

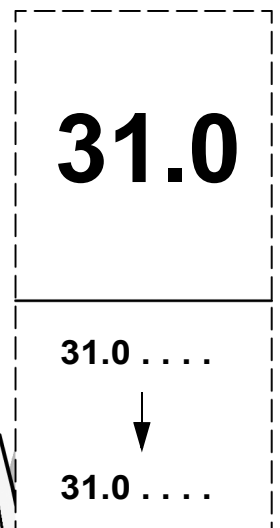
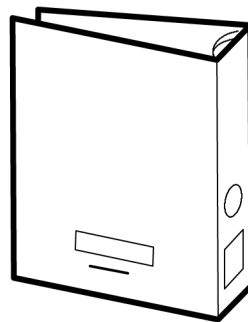
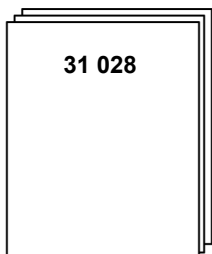
31 028 - GB - 07/2003

CLUTCH

RANGE	FAMILY	VARIANT
KERAX	33R P 4X4	-
	33Q T 4X2	
	33P P 4X2	
	33N T 6X6	
	33M P 6X6	
	33L T 6X4	
	33K T 6X4	
	33G P 6X4	
	33B P 8X4	
	33A P 8X4	



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.



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— Slave cylinder E2-1 → 4

— Lining wear indicator E3-1 → 1

GENERALITIES

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

TECHNICAL DATA

Tightening torques

Definitions

There are several types of tightening:

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

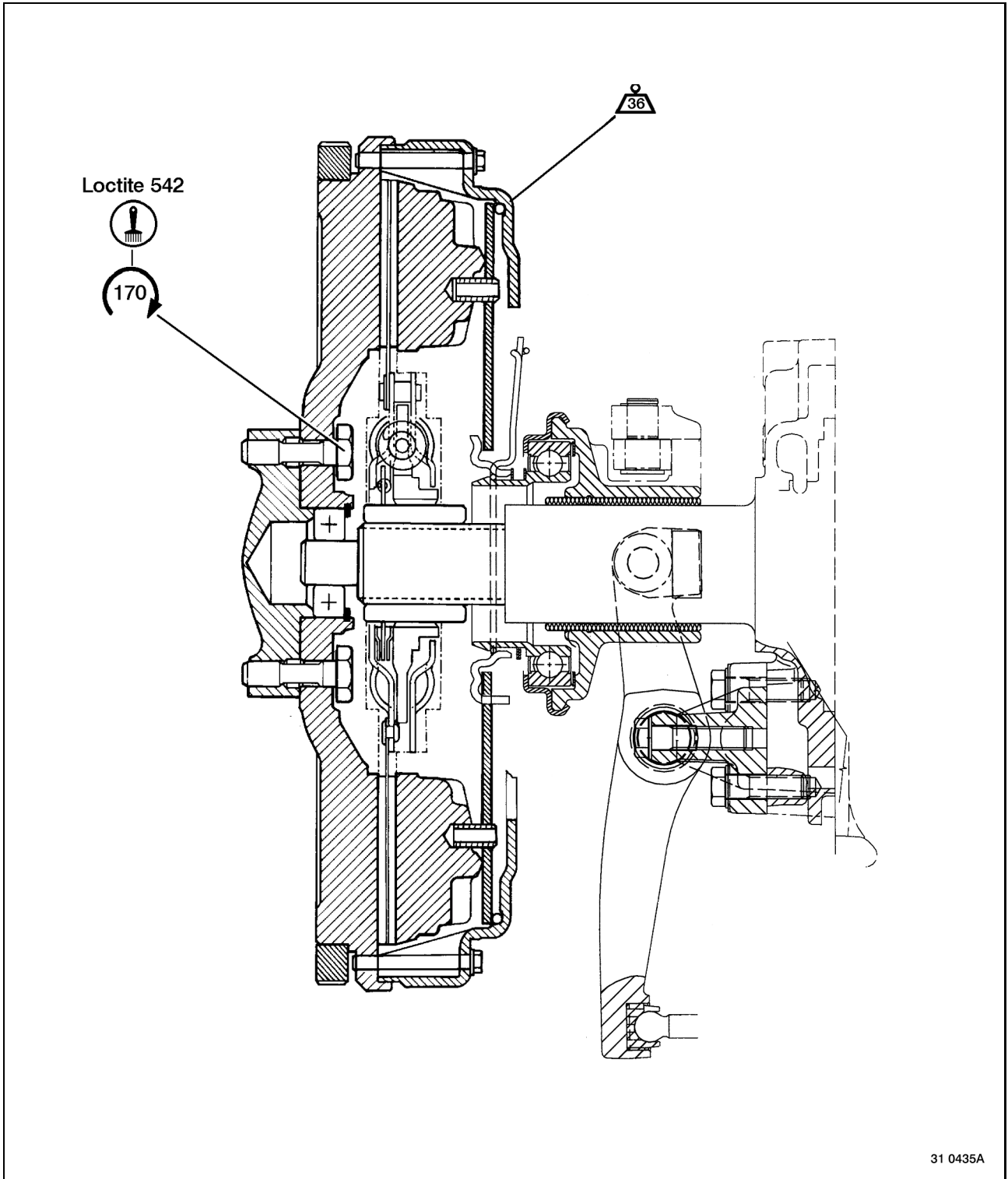
Standard nut and bolt tightening torques table



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).**

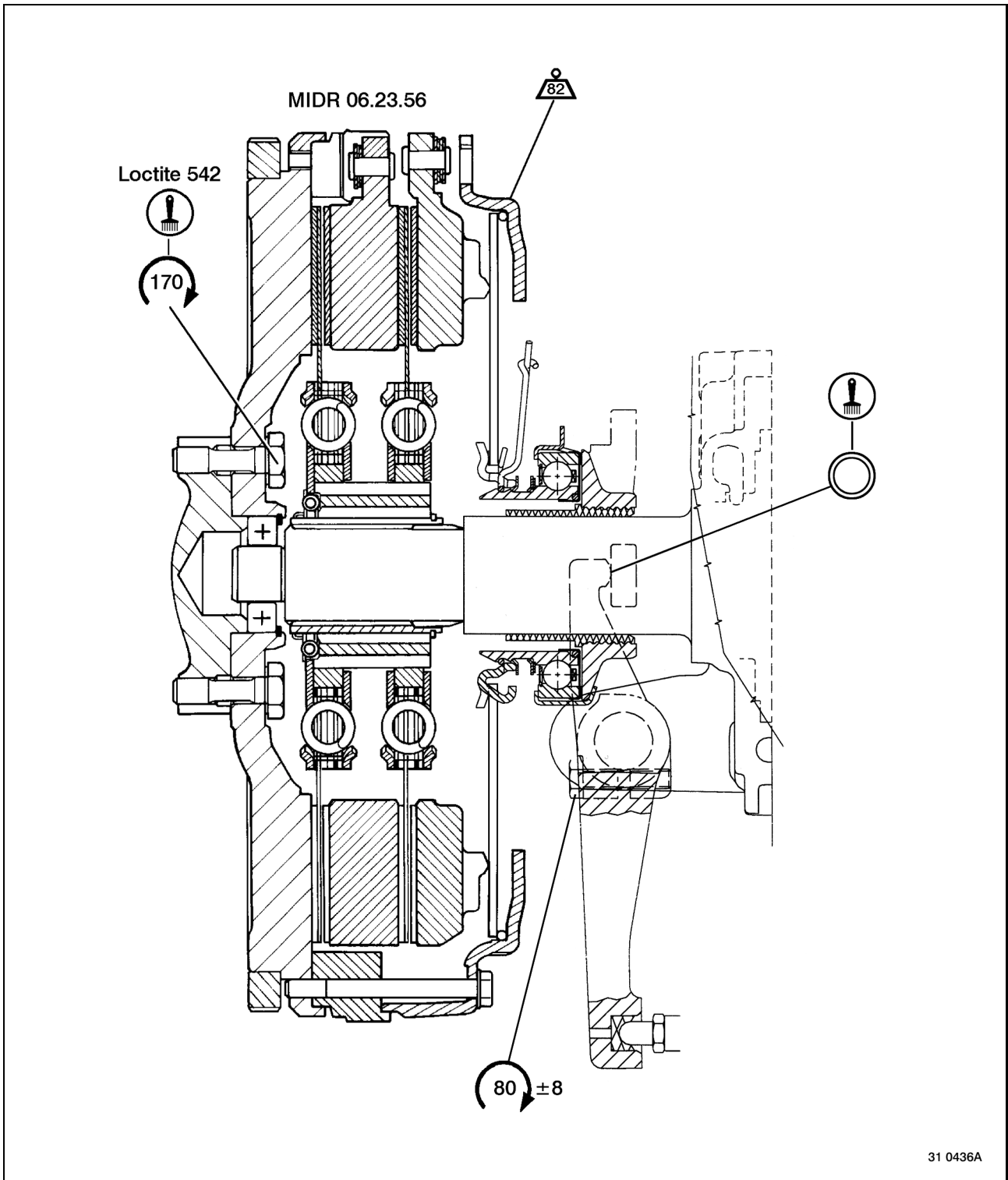
Tightening torque values in Nm for conventional "metric system" threaded hardware based on standard 01.50.4002 (H: normal and HE: with flange)		
dia. and pitch of nuts and bolts	Tightening class III	
	Quality class 8.8	Quality class 10.9
6 x 1.00	7.5 ± 1.5	11 ± 2.2
7 x 1.00	15 ± 3	20 ± 4
8 x 1.00	20 ± 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

Detailed view of clutch 430 DTE



Engine	Clutch	Gearbox
MIDR 06.23.56.12S	430 DTE	ZF 16S.109 / 151 ZF 8S.151 ZF 9S.109 EATON 8209

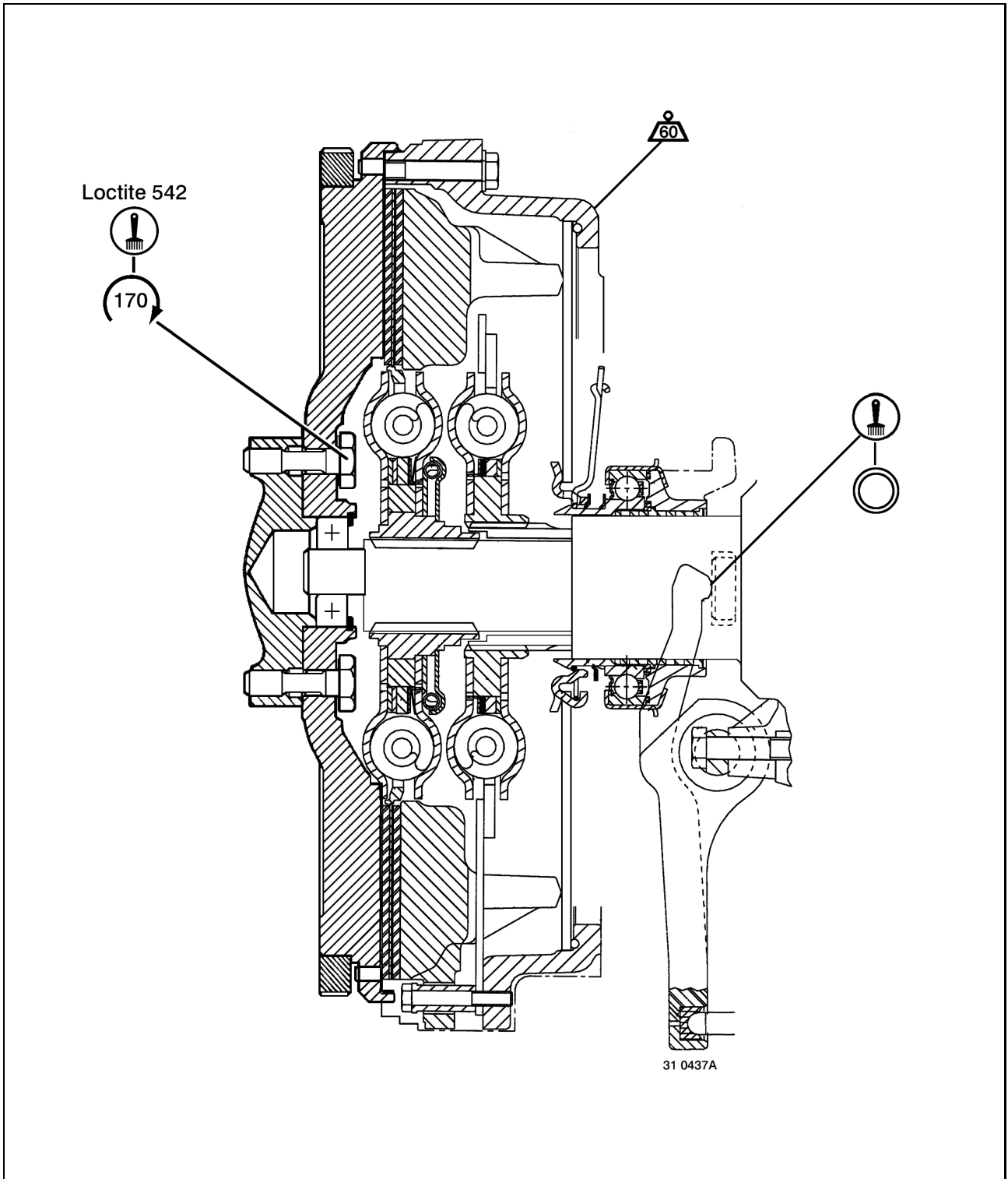
Detailed view of clutch MFZ 2.400



31 0436A

Engine	Clutch	Gearbox
MIDR 06.23.56.12S	MFZ 2.400	ZF 16S.151 / 221 / 251 ZF 8S.151

Detailed view of clutch GMFZ 430



Engine	Clutch	Gearbox
MIDR 06.23.56.12S	GMFZ 430	ZF 16S.151 + NMV 221

Consumables

Oils

We recommend: Renault Trucks Oils

Circuit	Renault Trucks Oils	Standards
Clutch hydraulic system	Fluid FE4	SAE J 1703F / DOT4

Grease

	RAM	Lithium soap grease NLGI 2 with molybdenum bisulphide
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TOOLS

Generalities

RENAULT TRUCKS divide 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.
- **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 amount of skill is needed to make these tools.

Three levels (or echelons) determine their assignment:

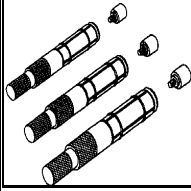
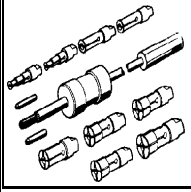
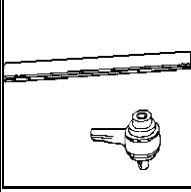
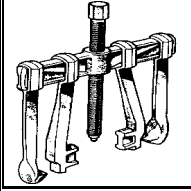
- **Level 1:** tools for servicing, maintenance and minor tasks.
- **Level 2:** tools for major repairs.
- **Level 3:** tools for refurbishment.



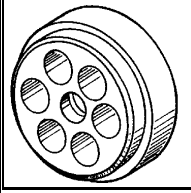
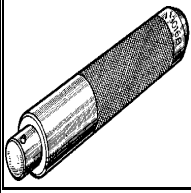
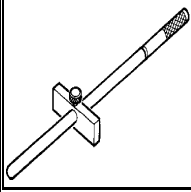
*Proprietary tools mentioned in this manual do not appear in the tools list.
These tools are identified in the standard tools manual (MO) by a 4-figure number.*

LIST OF TOOLS

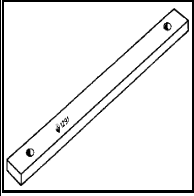
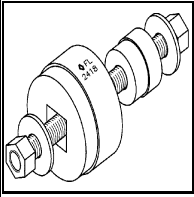
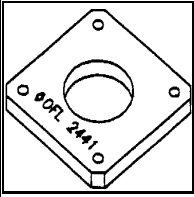
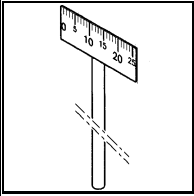
General-purpose tools

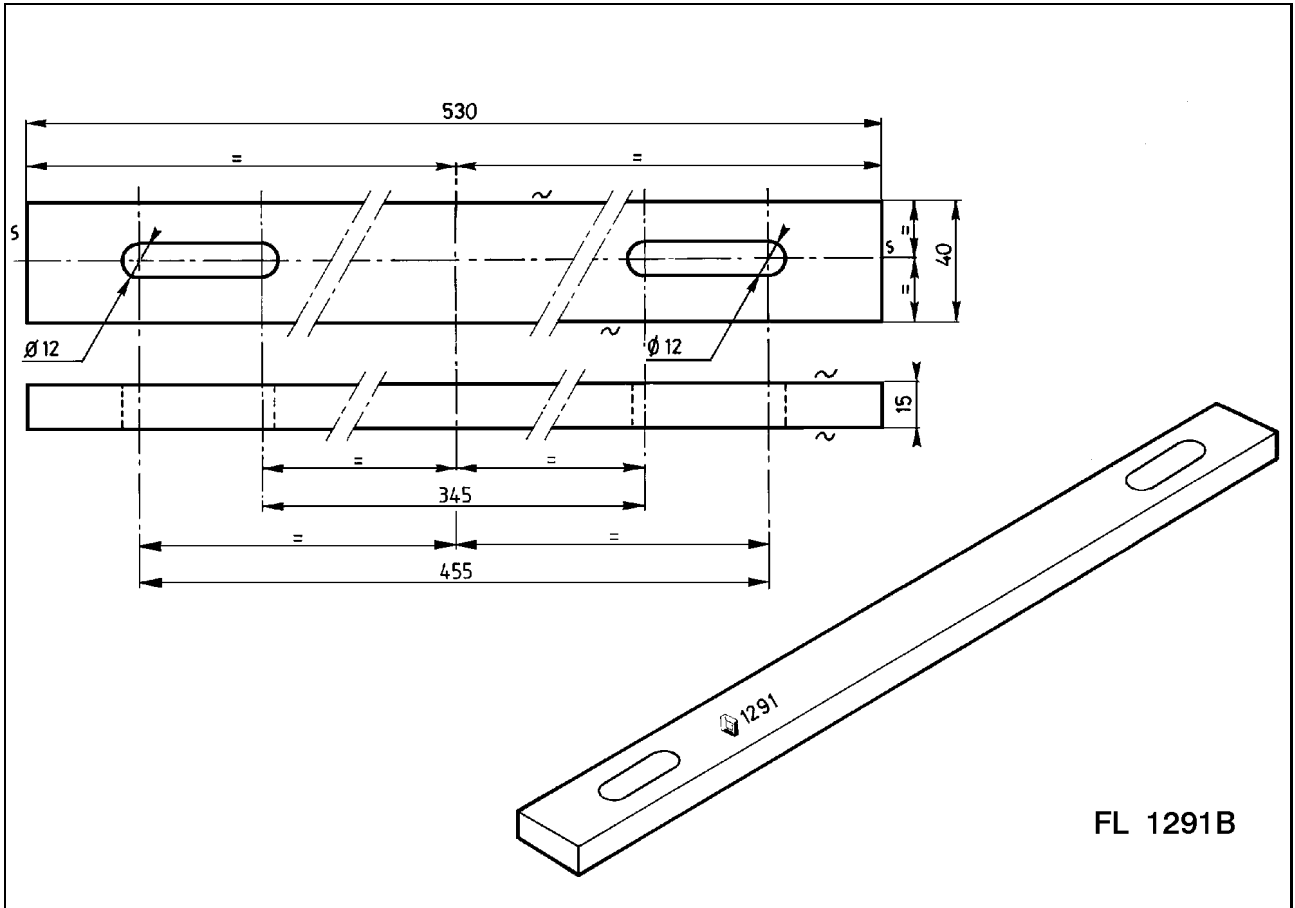
Illustration	RENAULT TRUCKS Ref.	Designation	Manufacturer reference	Manufacturer code	Level	Qty
	5000262437	CLUTCH CENTRING TOOL			1	1
	5000260978	PULLER			1	1
	5000269774	TORQUE MULTIPLIER			1	1
	5000260833	PULLER			1	1

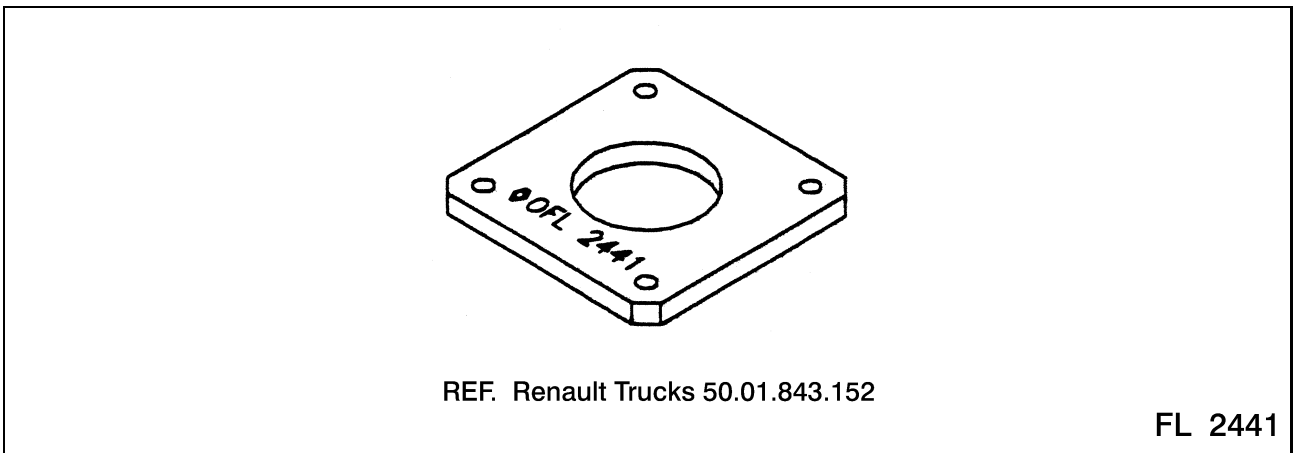
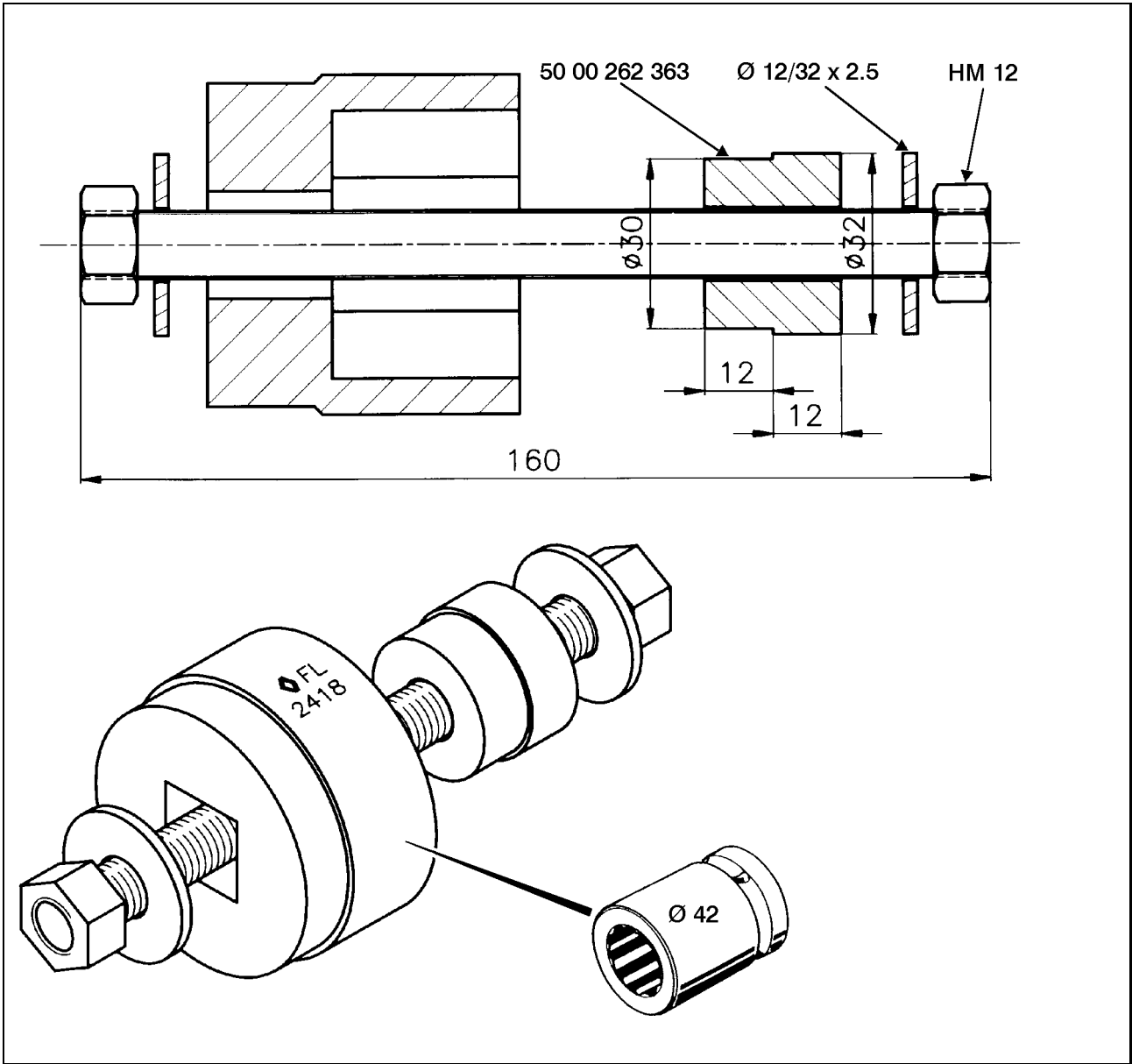
Special Tools

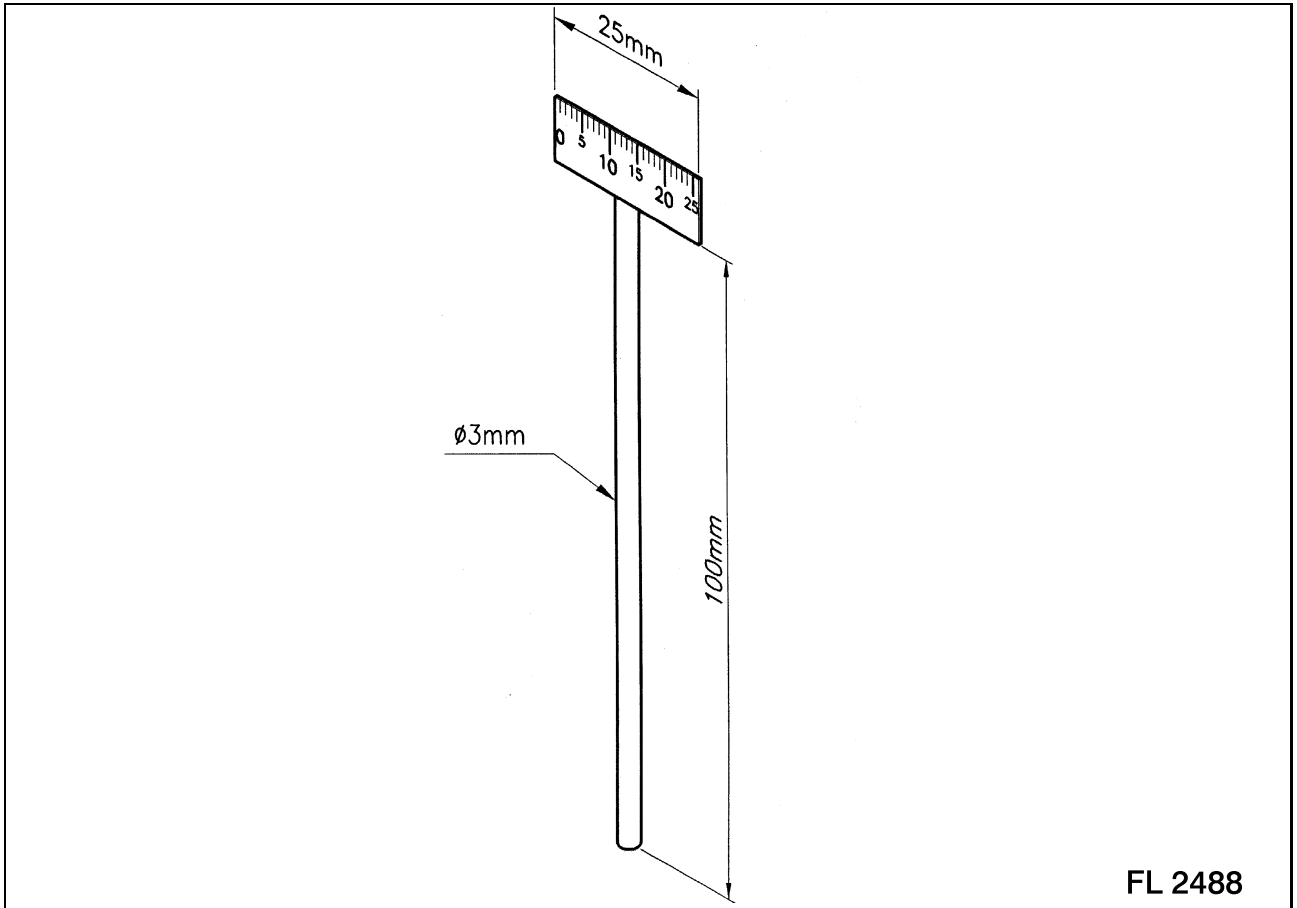
Illustration	RENAULT TRUCKS Ref.	Designation	Manufacturer reference	Manufacturer Code	Level	Qty
	5000262363	SET OF PUSHERS			1	1
	5000263016	HANDLE			1	1
	5000263231	GAUGE ROLLER			1	1

Locally manufactured tools

Illustration	RENAULT TRUCKS Ref.	Designation	Manufacturer Reference	Manufacturer Code	Level	Qty
	1291	PULLER			1	1
	2418	PULLER			1	1
	2441	SPACER			1	1
	2488	RULER			1	1







FL 2488

CLUTCH MECHANISM

Release thrust bearing

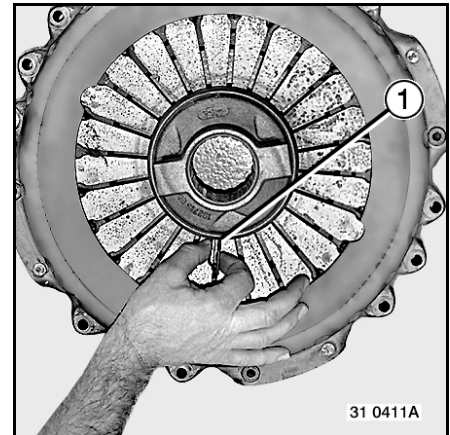
Removal

Clutch type MFZ 2.400 / 430 DTE / GMFZ 430

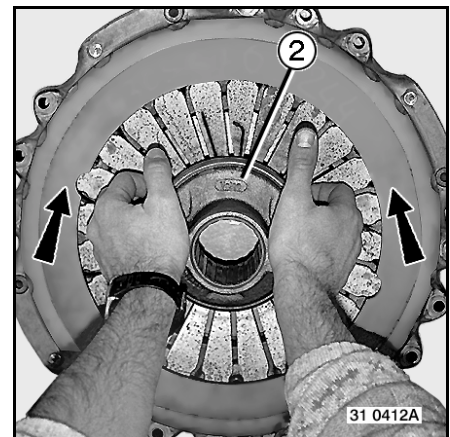
The release thrust bearing retaining ring is opened out after the gearbox has been removed.

The release thrust bearing remains on the mechanism.

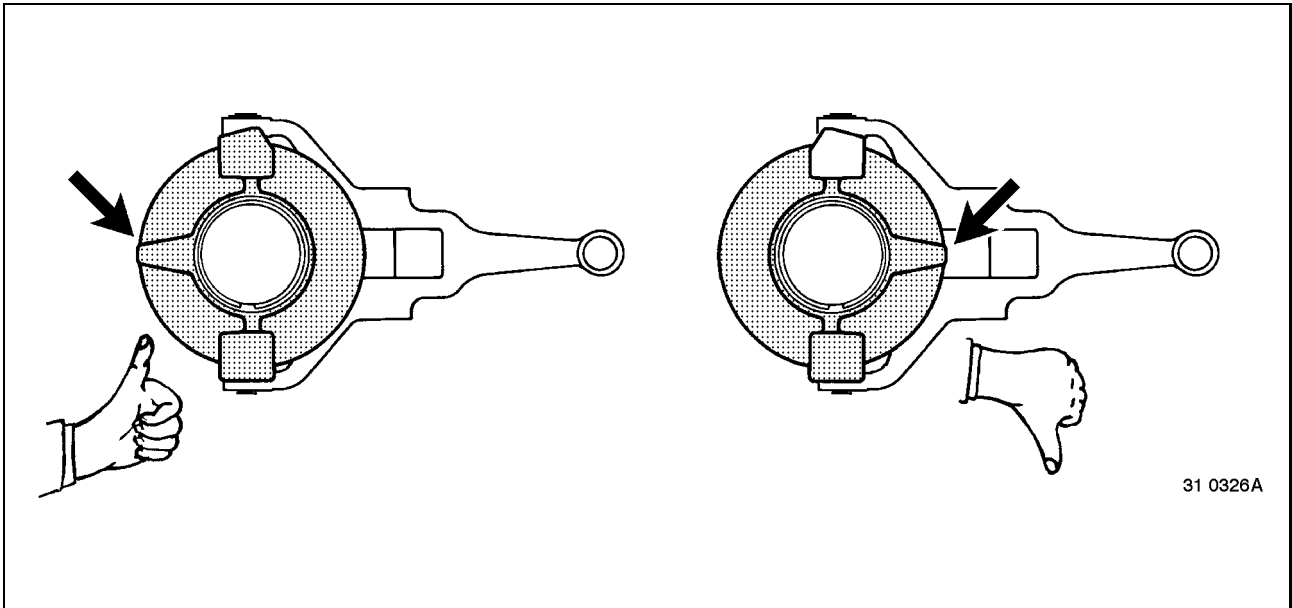
Open out retaining ring (1).



To free the retaining ring press on release thrust bearing (2).
Remove release thrust bearing (2).



Fitting

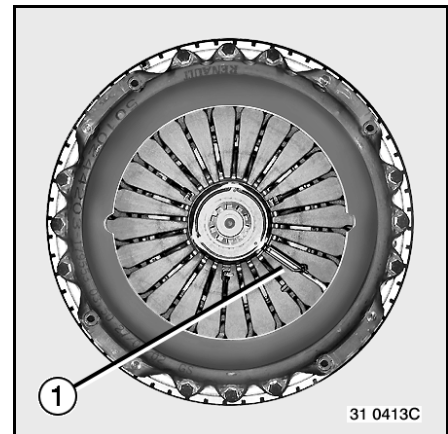


Depending on the assembly.
 Match the direction of orientation.
 Remove dust from the bearing-carrier and from the release thrust bearing.
 Do not use any degreasing product.
 Install the thrust bearing to the bearing-carrier.



The release thrust bearing ring is made of plastic. Upon assembly, do not grease the ring or the bearing carrier on clutch type MFZ 2.400 / GMFZ 430.

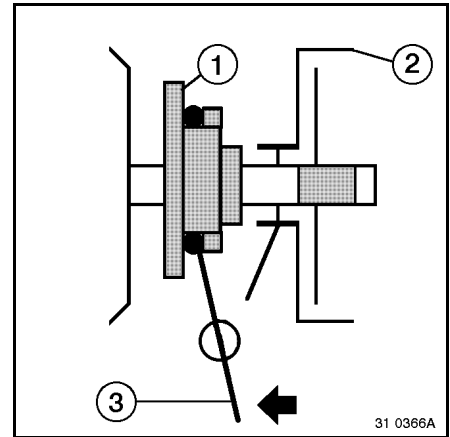
Close retaining ring (1).



Fitting the gearbox.

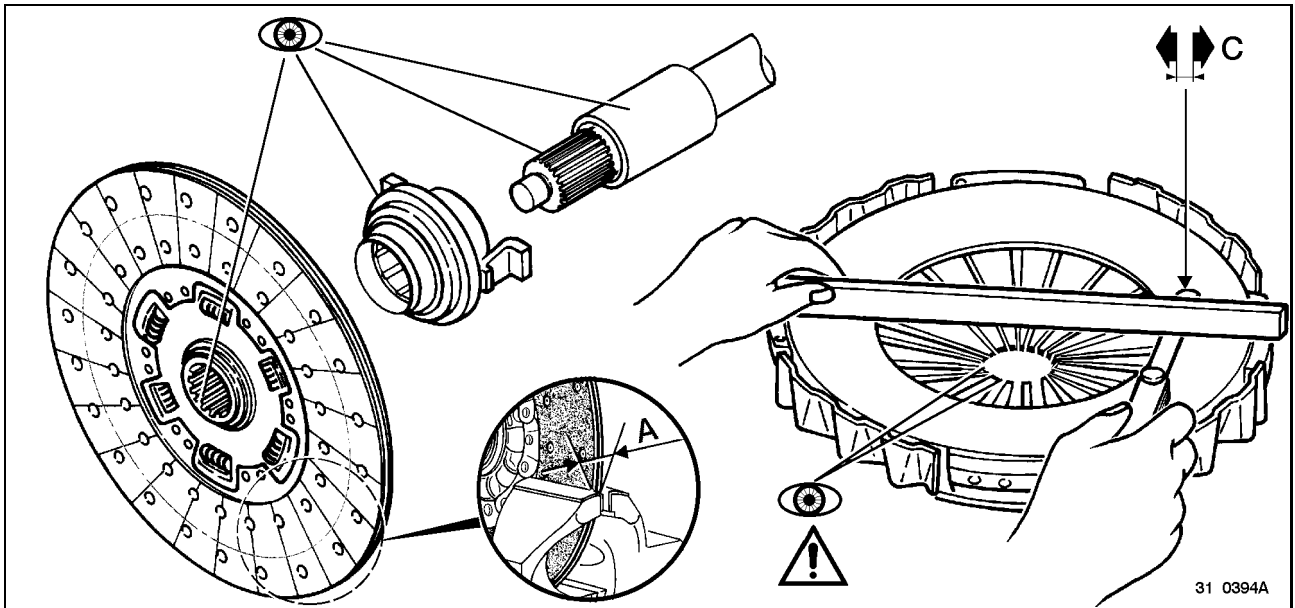
Move the operating fork (3) rearwards to lock the release thrust bearing (1) to clutch mechanism (2).

Move the operating fork (3) forwards to check correct locking of release thrust bearing (1).



Clutch mechanism

Removal



Loosen the setscrews securing the mechanism progressively and in diametrically opposed sequence to avoid placing any strain on the clutch.
Remove the clutch mechanism.

Inspection

Inspecting the centre plate

- Change centre plates with broken, torn, burnt or greasy linings.
- Inspect the linings for wear.
- Check the condition of the hub and gearbox shaft splines.
- Check the condition of the centre plate springs.

Depending on the assembly.

Inspecting the mechanism

- Check that the pressure plate does not present any cracks.
- Check the taper.
- Check the tips of the diaphragm or the support ring for wear.
- Check that driving lugs are neither blued, distorted nor torn apart.
- Check the thrust bearing retaining ring for wear and distortion.

Inspecting the release thrust bearing

- Check that the release thrust bearing is not seized.
- Check the contact surface of the retaining ring.
- Check the state of the spring washers depending on the assembly.
- Check the plastic sleeve for wear.



Never dip the thrust bearing in degreasing product or spray any on it.

To inspect the thrust bearing carrier

- If the thrust bearing carrier presents signs of wear or seizure, replace it.

Mechanism	Lining thickness min. dimension A (mm)	Pressure plate Taper C (mm)
430 DTE	7	0.8
MFZ 2.400	7	0.8
GMFZ 430	7	-

Clutch type MFZ 2.400

(See MR 31 611)

Fitting

Upon assembly

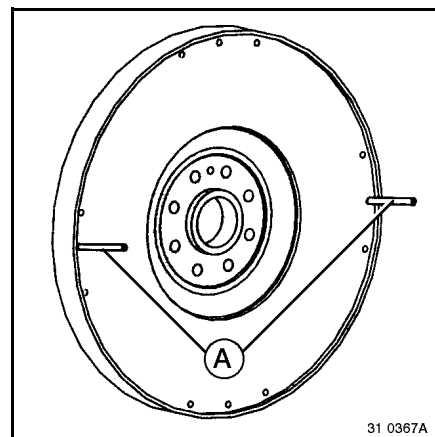
- Remove dust from the clutch casing.
- Degrease the flywheel friction track.
- Install the centre plate, using a centring tool, ensuring that it is fitted the right way round.
- Progressively tighten the diametrically opposed setscrews at the recommended tightening torque (see page B-1-3), (the diaphragm spring should gradually sink in).
- Ensure that the centring tool slides freely in the hub of the centre plate.
- Ensure that the height of the diaphragm spring fingers is constant.
- Depending on the clutch type, ensure that the height of the diaphragm spring fingers is constant.

Use tool **2437**.

Clutch type 430 DTE

Upon assembly

- Remove dust from the clutch casing.
- Degrease the flywheel friction track.
- To position the mechanism, screw in two headless screws.
- Assemble the clutch plate using a centring tool, checking the direction of assembly of the plate.
- Assemble the mechanism and position the flywheel so that the screw is positioned at 6 o'clock.
- Screw up and progressively tighten the 12 setscrews in three successive phases, following the sequence in the drawing, to the recommended tightening torque (see page B-1-3).
- Make sure that the centring tool slides freely in the hub of the clutch plate.
- Make sure that the height of the diaphragm fingers is constant.
- Make sure that the support ring and the retaining ring locking the release thrust bearing are correctly in place.



Use tool **2437**.

Nickel-plated: shiny colour.

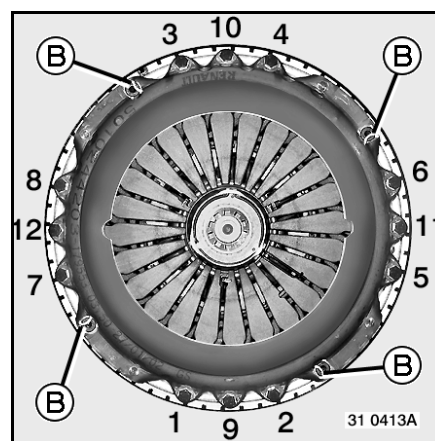


Do not grease splines.

After installing the mechanism, withdraw the clips **(B)**.

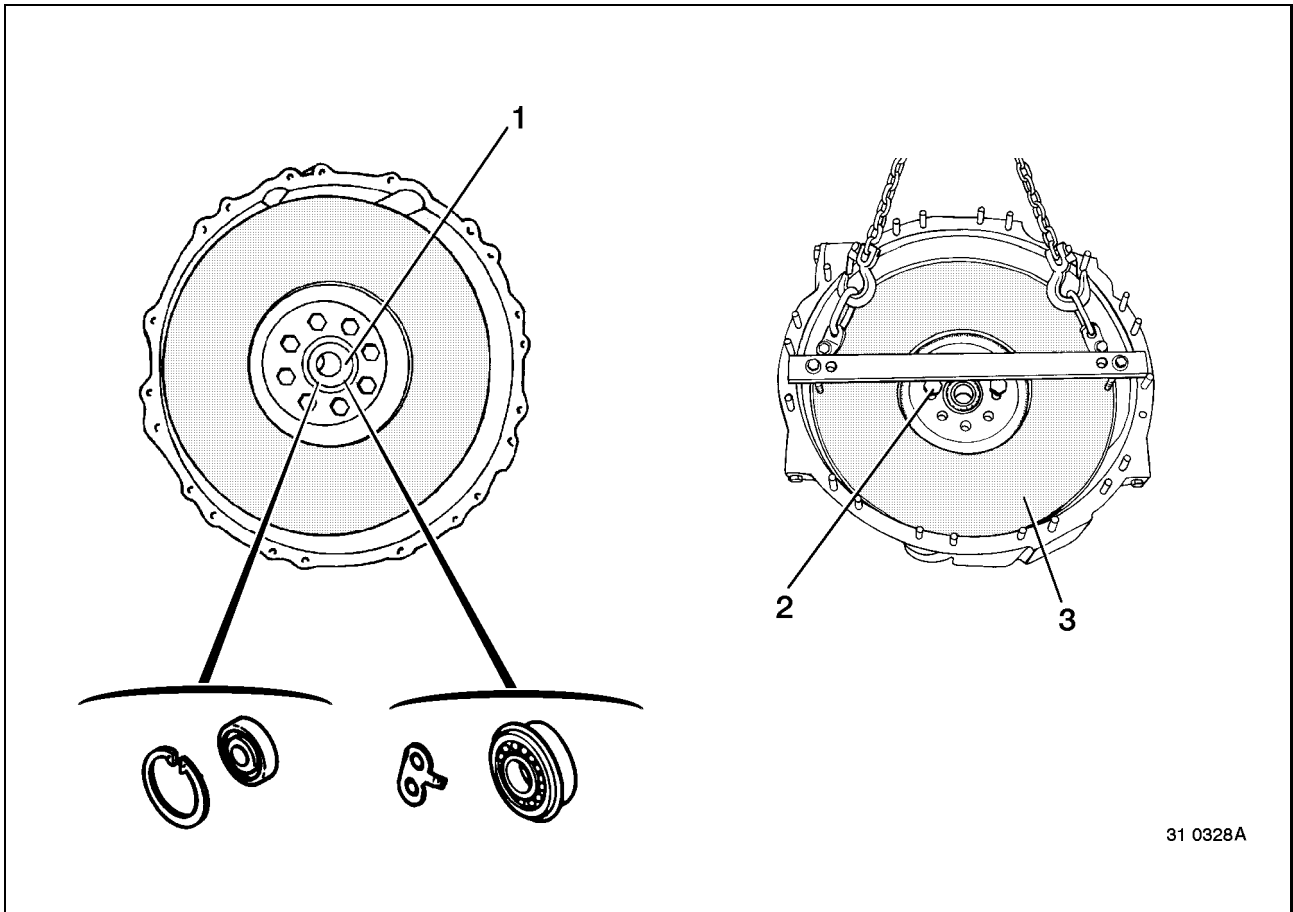
Clutch type MFZ 2.400

(See MR 31 611)



Engine flywheel

Removal



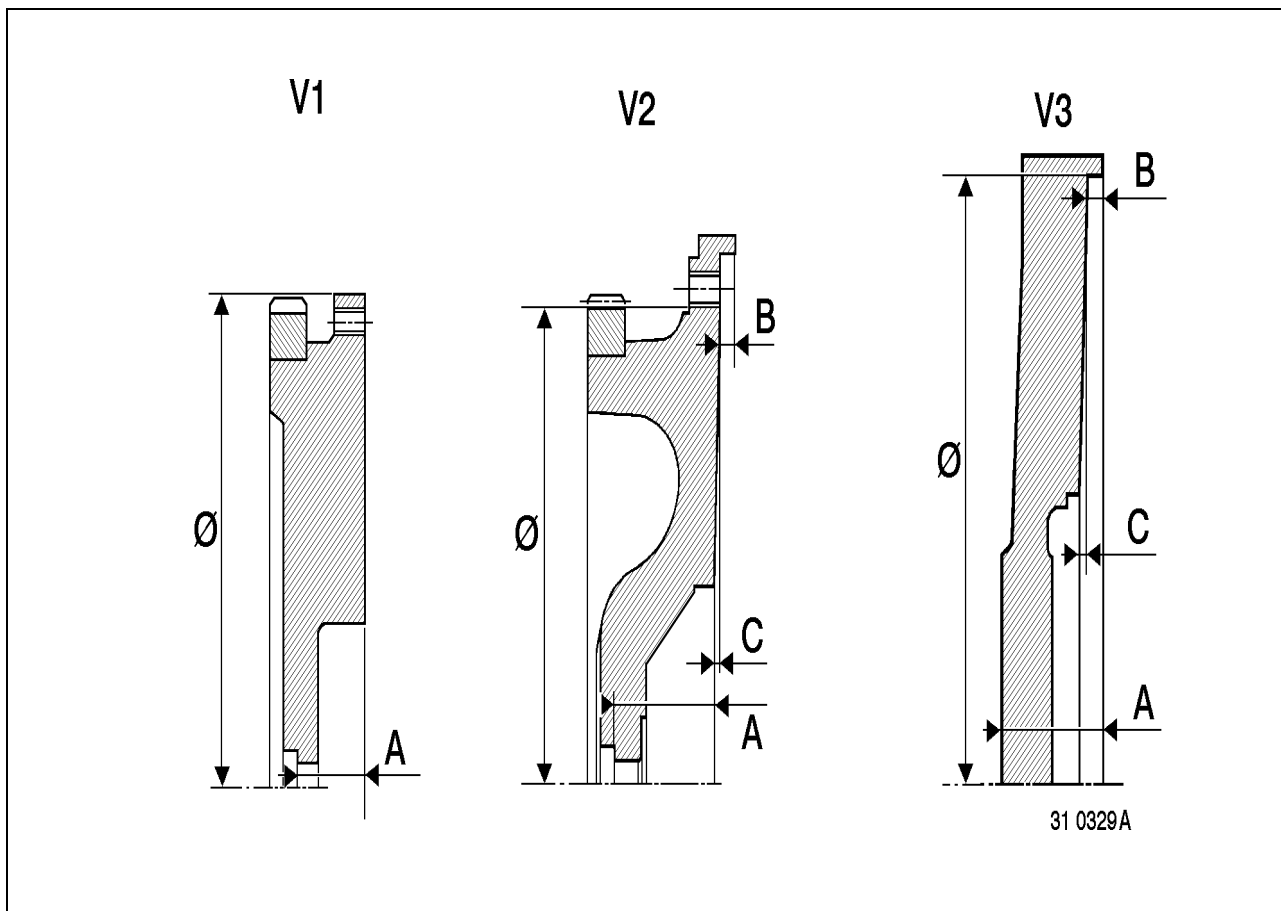
The item numbers indicated in the drawing on page correspond to the **sequence of disassembly**.
The table indicates the designation and reference number of the tools required for assembly/disassembly of the itemized parts.

Item	Tool designation	Reference N°	Assembly	Disassembly
1	Puller	0978		X
2	Torque multiplier	9774	X	X
3	Puller	1291		X

Inspection

Inspecting the flywheel

- Check for oil leaks at the rear of the engine and at the front of the gearbox.
- Check the surface condition of the flywheel (cracks, significant distortion, friction track wear).
- Grind or replace, as necessary (for values, see table).
- Check the state of the pilot bearing.



Engine flywheel grinding values

Engine	Clutch	Flywheel	A (mm)	B (mm)	Taper C	Ø (mm)
MIDR 06.23.56	-	V3	51.3→52	8→8.7	0.5 % = 20'	470

Fitting

Remove dust from the flywheel.

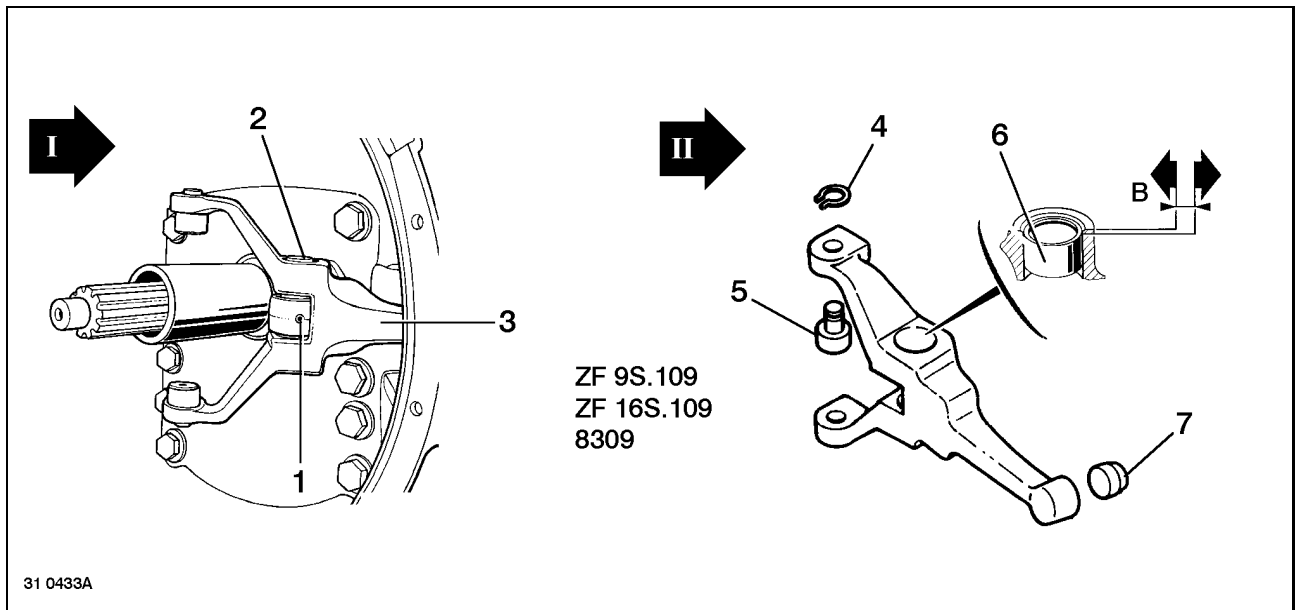
For fitting, proceed in the reverse sequence to removal.

Flywheel setscrews

Progressively tighten the setscrews, in diametrically opposed sequence, to the recommended tightening torque. See page(s) B-1-4, B-1-5, B-1-6.

Clutch fork

Removal



Gearbox ZF 16S. 109 / ZF 9S. 109 / Eaton 8309

Clutch type 430 DTE

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

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

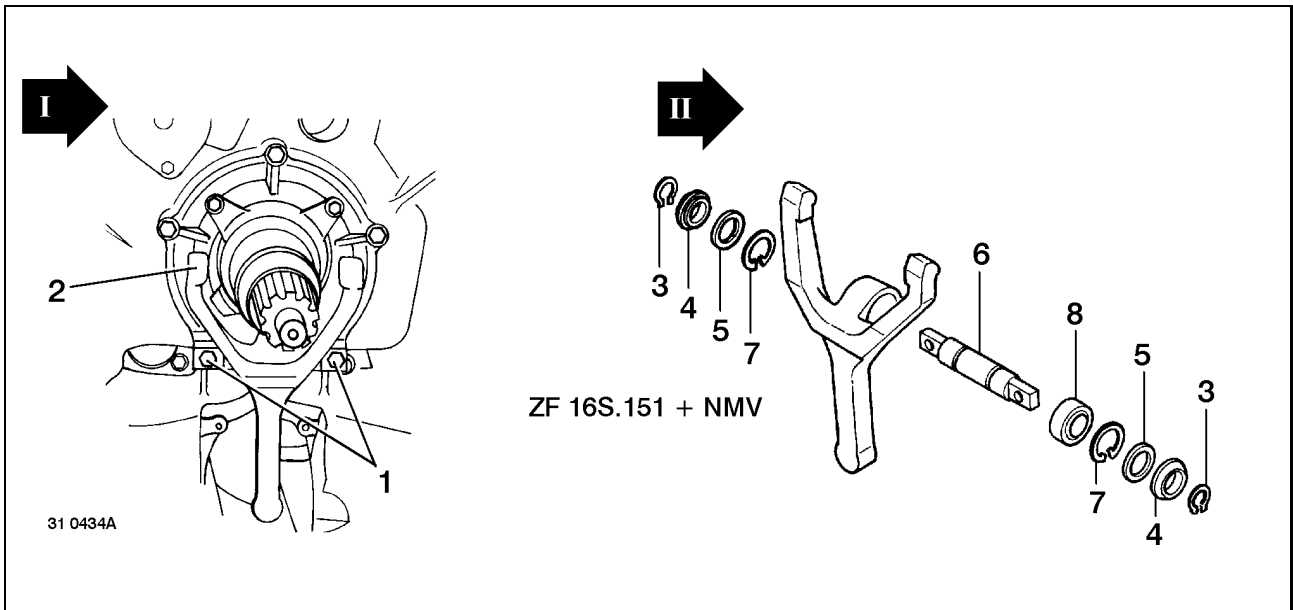
Item	Tool designation	Reference N°	Assembly	Disassembly
6	Puller	0978		X
6	Pusher set	2363 Ø 25-28	X	
6	Handle	3016	X	

Fitting

For fitting, proceed in the reverse sequence to removal.

Ensure dimension **B = 4 ± 0.5 mm**.

Removal



Gearbox ZF 16S. 151 + NMV

Clutch type GMFZ 430

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

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

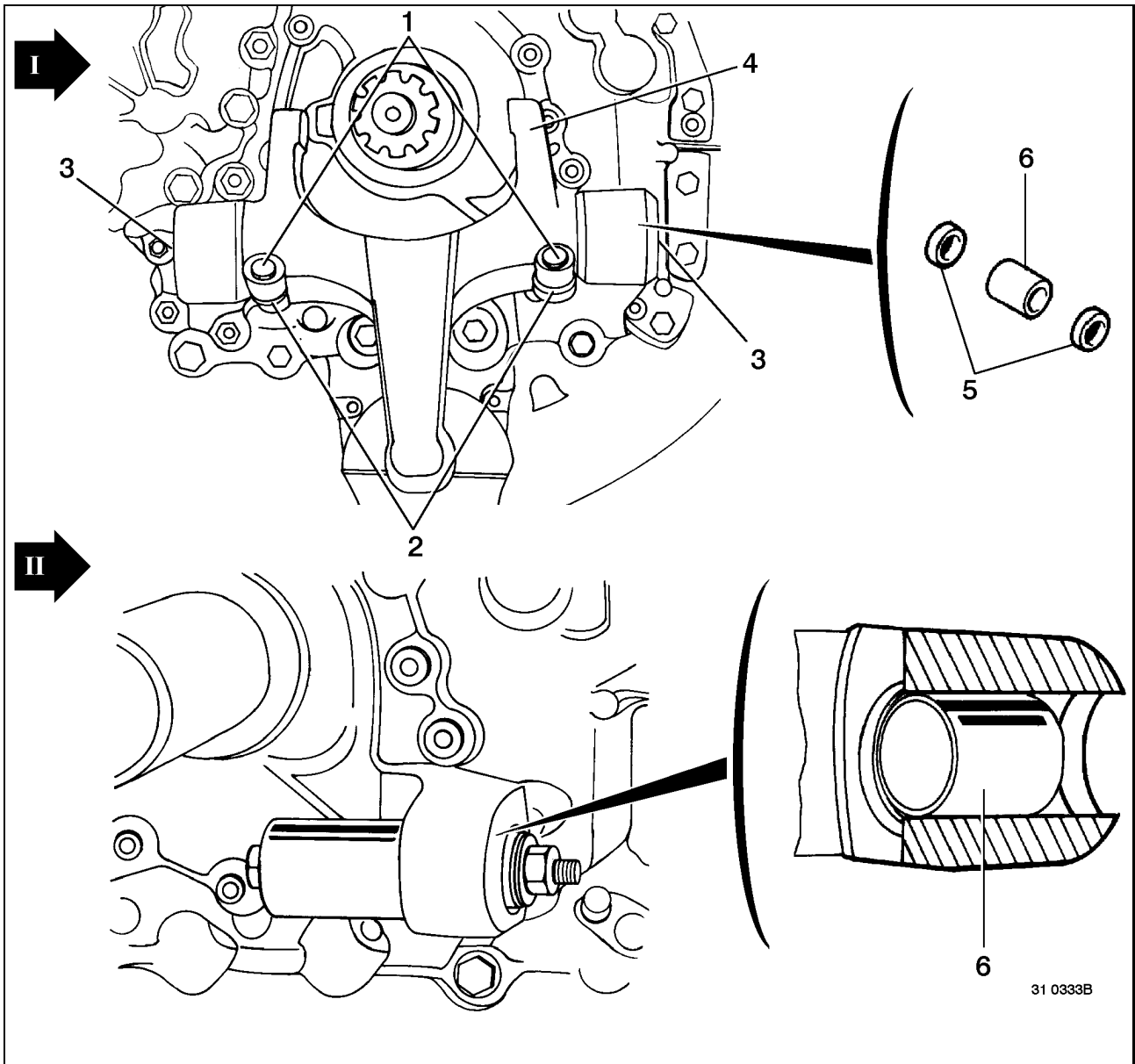
Item	Tool designation	Reference N°	Assembly	Disassembly
8	Pusher set	2363 Ø37 - 40	X	X
8	Handle	3016	X	X

Fitting

For fitting, proceed in the reverse sequence to removal.

Tighten setscrews (1) at a torque of **110 ± 20 Nm**.

Removal



Gearbox ZF 16S. 151/221/251 / 8S. 151

Clutch type MFZ 2.400

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

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

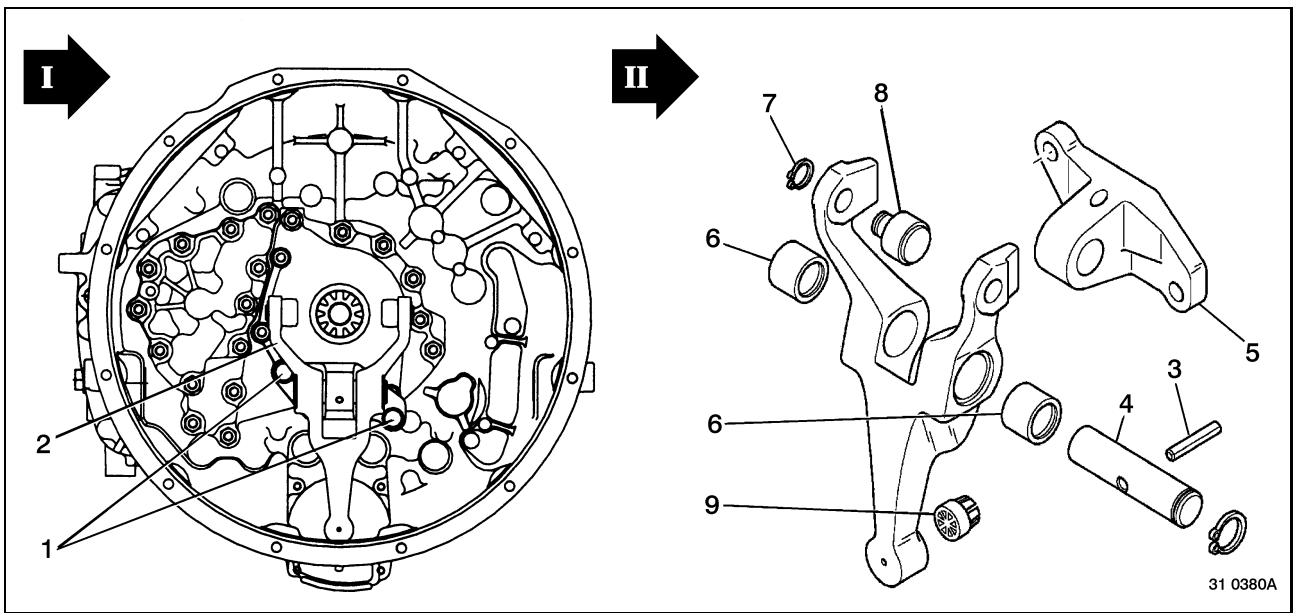
Item	Tool designation	Reference N°	Assembly	Disassembly
6	Puller	2418	X	X

Fitting

For fitting, proceed in the reverse sequence to removal.

Tighten setscrews (1) at a torque of $80 \pm 8 \text{ Nm}$.

Removal



Gearbox ZF 16S. 151/221/251/ 8S. 151

Clutch type 430 DTE

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

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

Item	Tool designation	Reference N°	Assembly	Disassembly
6	Pusher set	2363 Ø25-28	X	X
6	Handle	3016	X	X

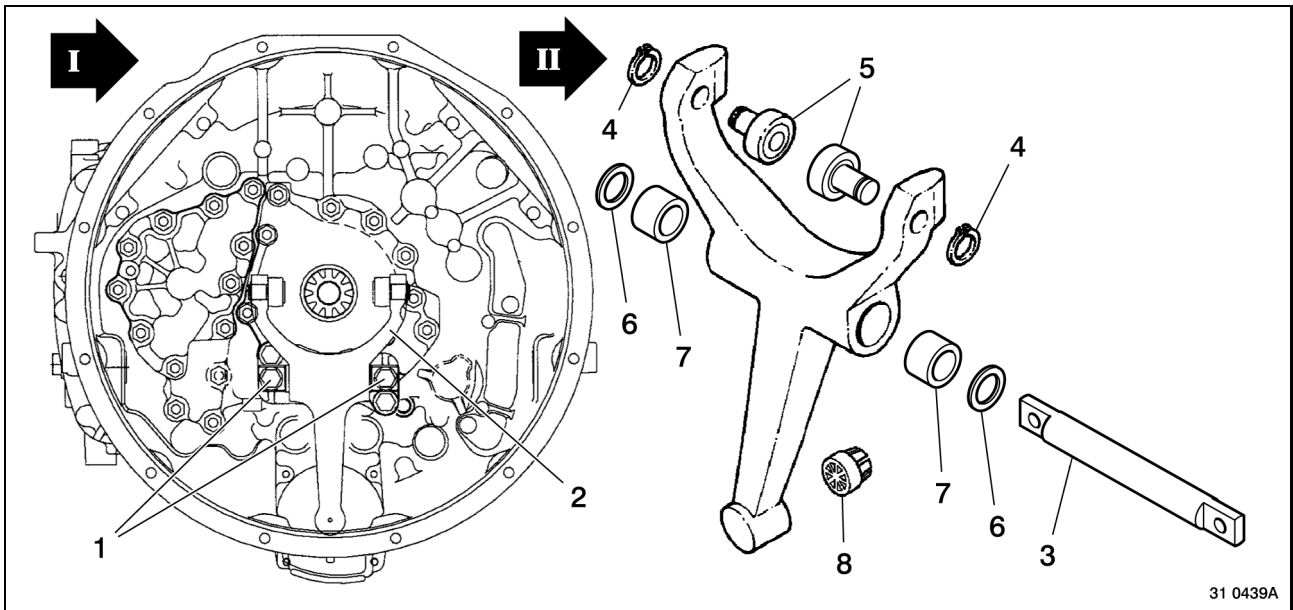
Fitting

For fitting, proceed in the reverse sequence to removal.

Tighten the screws to torque.

See page(s) B-1-3.

Removal



Gearbox ZF 16S. 151/221/251 - 8S. 151

Clutch type 430 DTE

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

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

Item	Tool designation	Reference N°	Assembly	Disassembly
7	Press		X	X
7	Tube Ø 31		X	X

Fitting

For fitting, proceed in the reverse sequence to removal.

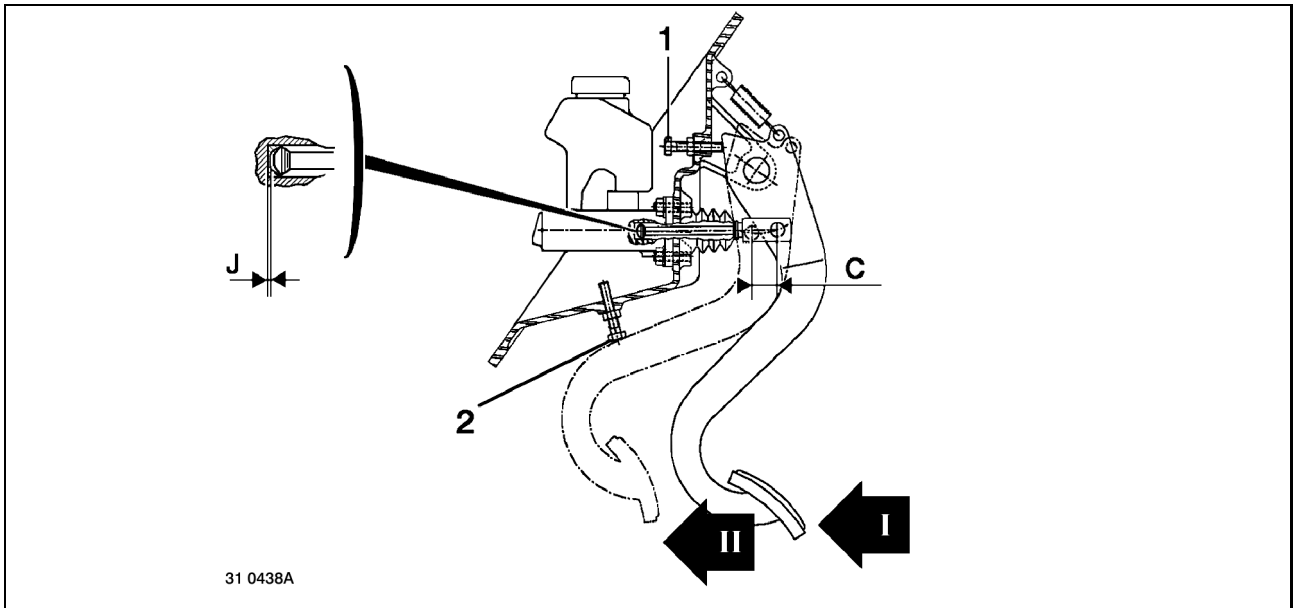
Tighten the screws to torque.

See page(s) B-1-3.

CLUTCH CONTROL

Master cylinder

Adjustment



It is essential to bleed the power-assisted clutch circuit before checking the effective slave cylinder travel and before implicating the different units making up the clutch function.

Adjustment of clearance J

Turn screw (1) to obtain a clearance $J = 0.5^{+0.5} \text{ mm}$.
Tighten the locknut.

Adjustment of travel

Turn screw (2) to obtain dimension $C = 21 \pm 0.5 \text{ mm}$.
Tighten the locknut.

Slave cylinder

Reference numbers

Manufacturer's reference number	RENAULT TRUCKS reference number	Setting (see page)
Wabco 970 051 4150	50 10 452 511	E-2-3
Wabco 970 051 4220	50 10 452 512	E-2-3

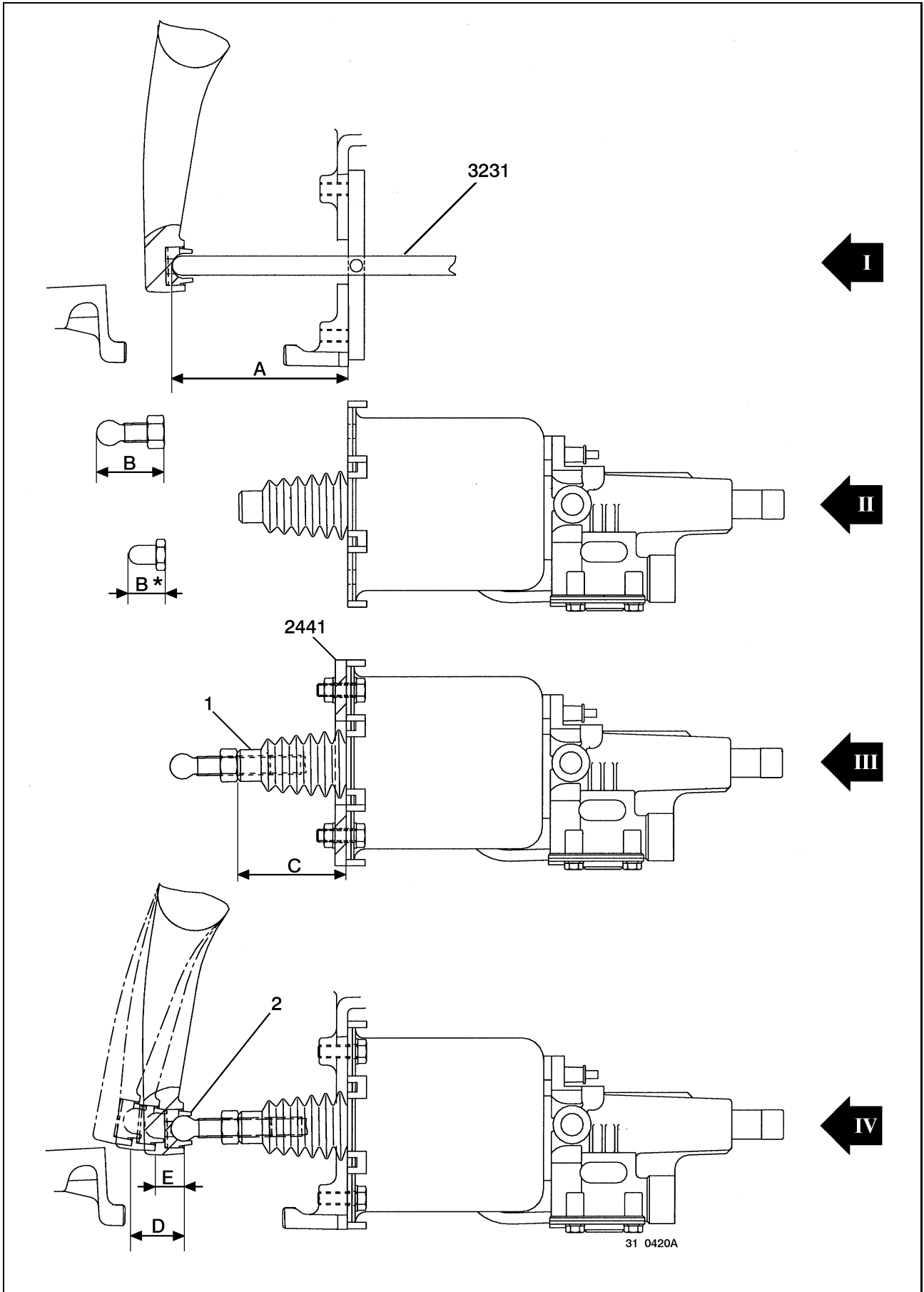


It is essential to bleed the power-assisted clutch circuit before checking the effective slave cylinder travel and before implicating the different units making up the clutch function.



Do not actuate the clutch if the slave cylinder is not fastened to its bracket.

Adjustment



Adjustment

Dimension **B** and the slave cylinder valve must be re-adjusted whenever any clutch component is changed. The items numbers indicated in the text refer to the figure on page E-2-2 .

Note down dimension **A** between the fork impression and the clutch servo unit mounting face using tool **3231** and a depth gauge.



Keep the fork in support during the reading.

Clutch type Valéo 430DTE / GMFZ 430

Adjust dimension **B** = **A** - 69 mm.

Clutch type MFZ 2.400

Adjust dimension **B*** = **A** - 64 mm.

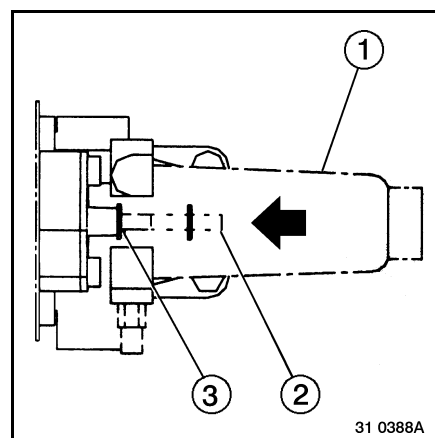
Adjusting the slave cylinder valve

- 1° Slave cylinder removed: fit tool **2441** to the slave cylinder.
 - 2° Connect up the pipes, bleed the hydraulic system (slave cylinder in the horizontal position).
 - 3° Move control rod **(1)** forwards while actuating the clutch pedal until it becomes hard "**C** ≥ 96 mm".
 - 4° Withdraw tool **2441** and offer up the slave cylinder pre-set in this way on its support bracket. Put the push-rod into place in its housing.
 - 5° Push the slave cylinder into abutment on its support bracket. Attach the slave cylinder. The push-rod is in its final position.
- Do not push the push-rod back, even for a moment, or else the above procedure is to be repeated.**
- 6° Connect up the air pipes.

In case of replacement of the clutch plate:

Fit and attach the slave cylinder **(1)**.

Push rod **(2)** as far as abutment and put pointer **(3)** in that position.

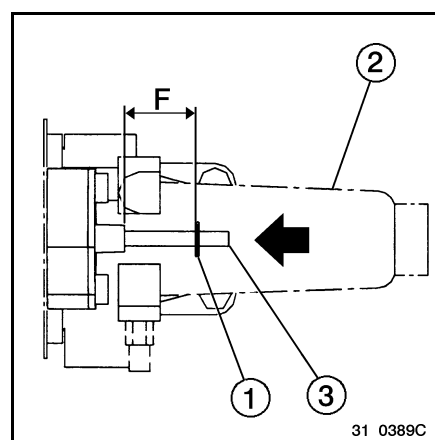


In case of replacement of the clutch servo:

To locate the position of pointer **(1)** measure dimension **F**.

Fit and attach the slave cylinder **(2)**.

Push rod **(3)** as far as abutment and reposition the pointer while ensuring dimension **F**.



Inspection

Check the effective travel at the slave cylinder ($D = 22 \pm 1$ mm see page E-2-2).

Check the slave cylinder microvalve travel.

Disconnect the plastic tube at valve outlet 22.

Slowly depress the clutch pedal and measure the amount of movement of the slave cylinder push-rod until the moment when air begins to escape from valve outlet 22.

This dimension should correspond to $E = 16 \pm 0.5$ mm.

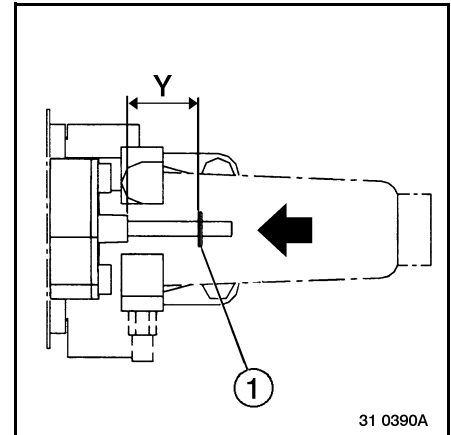
If the opening dimension of slave cylinder valve is not obtained, repeat the adjusting operations (see page E-2-3).

Use tool 2488.

Gearbox type ZF 16S. 109 / 9S. 109 / 8309

To locate the position of pointer (1) measure dimension Y.

Remove the pointer (1).



Measure dimension A.

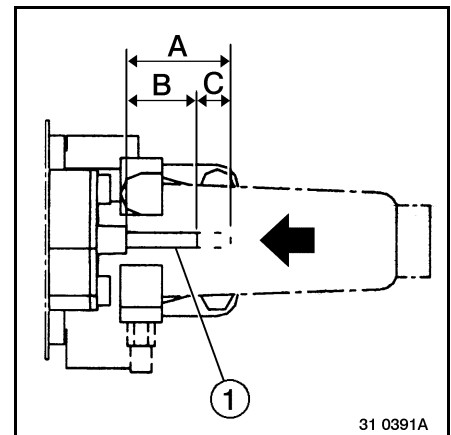
Fully release the clutch.

Push the push-rod (1) as far as abutment.

Measure dimension B.

The clutch travel $C = 22 \pm 1$ mm is equal to $A - B$.

Reposition the pointer (1) while ensuring dimension Y.



Lining wear indicator

Inspection

Depending on the assembly.

To gain access to the underside of the gearbox, remove the soundproofing screen.

After taking action, put the soundproofing screen properly back into place.

Soundproofing screen(s)

Any damage to the interior protective film of the screen requires replacement of the film.

See that no flammable products are applied to the screen protective films.

The screens are to be cleaned using a cloth.

If necessary, use soapy water (any other product is strictly forbidden).



In the event of removal of the slave cylinder, without replacement of the clutch plate, mark the position of pointer (1) before dismantling and put it back in the same position upon assembly.

Clutch type Valéo 430DTE / GMFZ 430

The position of pointer (1) corresponds to:

A = new lining.

B = worn lining.

X = 25 ± 1 mm.

Clutch type MFZ 2.400

The position of pointer (1) corresponds to:

A = new lining.

B = worn lining.

X = 34 ± 1 mm.

