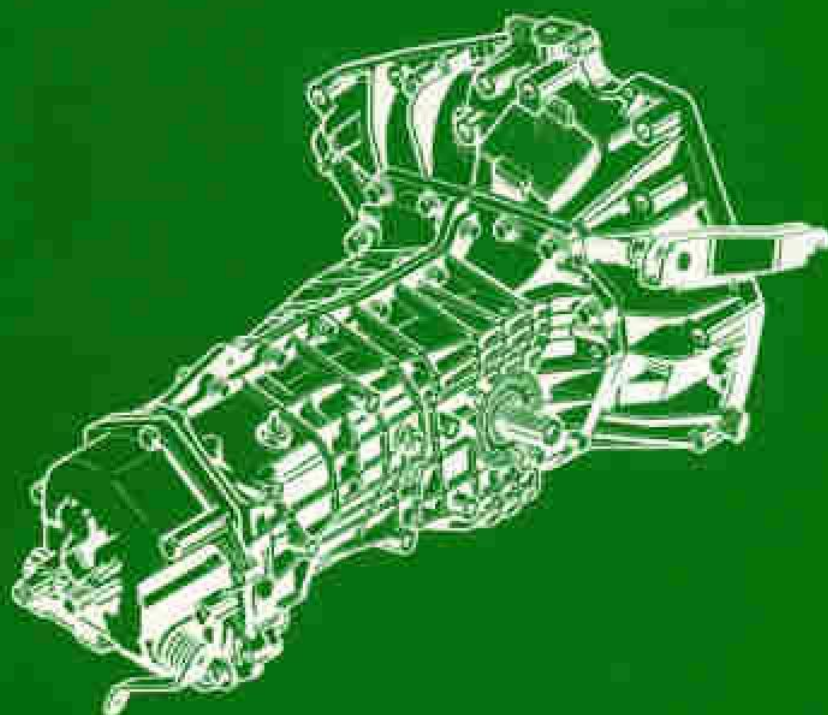


B.V. NG

77 11 073 487 ♦ ⑤ Edition Anglaise



RENAULT

RENAULT

Workshop manual

Manual gearboxes

Type	Range
NG0	Renault 18 Renault Fuego Renault 20
NG1	Renault 18 Renault Fuego Renault 20
NG2	Renault 20
NG3	Renault 18 Renault Fuego Renault 20 Renault 30
NG5	Renault 5

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SPECIFICATIONS

Type NG manual gearboxes are fitted to the following vehicles :

Renault 18 : 1340, 1341, 1342, 1343, 1344, 1345, 1349, 1350, 1351, 1352, 1353, 1354, 2350, 2354

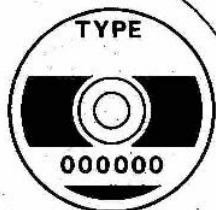
Renault Fuego : 1360, 1361, 1362, 1363, 1365

Renault 20/30 : 1270, 1271, 1272, 1276, 1277

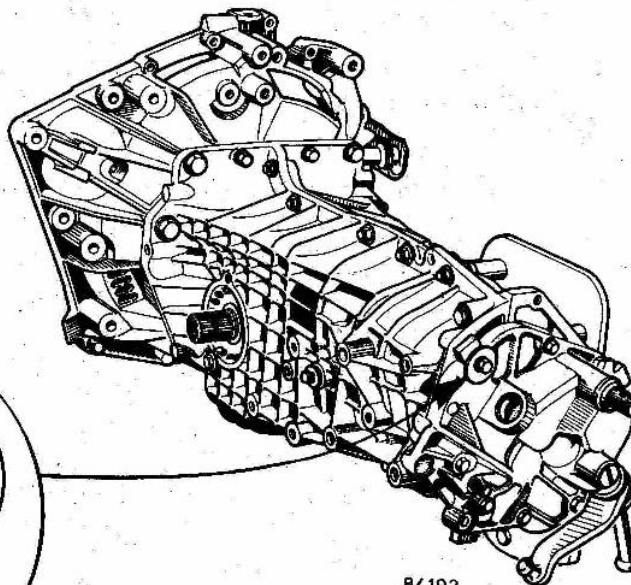
Renault 5 : 1223, 122B

IDENTIFICATION

The type, suffix and fabrication number are stamped on a plate held by a rear casing bolt.



74 008

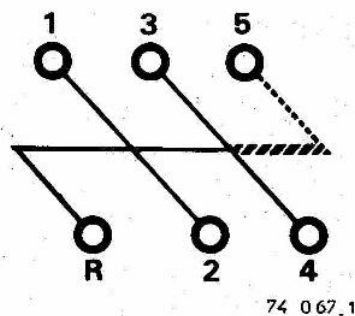


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CONSTRUCTION

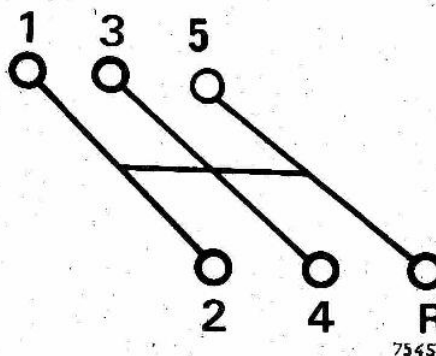
Number of ratios	4	5
<u>Differential</u>		
2 planet wheels	NG0	NG1-NG5
4 planet wheels	NG2	NG3

NG0 - NG1 - NG2 - NG3



74 067.1

NG5



73453

4 or 5 synchronized forward speeds.

1st-2nd - Renault synchro.

3rd-4th-5th - Borg-Warner synchros.

SPECIFICATIONS

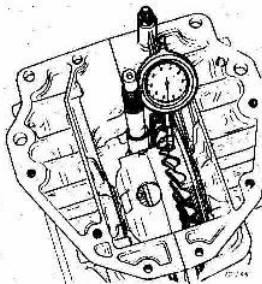
OIL

Grade	Quantity	Viscosity
API GL5 or MIL L2105B or MIL L2105C	4-speed or 5-speed	2 litres
		<div> <div>-10°C</div> <div>SAE 75W</div> <div>SAE 75W/SAE 80W</div> <div>+25°C</div> <div>SAE 80W</div> </div> <div> <div>-30°</div> <div>-20°</div> <div>-10°</div> <div>0°</div> <div>+10°</div> <div>+20°</div> <div>+30°</div> </div>

87117

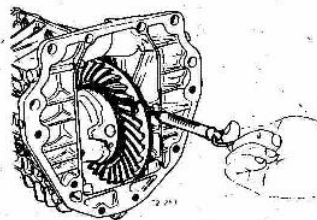
ADJUSTMENTS

Backlash



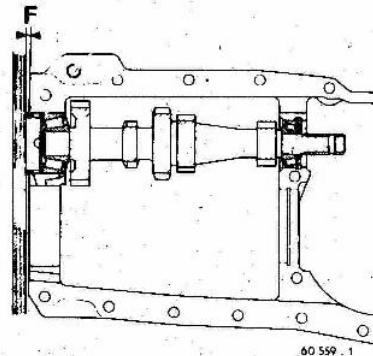
0,12 to 0,25 mm

Differential bearings



RE-USED BEARINGS	NEW BEARINGS
Free turning without play	Pre-load 1 to 3 da N

Primary shaft bearings - NG0 & NG2



Endplay
F = 0,02 to 0,12 mm

Pinion protrusion cannot be adjusted on these gearboxes

MATERIAL

Description	Packing	Part No.	Application
MOLYKOTE BR2 grease	1 kg tin	00 80 637 700	Sunwheel and clutch shaft splines.
THIXO CAF 4/60	100 g tube	77 01 404 452	Housing joint faces.
LOCTITE SCELBLOC	24 cc flagon	77 01 394 072	5th speed fixed gear.
LOCTITE FRENBLOC	24 cc flagon	77 01 394 071	Primary shaft nuts : - speedometer worm nut - reverse lever bolt.
GEARBOX OIL			All parts to be dipped.

PARTS WHICH MUST BE CHANGED AUTOMATICALLY AFTER EACH DISMANTLING

- All paper gaskets
- All lip-type oil seals
- All differential housing bolts
- Speedometer worm nut
- All rollpins
- Reverse lever bolt
- Planet wheel shaft retaining collar in NG2 and NG3
- Clutch housing bearing
- All snap rings
- Thrust pad guide tube
- Primary shaft nut

SPECIFICATIONS

SPECIAL POINTS

- The 5th speed fixed gear and hub must be bonded with Loctite Scelbloc or equivalent.
- The primary and secondary shaft nuts and reverse lever bolt must be bonded with Loctite FRENBLOC or equivalent.
- There are two possible methods of fitting the 3rd/4th gear cluster.
- NG3 crown wheel and pinion sets may have their teeth machined in two different ways but either set may be fitted to any NG3 gearbox.

NGO RATIOS

Suffix	Vehicle	Final drive	Speedo drive	1st	2nd	3rd	4th	Rev.
001	1340 1360	9/34	5/17	11/42	17/37	22/31	34/33	$\frac{12}{37}$ 19
002	1350						33/34	
003	1340 1360		6/20				34/33	
004	1362						33/34	
006	1271	9/31	6/18				34/33	
009	1344 1354	9/34	6/20				33/34	
010	1362						34/33	
011	1341 1351		5/17				33/34	
015	1350						34/33	
016	1344 1354	9/31	6/18				$\frac{11}{39}$ 23	
019	1271	9/34	6/20					
020	1340 1350 1360 2350	9/32	5/16					
	021							1340 1350 1360
023	1340 1350 2350	9/34	5/17					
	025						1344 1354 2354	
026	1344 1354	9/31	6/18					

SPECIFICATIONS

NGO RATIOS (continued)

Suffix	Vehicle	Final drive	Speedo drive	1st	2nd	3rd	4th	Rev.
034	1340 1350 1360 2350	9/32	5/16	11/45	17/37	22/31	34/33	$\frac{11}{39}$ 23
035	1340 1350 1360							
037	1340 1350 2350	9/34	5/17					
039	1344 1354 2354	9/31	6/18					
040	1344 1354							

SPECIFICATIONS

NG1 RATIOS

Suffix	Vehicle	Final drive	Speedo drive	1st	2nd	3rd	4th	5th	Rev.
002	1340 1350 1360	9/34	5/17						$\frac{12}{37}$ 19
003	1362		6/20						
006	1344 1354	9/31	6/18						
007	1276	9/34	6/20						
009	1341 1351								
010	1344 1354								
012	1340 1350 1360		5/17						
013	1362		6/20						
014	1344 1354	9/31	6/18						
018	1276	9/34	6/20						
022	1340 1350 1360 2350	9/32	5/16	11/42	17/37	22/31	33/34	36/31	$\frac{11}{39}$ 23
023	1340 1350 1360								
024	1340 1350 2350	9/34	5/17						
027	1341 1351	9/31	6/19						
028	1341 1351 1342	9/34	6/20						
029	1341 1351	9/31	6/19						
030	1342	9/34	6/20						
031	1344 1354 2354	9/31	6/18						
032	1344 1354								
033	1362								
034	1342 1352 1362	9/34	6/20						

SPECIFICATIONS

NGI RATIOS (continued)

Suffix	Vehicle	Final drive	Speedo drive	1st	2nd	3rd	4th	5th	Rev.
040	1271	9/29	8/23	11/45	17/37	22/31	34/33	37/29	$\frac{11}{39} 23$
041	1341 1351 1361	9/31	6/19						
046	1344 1354		6/18	11/42					
048	1341 1351 1361		6/19						
051	1340 1350 1360 2350	9/32	5/16						
052	1340 1350 1360								
053	1340 1350 2350	9/34	5/17						
054	1341 1351		6/20						
055	1341 1351		5/17						
056	1344 1354	9/31	6/18						
057	1342 1352 1362	9/34	6/20						
060	1276	9/34	6/20						
061	1344 1354 2354	9/31	6/18	34/33			37/29		

SPECIFICATIONS

NG2 RATIOS

Suffix	Vehicle	Final drive	Speedo drive	1st	2nd	3rd	4th	Rev.
000	1277 1272	9/34	6/20	11/42	17/37	22/31	34/33	$\frac{12}{37}$ 19
017	1277 1272							$\frac{11}{39}$ 23
018	1277							
042	1277	9/34	6/20	11/45				

NG3 RATIOS

Suffix	Vehicle	Final drive	Speedo drive	1st	2nd	3rd	4th	5th	Rev.					
000	1363	9/34	6/20	11/42	17/37	22/31	33/34	36/31	$\frac{12}{37}$ 19					
001	1345													
005	1277 1272													
008	1270	9/32	6/18						11/42	17/37	22/31	33/34	36/31	$\frac{11}{39}$ 23
010	1272	9/34	6/20											
011	1345													
015	1277	9/31	6/18											
016	1277 1272	9/34	6/20											
019	1270	9/32	6/18											
020	1343 1353	9/31												
021	1343 1353 1363	9/34	6/20											
025	1365													

SPECIFICATIONS

NG3 RATIOS (continued)

Suffix	Vehicle	Final drive	Speedo drive	1st	2nd	3rd	4th	5th	Rev.
039	1366	9/31	6/18	11/45	17/37	22/31	34/33	37/29	$\frac{11}{39}$ 23
042	1345 1355	9/34	6/20						
043	1345 1355 1365								
044	1343 1363								
045	1270	9/32	6/18						
047	1277	10/31	8/22						
062	1277	9/34	6/20						
063	1343 1353	9/31	6/18						
064	1363	9/34	6/20						

SPECIFICATIONS

NG5 RATIOS

Suffix	Vehicle	Final drive	Speedo drive	1st	2nd	3rd	4th	5th	Rev.
000	1223 Alpine	8/31	6/14						$\frac{12}{37}$ 19
001	1223 Coupe	8/33							
002	1223 Gordini	8/31							
003	122B	9/34	6/13	11/42	17/37	22/31	33/34	36/31	$\frac{11}{39}$ 23
004	122B								
005	122B								
006	122B								
007	1223 Alpine	8/31	6/14						$\frac{11}{39}$ 23
008	1223 Coupe	8/33							
009	1223 Gordini	8/31							
010	122B	9/34	6/13	11/45					
011	122B			11/42					
012	122B								
013	122B								

NG RATIOS - U.S.A. and CANADA
NGO

SPECIFICATIONS

Suffix	Vehicle	Final drive	Speedo drive	1st	2nd	3rd	4th	Rev.
012	1341 1348 1351 1358	9/34	6/20	11/42	17/37	22/31	34/33	$\frac{12}{37}$ 19
024	1341 1348 1351 1358							
038	1341 1348 1351 1358	9/31	6/19	11/45				$\frac{11}{39}$ 23
041	1341 1348 1351 1358			11/42				

NG1

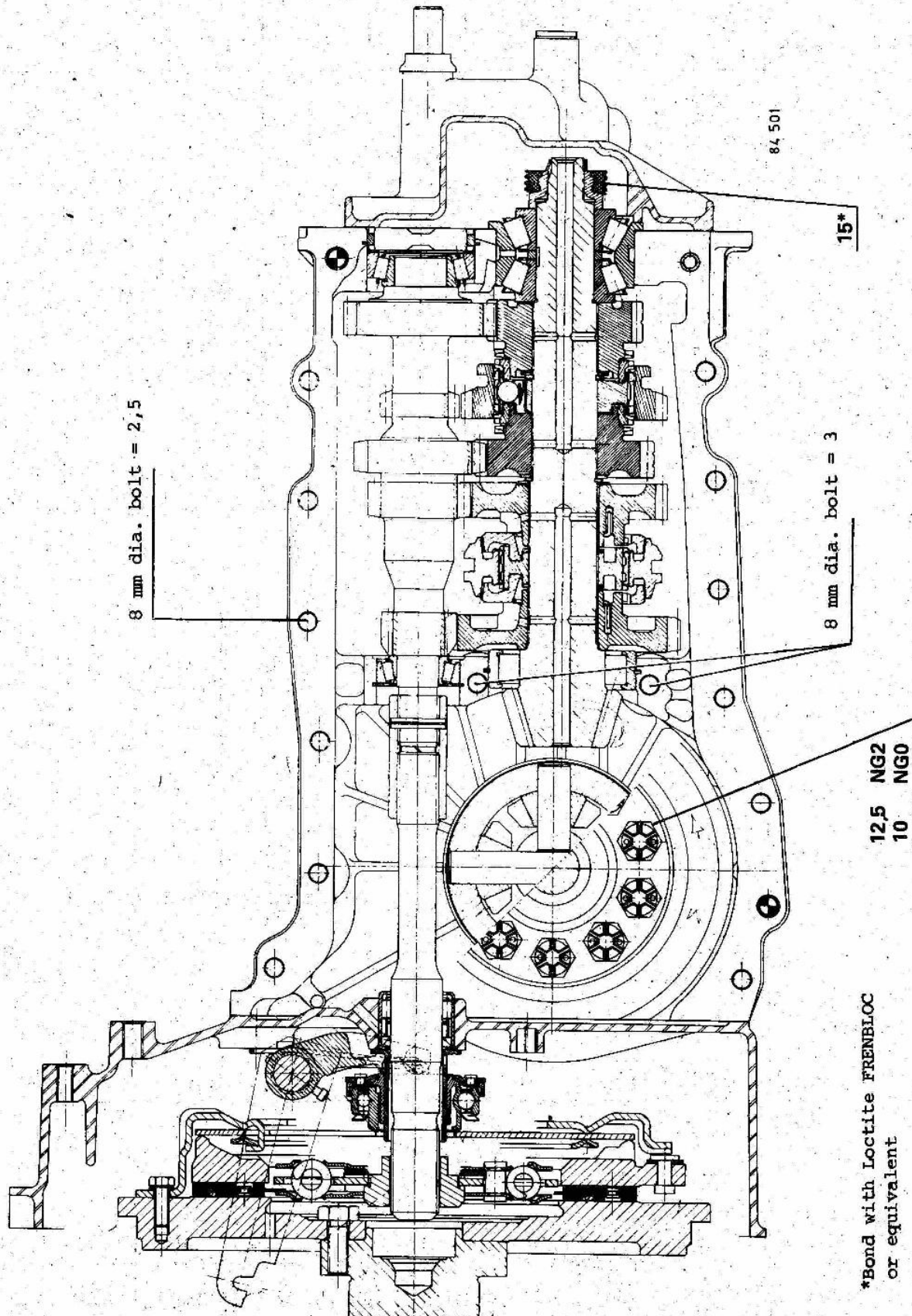
Suffix	Vehicle	Final drive	Speedo drive	1st	2nd	3rd	4th	5th	Rev.
004	1341 1348 1351 1358	9/34	6/20	11/42	17/37	22/31	33/34	36/31	$\frac{12}{37}$ 19
030	1341 1348 1351 1358								
037	1368	8/33	5/18						$\frac{11}{39}$ 23
055	1341 1348 1351 1358	9/34	5/17	11/45					
058	1368	8/33	5/18						

NG3

Suffix	Vehicle	Final drive	Speedo drive	1st	2nd	3rd	4th	5th	Rev.
065	136A	9/34	6/20	11/45	17/37	22/31	33/34	36/31	$\frac{11}{39}$ 23

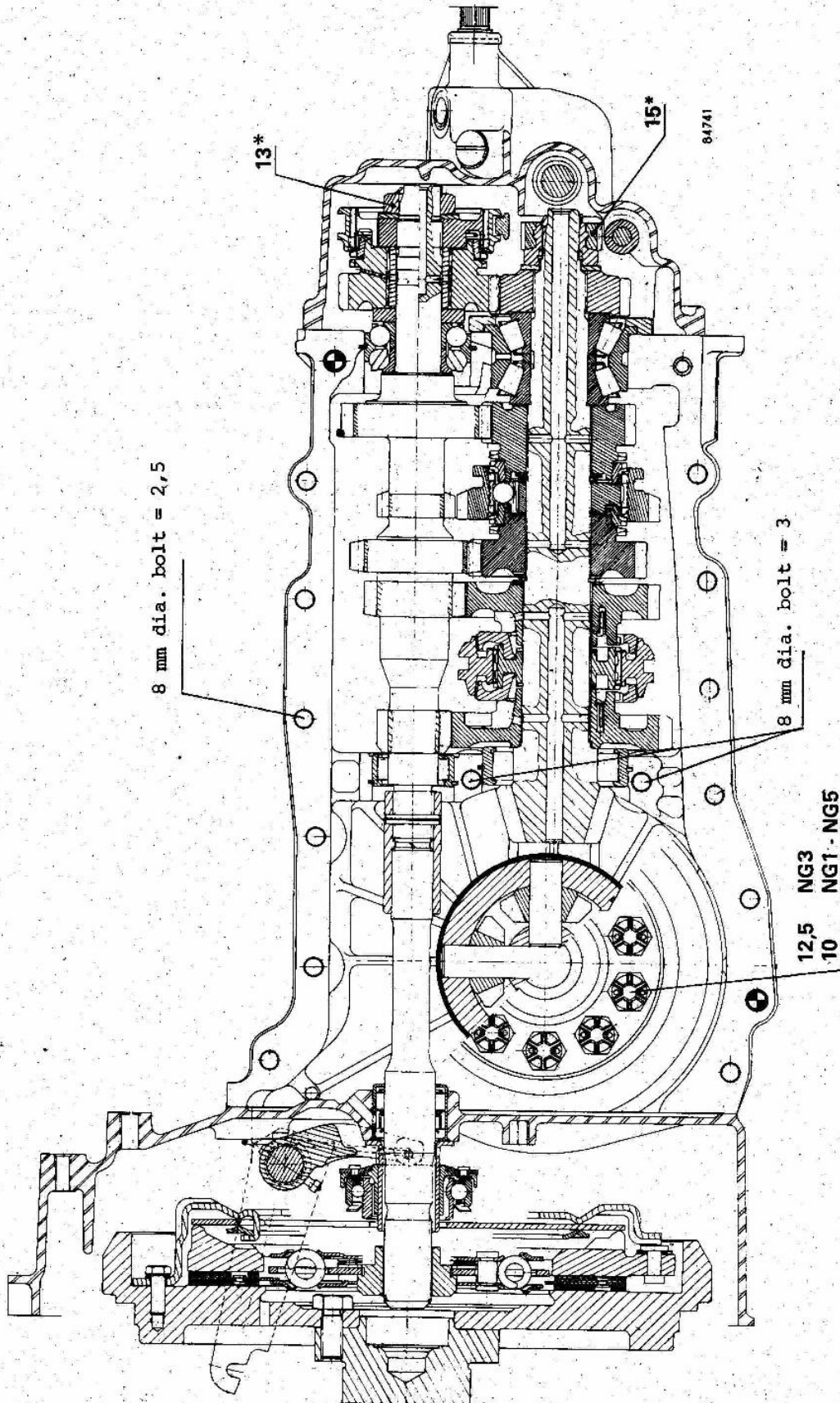
SPECIFICATIONS

SECTIONAL VIEW and TIGHTENING TORQUES in m. da N NGO and NG2



SPECIFICATIONS

SECTIONAL VIEW and TIGHTENING TORQUES in m. da N
NG1 - NG3 - NG5



*Bond with Loctite FRENBLOC
or equivalent

SPECIFICATIONS

MATCHED COMPONENTS

- Crown wheel and pinion
- Synchro hubs and sliding gears

Secondary shaft

- Crown wheel and pinion matching

The crown wheel and pinion are lapped together in manufacture.

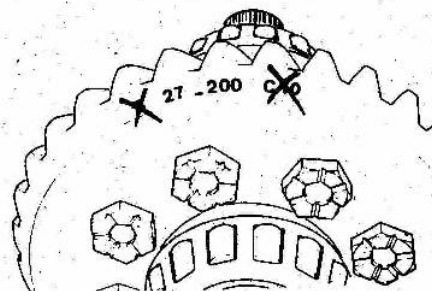
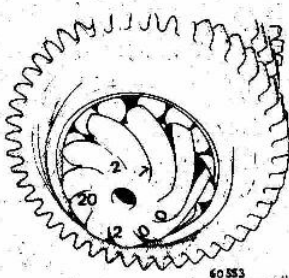
They must remain together as a pair.

If one mating part is changed, the other must be changed as well.

A common reference is stamped on the crown wheel and pinion.

Example : 27-200 (27th crown wheel and pinion machined on day 200 in the manufacturing year).

DO NOT TAKE ANY NOTICE OF OTHER LETTERS OR NUMBERS ON THE CROWN WHEEL.



SEPARATING THE CASINGS

DISMANTLING

SPECIAL TOOLS

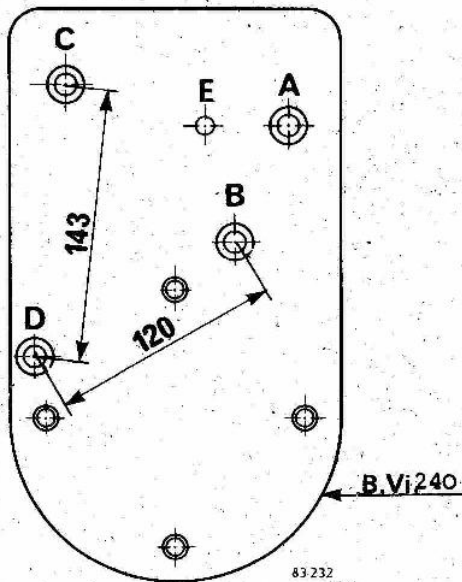
Methods Ref.	Description	Essential	Useful
B.Vi. 204-01	"C" wrench	■	
B.Vi. 240	Support	■	

Support B.Vi.240 must be modified to accept the gearbox casing.

Drill one 8,5 mm dia. hole (D) located as per the dimensions shown below.

Then weld a spacer 8,5 mm bore x 16 mm O/D x 37 mm thick to the plate at D.

Use fixing points B, C and D.



- Attach the gearbox to support B.Vi.240.

Remove :

- the clutch housing.

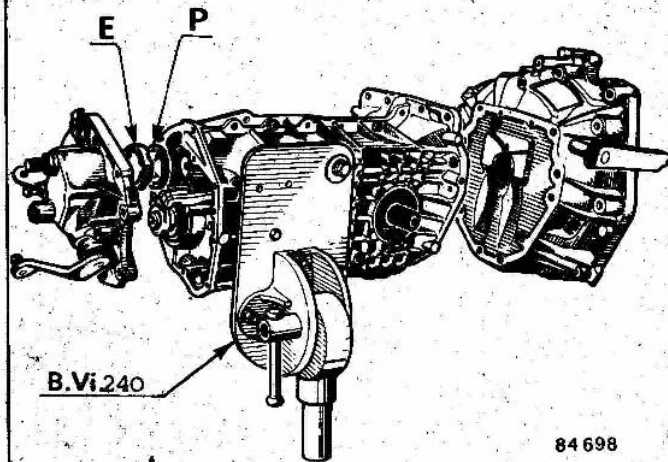
NG1 - NG3

- Select 3rd or 4th speed to prevent the 5th speed interlocking ball from falling into the gearbox.

NGO - NG1 - NG2 - NG3

- The rear casing

Remove and keep spacer (E) as well as the preload adjusting shims (P) for the primary shaft bearings (NGO - NG2).



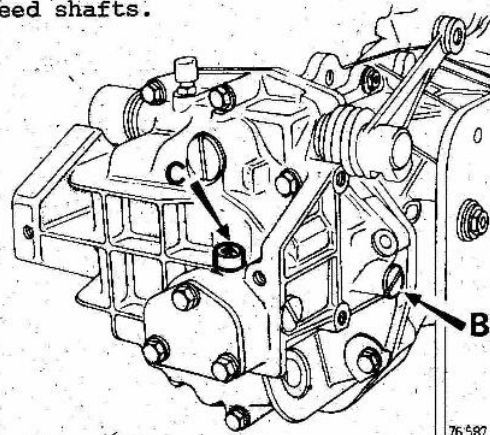
NG5

- Select neutral.

Remove :

- plug (B) and the spring and ball for the 5th speed hard spot

- plug (C), the plunger and interlocking ball between the 5th speed and 3rd/4th speed shafts.



SEPARATING THE CASINGS

DISMANTLING

NG5

Remove the rear casing.

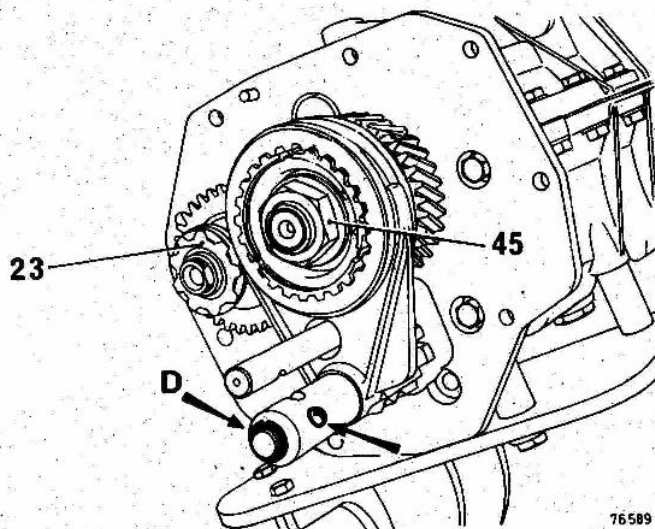
Retain the 5th speed selector fork ball.
Select 2 speeds (5th and 3rd or 4th).

Unlock and loosen : nuts 45 and 23
(wrench B.Vi.204-01).

Remove circlip (D) from the end of the
reverse shaft.

Remove :

- the 5th speed synchro assembly (hub/
sliding gear) and its fork
- the 5th speed gears
- and the spacer plate.



76589

ALL TYPES

Separate the casings.

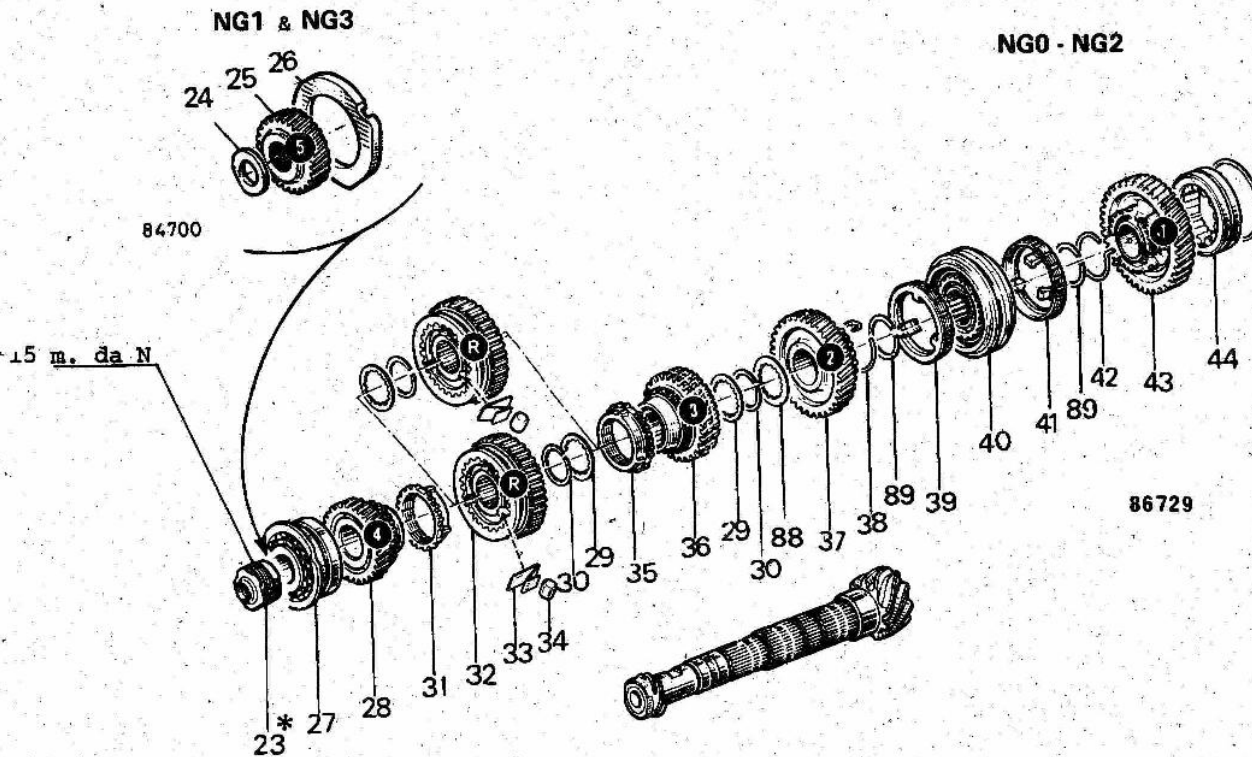
SECONDARY SHAFT

DISMANTLING

The housings must be separated prior to this operation.

SPECIAL TOOLS	Methods	Description	Essential	Useful
	Ref.			
	B.Vi. 204-01	32 mm "C" wrench	■	

EXPLODED VIEW



* Bond with Loctite FRENLOC or equivalent

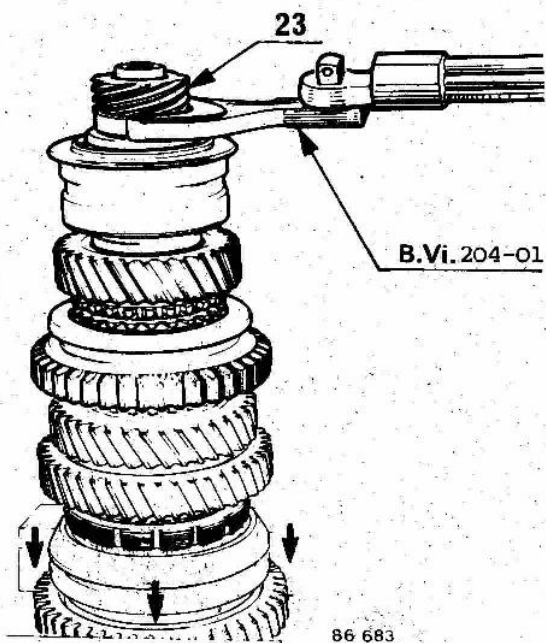
SECONDARY SHAFT

DISMANTLING - REASSEMBLING

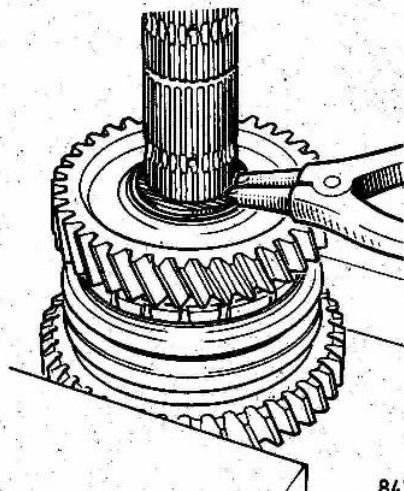
Dismantling details

- Place the secondary shaft in a vice, holding it by the 1st speed gear.
- Select 1st speed (arrows).
- Unlock and unscrew worm nut (23) using "C" wrench B.Vi.204-01.

NG1 - NG3 : Use an extractor to remove the 5th speed gear.



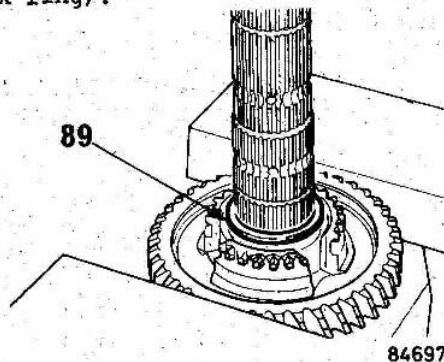
The hubs are a sliding fit preventing from moving endwise by snap rings; use a pair of circlip pliers to extract them.



- Before removing snap ring (89) in front of the 1st speed gear, take the secondary shaft out of the vice as it is no longer held.

Warning :

The bearing roller cages (44) are not held by the secondary shaft (no inner track ring).

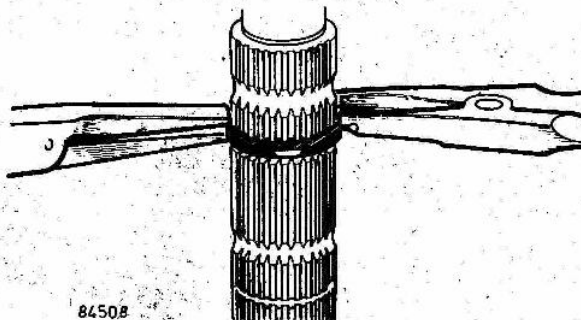


REASSEMBLING

Special points concerning reassembly

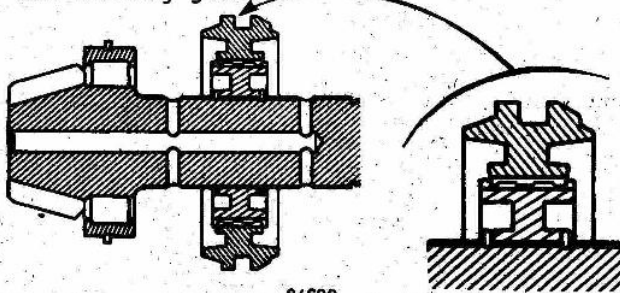
New snap rings must always be used when reassembling.

When fitting new snap rings, use a pair of circlip pliers to open the ends and a pair of flat nose pliers so as not to bend the snap rings.



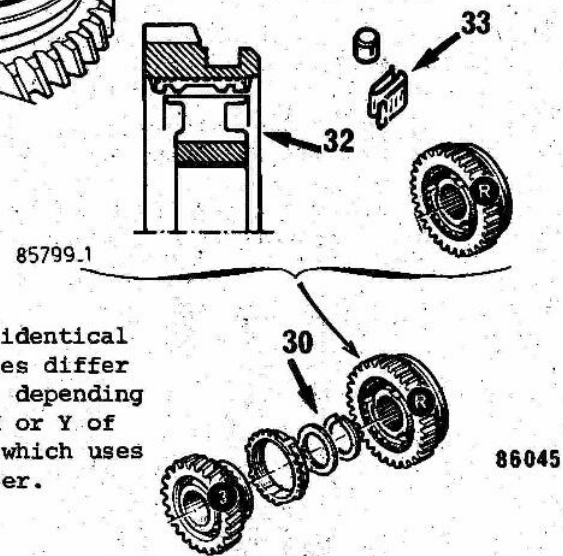
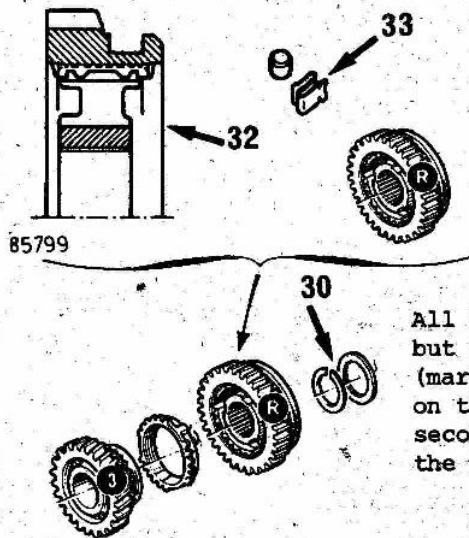
The 1st/2nd and 3rd/4th speed hubs are free turning on the secondary shaft; find the position where they slide the easiest on the shaft.

Direction for fitting 1st/2nd speed hub and sliding gear.



REASSEMBLING

1st ASSEMBLY

$$Y = 33,5 \text{ mm}$$


All the parts are identical but the 2 assemblies differ (marks 1, 2 and 3) depending on the dimension X or Y of secondary shaft S which uses the same Part Number.

1st Assembly

Fit :

- 21

SECONDARY SHAFT

REASSEMBLING

2nd Assembly

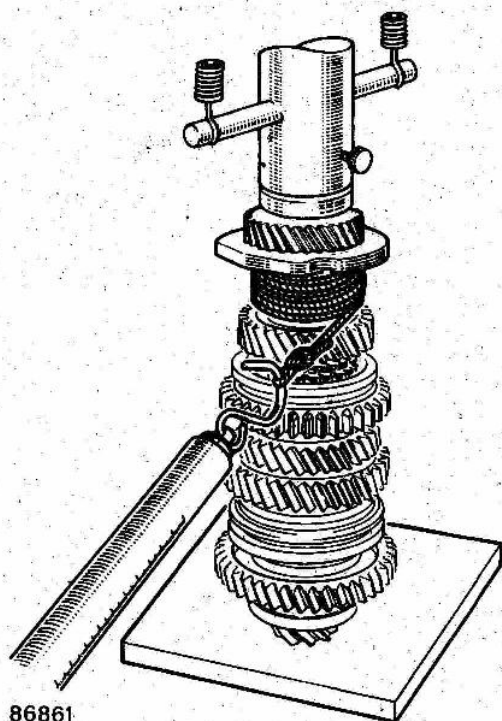
The 5th speed fixed gear (25) is fitted without any product and is free turning up to three-quarters of its splines on the secondary shaft. Place the assembly in a press so as to be able to press only on the 5th speed gear to complete the fitting process.

Wrap a piece of cord round the outer track ring for the double taper roller bearing.

Using a balance, measure the preload which should be between 1,5 and 4 da N.

If the value read on the balance is too low, continue to press on the gear.

The press loading on the gear must not be less than 100 kg nor more than 1500 kg.



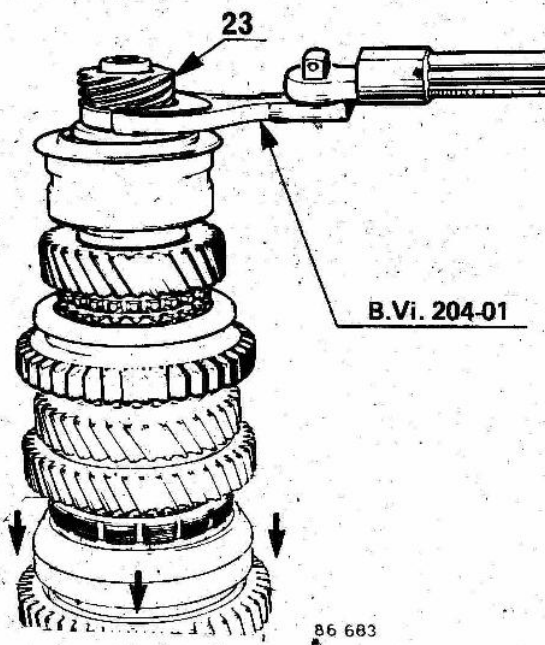
ALL TYPES

Select 1st speed (arrows).

Smear the threads in nut (23) with Loctite FRENBLOC or equivalent.

Screw on nut (23), torque tighten it using "C" wrench B.Vi.204-01 then lock it.

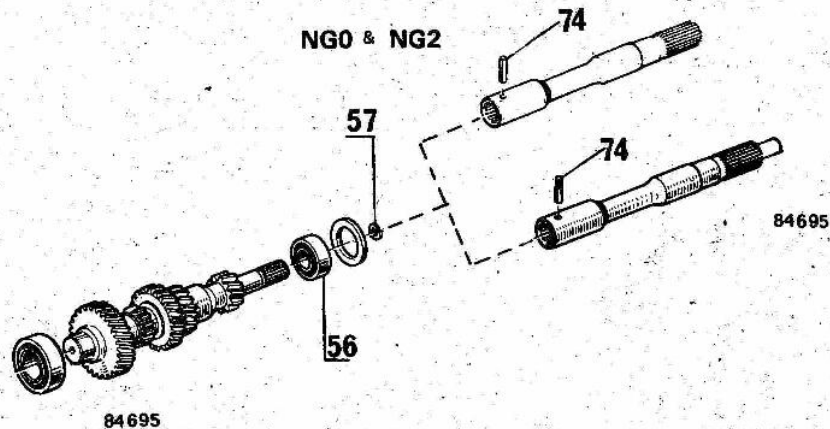
Check and, if necessary, adjust the differential bearing preload then refit the housings, adjusting the primary shaft bearing preload for gearboxes NGO and NG2 and the backlash on all gearboxes.



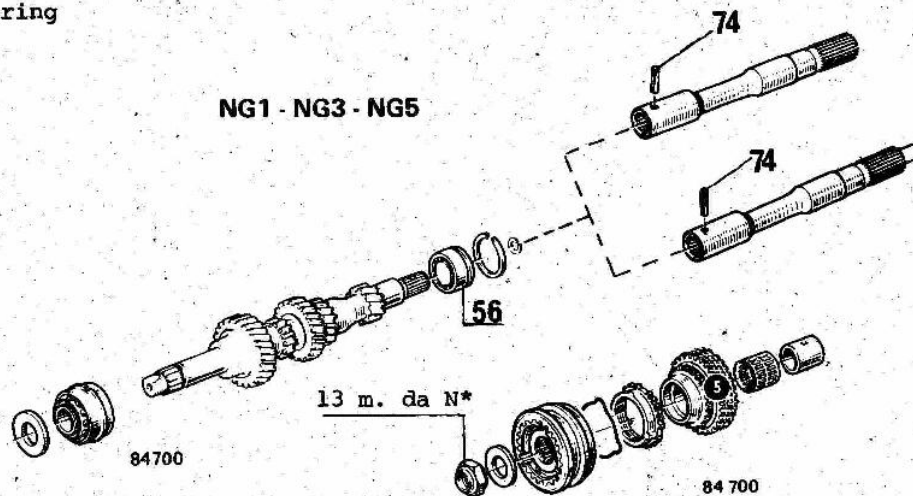
PRIMARY SHAFT

DISMANTLING

The housings must be separated prior to this operation.



56 with inner track ring



56 without inner track ring

* Bond with Loctite FRENLOC or equivalent

SPECIAL TOOLS

Methods Ref.	Description	Essential	Useful
B.Vi.39	Drift for 4 mm dia. rollpins	■	

DISMANTLING

Separate the clutch shaft and primary shaft by punching out rollpin 74 with drift B.Vi.39.

Remove washer 57.

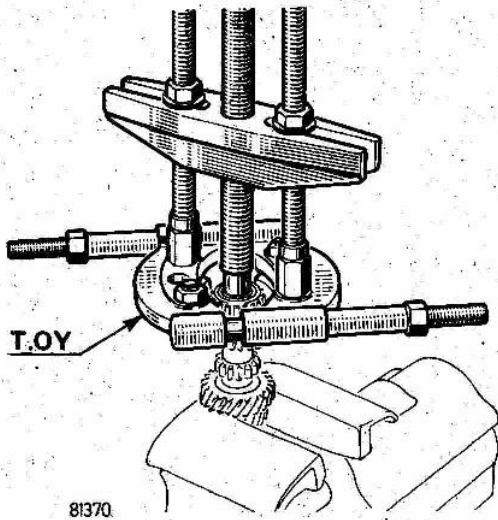
NG1 - NG3

The 5th speed hub may have been fitted tight, if so, use an extractor and take the load under the 5th speed gear.

PRIMARY SHAFT

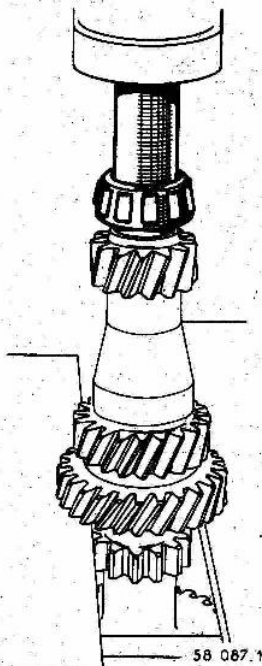
DISMANTLING

Place the primary shaft in a vice fitted with soft jaws; extract the bearings using the WILMONDA T.O.Y extractor.



REASSEMBLING

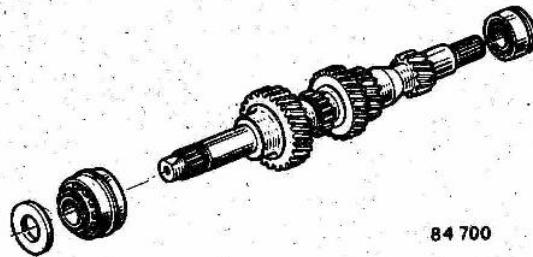
Press on the new bearings.



There is no adjustment of the teeth relationship on the primary shaft and secondary shaft.
Adjust the differential bearing preload.

NG1 and NG3

The primary shaft is fitted with a double row ball bearing at the 5th speed gear end and a roller bearing at the clutch shaft end.



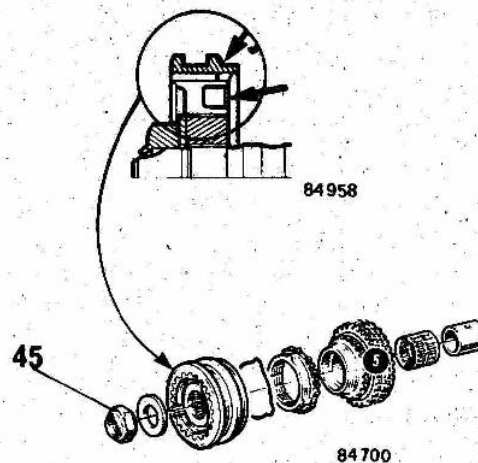
1st assembly

Fit the 5th speed assembly to the shaft, bond the hub with 3 drops only of Loctite SCELBOC or equivalent. An excessive amount of Loctite could cause the bearing to stick.

2nd assembly

The hub is fitted without any product using the press and taking the load on the 4th speed gear.

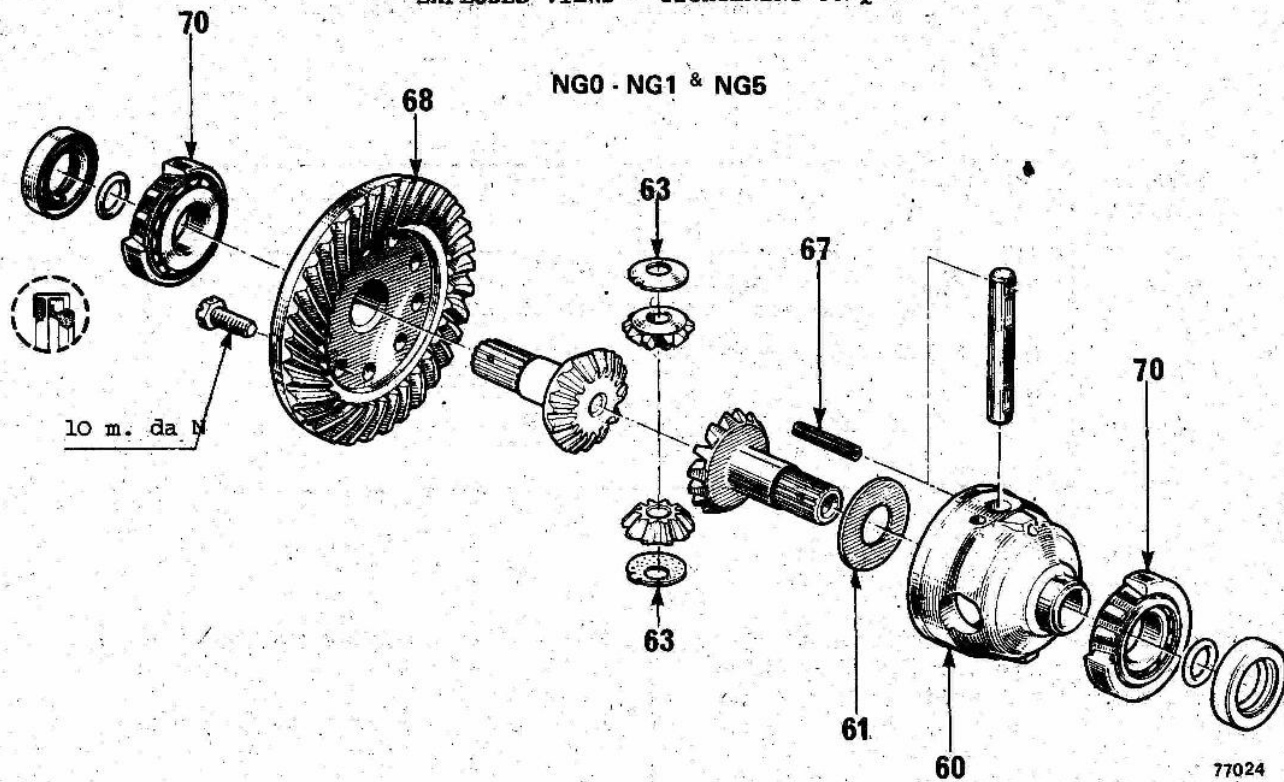
The press load must not be less than 100 kg nor more than 1500 kg.



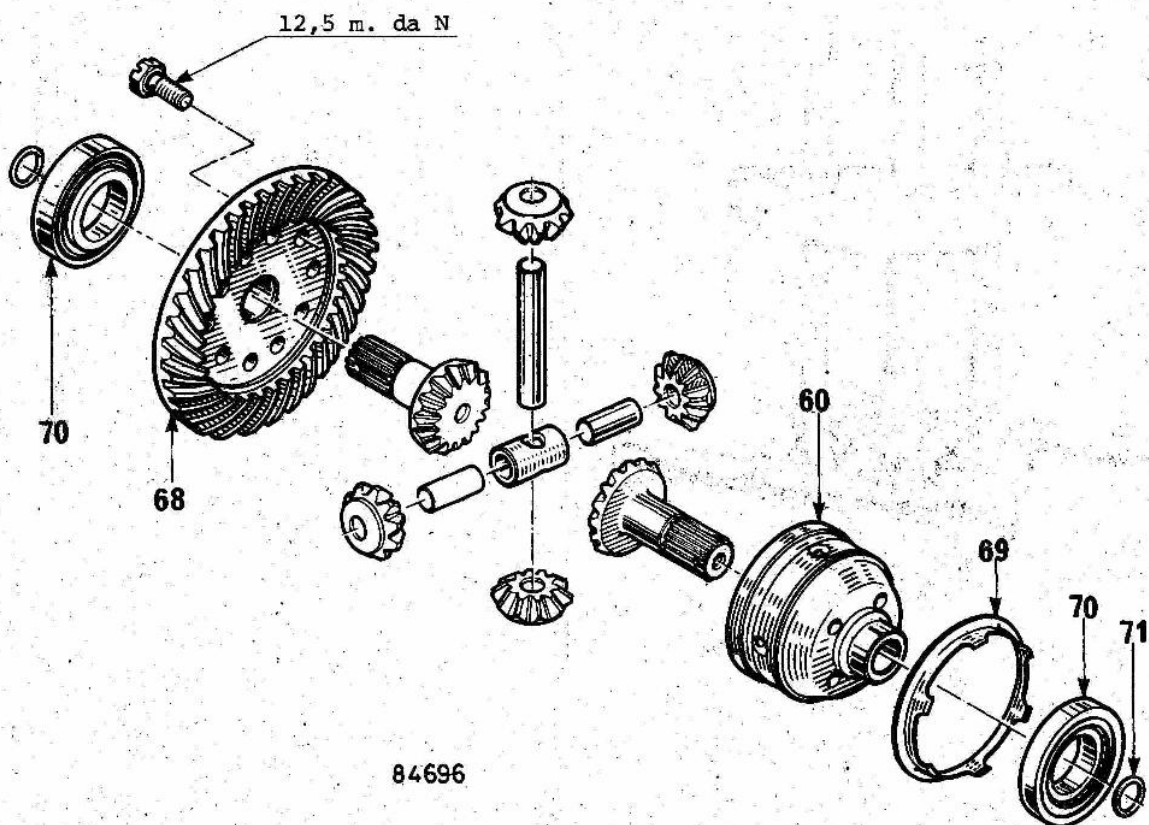
NG1 and NG3 - all assemblies

Smear the thread in nut 45 with Loctite FRENBOC or equivalent, torque tighten and lock it.

EXPLODED VIEWS - TIGHTENING TORQUES



NG2 & NG3



DIFFERENTIAL

DISMANTLING

The housings must be separated prior to this operation.

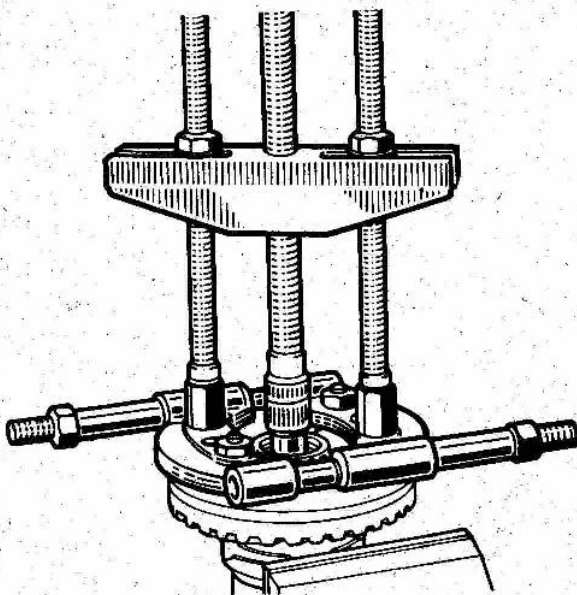
SPECIAL TOOLS

Methods Ref.	Description	Essential	Useful
B.Vi. 31-01	Set of drifts for 5 mm dia. rollpins in NGO - NG1 and NG5	■	
B.Vi. 807-01	Castellated ring wrench	■	
B.Vi. 883	Press tool for closing differential collar in NG2 and NG3	■	

NGO - NG1 - NG5

Remove all the bolts except two diametrically opposite from crown wheel 68 (self-locking bolts which cannot be re-used).

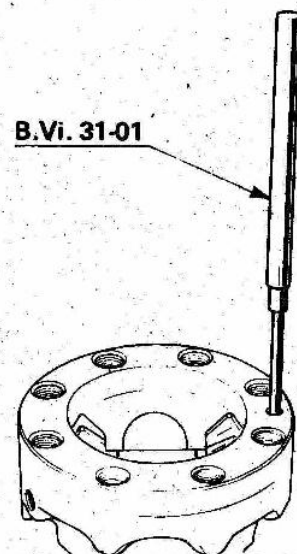
Extract bearings 70 using WILMONDA T.OY extractor.



Remove the remaining two bolts and crown wheel 68.

Punch out rollpins 67 using drift B.Vi.31-01.

Separate the various parts.



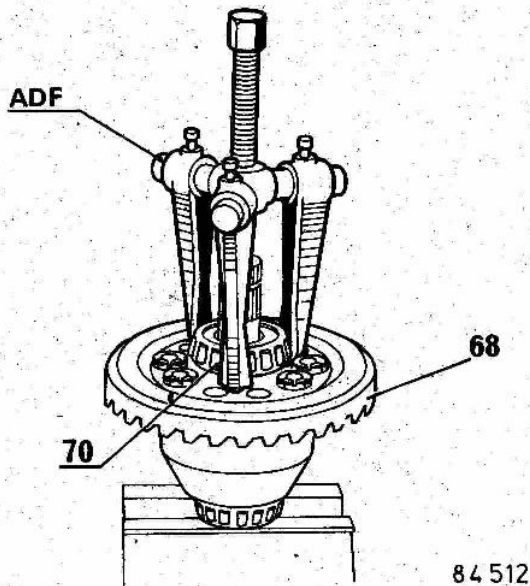
72 851

DISMANTLING

NG2 - NG3

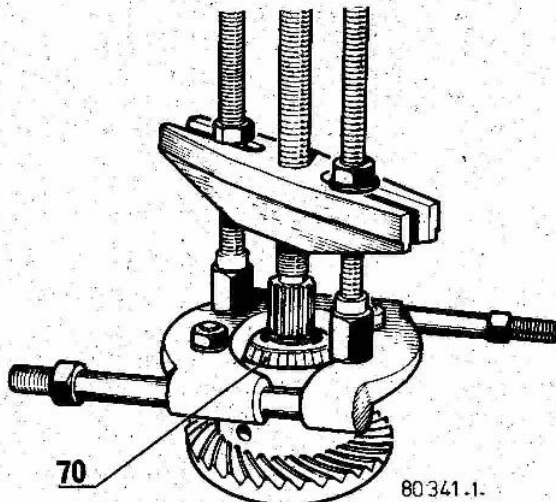
Remove four bolts from crown wheel 68 (self-locking bolts which cannot be re-used).

Extract bearing 70 from the crown wheel end using a WILMONDA - ADF extractor.



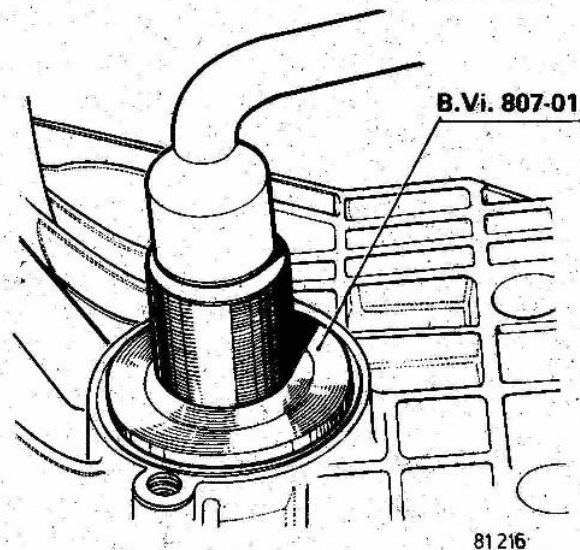
Collar 69 must be irretrievably destroyed if the sunwheels and planet wheels are to be removed.

Extract the bearing from the differential housing end using a WILMONDA T.OY extractor.

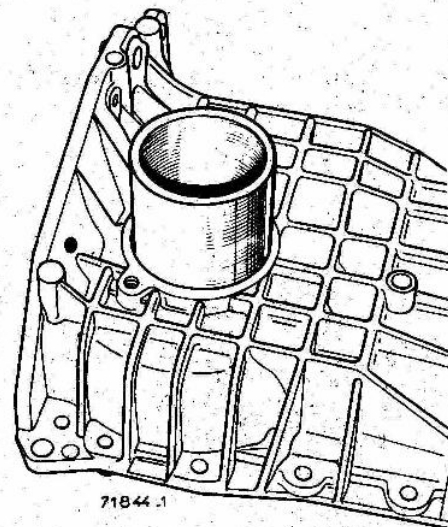


All types

Remove ring nuts 6 from the housings using castellated wrench B.Vi.807-01.



Use a piece of tube of 71 mm o/d to tap out the bearing outer track rings.



DIFFERENTIAL

REASSEMBLING

NGO - NG1 - NG5

Fit the following into the differential housing :

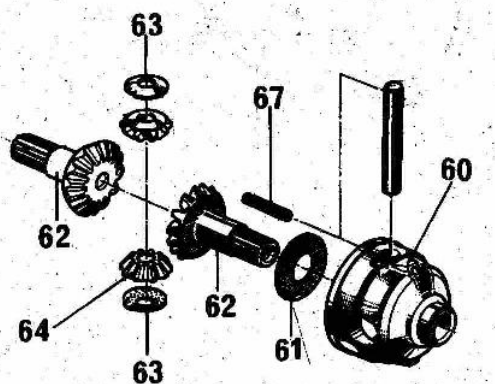
- washer 61 with its oil groove facing the sunwheel.

Use the washer 1,96 to 2 mm thick.

(The washer 2,03 to 2,07 mm thick will only be used when the play in 62 - 64 is excessive.)

- 64 and 63 (locking tag in the hole in the housing).

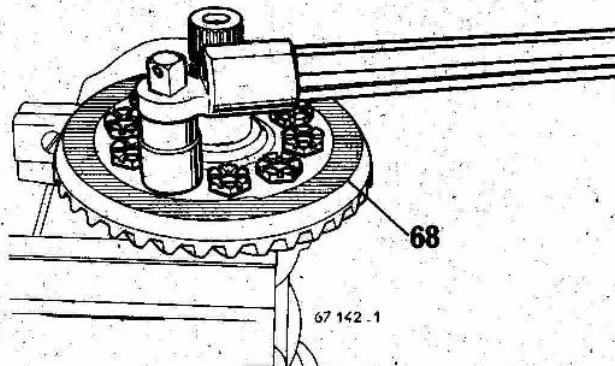
Fit rollpin 67 in position; drive it about 5 mm down inside the housing using drift B.Vi.31-01.



All types

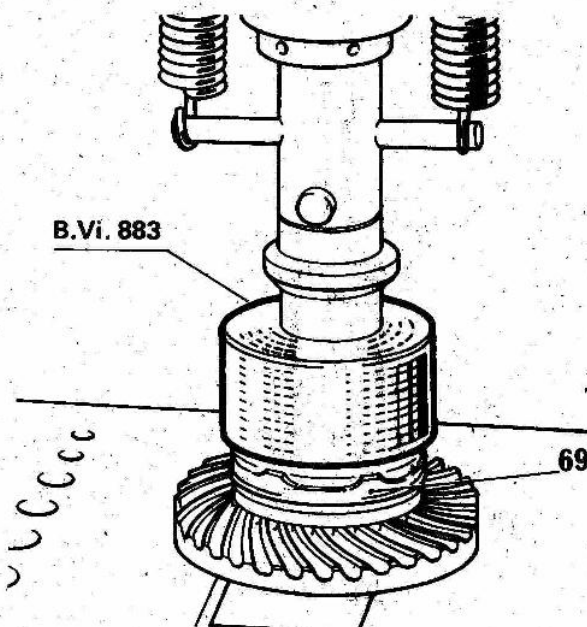
Assemble crown wheel 68 to housing 60 using new self-locking bolts.

Torque tighten the bolts.



NG2 - NG3

Place collar 69 over differential housing 60 and press into position using press tool B.Vi.883.



All types

The bearing on the crown wheel side has a bore which is smaller than that in the housing.

Press on the new bearings.

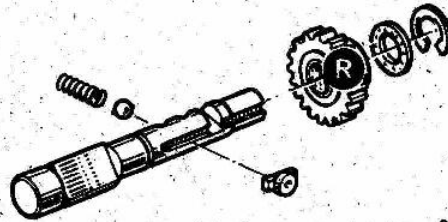
Fit the bearing outer track rings so that they are recessed slightly in relation to the casing inside face and fit the ring nuts taking care to screw the one at the housing end further in.

- Adjust the differential bearing preload.

- Then refit the housings, adjusting the primary shaft bearing preload for the NGO and NG2 gearboxes and the backlash for all gearboxes.

DISMANTLING

The housings must be separated prior to this operation.



84695

DISMANTLING

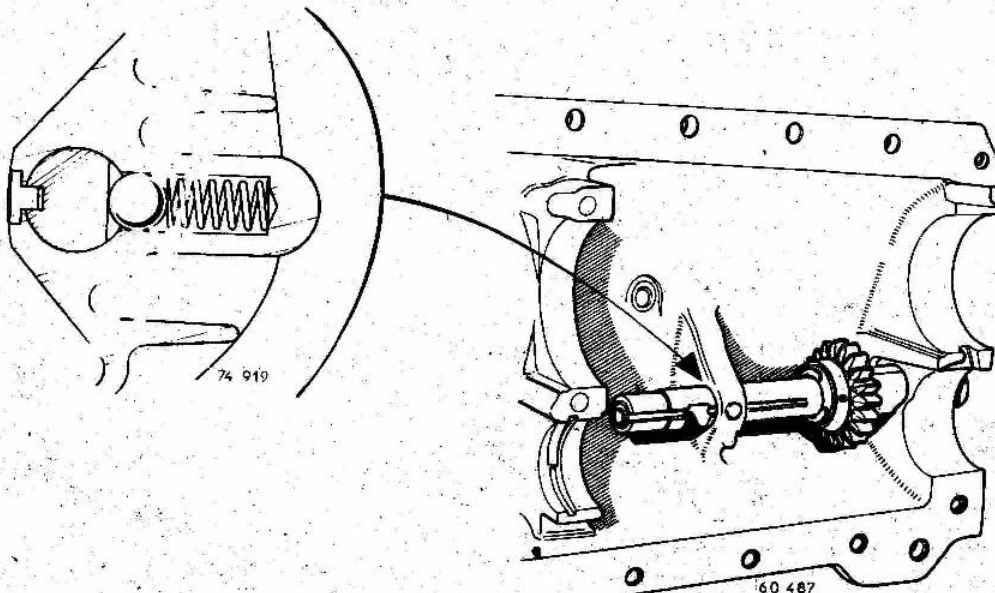
Remove the circlip holding the gear then withdraw :
the shaft, gear, friction washer and guide.

REASSEMBLING

In the half-casing :

- insert the interlocking spring and ball
- insert the shaft, fit the gear (hub facing differential) followed by the friction washer (bronze side facing the gear)
- insert the guide inside the bore and push the shaft right in
- fit the gear retaining clip.

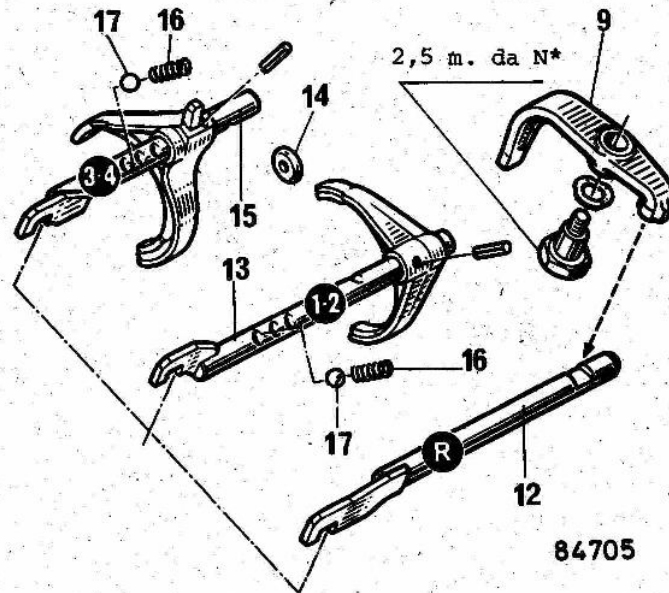
Reassemble the housings.



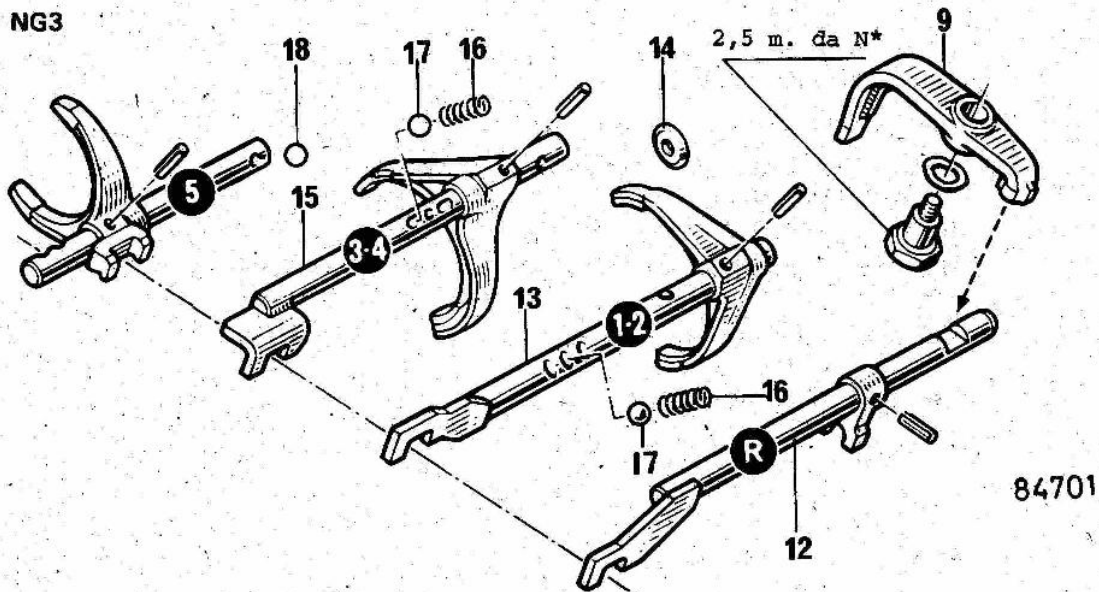
GEAR SELECTOR MECHANISM

EXPLODED VIEWS - TIGHTENING TORQUES

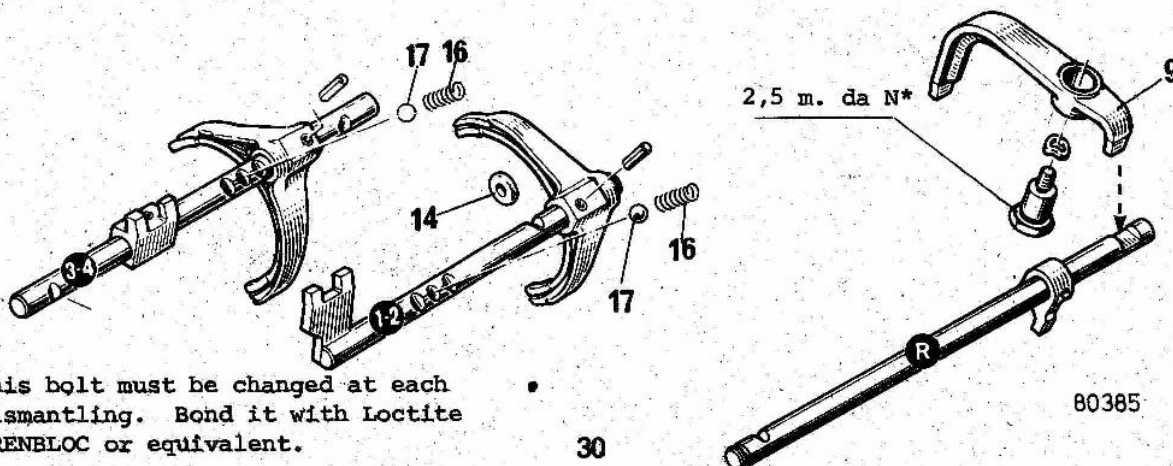
NG0 & NG2



NG1 & NG3



NG5



* This bolt must be changed at each dismantling. Bond it with Loctite FRENBLQC or equivalent.

GEAR SELECTOR MECHANISM

DISMANTLING

The housings must be separated prior to this operation.

SPECIAL TOOLS

Methods Ref.	Description	Essential	Useful
B.Vi. 31-01	Set of drifts for 5 mm dia. rollpins	■	

DISMANTLING

Take out hard spot spring 16 and ball 17 as well as disc 14 between the selector shafts.

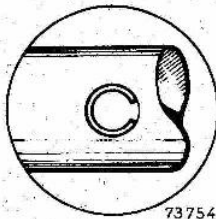
NG1 and NG3

Take out interlocking ball 18 between the 3rd/4th and 5th speed selector shafts.

REASSEMBLING

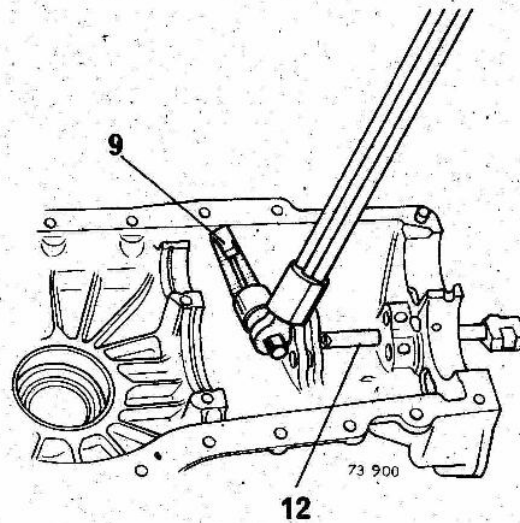
Special points

Make sure that the rollpins face the right way, the slot must face the rear casing.

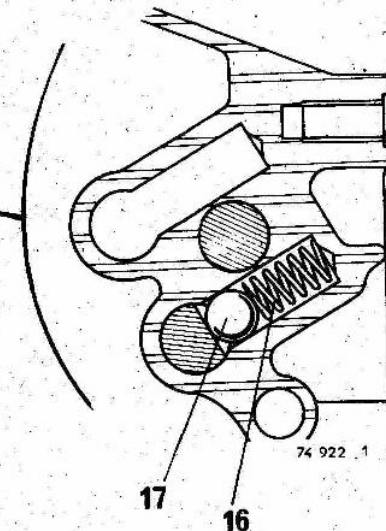
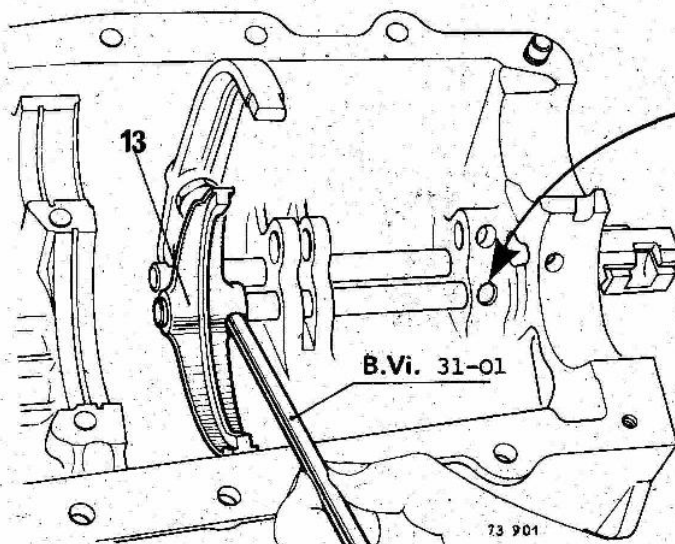


Insert in this order :

- selector shaft 12 and selector 9, torque tighten the bolt.



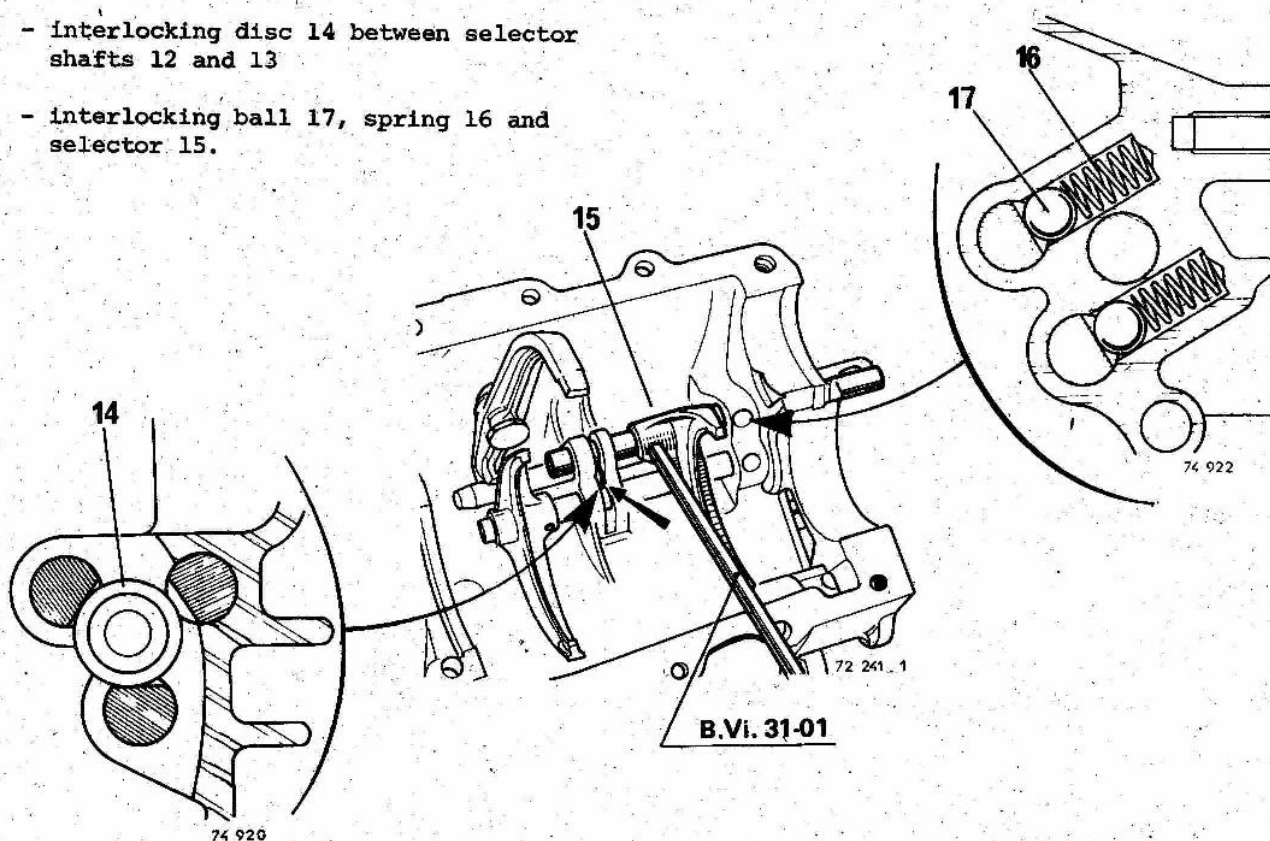
- 17, 16 & 13



GEAR SELECTOR MECHANISM

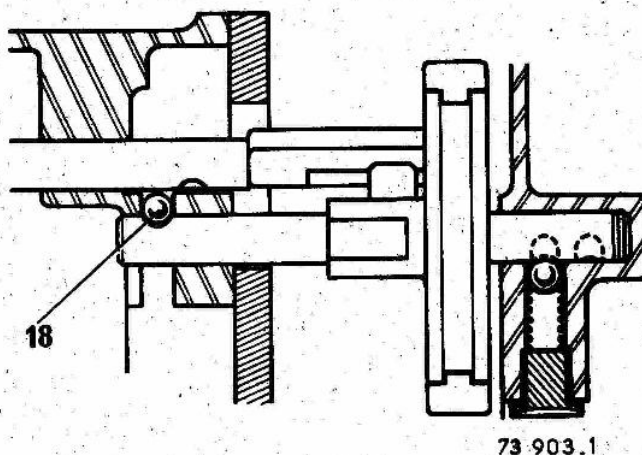
REASSEMBLING

- interlocking disc 14 between selector shafts 12 and 13
- interlocking ball 17, spring 16 and selector 15.



NG1 and NG3

- Insert interlocking ball 18 and the 5th speed shaft in the casing.
- Select 3rd or 4th speed to prevent the 5th speed shaft from moving.



All types

Reassemble the casings.

DIFFERENTIAL BEARING PRELOAD

SPECIAL
TOOLS

Methods Ref.	Description	Essential	Useful
B.Vi. 807-01	Castellated ring wrench	■	

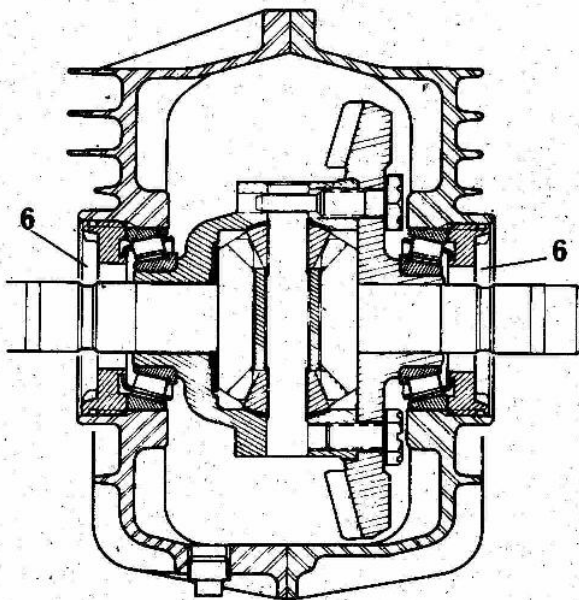
TIGHTENING TORQUES in m. da N

8 mm dia. stays : 3
8 mm dia. bolts : 2,5

Fit the differential in the casings without the final drive pinion and torque tighten the casing bolts.

Adjustment of the bearings is obtained by screwing or unscrewing ring nuts 6.

AT THIS STAGE DO NOT FIT THE NEW LIP-TYPE OIL SEALS TO THE DIFFERENTIAL RING NUTS .. They might be damaged by the sunwheels when the gearbox is re-opened for the following adjustments :



81378

There are two possibilities :

Bearings which may be used again :

The differential should turn without play.

- Screw in the ring nuts.
- Screw the ring nut on the differential housing side in slightly more so that greater backlash than normal is obtained for final assembly.

Stop screwing in the nuts when the differential assembly shows no sign of play.

This is the final adjustment.

Mark the position of the ring nuts in relation to each half-casing.

New bearings :

New bearings must be fitted with a preload.

Continue to screw in the nuts which has the effect of pushing the track rings towards each other :

- screw the ring nut on the differential housing side in slightly more so that greater backlash than normal is obtained for final assembly.

Stop screwing in the nuts when the differential becomes slightly hard to turn.

Check the preload.

ADJUSTMENT

DIFFERENTIAL BEARING PRELOAD

Checking preload : Rotate the differential several times to settle the bearings when they are new.

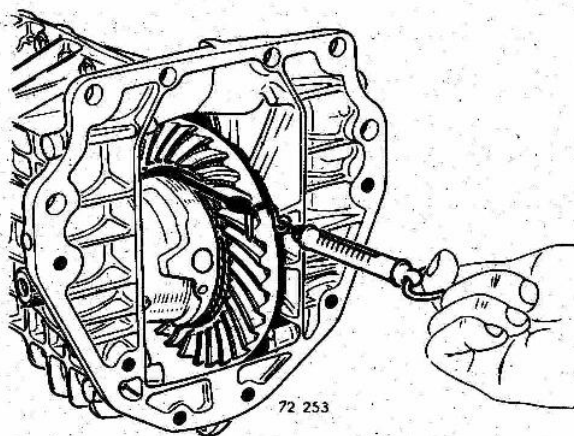
Wrap a piece of cord round the differential housing.

Pull on this cord using a spring balance.

The differential should turn under a load of between 1 and 3 da N.

This load is the amount necessary to ensure a constant rotating movement of the differential.

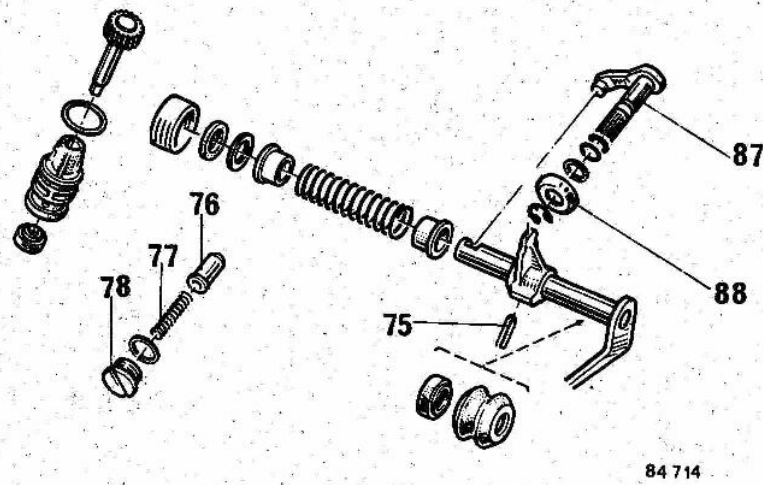
If the adjustment is incorrect, screw in the ring nut slightly on the housing side and re-check the preload.



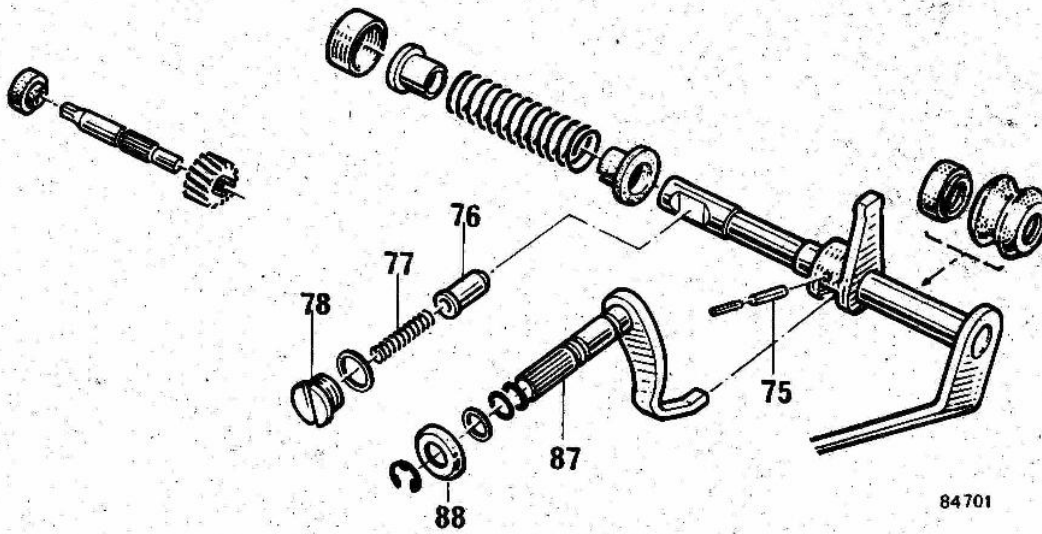
Adjustment of the primary shaft endplay in NGO and NG2 gearboxes and adjustment of the backlash are carried out during casing re-assembly.

EXPLODED VIEWS

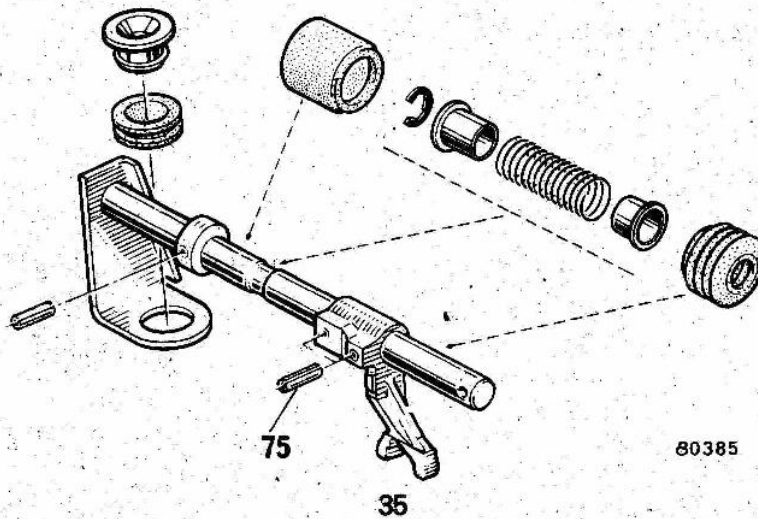
NG0 - NG2



NG1 - NG3



NG5



REAR CASING

DISMANTLING

SPECIAL TOOLS

Methods Ref.	Description	Essential	Useful
B.Vi. 606	Set of drifts for 7 mm dia. rollpins	■	
B.Vi. 905-02	Tool for changing speedo drive oil seal	■	

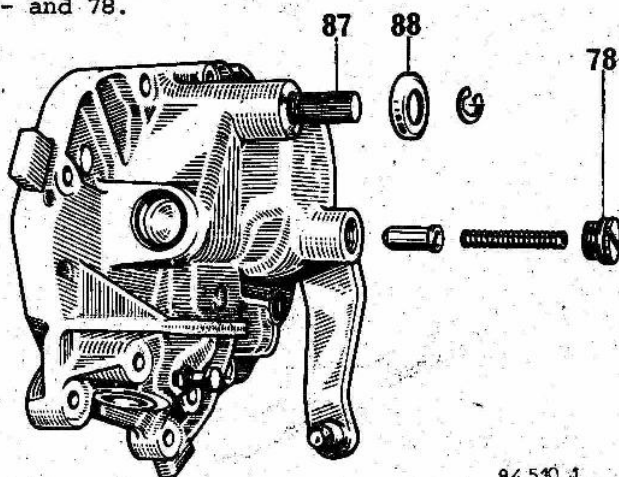
DISMANTLING

Special points

- Punch out rollpins 75 using drift B.Vi.606.

NGO - NG1 - NG2 - NG3

- 88 using a screwdriver
- and 78.



84 540 A.

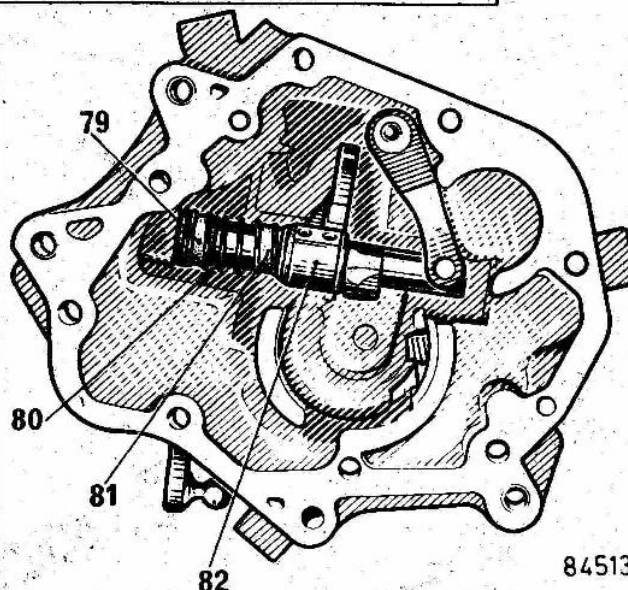
REASSEMBLING

- Deburr the shafts with fine emery cloth to prevent damaging the lip-type oil seals.
- Insert the lip-type oil seal in the casing.

NGO and NG2

Insert the following in the casing by sliding the shaft along :

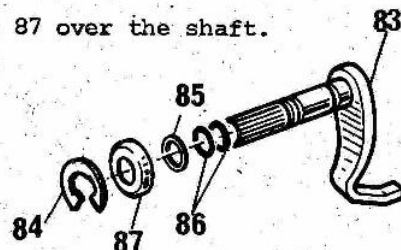
- 79, 80, 81 and 82.



84513

Insert the rollpin.

- shaft 83 with shim 85 and two "O" rings 86.
- Slip 87 over the shaft.
- 84.

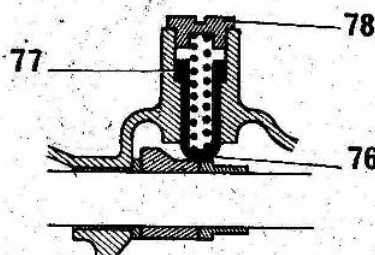


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Special points concerning NG1 and NG3

Only the spacers and spring are fitted to the shaft.

- Fit 76, 77 and 78 (smear the threads on 78 with CAF THIXO 4/60).



84 702

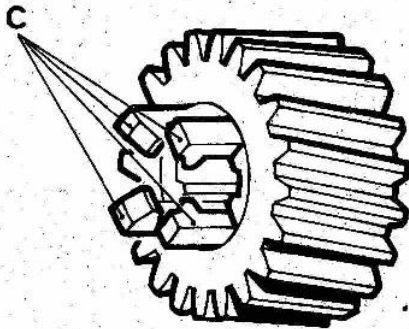
SPEEDOMETER DRIVE

Speedometer drive nut NG1 - NG3

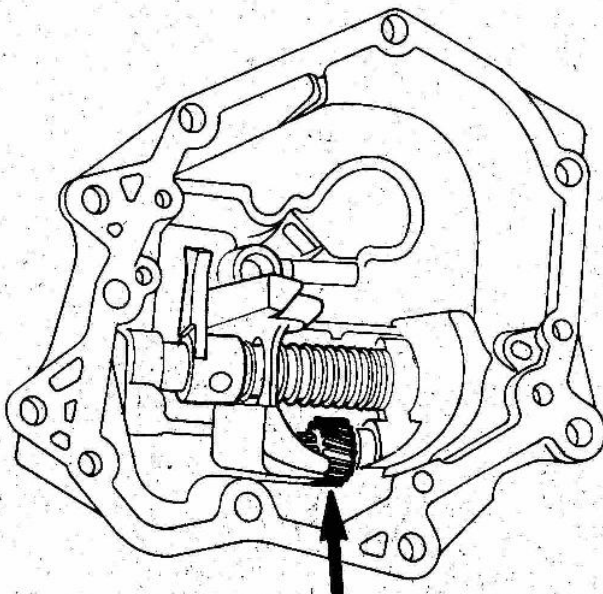
- Spread tabs (C) holding the nut on the shaft.

The speedometer drive nut must be changed at each dismantling.

- Extract the shaft.
- Remove the oil seals in the casing.



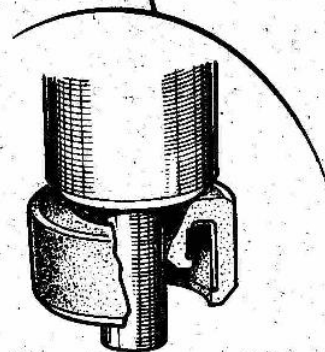
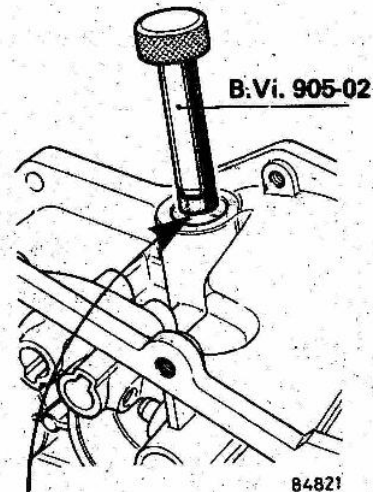
83 384



83 383

Speedometer drive oil seal - NG1 - NG3

Position the shaft using tool B.Vi.905-02 before fitting the oil seal.



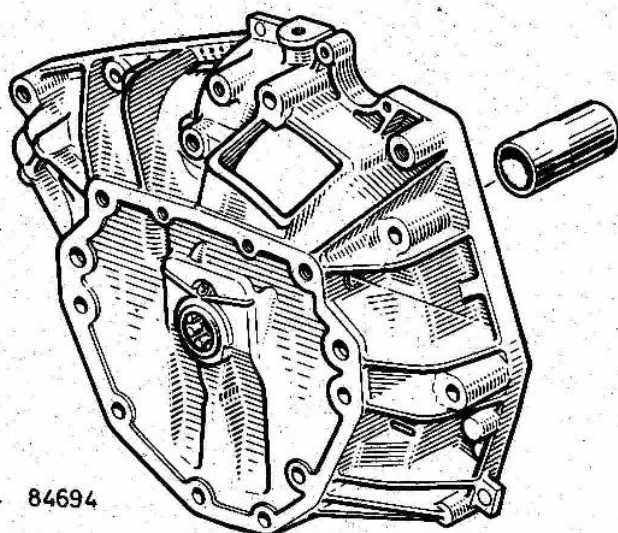
84 886

CLUTCH HOUSING

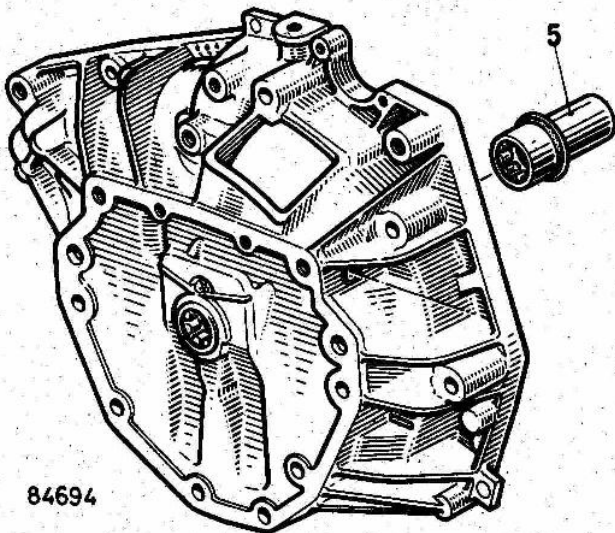
DISMANTLING

SPECIAL TOOLS	Methods	Description	Essential	Useful
	Ref.			
	B.Vi. 488	Oil seal protector	■	
	B.Vi. 526	Oil seal protector	■	
	Emb. 880	Impact tool for fork pin removal	■	

Exploded view of clutch housing on engines with cast iron or aluminium cylinder block (1st Assembly)



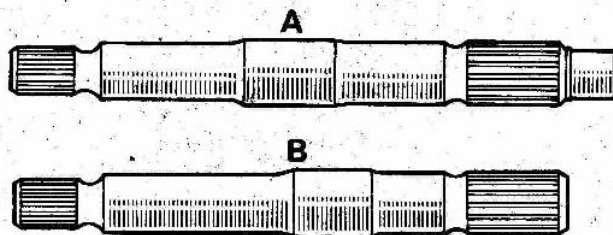
Exploded view of clutch housing on engines with aluminium cylinder block (2nd Assembly)



On engines with an aluminium cylinder block, the clutch is located either by :

- a spigot bearing in the crankshaft and a long clutch shaft (A) - 1st assembly
- or
- a bearing (5) in the clutch housing and a short clutch shaft (B) - 2nd assembly.

These two methods of assembly must be followed implicitly.

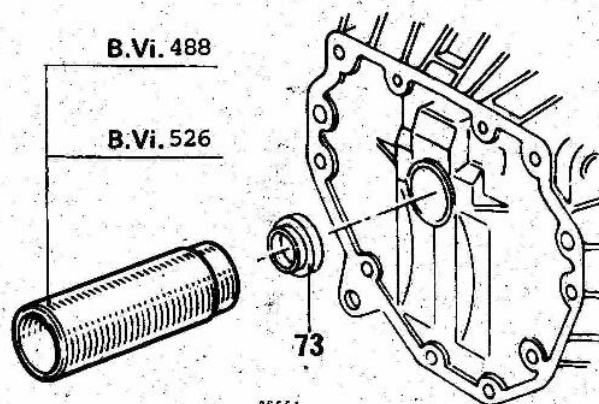


83 864

Special features (1st assembly)

Oil seal (73) is inserted using tool :

- B.Vi.488 for engines with cast iron cylinder block
- B.Vi.526 for engines with aluminium cylinder block.



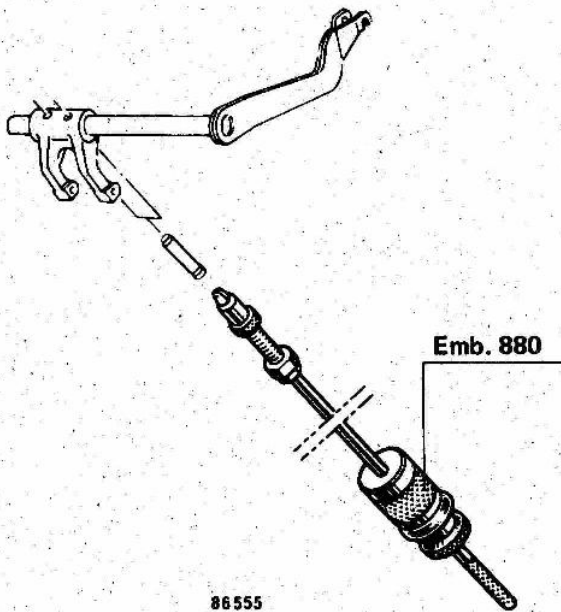
DISMANTLING

Special features (2nd assembly)

- Press out guide tube 5. Once removed, a new guide tube MUST be fitted.

All Types

Use impact tool Emb.880 to extract the clutch fork pins.



REASSEMBLING

Special Points

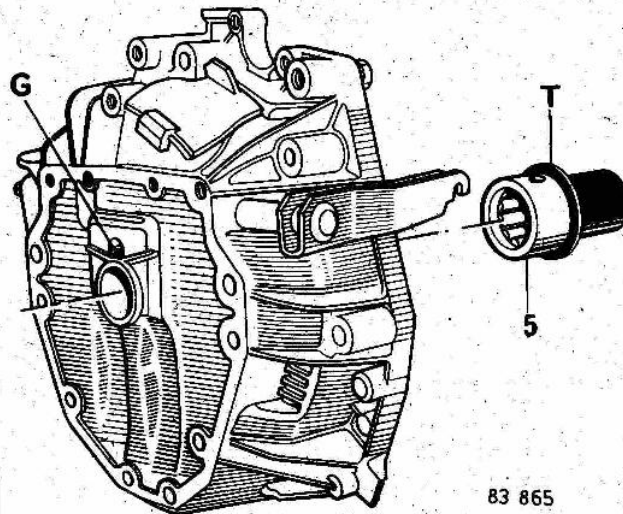
Smear a film of Molykote BR2 grease inside the guide tube.

Offer up the guide tube to the clutch housing and line up the bearing lubrication hole in the guide tube with that in the clutch housing.

Fit the "O" ring (T) to the guide tube (for gearboxes with short clutch shaft).

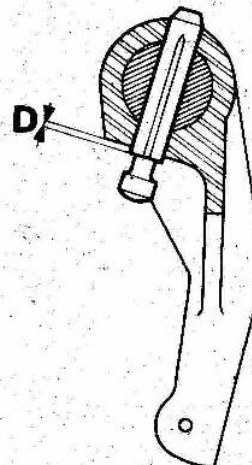
Press the new guide tube in until it touches the end.

Check that the lubrication hole in guide tube 5 is in line with hole (G) in the clutch housing.



All Types

- Lubricate the clutch fork shaft with Molykote BR2 grease.
- Insert the pins : Note the amount of pin protrusion (D) in relation to the fork : $D = 1 \text{ mm}$.
- Lubricate the thrust pad guide and fork fingers with Molykote BR2 grease.
- Fit the new thrust pad.
- Insert the spring with its ends in the holes in the thrust pad bracket and in the fork.
- Lubricate the zone on the diaphragm spring which contacts the thrust pad lightly with Molykote BR2 grease.



- Then refit the clutch housing. See chapter "REFITTING THE CASINGS".

REASSEMBLING THE CASINGS

REASSEMBLING

SPECIAL TOOLS

Methods Ref.	Description	Essential	Useful
B.Vi. 204-01	O.E. stub wrench	■	
B.Vi. 488	Oil seal protector	■	
B.Vi. 526	Oil seal protector	■	
B.Vi. 807-01	Castellated wrench	■	
B.Vi. 813	Oil seal protector	■	

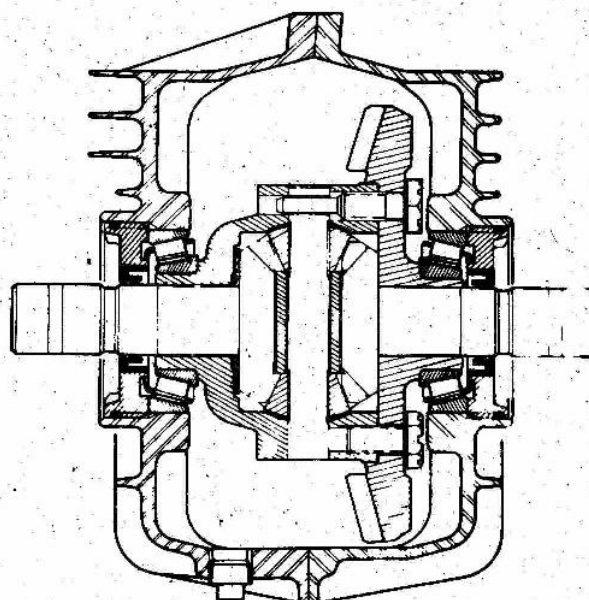
TIGHTENING TORQUES in m. da N

- Rear cover bolts : 1 to 1,5
- 8 mm dia. half-casing bolts : 2,5
- 8 mm dia. stay bolts for half-casings : 3
- Primary shaft nut : 13
- Secondary shaft nut : 15

REASSEMBLING

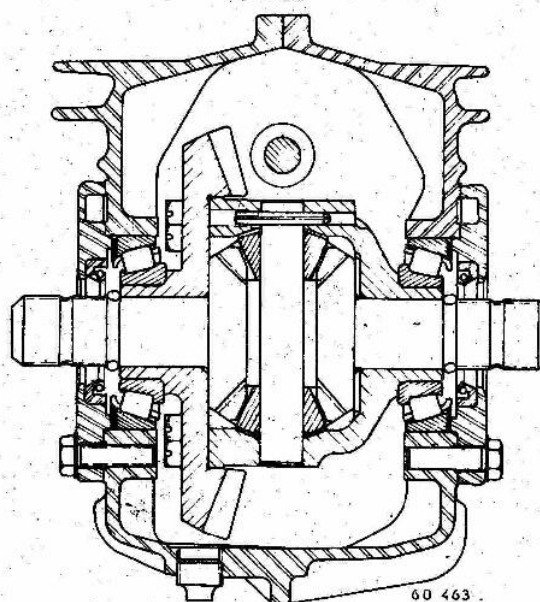
Position of differential in gearbox

NGO - NG1 - NG2 - NG3



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NG5



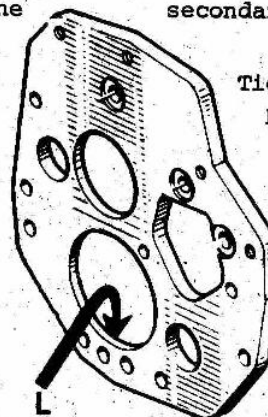
60463

The crown wheel fits the same side as the drain plug.

After fitting the shafts and differential, smear the casing joint face with CAF THIXO 4/60 paste and assemble the half-casings taking care of the position of the bearings and the reverse lever.

Insert the half-casing bolts but do not tighten the nuts at this stage.

Fit the spacer plate, spotfacing (L) in line with the secondary shaft bearing.

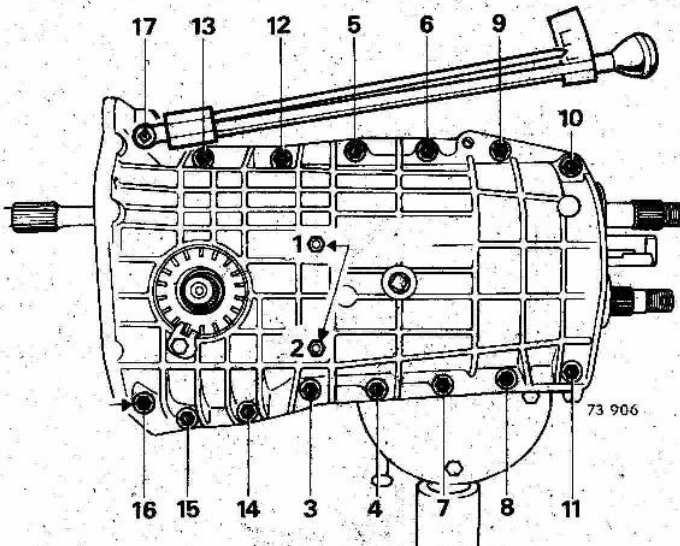


Tighten the plate bolts.

REASSEMBLING

All Types

Torque tighten the ring of bolts in their correct order.



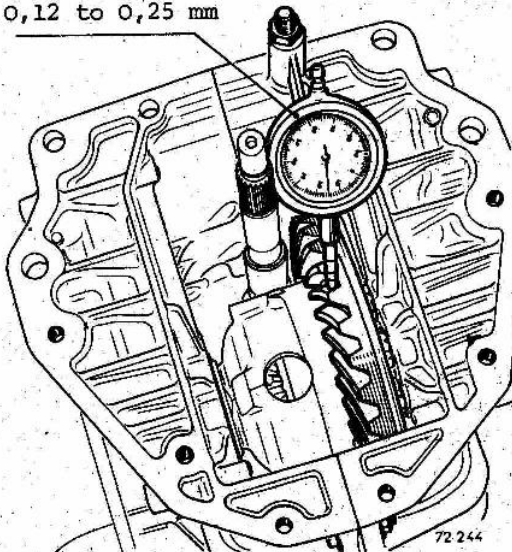
Adjusting crown wheel and pinion backlash :

- Fit a clock gauge to the casing with its plunger at right angles to the flank of one of the crown wheel teeth as close as possible to the outside diameter.
- Check the amount of backlash : it should be between 0,12 and 0,25 mm.

If it is excessive, unscrew the ring nut at the differential housing and screw in the ring nut at the crown wheel end by the same amount; do the opposite if it is insufficient.

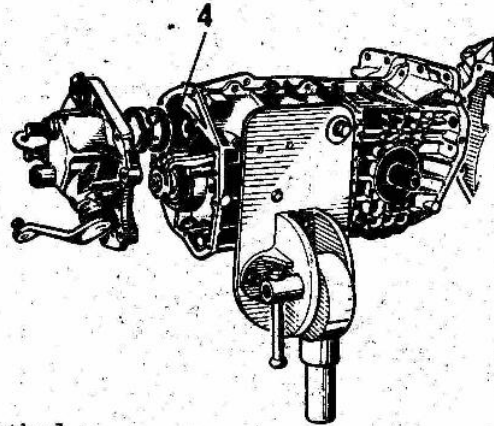
Mark the position of each ring nut in relation to the casing.

0,12 to 0,25 mm



NGO - NG2

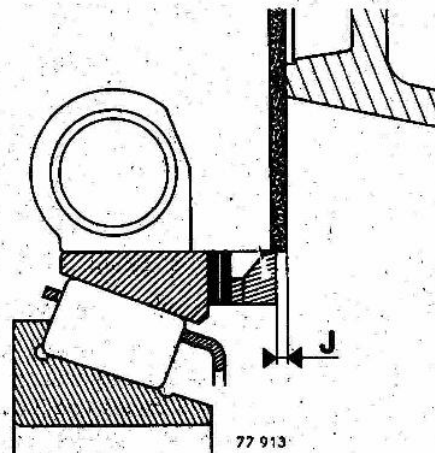
Adjustment of the primary shaft preload is made using shim 4.



Method :

- Fit the adjusting shims removed during dismantling also the spacer.
 - Tap the spacer gently using a piece of tube; this will locate the bearings.
 - Fit the rear casing paper gasket.
 - Measure the clearance (J) between the spacer and the outside of the seal :
- $J = 0,02 \text{ to } 0,12 \text{ mm.}$

If the adjustment is incorrect, increase or reduce the thickness of the shimming. Shims are available in thicknesses of : 0,10 - 0,25 and 1 mm.



REASSEMBLING THE CASINGS

NGO - NG1 - NG2 - NG3

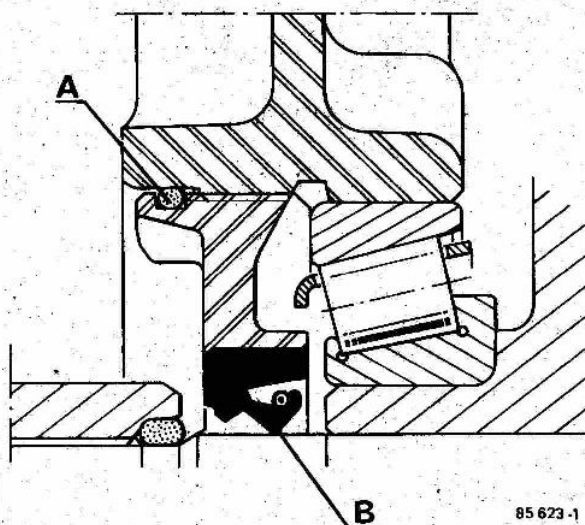
Fit the rear casing and torque tighten it.

Refitting the differential ring nut oil seals :

- Unscrew a differential ring nut from the casing counting the number of turns required.

1st assembly

CROSS SECTION OF ASSEMBLY IN THE CASING

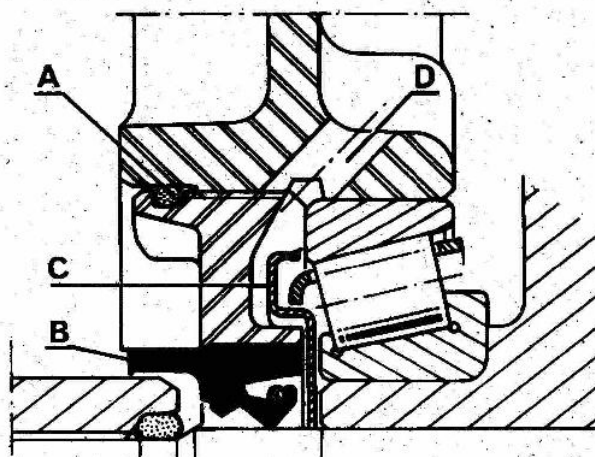


A : "O" ring

B : Lip-type oil seal

2nd assembly

CROSS SECTION OF ASSEMBLY IN THE CASING



A : Oil seal

B : Lip-type oil seal with front bush

C : Deflector

D : Lubrication hole

INTERCHANGEABILITY

I - LIP-TYPE OIL SEAL

After stocks of the 1st pattern are exhausted, the Parts Department will only supply front bush type oil seals.

II - DIFFERENTIAL RING NUT

After stocks of the 1st pattern are exhausted, the Parts Department will only supply ring nuts fitted with :

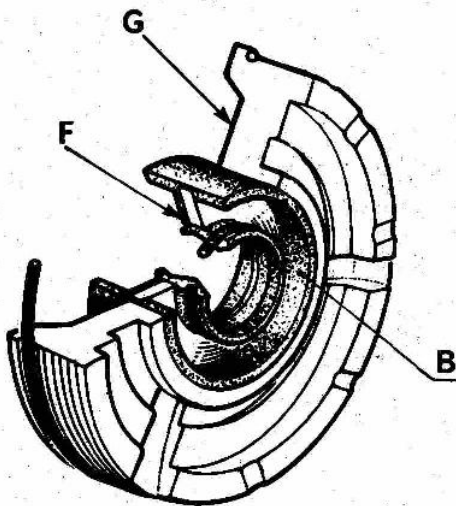
- an "O" ring (A)
- a front bush type oil seal (B)
- and a deflector (C).

The deflector (C) MUST NEVER be fitted to a manual gearbox which has a casing WITHOUT a lubrication hole (D) because the oil seal lip will not be lubricated.

REASSEMBLING

FITTING THE OIL SEAL TO THE NUT

The lip-type oil seal B is inserted from inside the ring nut until seal face F is flush with nut face G.

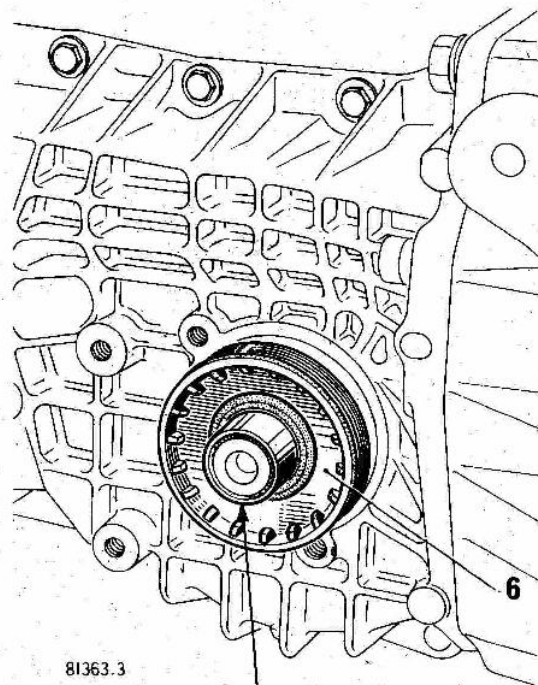


85622

Fit the "O" ring and lip-type oil seal. Use tool B.Vi.813 over the sunwheel splines to protect the lip.

Refit ring nut 6, counting up the number of turns and line up the marks made on dismantling.

Proceed in the same way for the other ring nut.



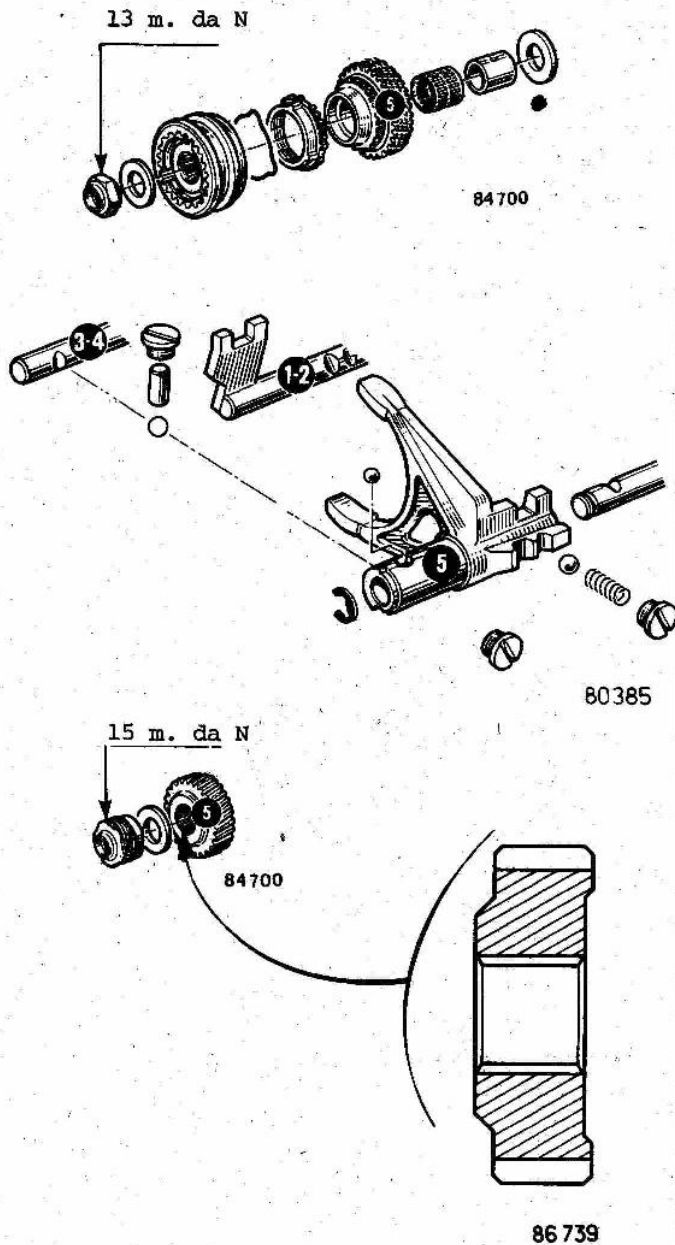
81363.3

B.Vi. 813

Prevent ring nuts 6 from turning with the lockwashers.

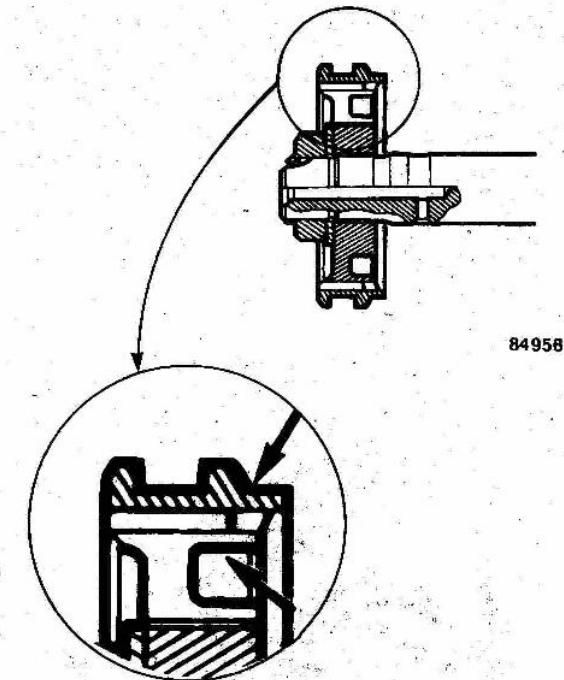
REASSEMBLING

NG5

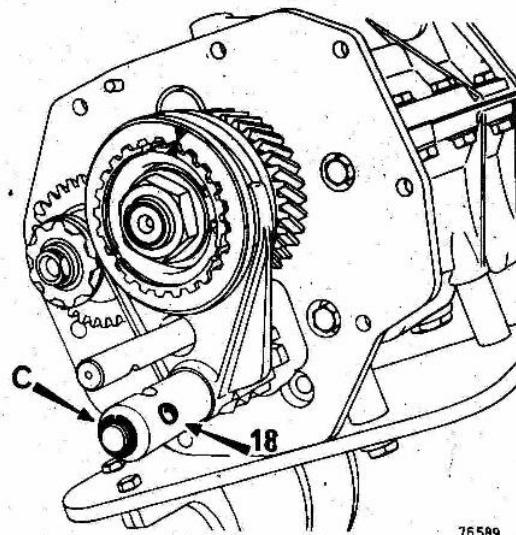


Note which way the 5th speed fixed gear faces on reassembly and bond it with Loctite SCELBLOC or equivalent.

Bond the hub with Loctite SCELBLOC and fit the assembly the correct way round.



Fit circlip (C).

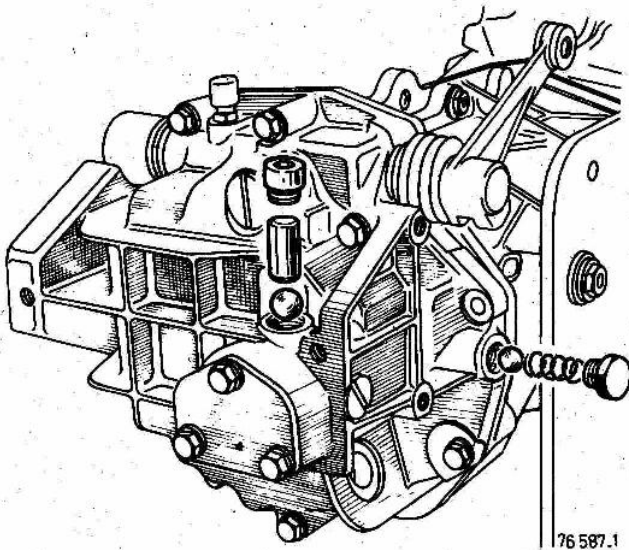


Select 5th speed and reverse, smear the threads on both nuts with Loctite FRENBLOC and torque tighten them using wrench B.Vi.204-01.

Insert interlocking ball 18.

REASSEMBLING

Fit the casing with its gasket and torque tighten the bolts.

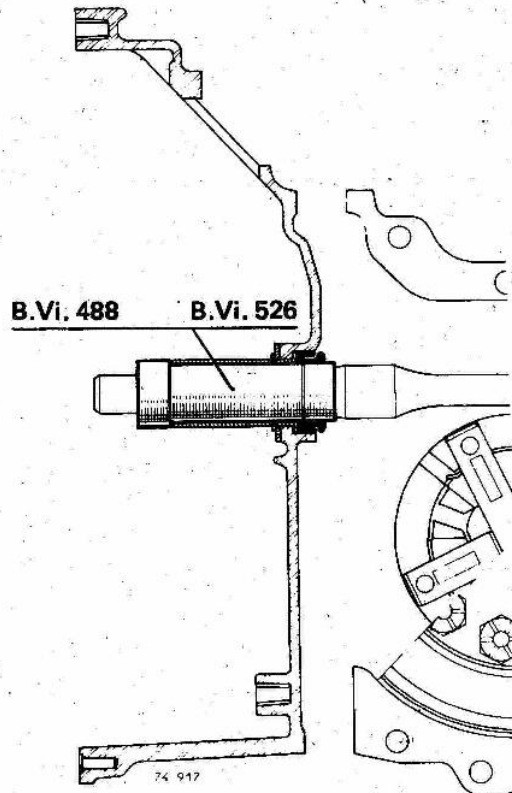


Clutch housing

Long clutch shaft :

Fit the clutch housing using protector B.Vi.526 if the engine has an aluminium cylinder block or protector B.Vi.488 if the engine has a cast iron cylinder block.

The above will protect the oil seal lip from the clutch shaft splines.



Smear the clutch housing paper gasket with CAF THIXO 4/60 paste.

Insert the protector inside the thrust pad guide to spread the oil seal lip.

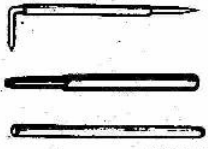


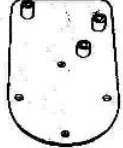
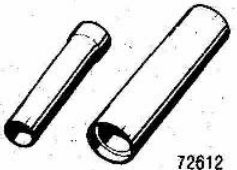


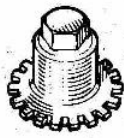
Fit the clutch housing by sliding the protector along the clutch shaft.

Remove the protector.

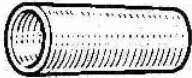
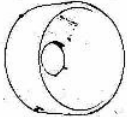
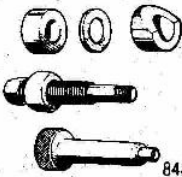

Short clutch shaft :

Wrap some adhesive tape round the splines so as not to damage the oil seal lip then torque tighten the clutch housing bolts.

SPECIAL TOOLS

	METHODS REF.	PART NO.	DESCRIPTION
 <p>68997-1</p>	B. Vi. 31.01	00 01 259 401	Set of 3 drifts for insert- ing 5 mm dia. rollpins
 <p>69001</p>	B. Vi. 39	00 01 322 500	Drift for inserting 4 and 10 mm dia. rollpins
 <p>69009</p>	B. Vi. 204.01	00 00 020 401	32 mm o.e. stub wrench for secondary shaft nut
 <p>69012</p>	B. Vi. 240	00 00 024 000	Gearbox support for fitting to Desvil stand
 <p>72612</p>	B. Vi. 488	00 00 048 800	Sleeves for protecting and inserting clutch housing oil seals
 <p>72612</p>	B. Vi. 526	00 00 052 600	Sleeves for protecting and inserting clutch housing oil seals
 <p>77743</p>	B. Vi. 606	00 00 060 600	Set of drifts for changing 6 mm dia. rollpins
 <p>81435</p>	B. Vi. 807-01	00 00 080 701	Castellated wrench for differential ring nut (New sealing method)

SPECIAL TOOLS

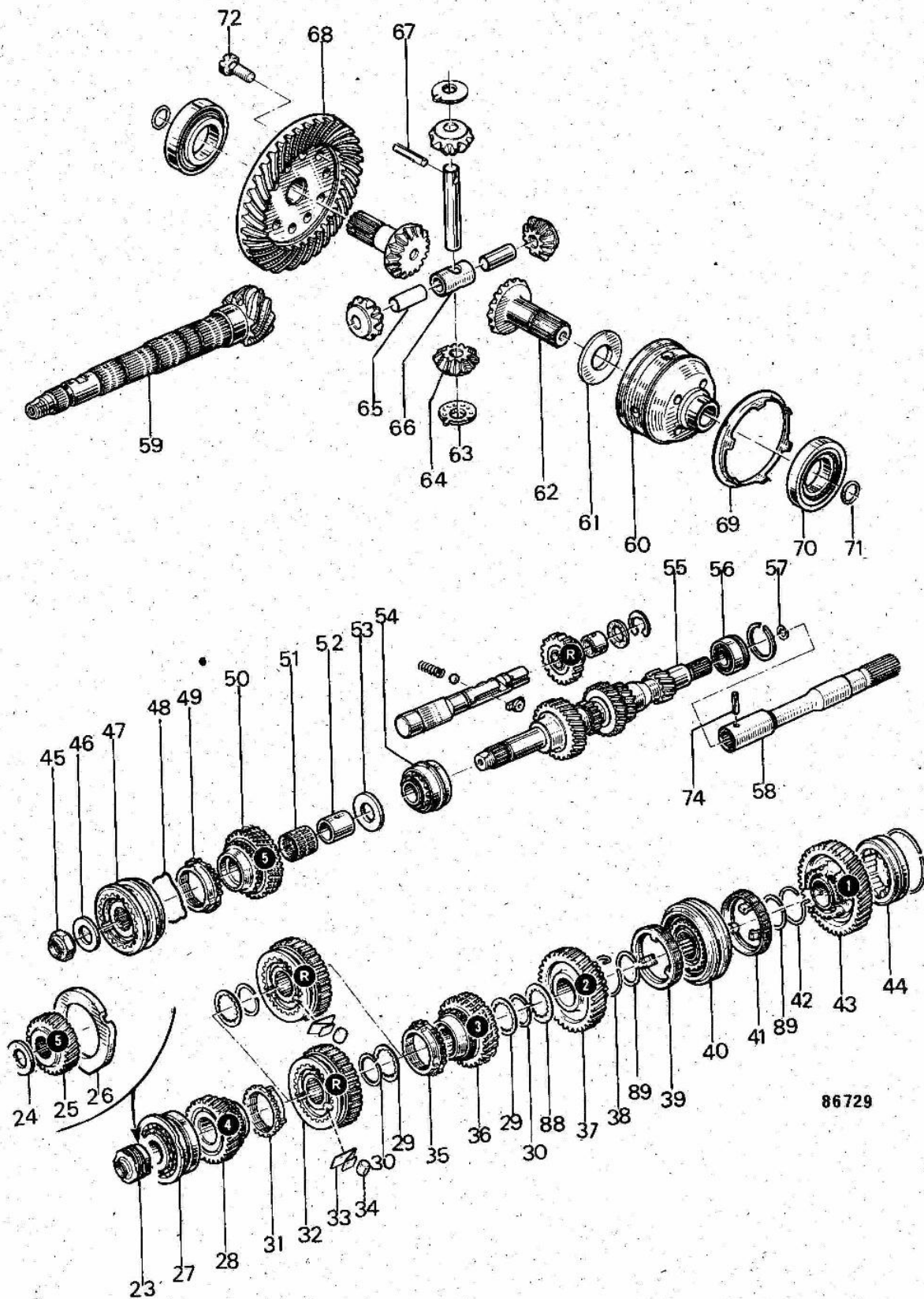
	METHODS REF.	PART NO.	DESCRIPTION
 81788	B. Vi. 813	00 00 081 300	Differential ring nut oil seal protector when passing over splines
 84912	B. Vi. 883	00 00 088 300	Press tool for differential ring
 84817	B. Vi. 905-02	00 00 090 502	Set of tooling for changing speedometer shaft oil seal
 84328	Emb. 880	00 00 088 000	Impact tool for extracting clutch fork

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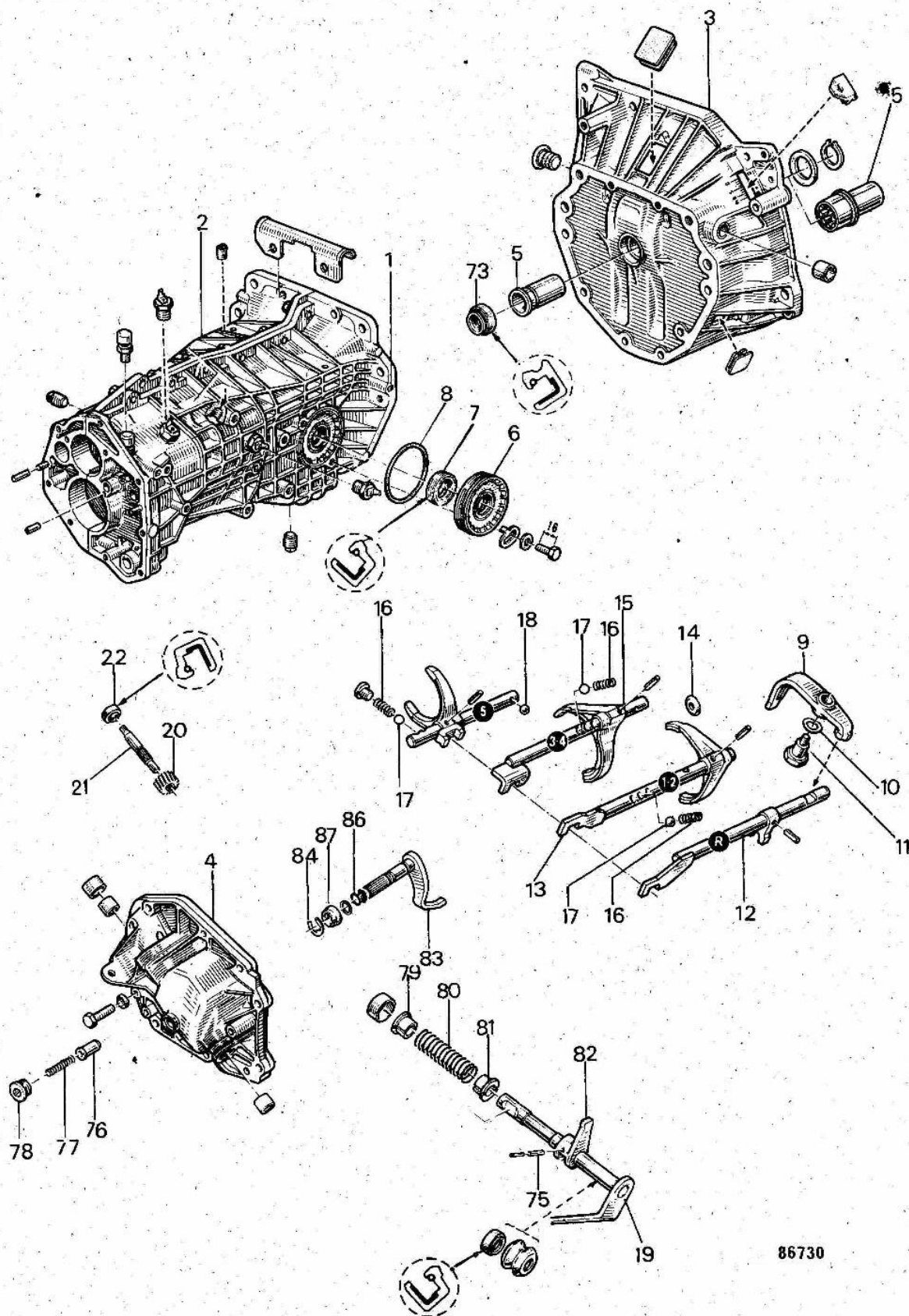
- 1 - R.H. half-casing
- 2 - L.H. half-casing
- 3 - Clutch housing
- 4 - Rear casing
- 5 - Guide tube
- 6 - Differential ring nut
- 7 - Lip-type oil seal
- 8 - "O" ring
- 9 - Reverse lever
- 10 - Wave washer
- 11 - Reverse lever bolt
- 12 - Reverse shaft
- 13 - 1st/2nd shaft and fork
- 14 - Interlocking disc
- 15 - 3rd/4th shaft and fork
- 16 - Hard spot spring
- 17 - Hard spot ball
- 18 - Interlocking ball
- 19 - Input shaft
- 20 - Speedo drive gear
- 21 - Speedo drive shaft
- 22 - Speedo drive oil seal
- 23 - Secondary shaft nut
- 24 - Washer
- 25 - 5th speed fixed gear
- 26 - Spacer
- 27 - Double taper roller bearing
- 28 - 4th speed idler gear
- 29 - Small splined washer
- 30 - Small circlip
- 31 - 4th speed synchro
- 32 - 3rd/4th hub-sliding gear
- 33 - Spring
- 34 - Roller cage
- 35 - 3rd speed synchro
- 36 - 3rd speed idler gear
- 37 - 2nd speed idler gear
- 38 - 2nd speed synchro spring
- 39 - 2nd speed synchro
- 40 - 1st/2nd hub - sliding gear
- 41 - 1st speed synchro
- 42 - 1st speed synchro spring
- 43 - 1st speed idler gear
- 44 - Roller bearing

- 45 - Primary shaft nut
- 46 - Washer
- 47 - 5th speed hub-sliding gear
- 48 - 5th speed synchro spring
- 49 - 5th speed synchro
- 50 - 5th speed idler gear
- 51 - Needle roller bearing
- 52 - Bush
- 53 - Thick washer
- 54 - Double row ball bearing
- 55 - Primary shaft
- 56 - Roller bearing
- 57 - Grower washer
- 58 - Clutch shaft
- 59 - Secondary shaft
- 60 - Differential housing
- 61 - Friction washer
- 62 - Sunwheel
- 63 - Washer
- 64 - Planet wheel
- 65 - Short planet wheel shaft
- 66 - Differential core
- 67 - Rollpin
- 68 - Crown wheel
- 69 - Differential ring
- 70 - Bearing
- 71 - "O" ring
- 72 - Crown wheel bolt
- 73 - Lip-type oil seal
- 74 - Rollpin
- 75 - Input shaft selector finger rollpin
- 76 - Reverse stop plunger
- 77 - Plunger spring
- 78 - Plug
- 79 - Spacer
- 80 - Spring
- 81 - Spacer
- 82 - Selector finger
- 83 - Control shaft
- 84 - Circlip
- 85 - Shim
- 86 - "O" ring
- 87 - Plastic clip
- 88 - Large splined washer
- 89 - Large circlip

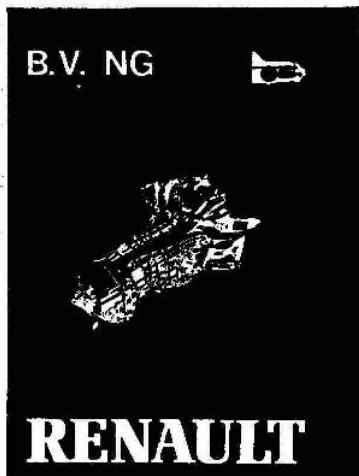
EXPLODED VIEW OF MECHANISM



EXPLODED VIEWS OF CASINGS AND SELECTOR CONTROLS



86730



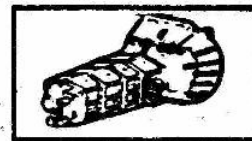
I.S.

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JANUARY, 1984
JANVIER, 1984

**RENAULT 18/18i
AND FUEGO MODELS**



MANUAL GEARBOXES/BOÎTES DE VITESSES MANUELLES

NG MANUAL GEARBOX APPLICATION

Information

This I.S. Note provides NG Manual gearbox applications for Renault 18/18i and Fuego models.

NG Manual Gearbox Application

Gearbox	No. of Speeds	Vehicle Application
NGO	4-Speed	Renault 18 1341-1351 models (Canada Only) Renault 18i 1348-1358 models
NG1	5-Speed	Renault 18 1341-1351 models (Canada Only) Renault 18i 1348-1358 models Renault Fuego 1368 models
NG3	5-Speed	Renault Fuego Turbo 136A models

NOTE: Refer to page 13 in the B.V. NG manual for details on the NG gearbox suffix code numbers.

Filing Instructions

File this I.S. Note in the plastic binder supplied with your B.V. NG manual.

ISSUED BY:
TECHNICAL SERVICES DEPARTMENT,
AMERICAN MOTORS (CANADA) INC.,
350 KENNEDY ROAD SOUTH,
BRAMPTON, ONTARIO L6V 2M3