

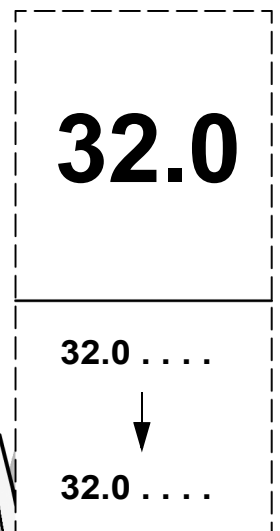
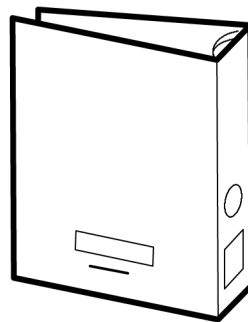
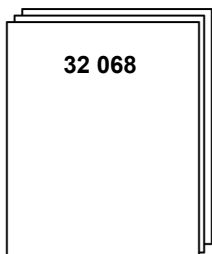
32 068 - GB - 03/2004

GEARBOX - ZF 5 S.270 / ZF 6 S.350

RANGE	FAMILY	VARIANT
MASCOTT DXi	54A	120AX+150FP/FQ
	54B	



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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Removal/Fitting	D-1 → 6
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GENERALITIES

APPLICABILITY

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
MASCOTT DXi	54A	Warnings	120AX+ 150FP/FQ	09/02/2004		31/03/2003	A-3
	54B		120AX+ 150FP/FQ	09/02/2004			
MASCOTT DXi	54A	Conventional symbols	120AX+ 150FP/FQ	09/02/2004		23/05/2002	A-4
	54B		120AX+ 150FP/FQ	09/02/2004			

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

APPLICABILITY

Tightening torques

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
MASCOTT DXi	54A	Definitions	120AX+ 150FP/FQ	09/02/2004		27/02/2003	B1-4
	54B		120AX+ 150FP/FQ	09/02/2004			
MASCOTT DXi	54A	Standard nut and bolt tightening torques table	120AX+ 150FP/FQ	09/02/2004		06/06/2003	B1-5
	54B		120AX+ 150FP/FQ	09/02/2004			

Specific tightening torques

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
MASCOTT DXi	54A	Transmission	120AX+ 150FP/FQ	09/02/2004		07/11/2003	B2-1
	54B		120AX+ 150FP/FQ	09/02/2004			
MASCOTT DXi	54A	Gearbox	120AX+ 150FP/FQ	09/02/2004		07/11/2003	B2-1
	54B		120AX+ 150FP/FQ	09/02/2004			
MASCOTT DXi	54A	Starter	120AX+ 150FP/FQ	09/02/2004		03/12/2003	B2-1
	54B		120AX+ 150FP/FQ	09/02/2004			

Weights

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
MASCOTT DXi	54A	Gearbox	120AX+ 150FP/FQ	09/02/2004		10/11/2003	B3-1
	54B		120AX+ 150FP/FQ	09/02/2004			

Consumables

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
MASCOTT DXi	54A	Use	120AX+ 150FP/FQ	09/02/2004		10/11/2003	B4-1
	54B		120AX+ 150FP/FQ	09/02/2004			

Tightening torques

Definitions

There are several types of tightening:

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

Transmission

Prop shaft securing nuts and bolts

100 ± 20 Nm

Gearbox

Nuts and bolts securing gearbox to engine

67 ± 10 Nm

Starter

Starter securing bolts

44^{±6} Nm

Power cable securing nut

9 Nm

Starter control wire securing nut

3 Nm

Weights

Gearbox

Type	Weight without oil (in kg)	Weight with oil (in kg)
ZF 5S.270	49	-
ZF 6S.350	63	-

Consumables

Use

Oil capacities and specifications (see Driving & Servicing Handbook)

TOOLS

APPLICABILITY

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
MASCOTT DXi	54A	Generalities	120AX+ 150FP/FQ	09/02/2004		12/12/2001	C-3
	54B		120AX+ 150FP/FQ	09/02/2004			

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
	5000269366	RAM		BB	1	1
	9364	2-AXIS SWIVELLING HEAD		BB	1	1
	5000269804	STRAP			1	1

BB	SEFAC S.A.					
	1 rue André Compain BP 101					
	08800 MONTHERME				FRANCE	
	☎ 03.24.53.01.82			📠 03.24.53.29.18		

REMOVAL/FITTING

APPLICABILITY

Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
MASCOTT DXi	54A	Generalities	120AX+ 150FP/FQ	09/02/2004		10/11/2003	D-3
	54B		120AX+ 150FP/FQ	09/02/2004			
MASCOTT DXi	54A	Removal	120AX+ 150FP/FQ	09/02/2004		10/11/2003	D-4
	54B		120AX+ 150FP/FQ	09/02/2004			
MASCOTT DXi	54A	Fitting	120AX+ 150FP/FQ	09/02/2004		10/11/2003	D-6
	54B		120AX+ 150FP/FQ	09/02/2004			

Generalities

Practical advice

Prior to any work:

- Clean the major unit and its surrounds (See Driving Servicing Handbook, "Vehicle washing").
- Disconnect the batteries, starting with the negative terminal.
- 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.

Raising a vehicle on lifts or elevators

- For tyres with size less than or equal to **16** inches, place fork reducers on each lift column.
- Position and centre the lift columns.
- Release the parking brake.
- Raise the vehicle and put safety trestles into place.

Preparation prior to assembly:

Carefully clean and inspect all the parts.

Disassembled seals, circlips and lock-plates must always be discarded and new ones fitted.

Never force fit parts using copper or brass punches or drifts. Use a specially adapted pusher each time so as to prevent ingress of metallic particles into the casings and bearings. Always oil all parts prior to force fitting them. The inside of the lips of seal rings are to be smeared with grease.

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.

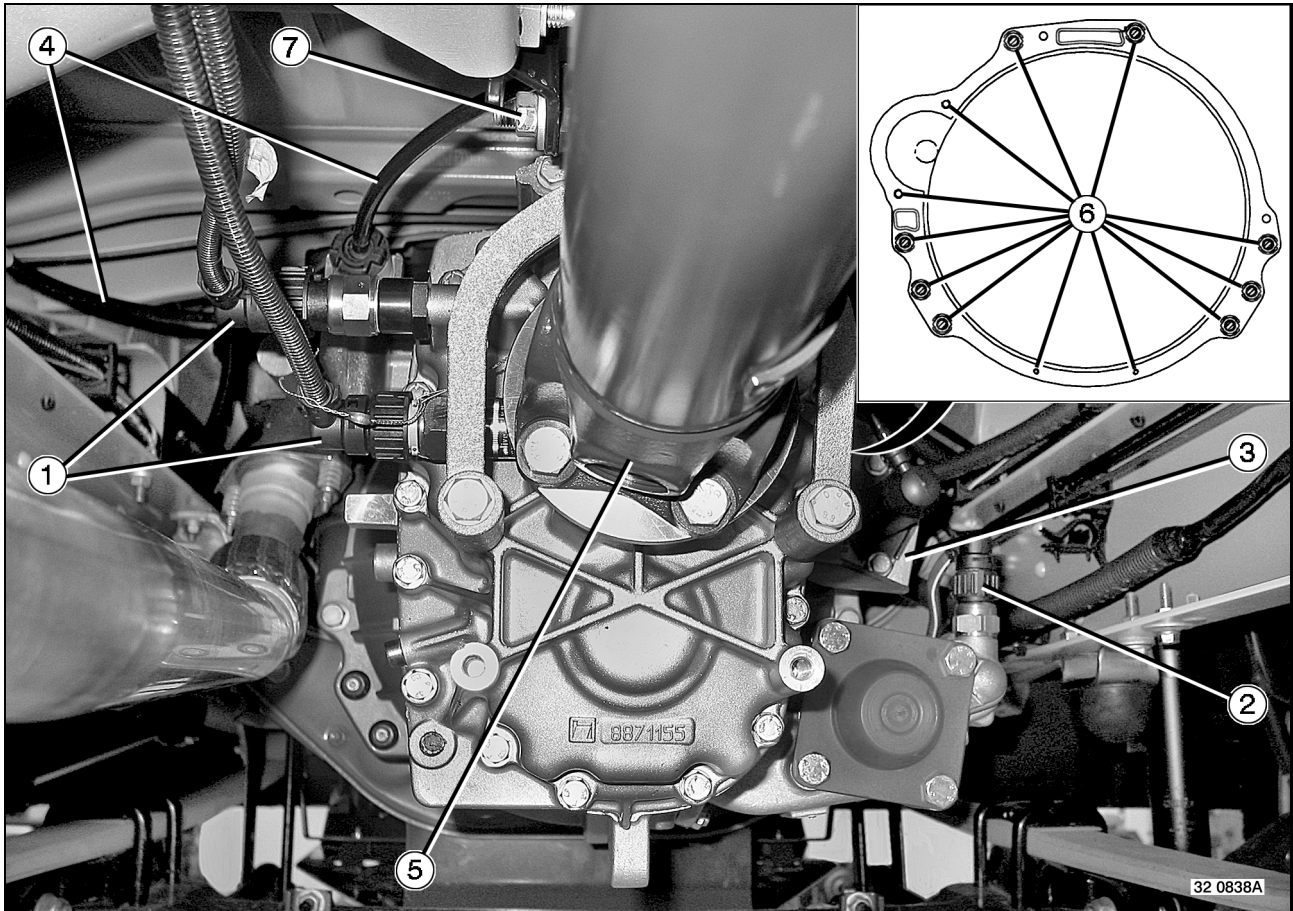
Using the product:

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

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

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

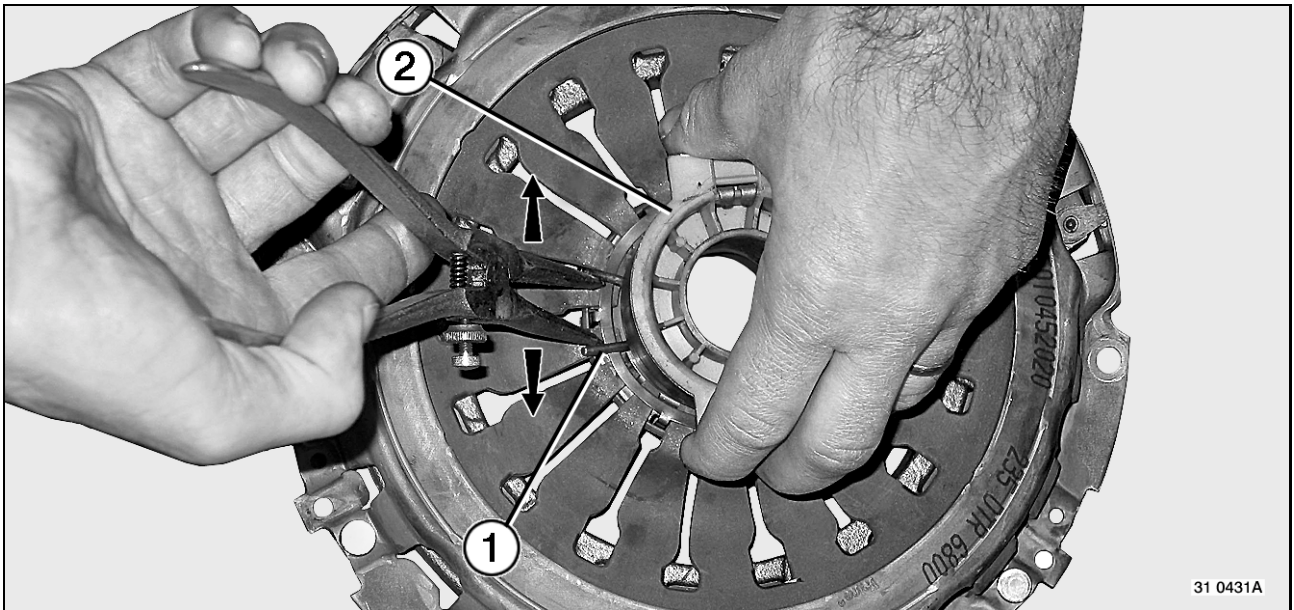
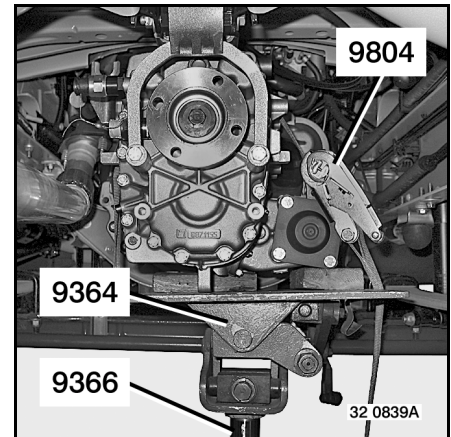
Removal



Remove soundproofing screens.

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

Install tool **9366 + 9364 + 9804**.
Remove the gearbox.



Remove release thrust bearing.
Using circlips pliers, open out the retaining ring **(1)** to remove the clutch release bearing **(2)**.
Remove dust from the bearing-carrier and from the release thrust bearing.
Do not use any degreasing product.

Fitting

Install the thrust bearing to the bearing-carrier.

Engage any gear.

Fitting the gearbox.

Remove the gear.

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)**.

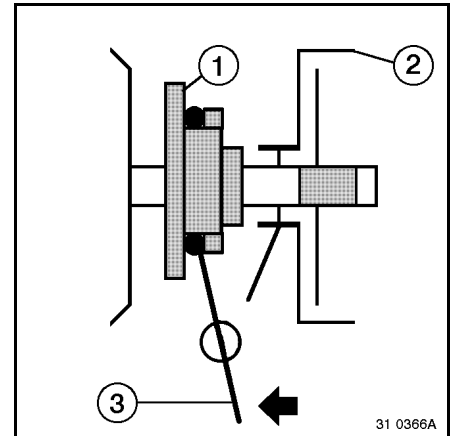
For assembly, proceed in the reverse sequence to disassembly.

Tighten to torque.

See page(s) B-2-1.

Fill the gearbox with oil.

(See Driving & Servicing Handbook)



GEARSHIFT CONTROL

APPLICABILITY

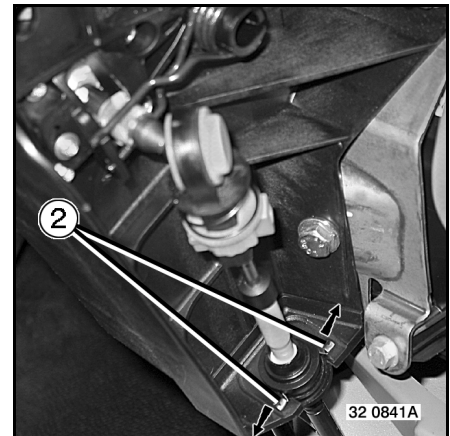
Range	Family	Title	Variant	Applicability date		Updating	Page N°
				Start	End		
MASCOTT DXi	54A	Removal	120AX+ 150FP/FQ	09/02/2004		10/11/2003	E-3
	54B		120AX+ 150FP/FQ	09/02/2004			
MASCOTT DXi	54A	Fitting / adjustment	120AX+ 150FP/FQ	09/02/2004		12/11/2003	E-4
	54B		120AX+ 150FP/FQ	09/02/2004			

Removal

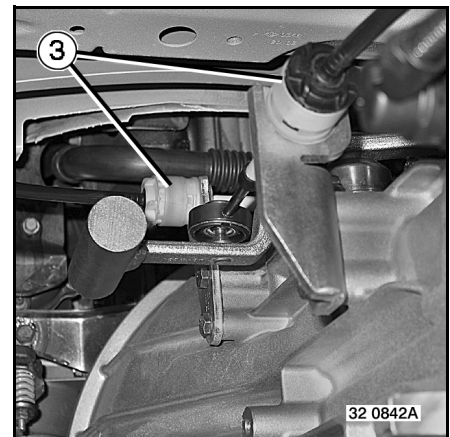
Remove trim (1).



Uncouple the ball-joints.
Push tabs (2) so as to withdraw the gear lever end cable stops.

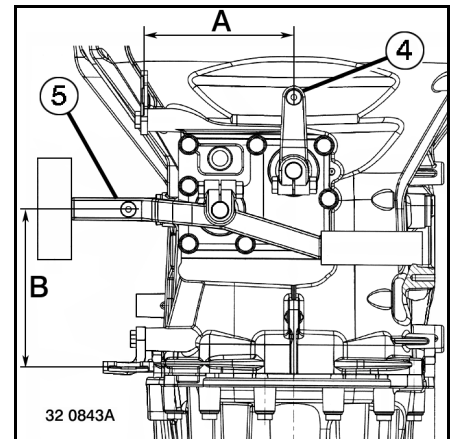


Remove soundproofing screens.
Uncouple the ball-joints.
Pull rings (3) so as to withdraw the gearbox end cable stops.

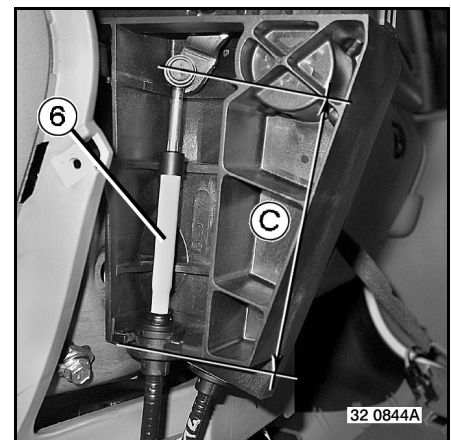


Fitting / adjustment

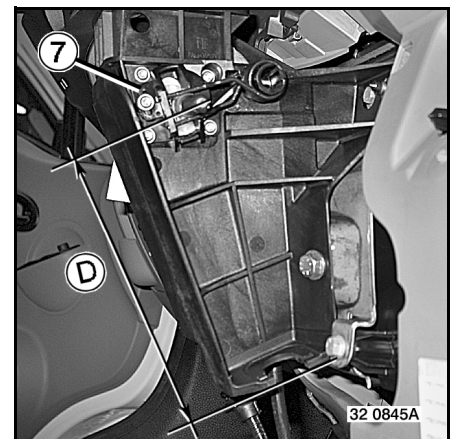
Gearshift controls (4-5) positioned in neutral, check dimensions **A = 133 mm** and **B = 140 mm**. Position the cable on the gearbox.



Put cable (6) into place. Check dimension **C = 140 mm**.



Check dimension **D = 160 mm**. Adjust with shim (7), if necessary.



Clip sheath stop (8).

Lift ring (9) and pull knob (10). In that position, adjust the length of the cable so as to insert ball-joint (11). Press knob (10) to lock adjustment of the cable.

