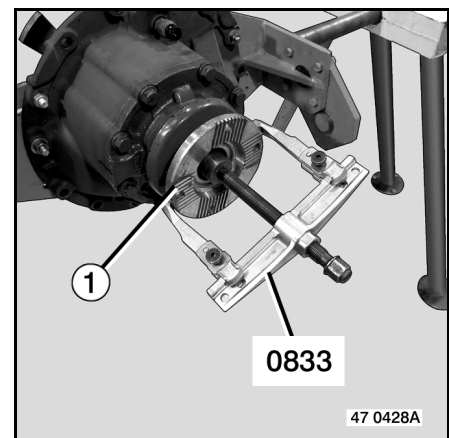
Input shaft seal

Removal

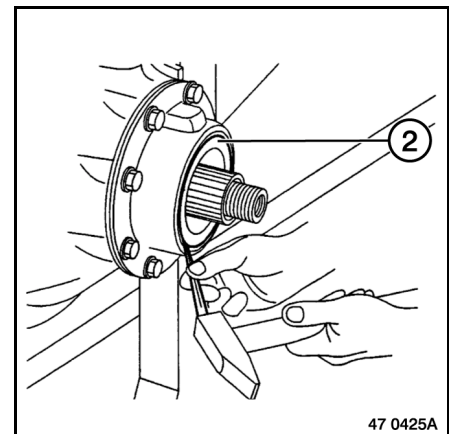
Retain the sliding collar (1) against rotation.
Use tool 9134.
Loosen nut.
Use tool 9774.



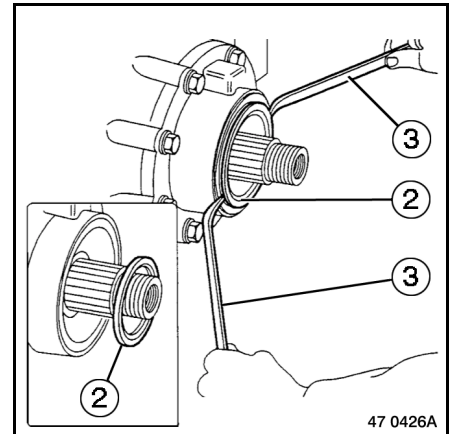
Remove coupling sleeve (1).
Use tool 0833.



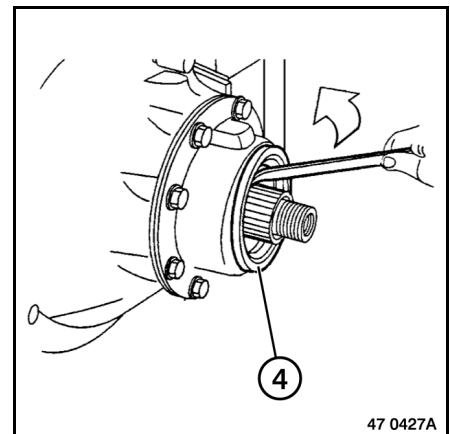
Raise the outer edge of guard plate (2) at two opposing points.



Remove guard plate (2).
Use two levers (3) at two opposing points.

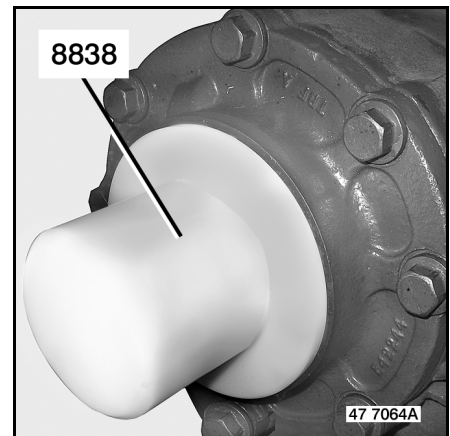


Take off seal (4).
Use one lever.
Carefully clean the housing of seal (4).

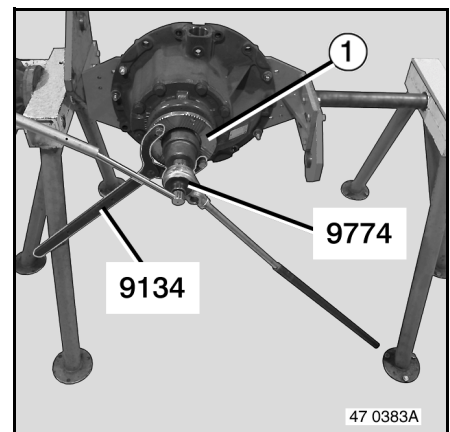


Fitting

Install a new seal (4).
Use tool 8838.
Fit guard plate (2).

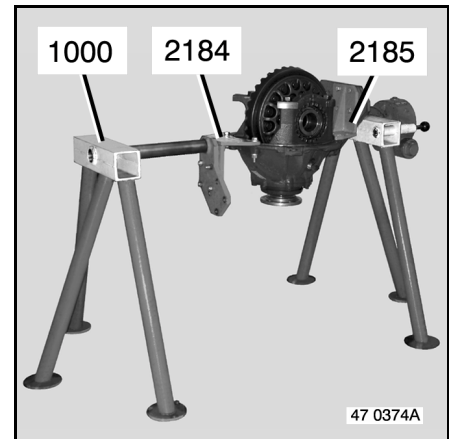


Fit sliding collar (1).
Screw on a new nut.
Retain the sliding collar (1) against rotation.
Use tool 9134.
Tighten nut to torque
Use tool 9774.
See page(s) B-2-3.



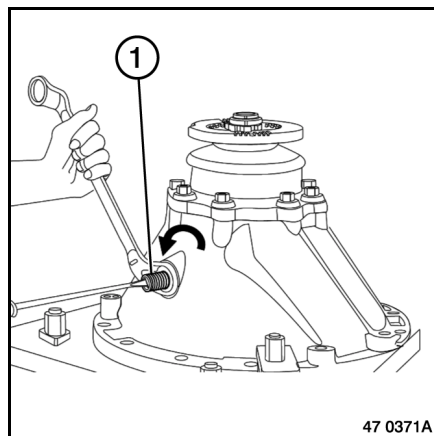
Mounting on stand N° 1000

Mount the axle head on stand 1000.
Use tool 2184 + 2185.

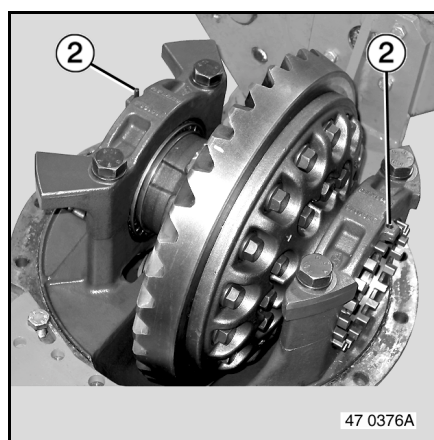


Removal of differential carrier

Remove bolt (1).



Remove pins (2).



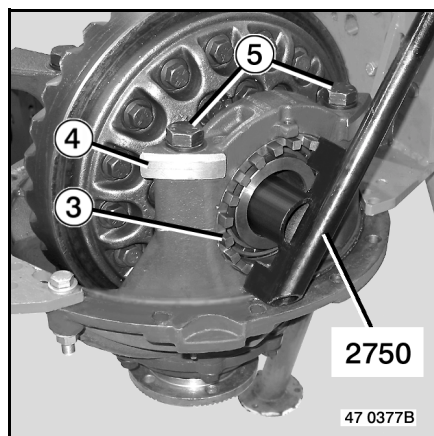
Remove castellated nuts (3).

Use tool **2750**.

Remove bolts (5).

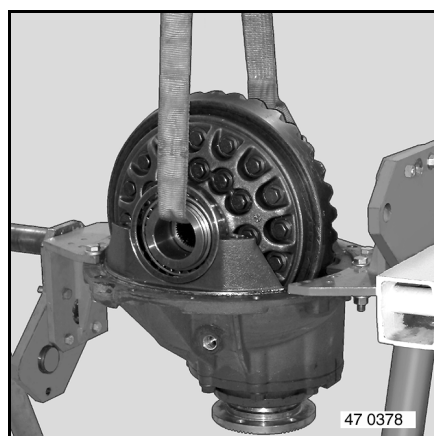
Remove washers.

Remove bearing caps (4).



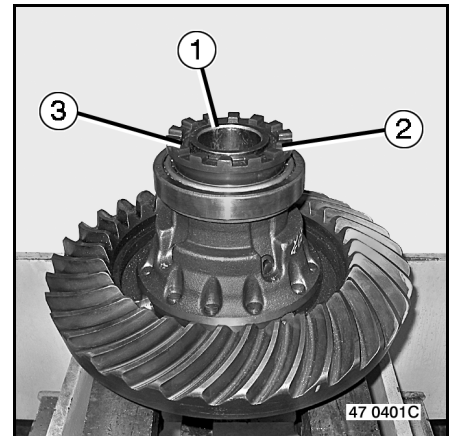
Put slings around the differential carrier.

Remove the differential unit.

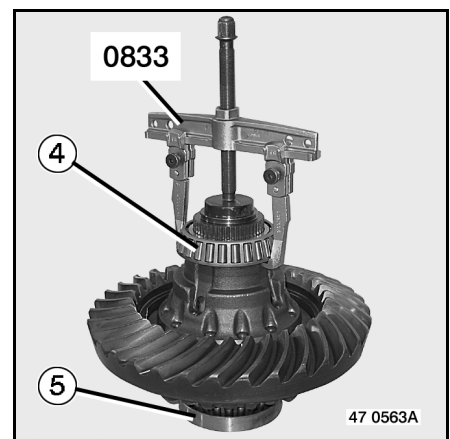


Disassembly of differential

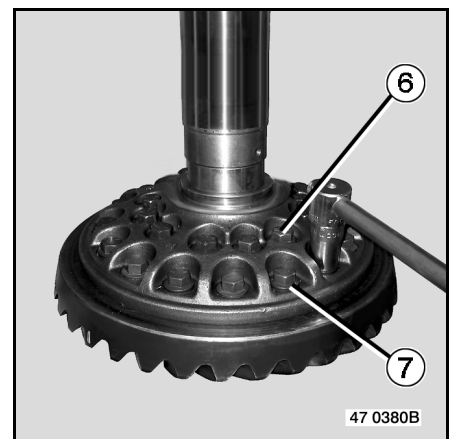
Remove circlip (1).
Withdraw washer (2).
Remove dog clutch (3).



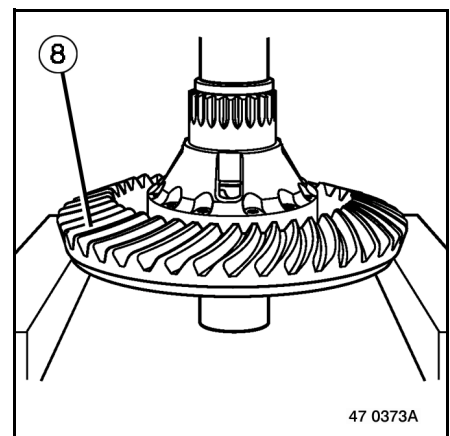
Remove bearings (4 - 5).
Use tool 0833.



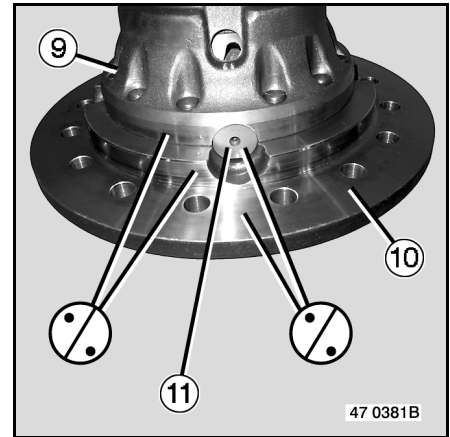
Hold the differential carrier using a press.
Remove bolts (6 - 7).



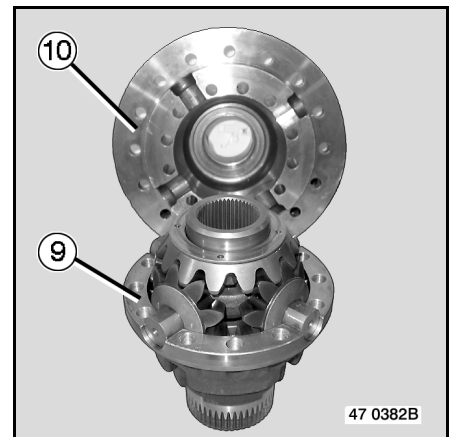
Remove ring gear (8).
Use a press.



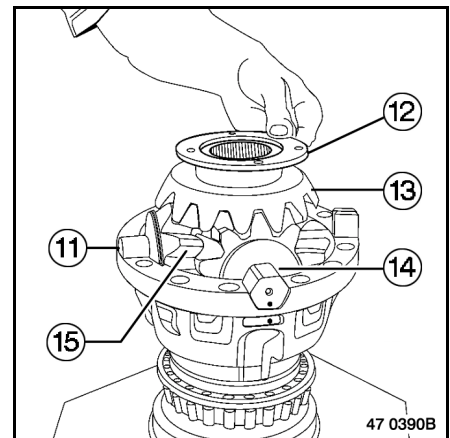
Mark half-cases (9 - 10).
Mark spider (11).



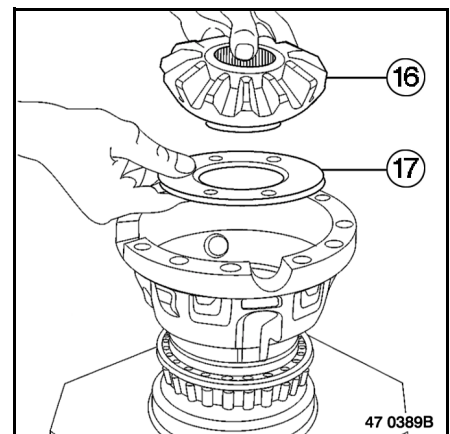
Separate two half-cases (9 - 10).



Remove stop plate (12).
Remove sun pinion (13).
Remove spider (11).
Remove thrust washers (14).
Remove planet gears (15).

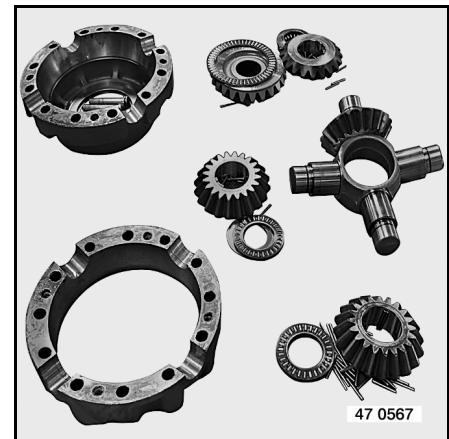


Remove sun pinion (16).
Remove stop plate (17).



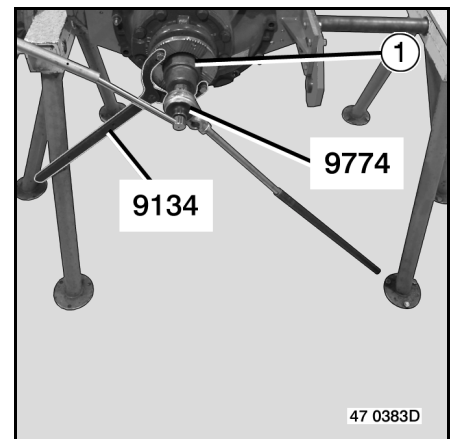
Inspection

Carefully clean and inspect all the parts.
Check the state of the ring gear / half-case support face
(no score marks, no signs of impact, no distortion...).
Check the state of the gear teeth and splines.

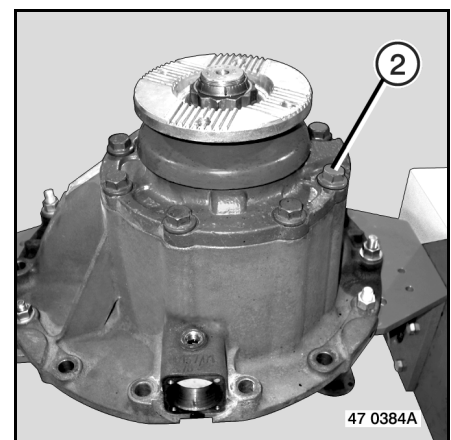


Disassembly of drive pinion

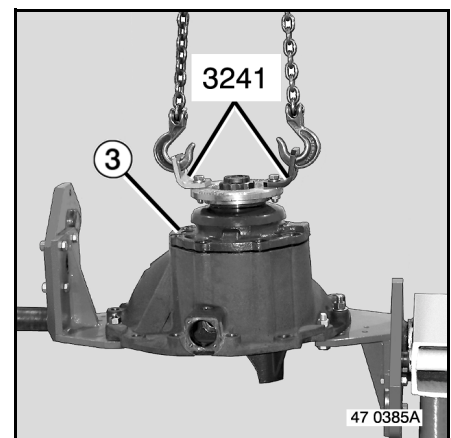
Loosen nut (1).
Use tool 9134 + 9774.



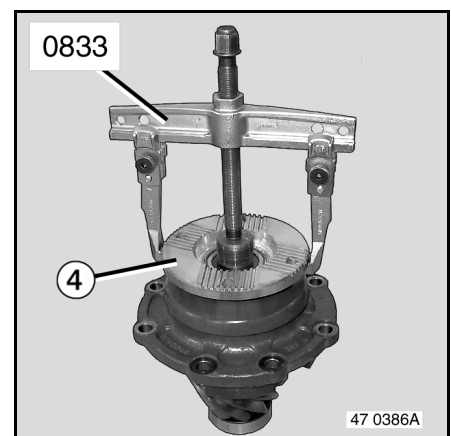
Remove bolts (2).



Remove shaft / cover assembly (3).
Use tool 3241.



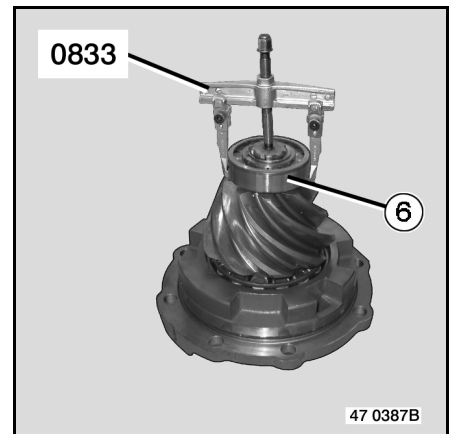
Remove coupling sleeve (4).
Use tool 0833.



Remove circlip (5).



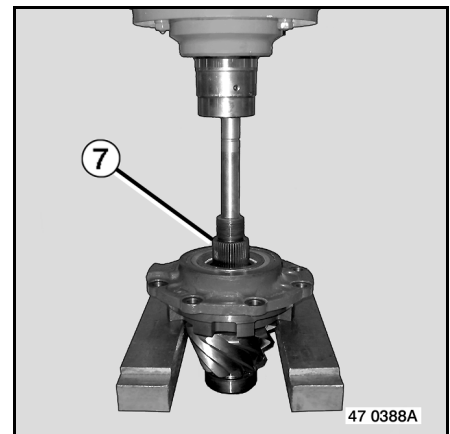
Remove spigot bearing (6).
Use tool **0833**.



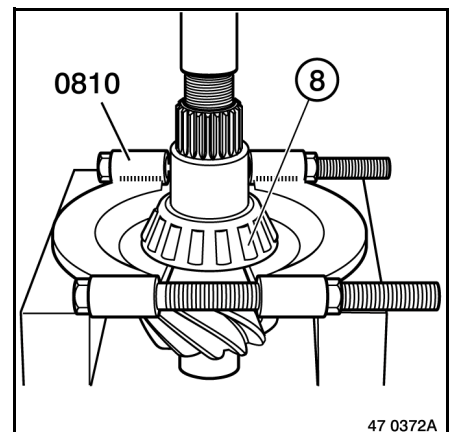
Drive out drive pinion (7).
Use a press.



Warning: Do not let the drive pinion fall onto the floor.

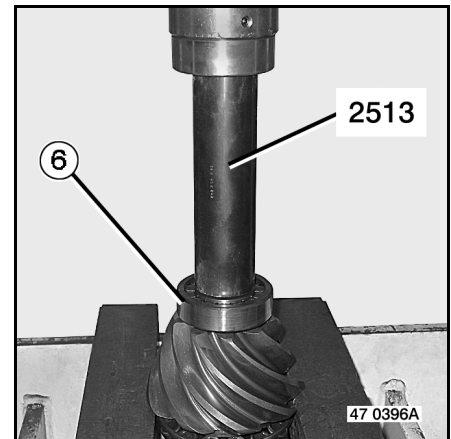


Extract bearing (8).
Use tool **0810**.
Use a press.

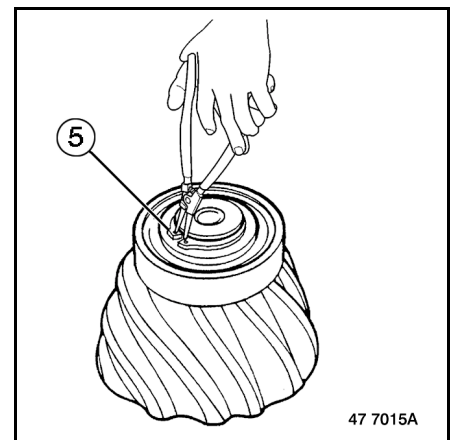


Assembly of drive pinion

Fit spigot bearing (6).
Use a press.
Use tool 2513.

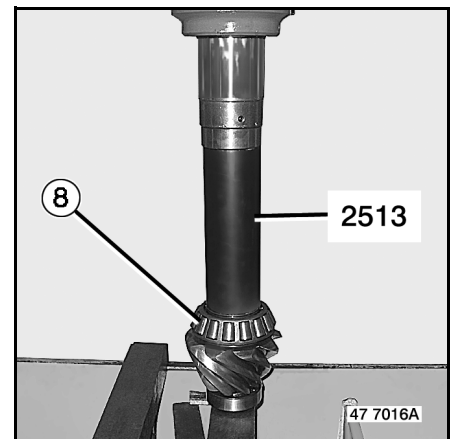


Put back circlip (5).

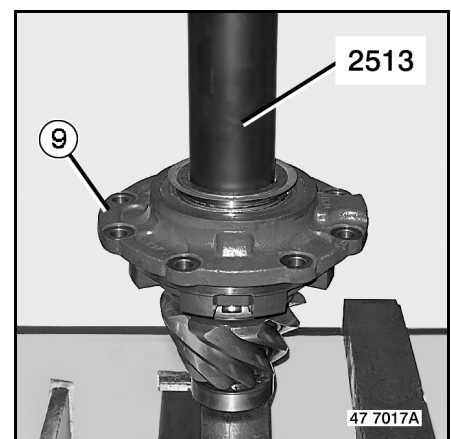


**WEAR THE NECESSARY PROTECTIVE CLOTHING AND EQUIPMENT:
RISK OF BURNS.**

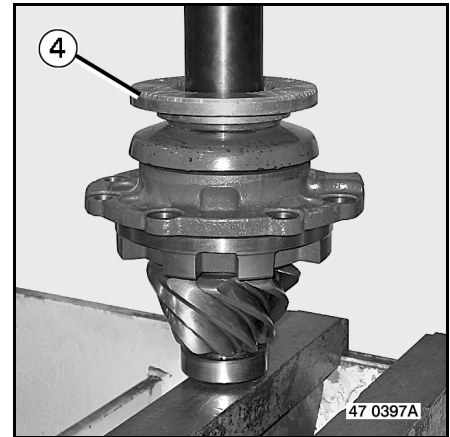
Heat bearing (8) to 100 °C for 15 minutes.
Install bearing (8).
Use a press.
Use tool 2513.



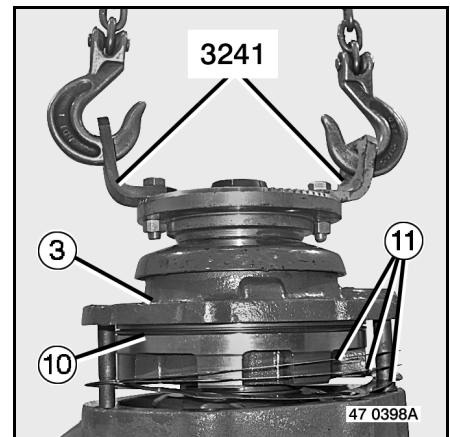
Assemble the half-case (9).
Use a press.
Use tool 2513.



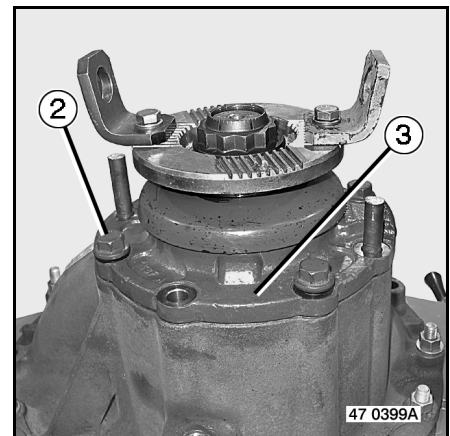
Fit sliding collar (4).
Use a press.
Fit nut (1).



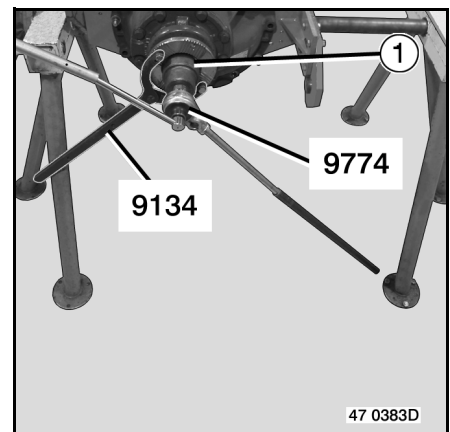
Place a new O-ring (10) in its housing and smear with grease.
Use **SUPEROL HP2** multi-service grease.
Use lifting tackle.
Use tool **3241**.
Use 2 headless screws diameter **M16x50** to align axle nose (3) during assembly.
Insert shims (11).



Install axle nose (3).
Tighten bolts (2) to torque.
See page(s) B-2-3.



Retain the sliding collar (4) against rotation.
Use tool **9134 + 9774**.
Tighten nut (1) to torque.
See page(s) B-2-3.

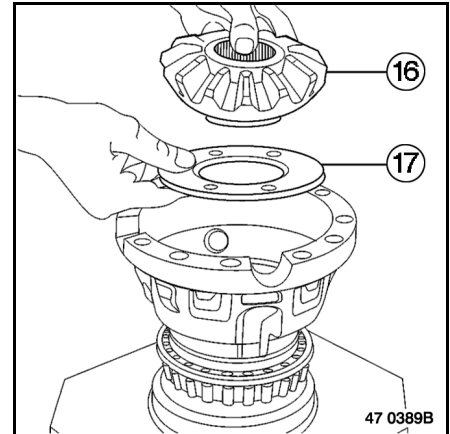


Assembly of differential



Lubricate all the components with drive axle lubricating oil.

Place half-case (9) on the bench.
Fit stop plate (17).
Position sun pinion (16).

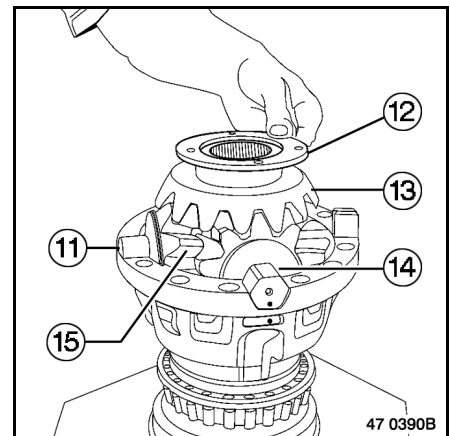


Fit planet gears (15) on spider (11).
Install thrust washers (14)
Fasten spider / planet gears / thrust washers assembly (11 - 15 - 14)
to half-case (9).

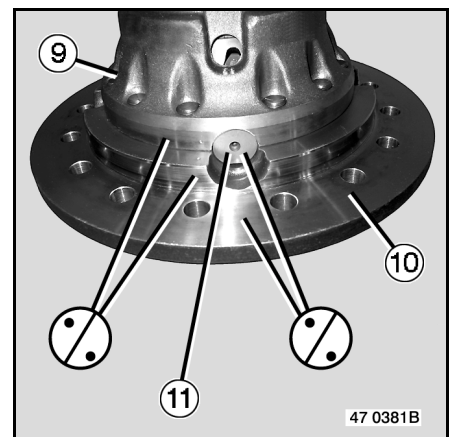


Ensure the same positioning of the spider as marked
upon disassembly.

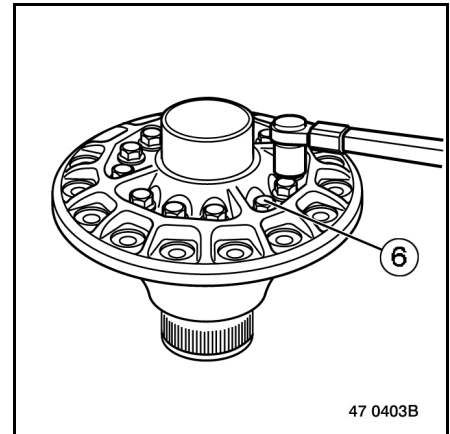
Position sun pinion (13).
Install stop plate (12).



Assemble half-cases (9 - 10) lining up the marks made upon
disassembly.

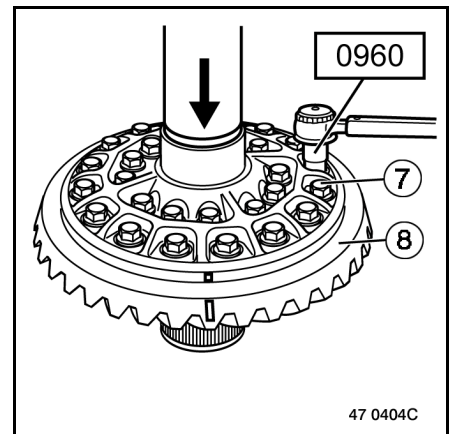


Start bolts (6).
Bolts (6) are to be replaced each time the unit is dismantled.

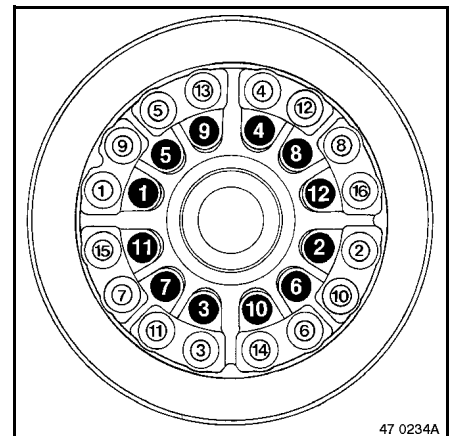


**WEAR THE NECESSARY PROTECTIVE CLOTHING AND EQUIPMENT:
RISK OF BURNS.**

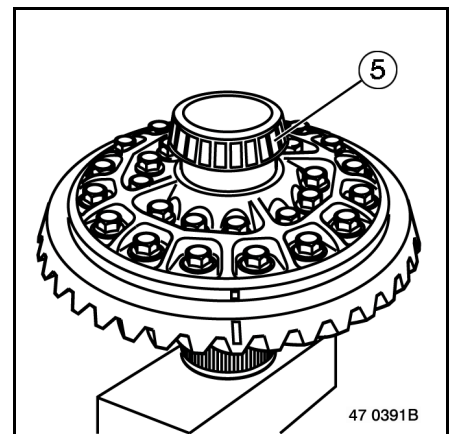
Heat ring gear (8) to 100 °C for 60 minutes.
Use 4 headless screws diameter M16x40 to align ring gear (8) during assembly.
Fit ring gear (8).
Start bolts (7).
Use tool 0960.
Bolts (7) are to be replaced each time the unit is dismantled.
Let cool.
Hold the differential carrier using a press.



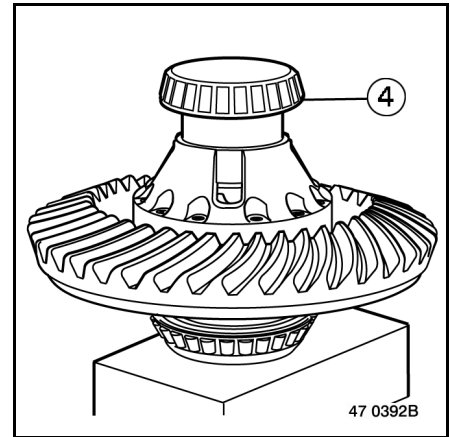
Tighten bolts (6 - 7) to the specified torque in the sequence indicated.
See page(s) B-2-3.



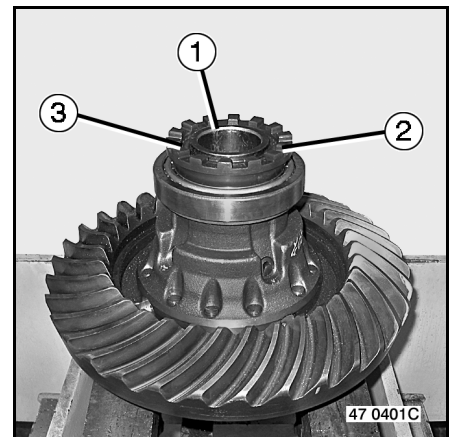
Heat bearing (5) to 100 °C for 60 minutes.
Press fit bearing (5).



Heat bearing (4) to 100 °C for 60 minutes.
Press fit bearing (4).
Let cool.

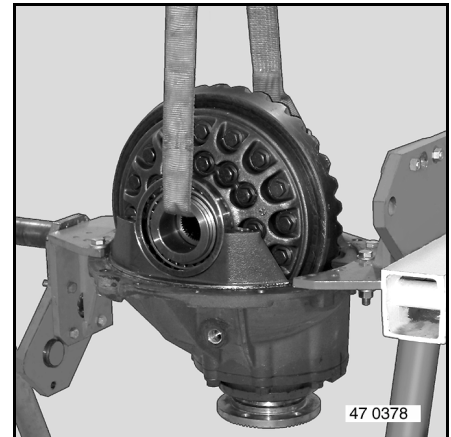


Fit dog clutch (3).
Fit washer (2).
Fit circlip (1).



Fitting the differential

Fit the differential carrier.



Position bearing caps **(4)** lining up the locating dowels.

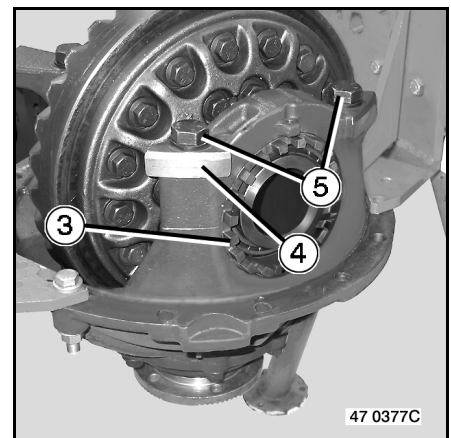
Fit washers.

Start bearing cap bolts **(5)** but do not tighten.

Screw on castellated nuts **(3)** by hand until they enter into contact with the bearing outer cages.

Tighten bolts **(5)** to torque.

See page(s) B-2-3.

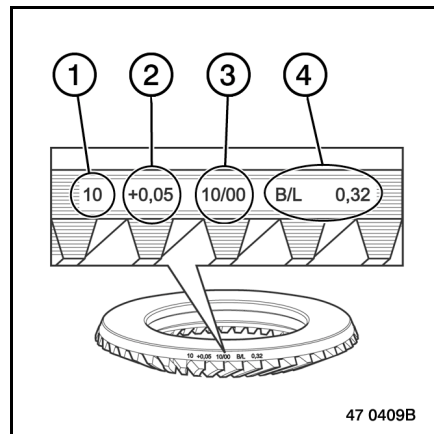


Adjustments

If a new drive pinion / ring gear set is to be fitted, it is necessary, to determine the exact positioning of the drive pinion, to know the meaning of the inscriptions to be found on the pinion and on the ring gear.

The following information is to be found on the outside diameter of ring gears:

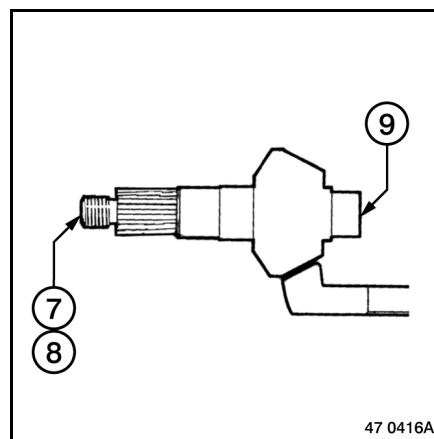
- Match number (1)
- P.C.: Drive pinion / ring gear set "pinion cone" variation number (2)
- Month and year of production (3)
- Drive pinion / ring gear set backlash (4)



The part number (7) and the tooth combination number (8) are scribed on the threaded end of all the drive pinions. The drive pinion / ring gear match number (9) is scribed on the other end of the drive pinions.



Drive pinion / ring gear sets that do not bear the same pinion / gear match numbers must never be used. Each ring gear has a pinion cone variation number that indicates the nominal assembly distance. This pinion cone variation number (PC) must be used in calculating the thickness of shims to be inserted between the bearing cage and the differential casing.



Measure the thickness of the original shim stack (10) saved at the time of disassembly.

Read the pinion cone (PC) variation number scribed on the old drive pinion.

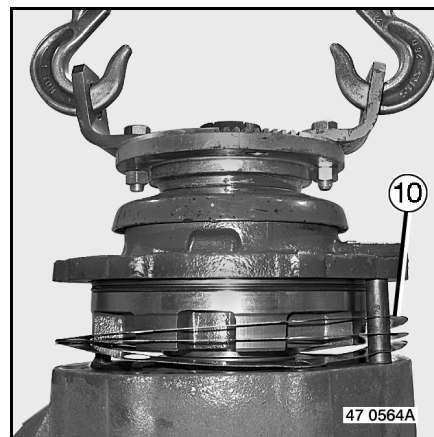
- If the number is positive (+), subtract it from the saved shim stack reading. (See example 1, page E-18)
- If the number is negative (-), add it to the saved shim stack reading. (See example 1, page E-19)

Note down the value.

Read the pinion cone (PC) variation number scribed on the new ring gear.

- If the number is positive (+), add it to the previous result. (See example 1, page E-18)
- If the number is negative (-), subtract it from the previous result. (See example 1, page E-19)

The value obtained indicates the thickness of the new shim stack to be used.



Example 1:

Shim stack thickness measured		0.75 mm
Old drive pinion value	+ 0.05 mm	- 0.05 mm
Result		0.70 mm
New drive pinion value	+ 0.10 mm	+ 0.10 mm
New shim stack thickness		0.80 mm

Example 2:

Shim stack thickness measured		0.85 mm
Old drive pinion value	- 0.10 mm	+ 0.10 mm
Result		0.95 mm
New drive pinion value	- 0.10 mm	- 0.10 mm
New shim stack thickness		0.85 mm



*The available shim thicknesses to be inserted between the bearing cage and the differential casing are **0.125 mm**, **0.200 mm**, **0.500 mm**.*

Select the appropriate spacer.
Assemble the half-case.

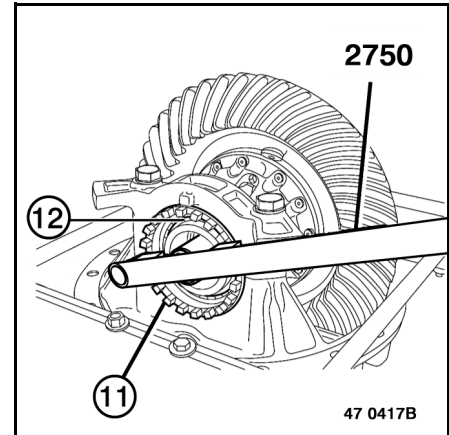
Adjustment of backlash



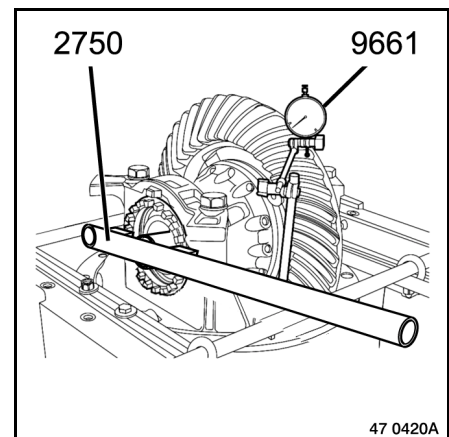
The differential preload is adjusted at the same time as adjustment of the backlash.

Adjust the end play between the teeth of the drive pinion / ring gear.
See page(s) B-1-3.
Retain the sliding collar against rotation.

Turn the castellated nuts **(11)** to position bearing rings **(12)** until a zero end play is obtained.
Use tool **2750**.
Before measuring, rotate the hypoid gear set several times.

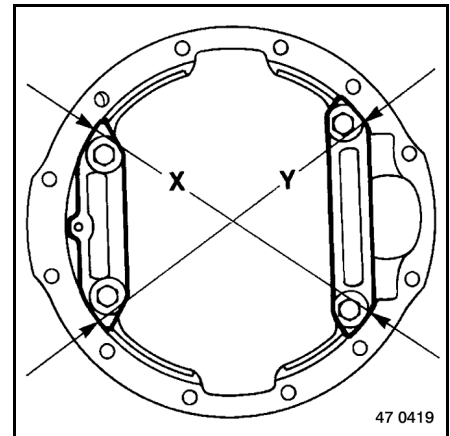


Place tool **9661** in contact with a tooth on ring gear **(17)**.
On the ring gear, find the tooth where the backlash is smallest.
By combined action on the adjusting nuts, adjust the backlash. Take the mean value of the theoretical play on the shortest between-teeth distance.
Use tool **2750**.
It is necessary to check the end play at **4** equally distant points.



Adjustment of differential bearings preload (bearing cap expansion)

Place two dial gauges in a diagonal position on the X or Y axis. Set the dial gauges to zero (0).



Use tool **9661**.

Tighten the castellated nuts so as to obtain correct spacing (leg spread) of the caps (sum of the readings given by the dial gauges). See page(s) B-1-3.

Keep towards the maximum value.

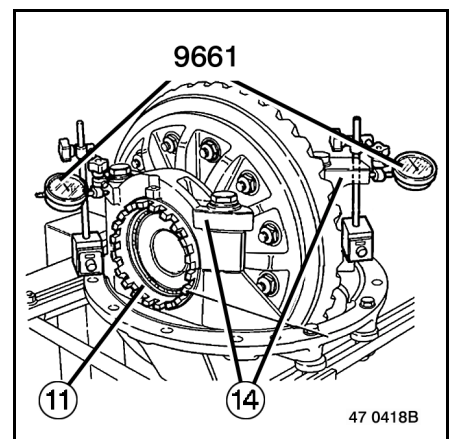
This spacing corresponds to the required bearings preload.

See page(s) B-1-3.

Rotate the differential one way then the other to check the backlash.

See page(s) E-20.

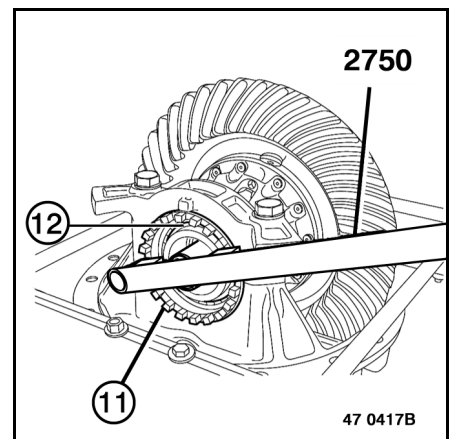
Correct, if necessary.



Turn the castellated nuts (**11**) to adjust.

Use tool **2750**.

Make the correction to both sides equally.



Checking run-out of ring gear shoulder

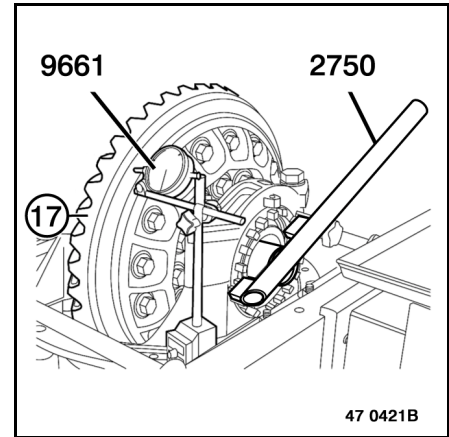
Using a dial gauge, check the run-out of the ring gear shoulder.

See page(s) B-1-3.

Use tool **9661**.

If the run-out exceeds the specification, dismantle the differential unit, reassemble and repeat adjustment of the bearings preload.

See page(s) E-21.



Theoretical tooth contact zone



The theoretical hypoid gear set contact zone is delimited in the drawings by dotted lines.

Apply a thin coat of Prussian blue (or red chalk) to the ring gear with a paintbrush.

Rotate the ring gear through several revolutions and note down the impression made by contact of the pinion teeth with the drive pinion teeth (**on the left**) and on the ring gear teeth (**on the right**).

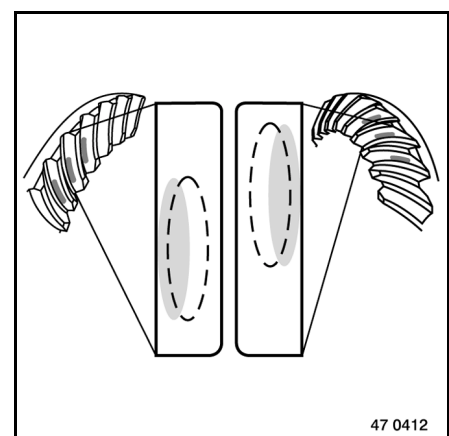
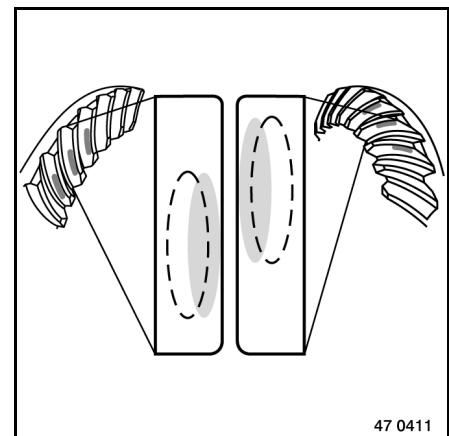
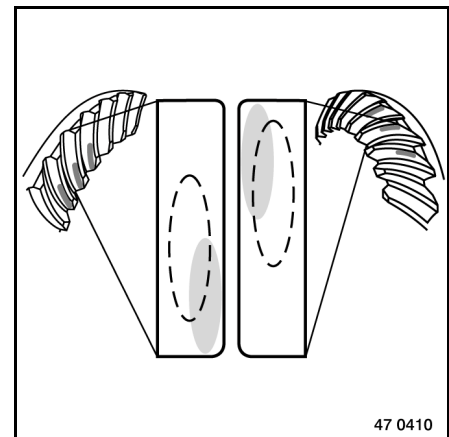
The following illustrations show possible contact patterns and the method for correcting any errors.

Reduce the thickness of the shim stack.
Increase the backlash.

Reduce the thickness of the shim stack.

Adjust the backlash.

See page(s) E-20.



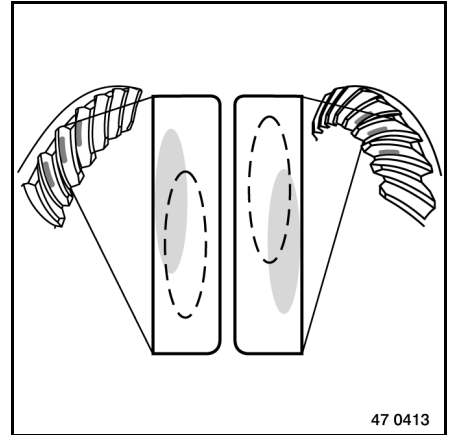
Check the backlash.

Add a shim.

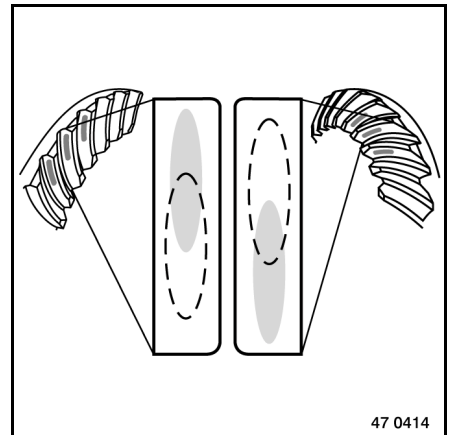
Adjust the backlash.

See page(s) E-20.

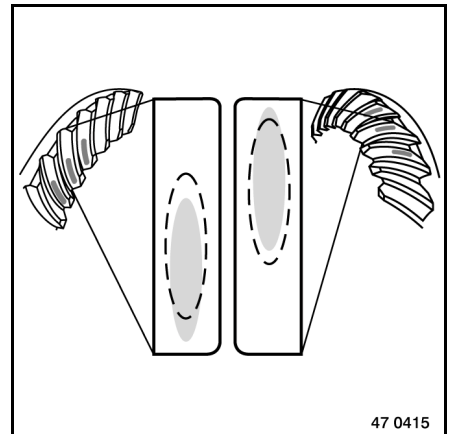
Add a shim.



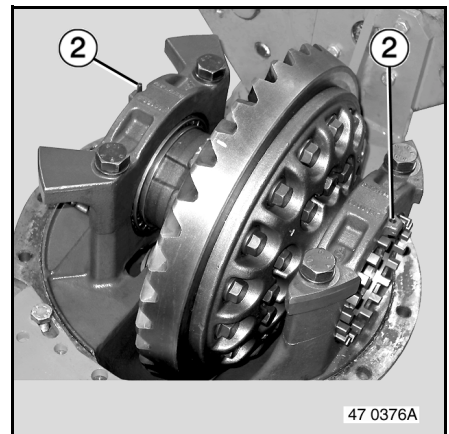
Reduce the backlash.



Increase the backlash.



Install split pins (2).



Adjustment of thrust screw

Install thrust screw (1) and jam nut.

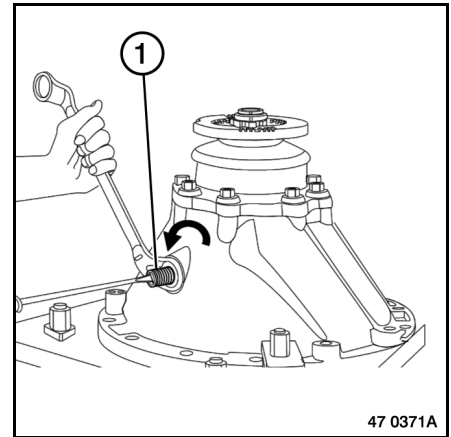
Apply sealant "**LT 573**".

Tighten the thrust screw until it enters into contact with the ring gear, then unscrew by one 1/2 turn.

Hold thrust screw (1).

Tighten nut to torque.

See page(s) B-2-3.



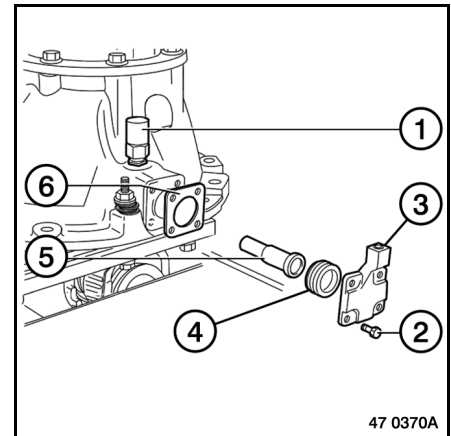
INTER-WHEEL DIFF. LOCK

APPLICABILITY

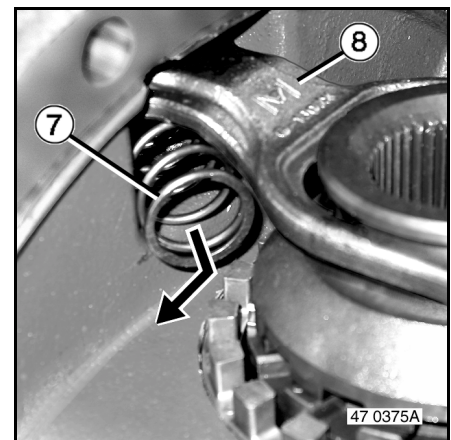
Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
RENAULT MAGNUM DXi 12 440 - 480	17RD	Disassembly	152BH			13/01/2004	F-3
	17SD						
	17TD						
RENAULT MAGNUM DXi 12 440 - 480	17RD	Assembly	152BH			20/01/2004	F-4
	17SD						
	17TD						

Disassembly

- Remove switch (1).
- Remove bolts (2).
- Remove cover (3).
- Remove piston (4).
- Remove shaft (5).
- Remove lip seal (6).

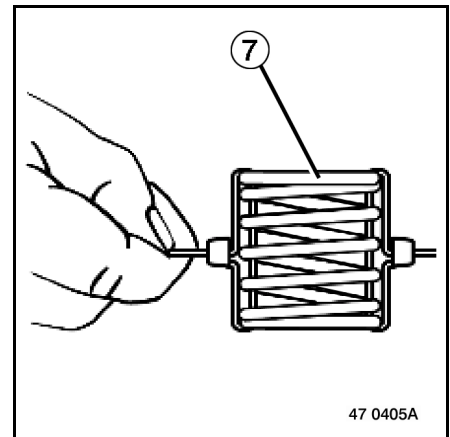


- Remove spring (7).
- Withdraw fork (8).

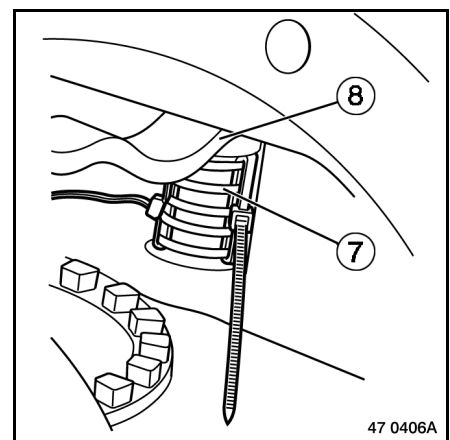


Assembly

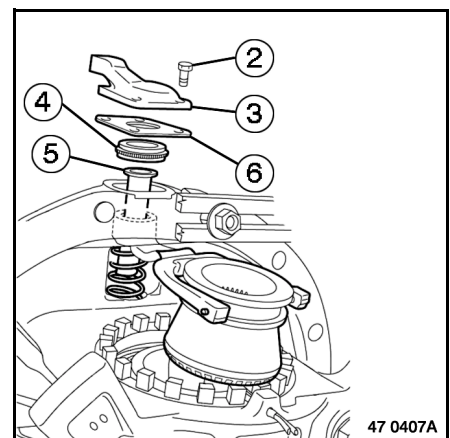
Tension spring (7).
Use plastic clamps.



Install spring (7).
Position fork (8).



Fit shaft (5).
Fit piston (4).
Lubricate the seal.
Use **MOLYCOTE 44** grease.
Fit seal (6).
Fit cover (3).
Fit bolts (2).
Take off the plastic clamps.
Tighten to torque.
See page(s) B-2-3.



Diff. lock switch

Screw in switch (1) through 3 turns.

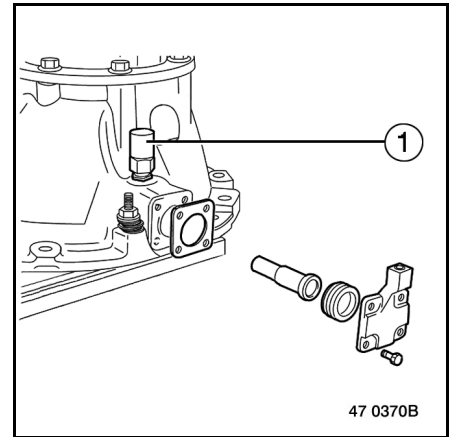
Apply sealing compound "LT 573" to give a tight seal.

Screw in switch (1) until it enters into contact with fork (8) then give it one extra screw turn.

Take a reading using a multi-meter.

Tighten nut to torque

See page(s) B-2-3.



Adjust and check the operation of the diff. lock engagement control switch by introducing a pressure of 6 bars into the system.

