

NOTE - This section of the manual only covers the overhaul of the BA 10/4 and BA 10/5 transmission. For removal and reinstallation, refer to the specific section of the applicable vehicle's shop manual.

THIS SECTION OF THE MANUAL CONCERNS THE FOLLOWING TRANSMISSIONS :



- BA 10/4 Installed since the 1978 Models (1977 Auto show)

IDENTIFICATION

- Reverse synchro-ring detent plug **(1)** on the left front half housing facing the side.

- BA 10/5 All types, first and second VERSIONS

IDENTIFICATION

- 1st Version :  Gearbox No. 31007 : 3 Hexhead bolts **(3)** and d1 = 5 mm
- 2nd Version :  Gearbox No. 31008 : 3 Flush mounted screws **(4)** and d2 = 9 mm.

NOTE

For early BA 10 gearbox overhaul → beginning of production → 1978 Models, refer to Class (3) of the 604 Workshop Manual.

IDENTIFICATION

- 3rd / 4th shaft dentent plug (2) facing toward the bottom.

USING THIS SECTION OF THE WORKSHOP MANUAL

To make the identification of the gearbox involved easier, the illustrations have been referenced as follows :

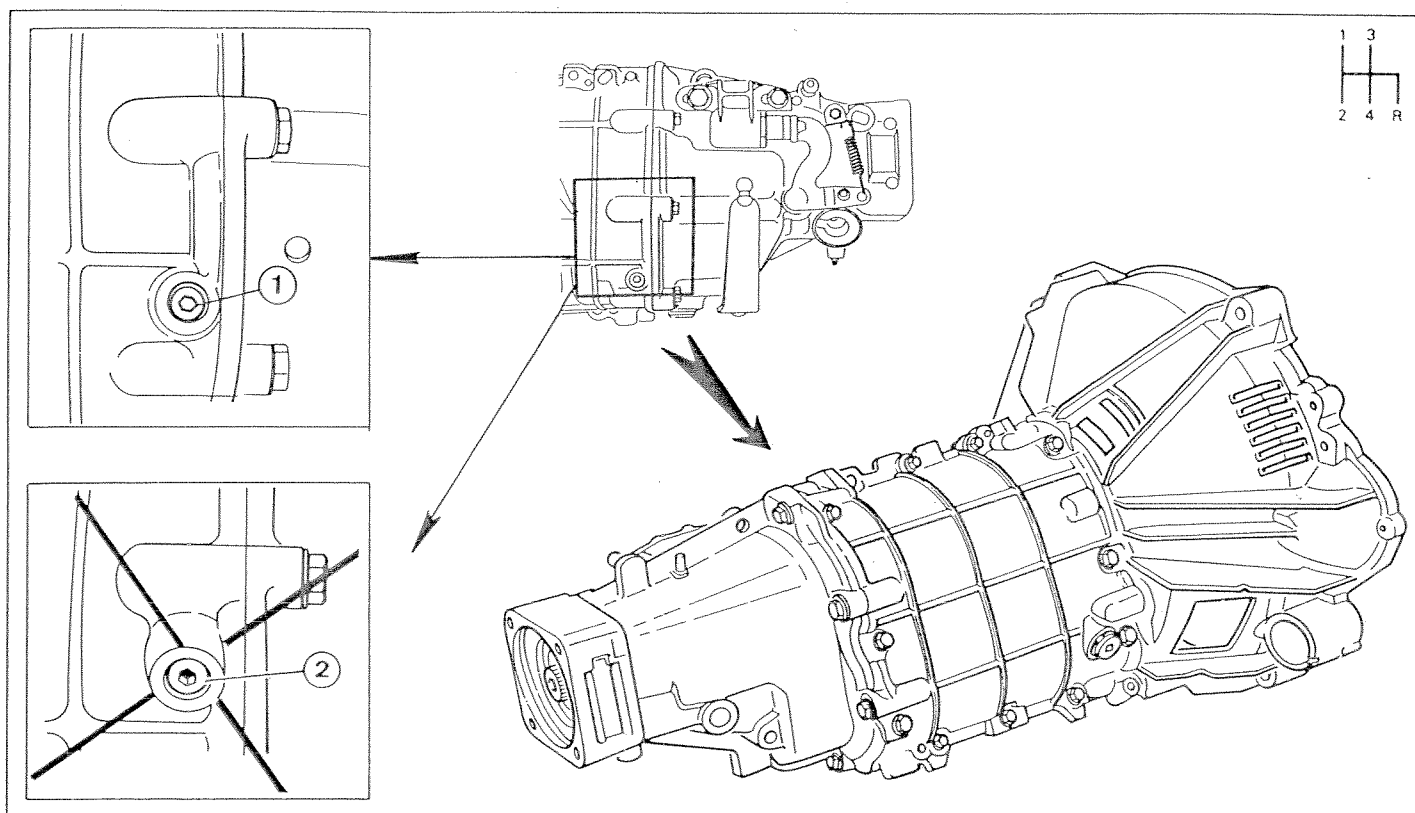
- : operations valid for the 2 gearboxes 4 and 5 speeds.
- : operation specific to the 4 speed BA 10/4 gearbox.
- : operation specific to the 5 speed BA 10/5 gearbox.

In order to keep this section as up to date as possible, you should note below any changes or modifications : the origin and date of the information and the nature of the change as well as the page involved - (see example below).

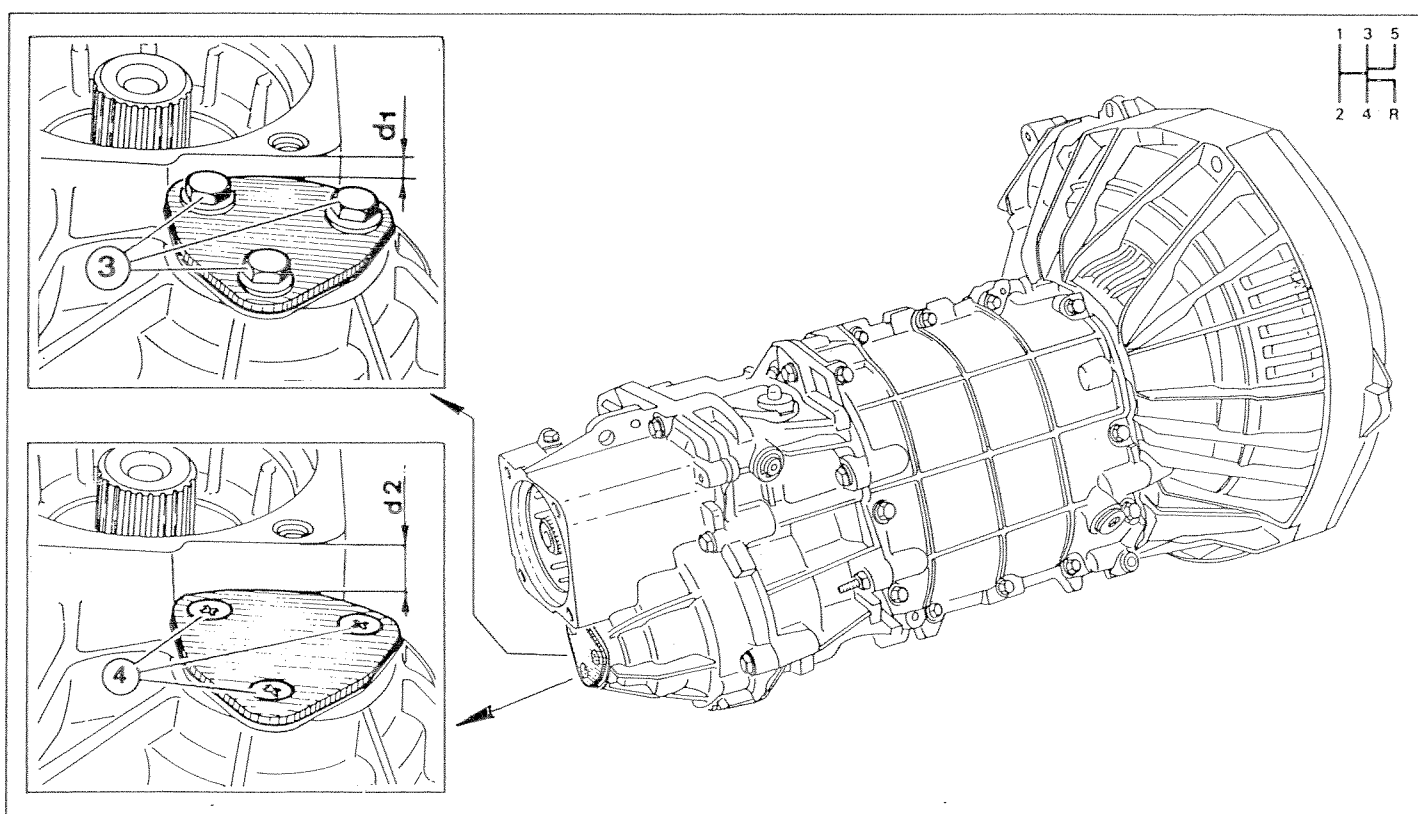
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BA 10/4
BA 10/5

3

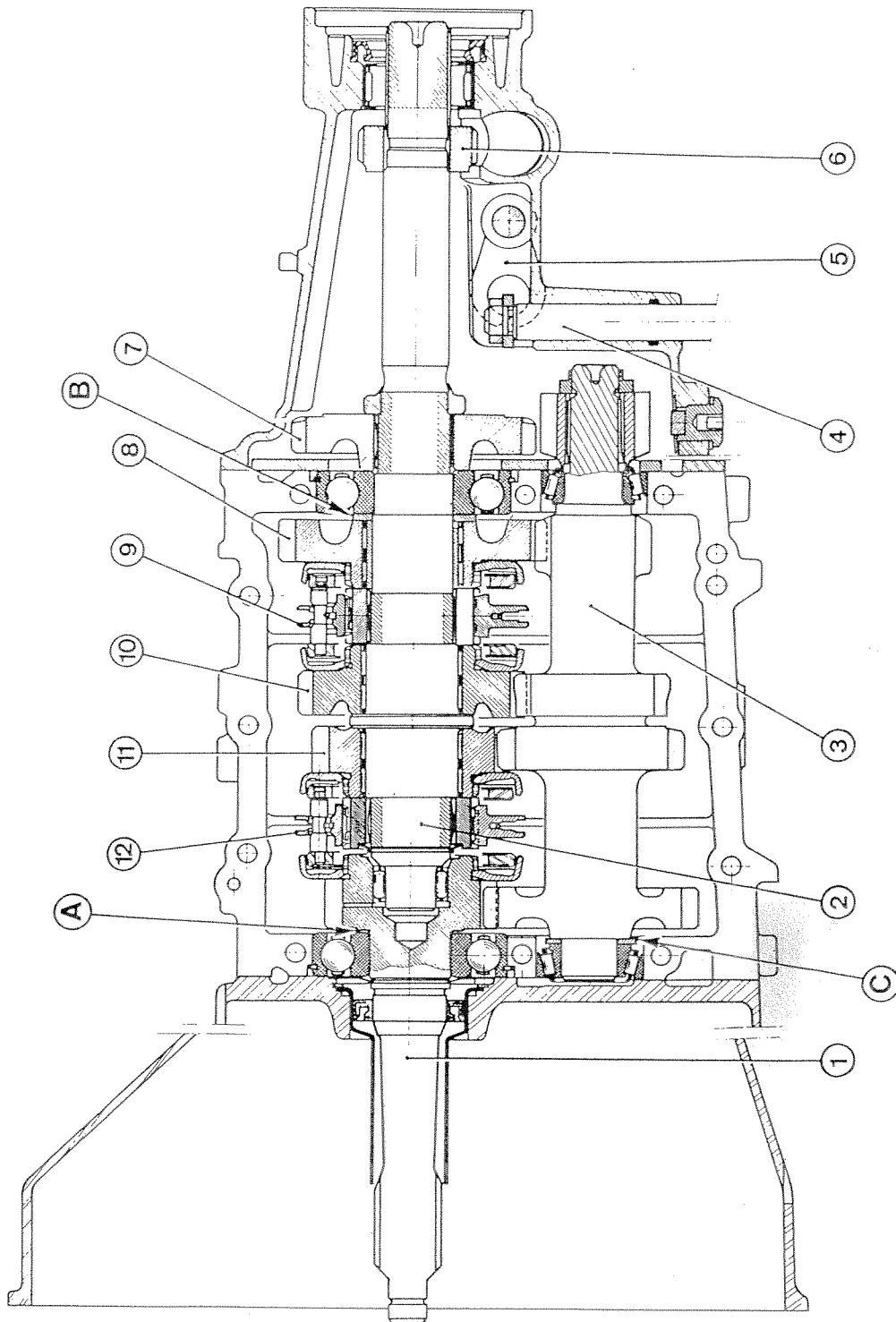


17.04.84. C 101



17.04.84. C 103

1 3
2 4 R



DESCRIPTION

- | | |
|--|--------------------------------------|
| 1 - Input shaft | 7 - Reverse gear pinion |
| 2 - Main shaft | 8 - First gear pinion |
| 3 - Cluster shaft (Intermediate shaft) | 9 - First / Second gear synchronizer |
| 4 - Gearshift control | 10 - Second gear pinion |
| 5 - Gear selector control | 11 - Third gear pinion |
| 6 - Speedometer worm gear (driving gear) | 12 - Third / fourth synchronizer |

ADJUSTING SHIMS

- A - Positioning of the fourth gear synchronizer cone.
- B - Positioning of the third, second and first gear synchronizer cones.
- C - Cluster shaft taper roller bearings preload.

MAIN TIGHTENING TORQUES

	mdaN	(ft.lbs.)
— Main shaft nut	5.5	(39.88)
— Bearing retaining plate screws	1	(7.25)
— Plugs for fork shafts detents	1.25	(9.06)
— Main housing assembly bolts $\varnothing 7 \times 1.00$	1	(7.25)
— Main housing assembly bolts $\varnothing 8 \times 1.25$	1.5	(10.88)
— Bell housing to main housing bolts	2.75	(19.94)
— Tailshaft housing bolts	1.5	(10.88)
— Mounting of the reverse lock-out plunger	1.5	(10.88)
— $\varnothing 13$ mm ball on tailshaft housing	1.5	(10.88)
— Elastic bushing mounting bolt	2.25	(16.31)
— Drain plug	2.75	(19.94)
— Filler plug(s)	2.75	(19.94)
— Back-up lights switch	2.75	(19.94)

DESCRIPTION

- | | |
|---------------------------------|---------------------------------|
| 1 - Input shaft | 8 - 3rd gear driven pinion |
| 2 - Main shaft | 9 - 3rd / 4th gear synchronizer |
| 3 - Cluster shaft | 10 - 5th / Reverse synchronizer |
| 4 - 5th / Reverse cluster shaft | 11 - 5th gear driving pinion |
| 5 - First gear driven pinion | 12 - 5th gear driven pinion |
| 6 - 1st / 2nd gear synchronizer | 13 - Reverse driven pinion |
| 7 - 2nd gear driven pinion | 14 - Speedometer worm gear |

PARTICULARITY OF THE BA 10/5 1st VERSION – DRAWING I

The output shaft rides on two tapered roller bearings (15) and (16).

PARTICULARITY OF THE BA 10/5 2nd VERSION – DRAWING II

The output shaft rides on one ball bearing (17) and one roller bearing (18).

ADJUSTING SHIMS

- A - Positioning of the 4th gear synchronizer cone.
- B - Positioning of the 3rd, 2nd and 1st gear synchronizer cones
- C - Cluster shaft taper roller bearings preload.
- D - 5th / Reverse cluster shaft free play.

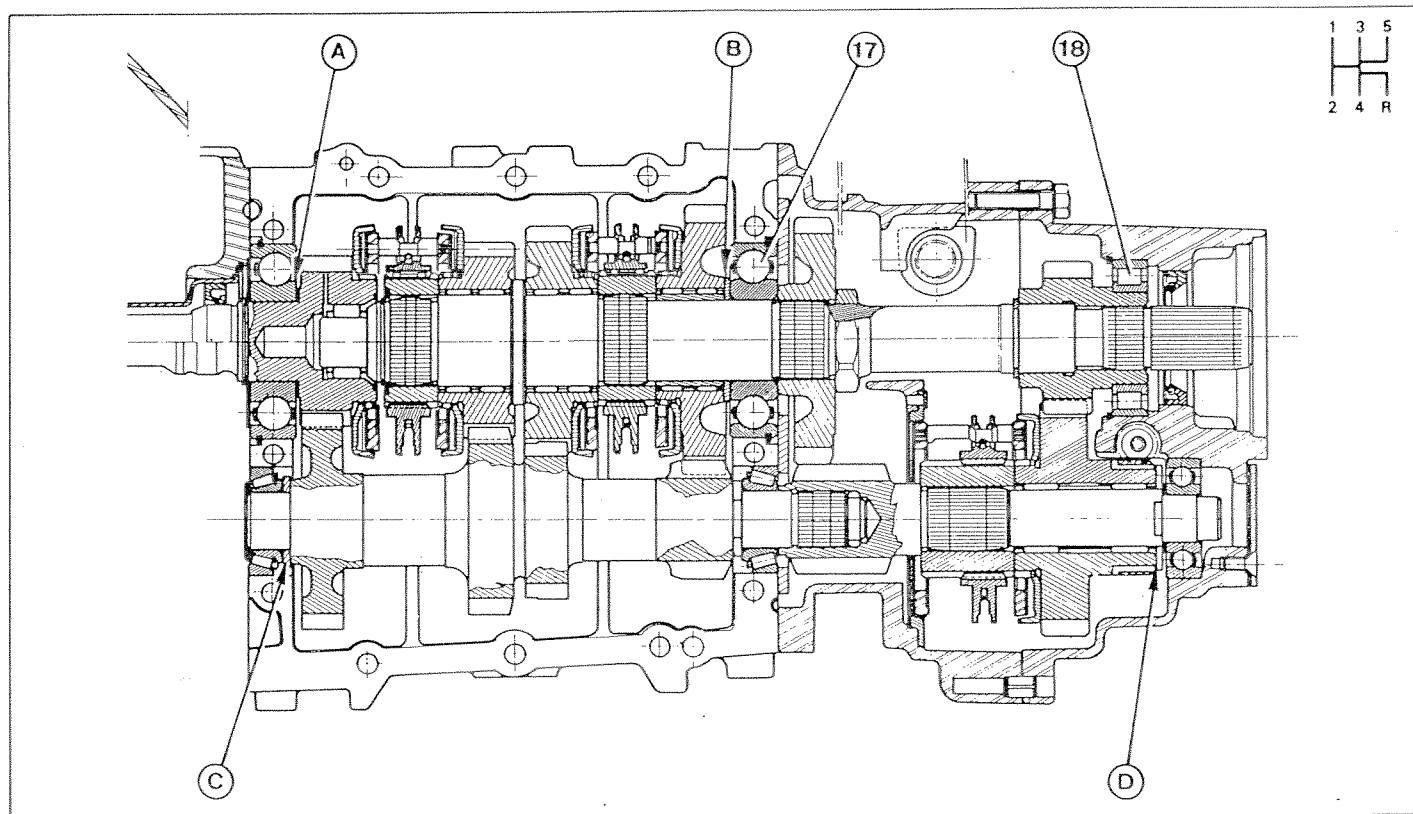
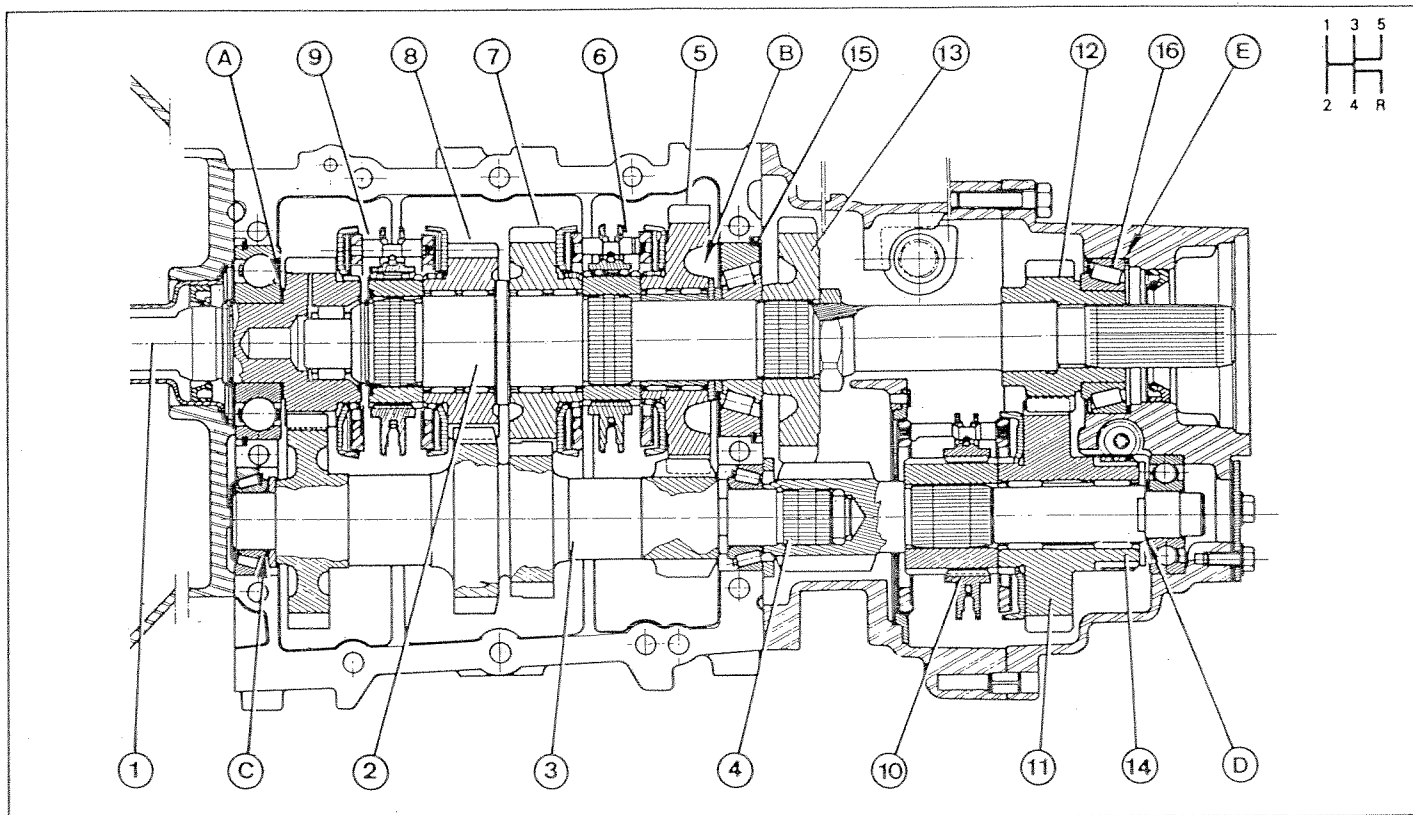
BA 10/5 1st VERSION – DRAWING I

- E - Main shaft taper roller bearings preload.

MAIN TIGHTENING TORQUES

	mdaN	(ft.lbs.)
— Intermediate housing bolts	1.75	(12.69)
— Tailshaft housing bolts	1.5	(10.88)

NOTE - Torque specifications above are specific to the BA 10/5; the other specifications are the same as listed for the BA 10/4.



I

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IV

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BA 10/4
BA 10/5

SPECIAL TOOLS

3

I

FROM SPECIAL TOOL KIT (.)0310 ZZ

- A1Z** - Drift for tailshaft bearing removal, BA 10/4 only
- D** - Installing guide and press ring
- FZ** - Dial indicator support
- G** - Spacer
- H** - Circlip and speedo driven gear remover
- K** - Safety hold down strap for BA 10/4 only
- L** - Staking tool
- M** - 6 mm Ø drift
- NY** - Press plate
- P** - Open end insert for mainshaft nut
- UZ** - Input shaft bearing and circlip installing drift

III

FROM THE (-).0117 ZS KIT

- T** - Dial indicator extension (useful length 55 mm).
- for BA 10/5 only.

II

(-).0314 A

- Transmission support.

IV

FROM THE (-).0520 ZY KIT

- M** - Socket.

for BA 10/4 only.

PEUGEOT

FROM THE (-).0314 ZX KIT

Supplemental kit to (-).0310 ZZ Kit

- C - Input shaft seal protector
- E - Input shaft bearing extractor shells
- FY - Press block for roller bearings
- H - Input shaft seal installing bushing (also used for installing throwout bearing guide)
- J - Cluster shaft taper roller bearing extractor half shells
- K - Gauge block **
- M - Tailshaft housing extractor **
- N - Press plate **
- P - Press block **
- R - 5th Reverse cluster shaft ball bearing installing press block **
- T - Press plate for output shaft taper roller bearing disassembly ***
- U - Output shaft roller bearing installing press drift **
- Y - Tailshaft seal installing ring
- AB - Splined socket for 5th gear pinion installation **
- AC - Installation assembly for 5th gear pinion **
- AE - 5th / Reverse fork shaft retaining plate **
- AF - Synchronizer cone centering gauge REFERENCE "10"
- AG - Positioning gauge for the output shaft ***

** For 5 speed gearbox only

*** For BA 10/5 1st version only

TOOLS TO BE MADE LOCALLY

TO BE INCORPORATED INTO THE KIT

0.0315

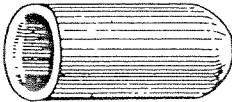
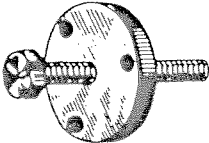
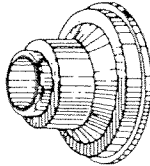
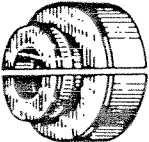
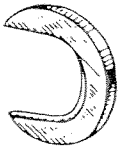
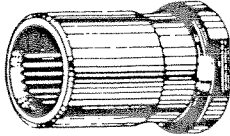
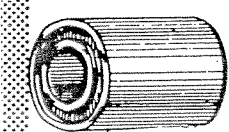

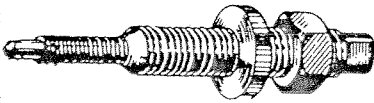
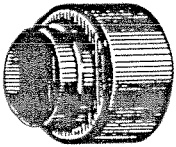
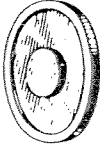

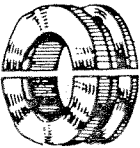


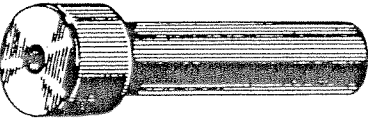
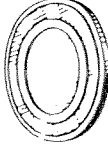
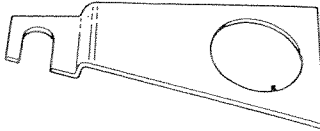
- Adjusting spacer for reverse lock-out plunger
BA 10/4 only.

0.0313 ZZ

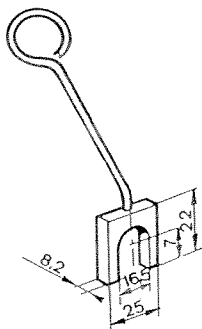
- Bell housing protector 30 mm thick.
(as per drawing opposite).

BA 10/4
BA 10/5

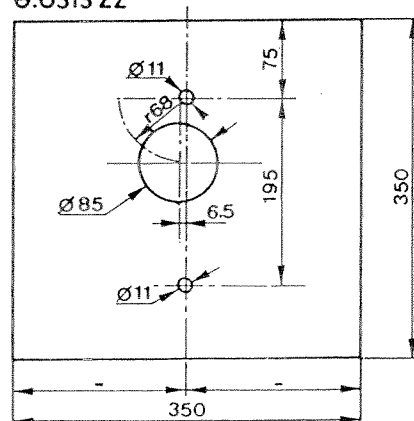
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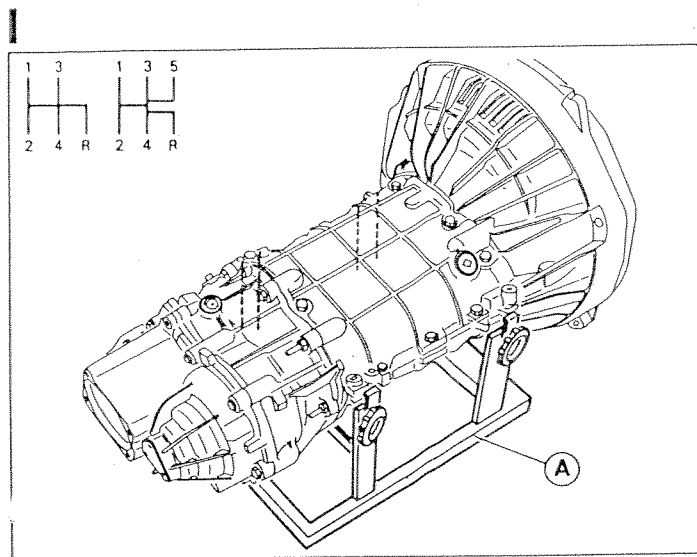
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 <p>E</p>	 <p>N</p>	 <p>AB</p>
 <p>FY</p>	 <p>P</p>	 <p>AC</p>
 <p>H</p>	 <p>R</p>	 <p>AE</p>
 <p>J</p>	 <p>T</p>	 <p>AF</p>
 <p>K</p>	 <p>U</p>	 <p>AG</p>

0.0315

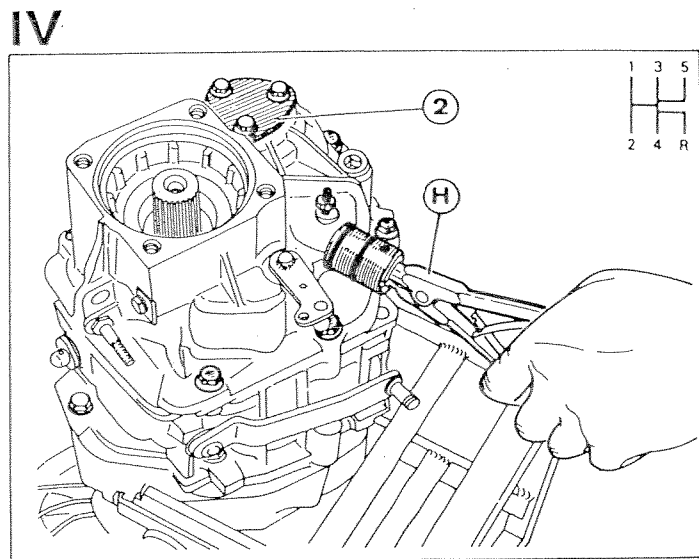


0.0313 ZZ

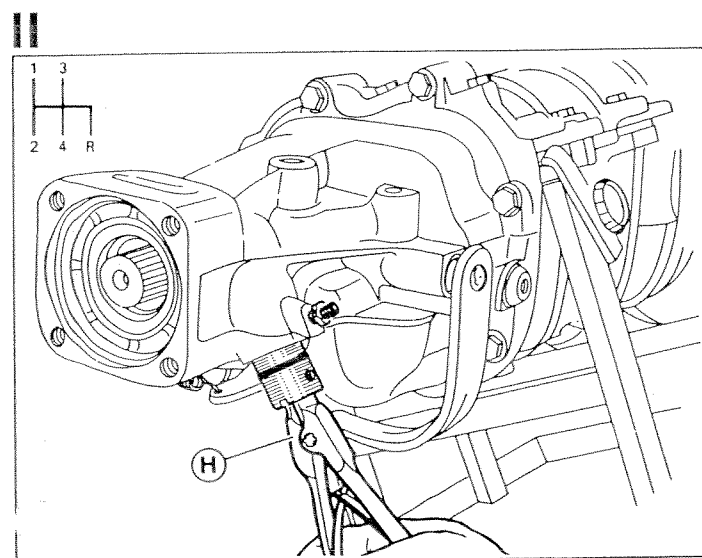




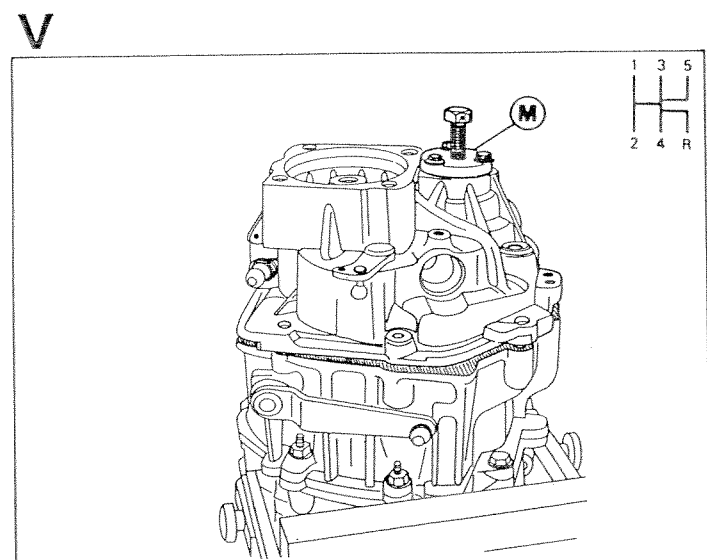
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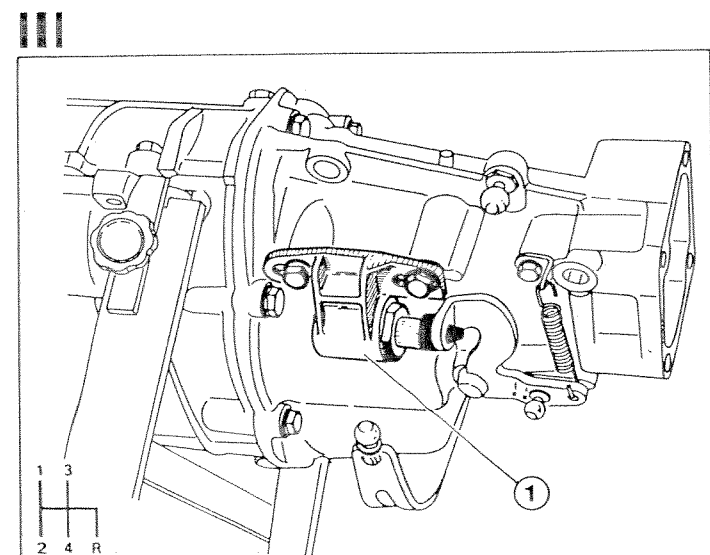
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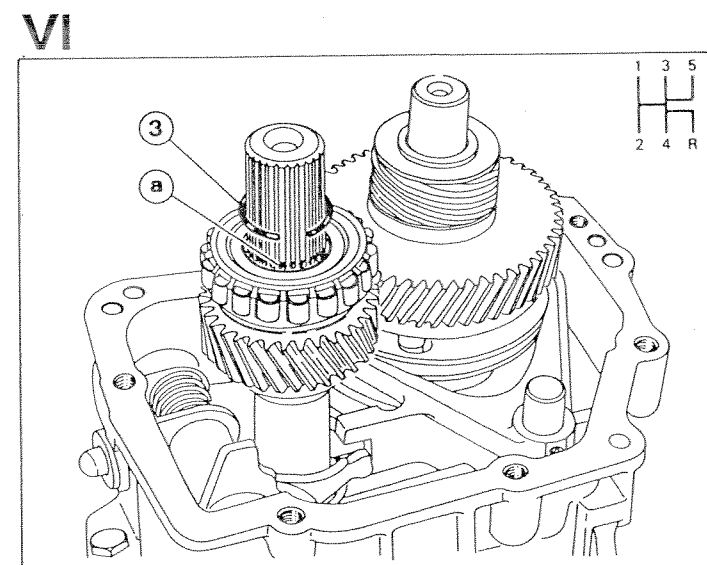
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BA 10/4
BA 10/5

DISASSEMBLY

3

I

- Mount the half housing of the transmission to the support (-).0314 A, firmly.
- Place the shift and selector controls in the neutral position.

IV

With the bellhousing resting on wood block 0.0313.

- Remove :
 - the inspection plate (2),
 - the speedometer driven pinion assembly,
 - the tail shaft housing mounting bolts.

II

- Remove :
 - the speedometer driven pinion assembly.

V

- Mount extractor (-).0314 M as shown.

PARTICULARITY OF THE 2nd VERSION

Use 3 M6 x 100 bolts 15 to 17 mm long

- Extract tailshaft housing.

Using a soft mallet to gently rap the housing will make extraction easier.

III

- Remove :
 - the reverse lock-out plunger (1).

NOTE - Mark and identify the position of the double stud(s). (chalk, paint, tape).

VI

PARTICULARITY - 2nd VERSION

- Pull the circlip (3) from its groove (a) and remove it.

PEUGEOT

I

— Remove :

- the 5th gear pinion using a universal puller, press plate **(-).0314 N** and the press block **(-).0314 P**.

IV

— Engage 5th gear.

- Install the retaining plate **(-).0314 AE** over the 5th gear selector fork shaft and mount it with two bolts to the intermediate housing.

— Drive the roll pin **(8)** from the 5th / Reverse fork.

IMPORTANT - Be careful not to gouge the mating face of the housing.

II

— Remove :

- the main shaft fifth gear pinion adjusting shim **(4)**,
- the spacer **(5)**,
- the mainshaft fifth gear pinion and its needle cage **(6)**.

PARTICULARITY 2nd VERSION

Remove the circlip **(7)**.

V

— Return the fork shaft to neutral position.

— Remove :

- the 5th / Reverse fork and collar,
- the synchronizer hub,
- the 5th / Reverse cluster shaft.

III

- Mark the 5th / Reverse synchro collar in relation to its hub.

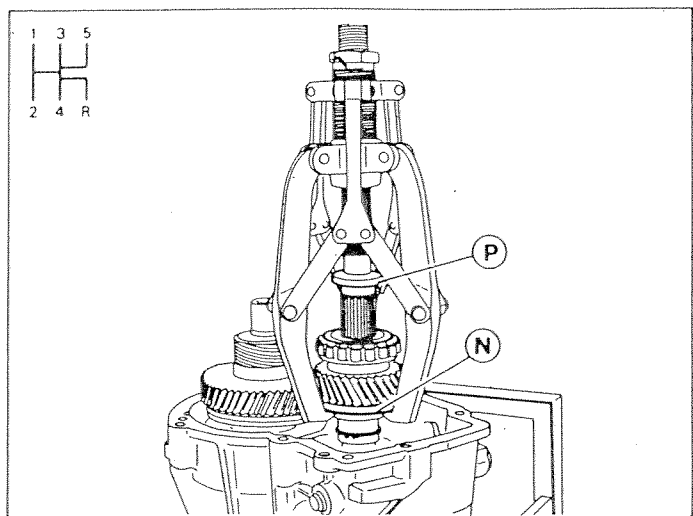
VI

— Clear the selector finger from the fork shafts.

— Remove :

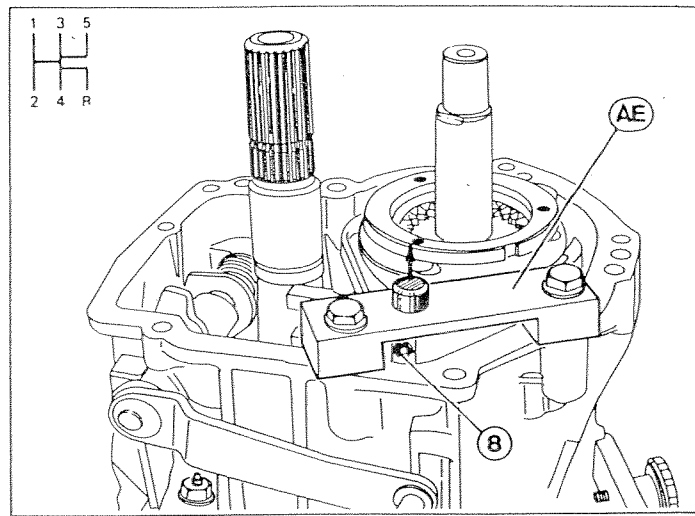
- the intermediate housing bolts,
- the intermediate housing.

I



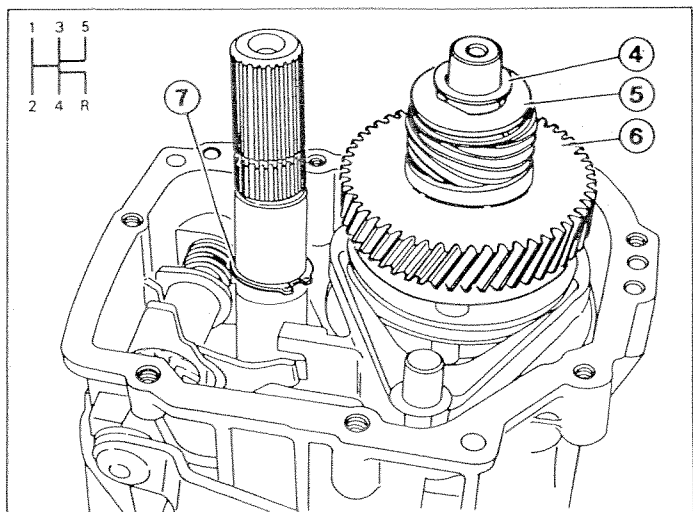
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IV



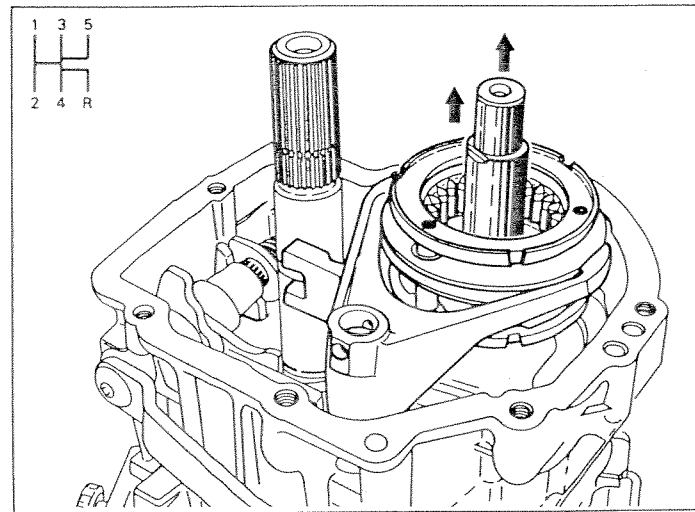
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II



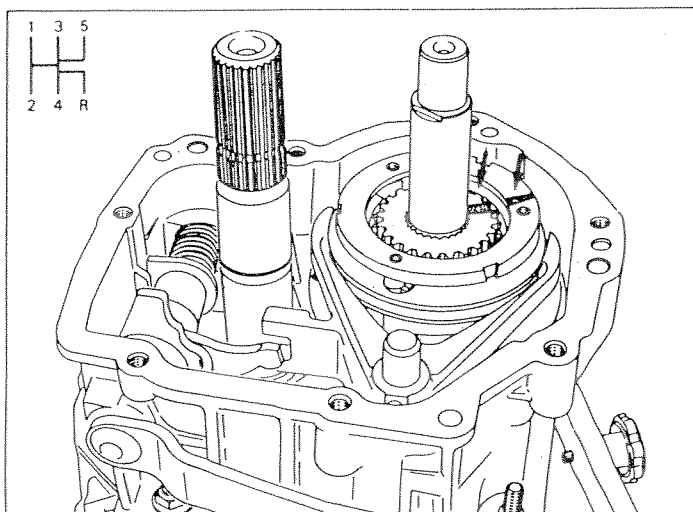
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V



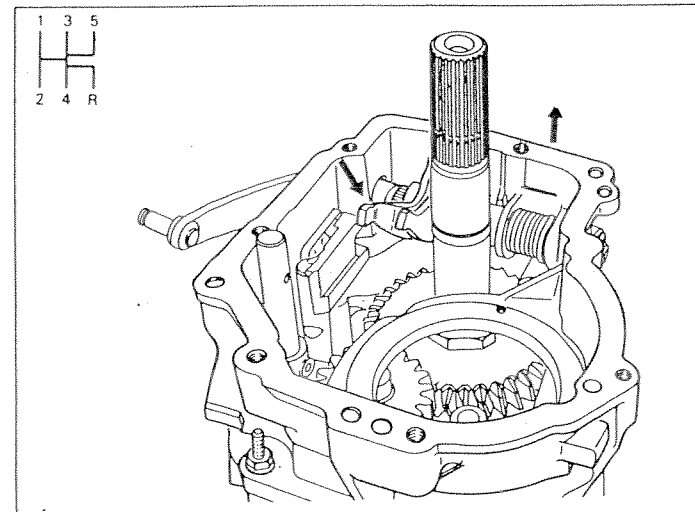
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III

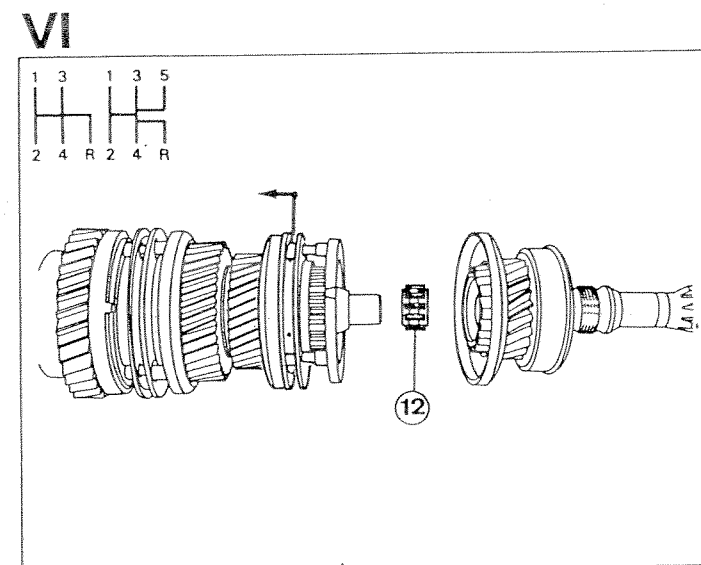
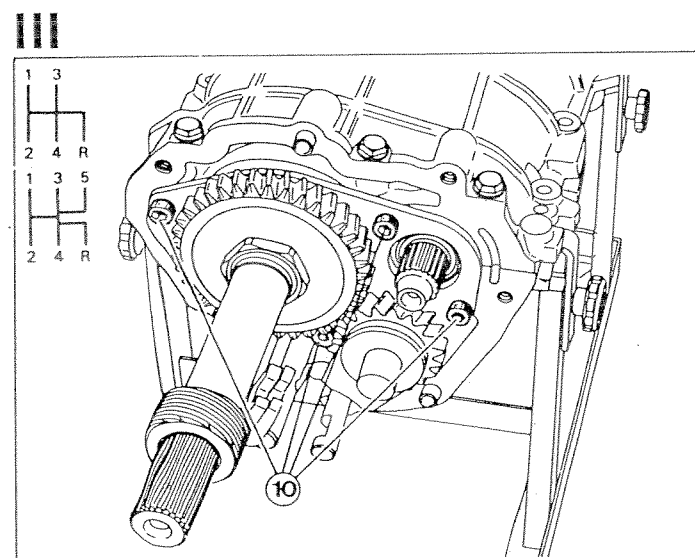
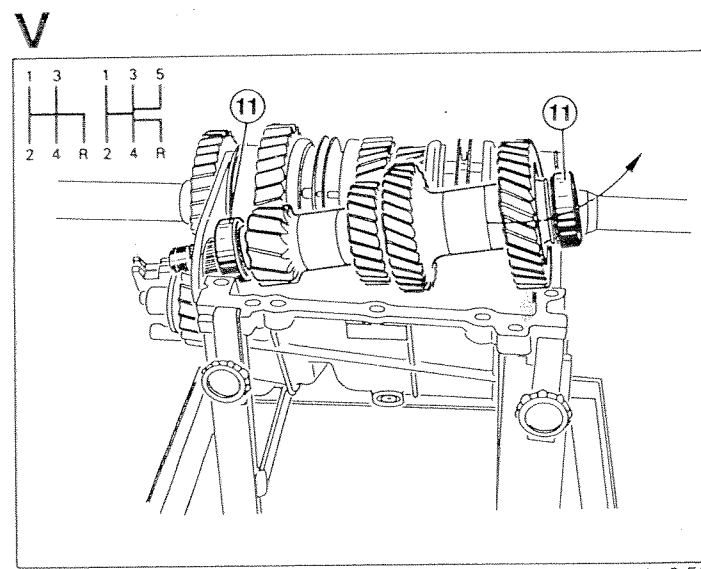
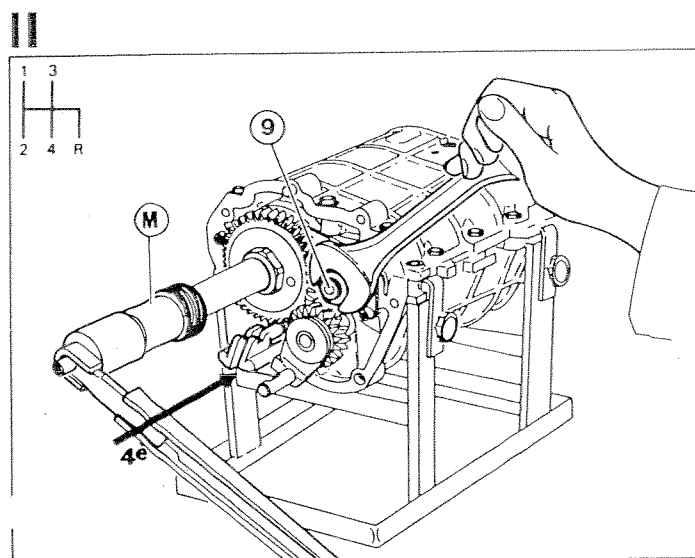
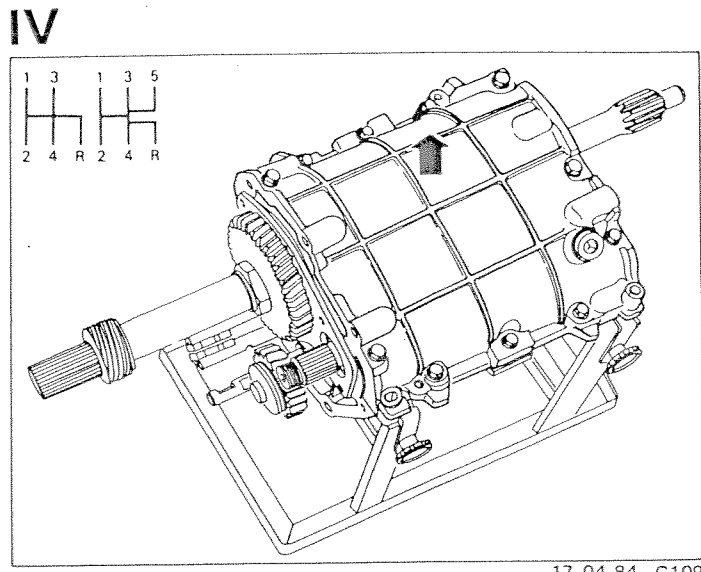
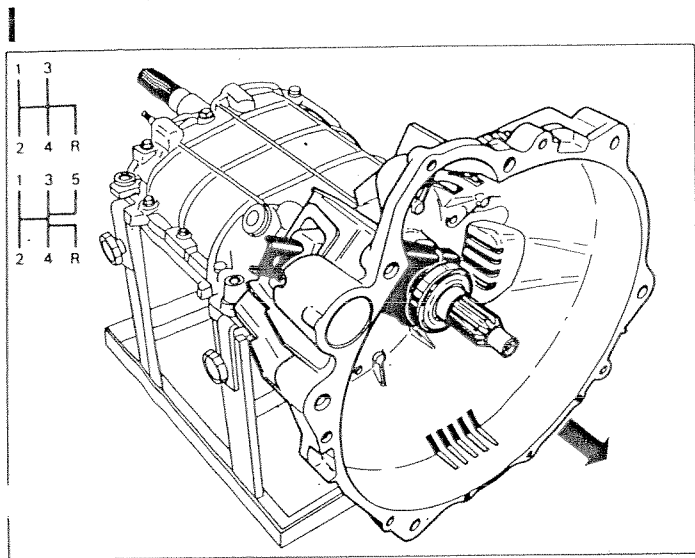


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VI



17.04.84. C37



BA 10/4
BA 10/5

DISASSEMBLY

3

I

- Remove :
- the throwout bearing and clutch fork,
- the bell housing.

IV

- Remove :
- the right half housing.

II

- Engage 4th gear.
- Lock the output shaft using the splined socket (-).0520 M.
- Loosen nut (9).
- Remove the reverse pinion from the intermediate shaft.

V

- Remove the cluster shaft.
- Recover the outer bearing races (11) and mark them if they are to be reused.

III

- Remove :
- the Allen screws (10) holding the rear bearing(s).

VI

- Remove the input and mainshaft gearing assemblies.
- Engage the synchro into 3rd gear position.
- Separate the input shaft from the main shaft.
- Recover the needle bearing cage (12).

PEUGEOT

I

DISASSEMBLY

- Remove :
 - the circlip (1),
 - the spring washer (2)
 - the circlip around bearing (3).
- Place the half shells (-).0314 E around the bearing (4).
- Set up assembly on the press as shown.
- Extract the bearing (4).

II

- Recover :
- FOR OIL SLINGER TYPE INPUT SHAFTS (a).
 - the oil deflector washer,
 - the adjusting shims.
- FOR OIL SEAL TYPE INPUT SHAFTS (b).
 - (machined surface).
 - the adjusting shims.

III

PREPARATION FOR ADJUSTMENT

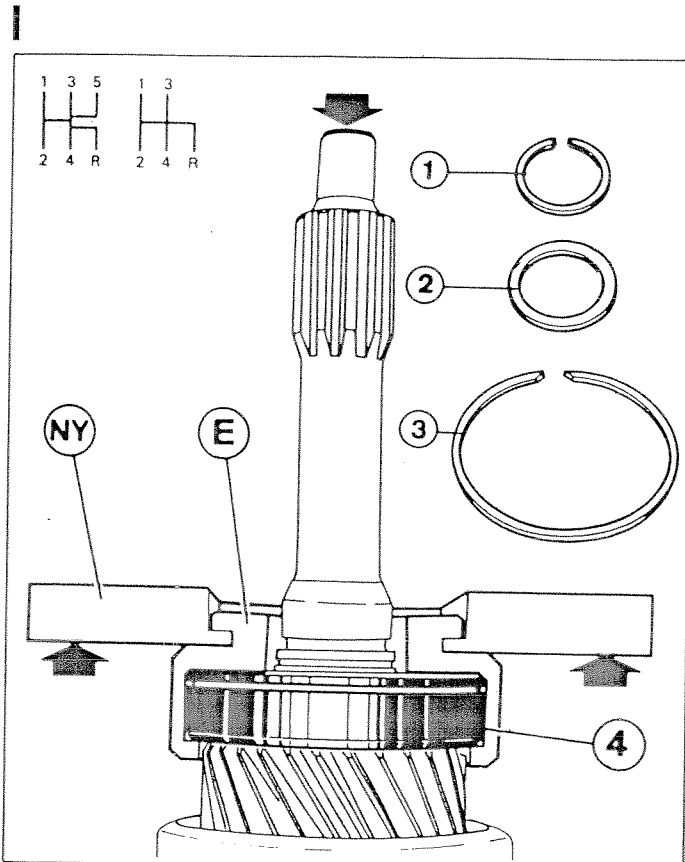
- Stack in following order :
 - 1) spacer (-).0310 G.
 - 2) input shaft pinion.
 - 3) adjusting shims :
 - a) if one of the following parts has been replaced :
 - input shaft,
 - 3rd and 4th shaft and fork,
 - front half housings.

OIL SLINGER TYPE INPUT SHAFT (a)

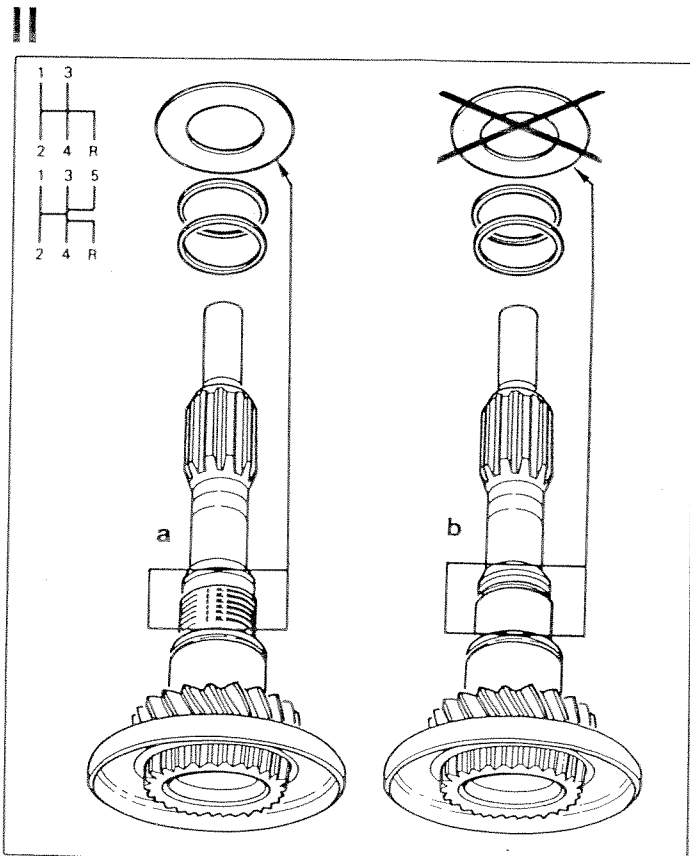
 - stack only oil deflector.

OIL SEAL TYPE INPUT SHAFT (b)

 - place a 0.20 mm spacer.
 - b) in all other cases :
 - stack the shims recovered on disassembly.
 - 4) the oil deflector washer (only on input shafts with oil slinger (a)).
 - 5) the bearing with a new circlip facing upward,
 - 6) the installing guide (-).0310 D.
 - 7) the drift (-).0310 UZ.
- Press the bearing until it is seated.
- NOTE** - Do not install the circlip nor the spring washer at this time.

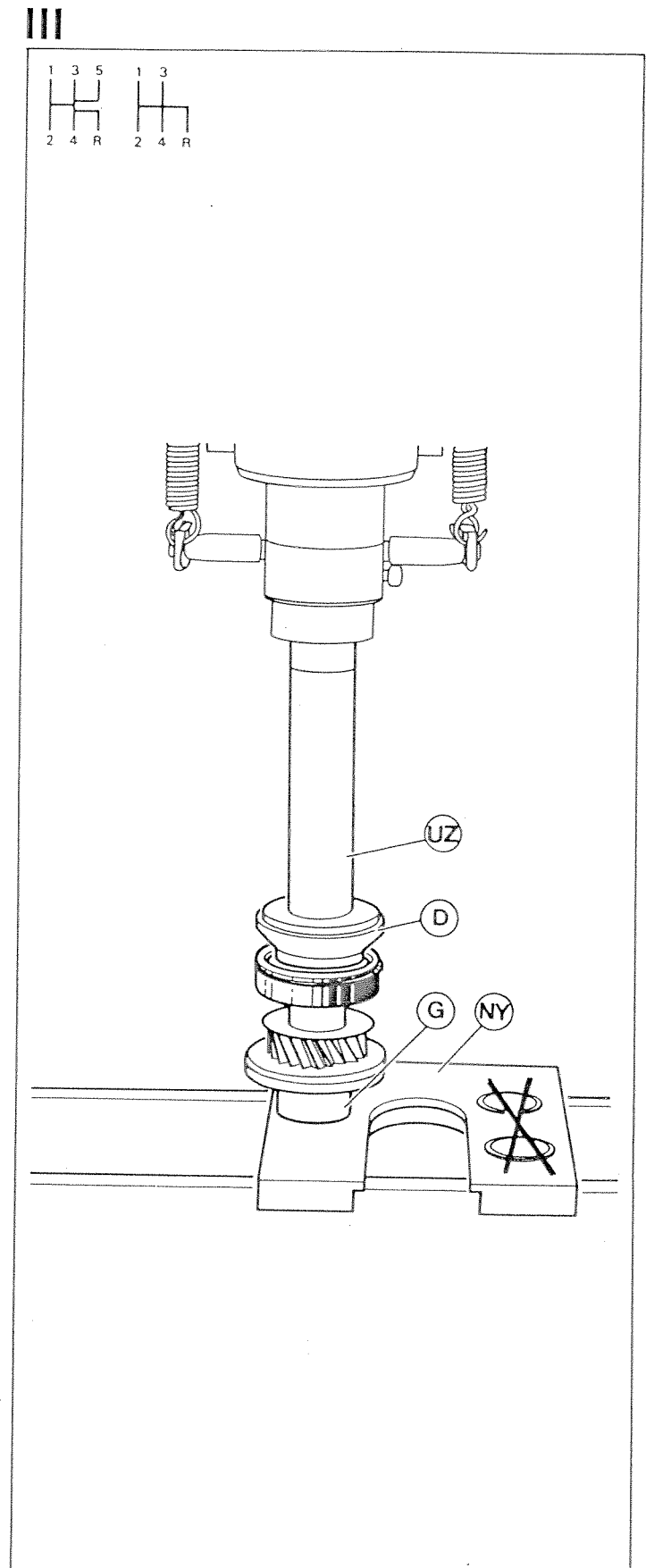


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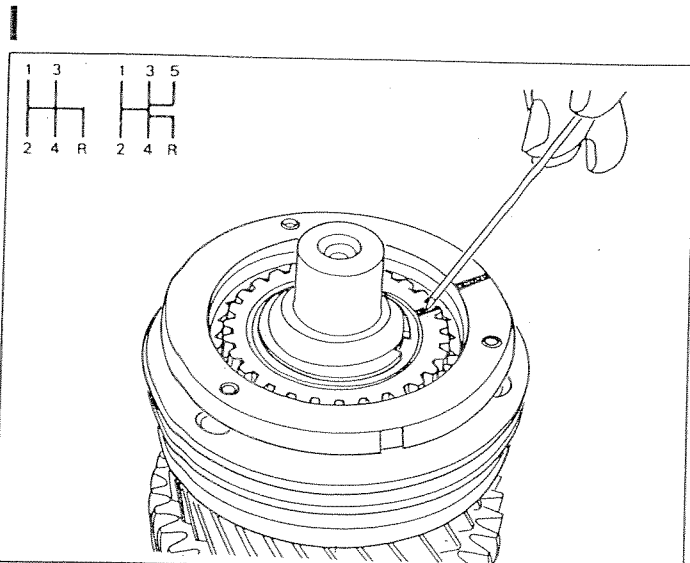


25.05.81. C 160

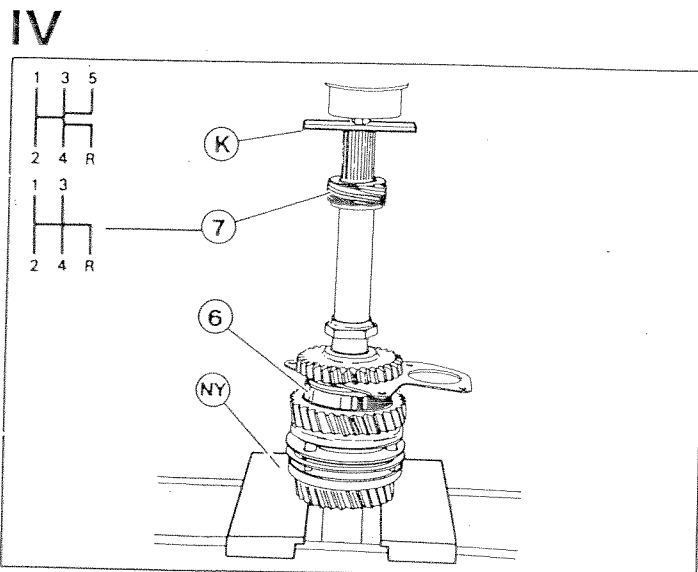
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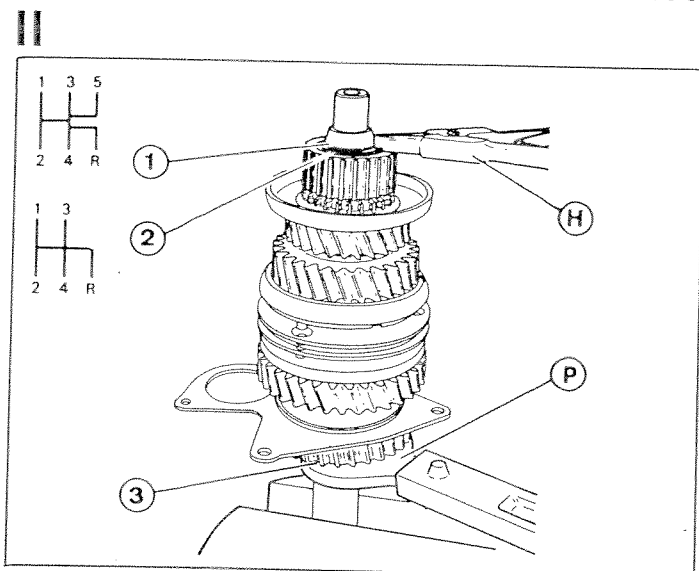
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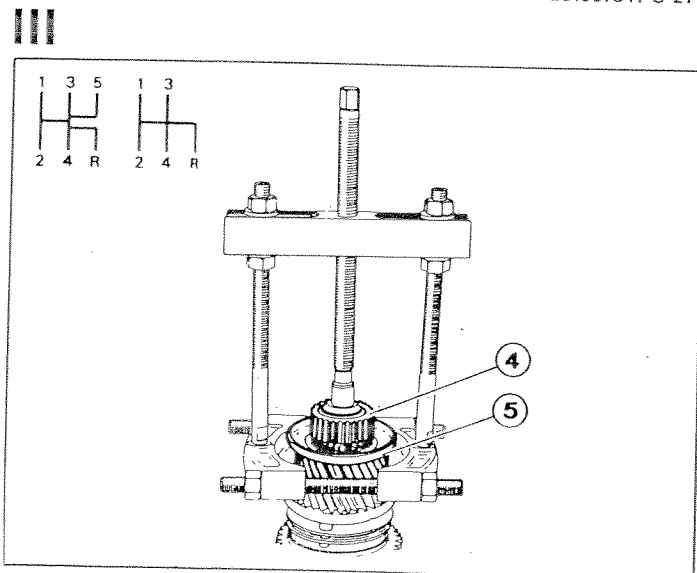
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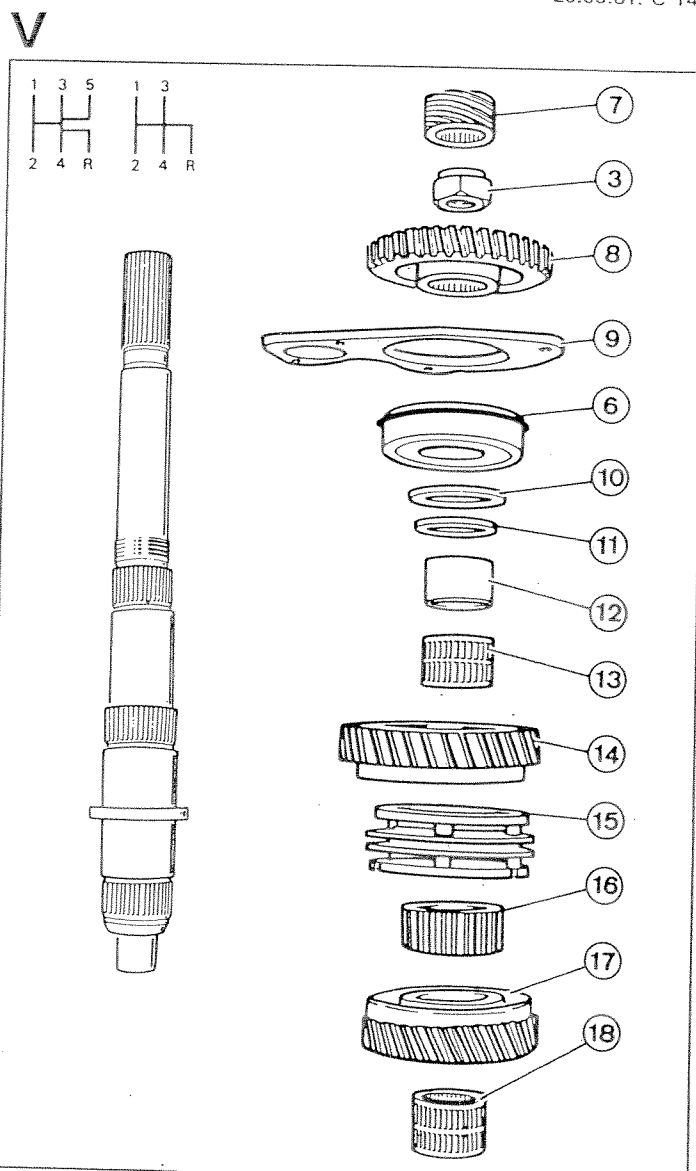
25.05.81. C 140



25.05.81. C 277



17.04.84. C 88



05.01.74. C 98

05.01.74. C 96

BA 10/4
BA 10/5

MAIN SHAFT
DISASSEMBLY

3

I

- Mark the 3rd / 4th synchro collar in relation to its hub.
- Slide the collar to neutral and remove it.

IV

- Position safety strap (-).0310 K on the end of the shaft.
- Press out the shaft to remove the bearing (6).

BA 10/4 PARTICULARITY

- Continue to press out the shaft to release the speedo worm gear (7).

II

- Remove :
 - the circlip (1)
 - the spring washer (2).
- Unscrew the nut (3) using the open end insert (-).0310 P.

V

- Recover, in the following order :
 - the speedometer worm gear (7)
(4 speed gearbox)
 - the nut (3),
 - the reverse gear driven pinion (8),
 - the bearing retainer plate (9)
(except BA 10/5 1st version),
 - the bearing (6),
 - the spacer washer (10)
(only on BA 10/5 first version)
 - the adjusting shim (11),
 - the first gear pinion spacer bushing (12).
 - the needle cage (13),
 - the 1st gear driven pinion (14),
 - the 1st / 2nd synchronizer WITHOUT SEPARATING THE COLLAR (15) FROM HUB (16),
 - the 2nd gear driven pinion (17).
 - the needle cage (18).
- Mark the 1st / 2nd collar (15) in relationship to its hub (16).

III

- Remove :
 - the synchronizer hub (4),
 - the 3rd gear driven pinion (5).
- (if necessary, separate the hub by extracting the pinion using the FACOM U53 puller).

3**MAIN SHAFT****PREPARATION FOR ADJUSTMENT****BA 10/4****BA 10/5****I**

- Install in the order and according to the reference marks made on disassembly the pinions and synchronizers.

IMPORTANT - Position the reference grooves (a) in the synchros toward the first gear pinion.

CAUTION-ADJUSTING SHIM (11).

a) if one of the following parts have been replaced :

- main shaft,
- driven pinion(s),
- 1st / 2nd or 3rd / 4th synchronizer(s),
- fork(s) and shaft(s).

Place a shim of **2,95 mm** thickness.

b) in all other cases :

Install the shim recovered on disassembly.

Install the bearing (6) with a new circlip facing to the rear.

II

- Press the bearing (6) on until it bottoms out.

CAUTION - DO NOT EXCEED 3 TONS (6 600 LBS.)

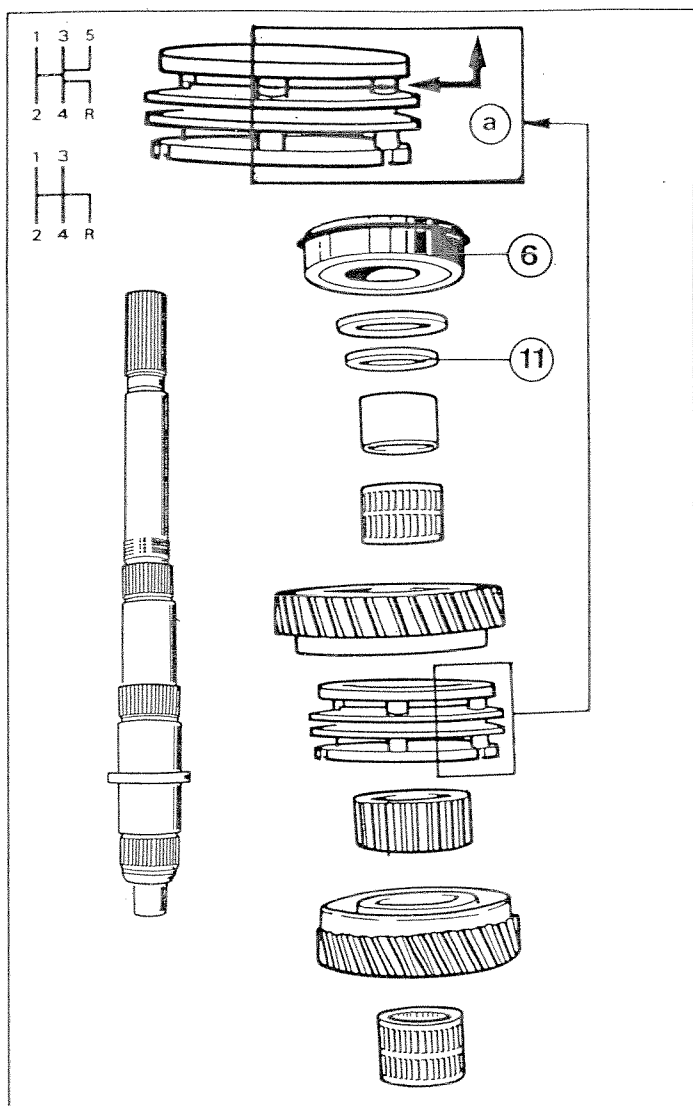
III

- Install :
 - the 3rd gear driven pinion (5),
 - the 3rd / 4th synchro hub (4),
 - a new spring washer (2),
 - a new circlip (1).

IV

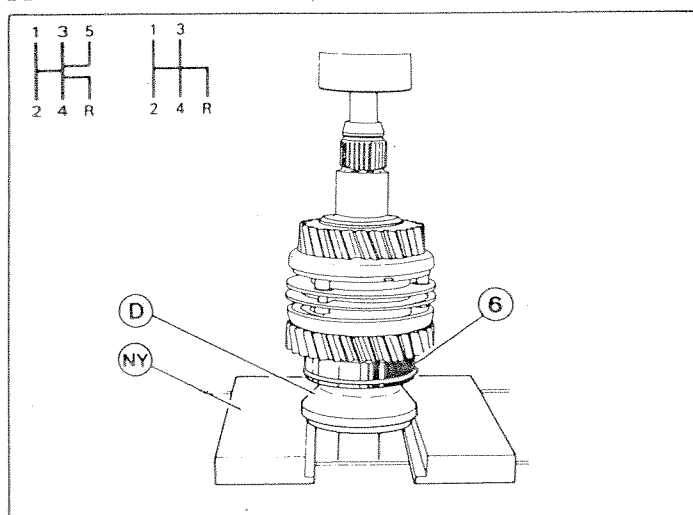
- While applying light pressure with the press to compress the spring washer, bring the circlip onto its groove.

- Retighten the circlip with a pair of water pump pliers until its diameter is flush with the machined production of the drift.

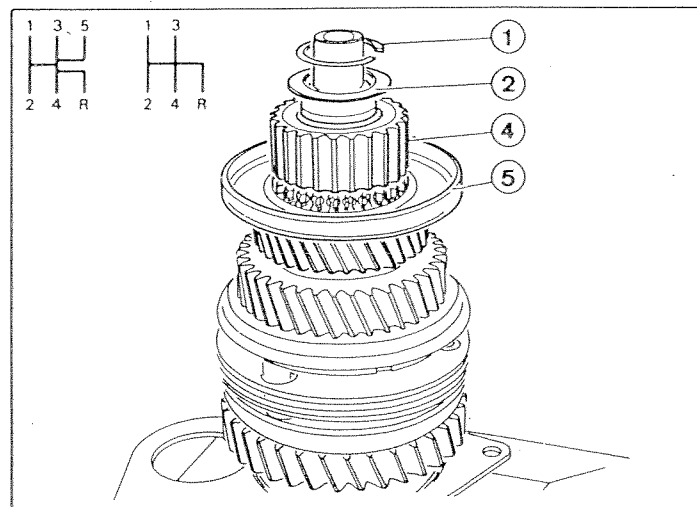


05.01.71. C 98

05.01.74. C 96

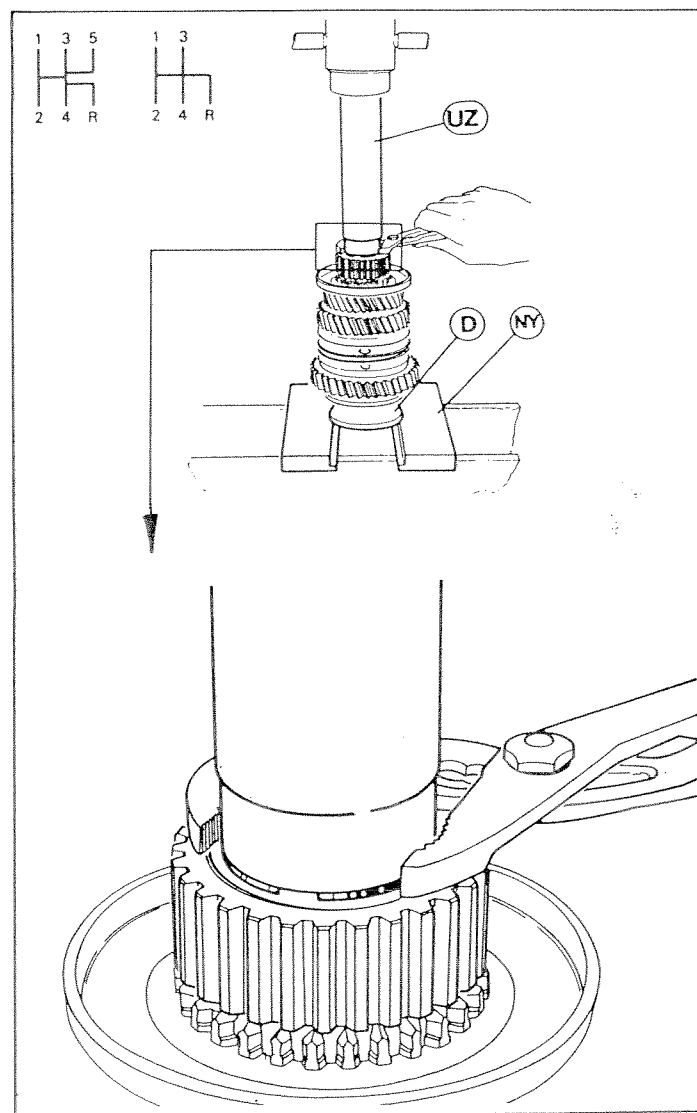


16.06.81. C 4



25.05.81. C 194

IV



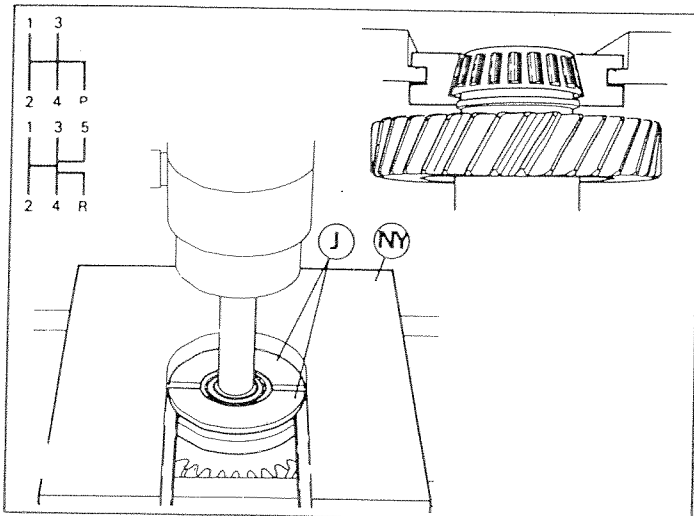
17.04.84. C 72

17.04.84. C 70

3

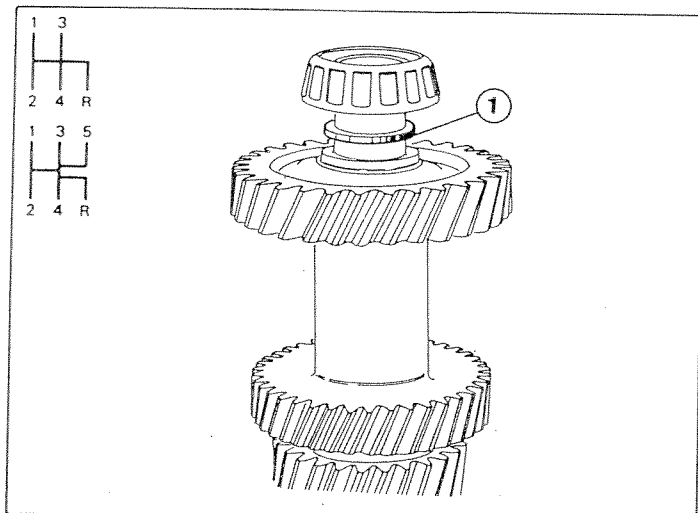
BA 10/4
BA 10/5

I



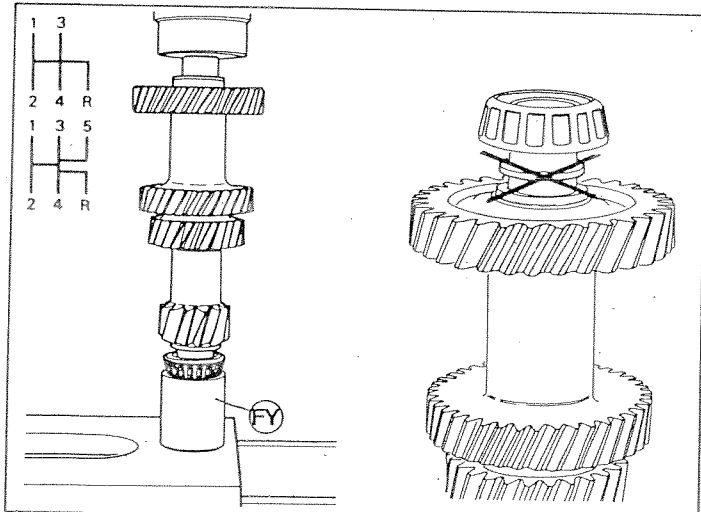
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II



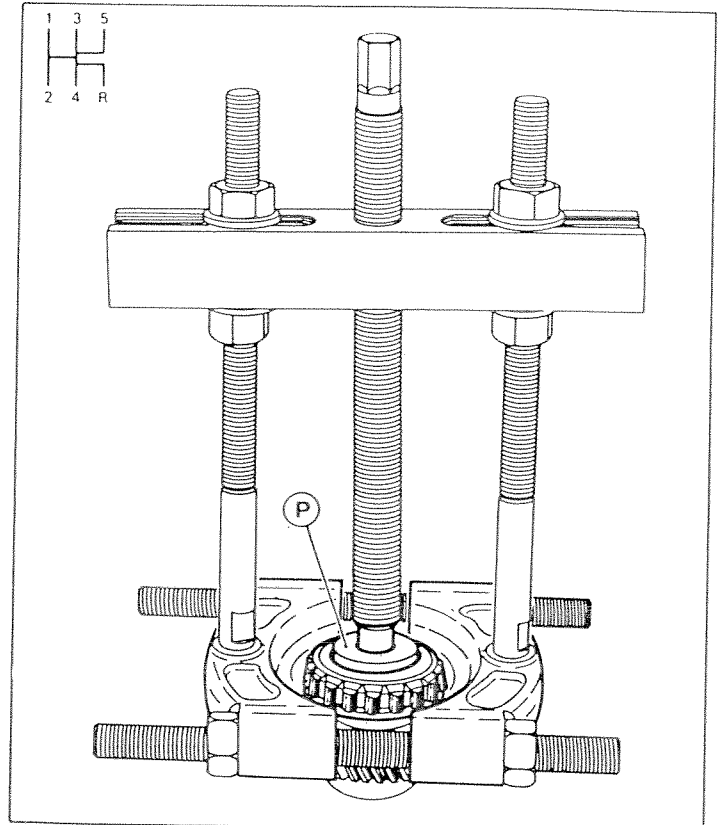
25.05.81. C 122

III



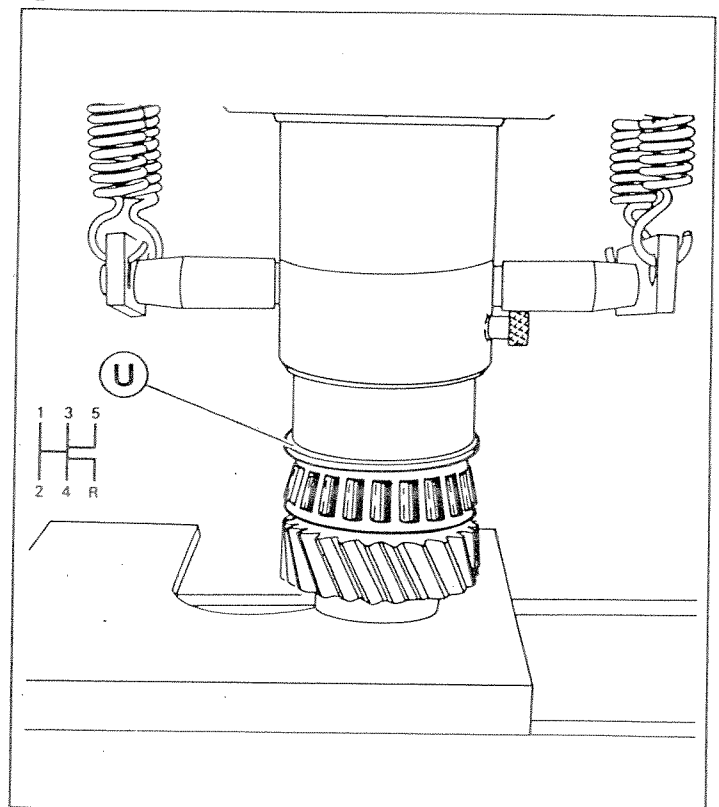
25.05.81. C 122

IV



17.04.84. C 86

V



08.10.77 C 149

BA 10/4
BA 10/5

CLUSTER SHAFT - 5th GEAR DRIVEN PINION
DISASSEMBLY - PREPARATION FOR ADJUSTMENT

3

I

CLUSTER SHAFT

DISASSEMBLY

- Extract the rear bearing using :
 - press plate (-).0310 NY,
 - the half shells (-).0314 J.

II

- Proceed in the same manner to extract the front bearing.
- Retrieve the adjusting shim (1).

III

ADJUSTMENT PREPARATION

- Lubricate the bearings generously with oil.
- Press on :
 - the rear bearing,
 - the front bearing **without adjusting shim** using the drift (-).0314 FY.

IV

5th GEAR DRIVEN PINION

DISASSEMBLY

- Remove :
 - the roller bearing (taper or straight according to fitting).

Use the extractor/puller FACOM U53 and the press block (-).0314 P.

V

REASSEMBLY

- Press on the bearing using the press plate (-).0314 U.

IMPORTANT - On new parts, respect the pairing of the shaft and the 5th gear driven pinion.

References : green or yellow.

IDENTIFICATION

(1)	(3)	(5)	Locking detent balls
(2)	(4)	(6)	Locking detent springs
(7)			Reverse synchronizer ring detent lock
(8)			Reverse synchronizer ring detent lock spring
(9)			Lock-out ball
(10)			Lock-out needle
(11)			Lock-out detent
(12)			1st/2nd selector fork
(13)			3rd/4th selector fork
(15)			Reverse selector fork

PARTICULARITIES

The detent balls (1) (3) and (7) are accessible from outside the gearbox.

The detent ball (5) which is maintained in place by the rear bearing of the secondary shaft, is not accessible from outside the gearbox.

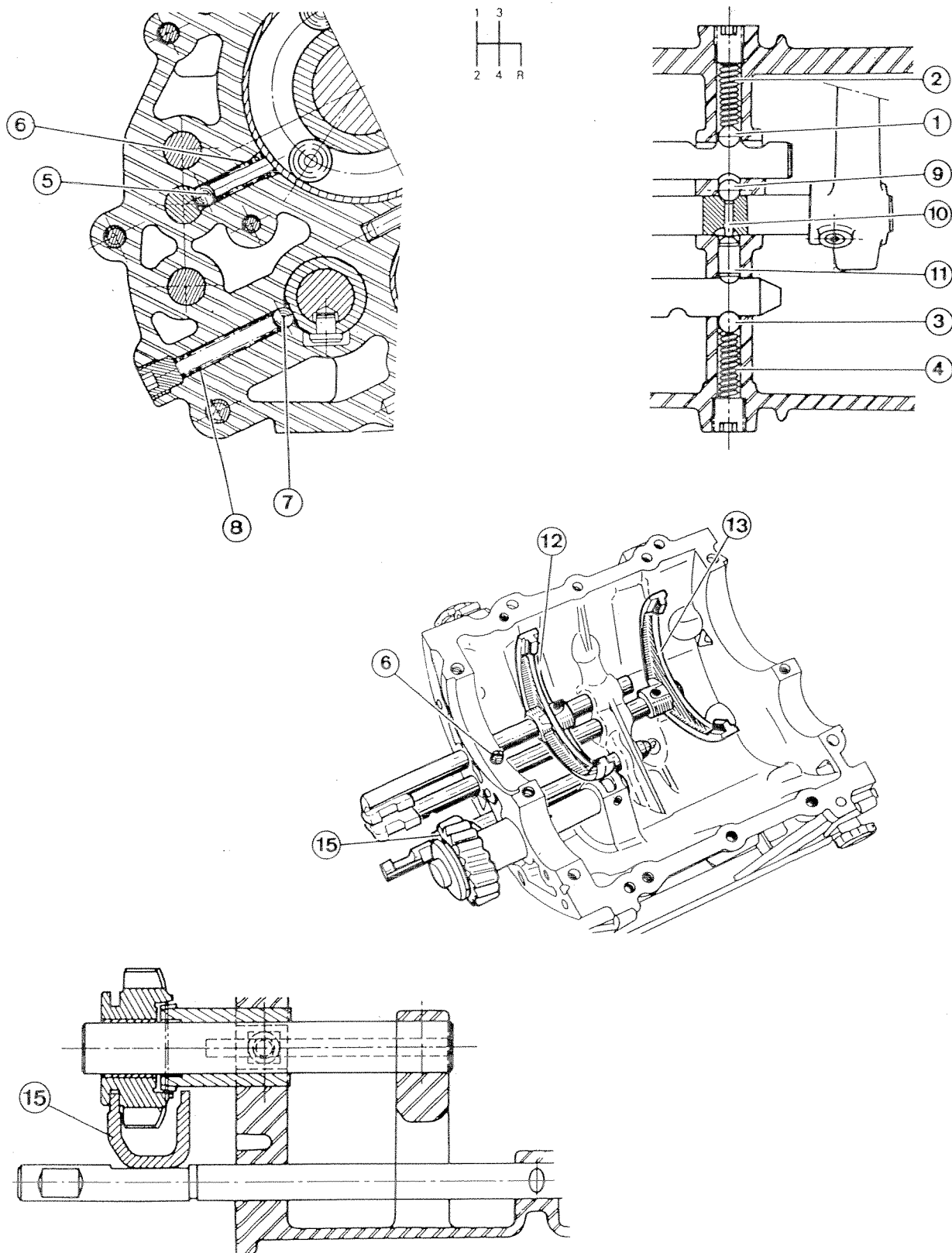
NOTES :

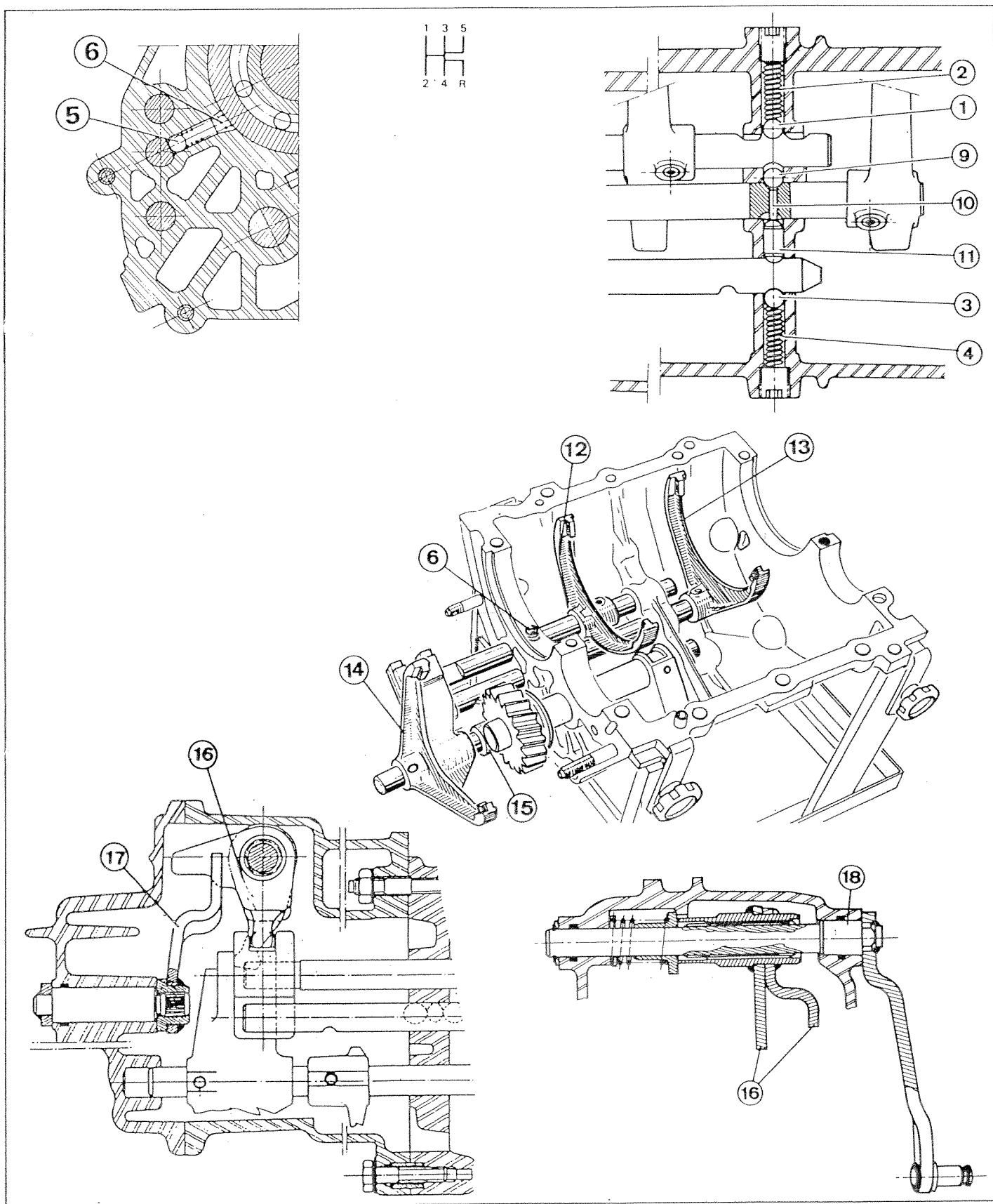
— the five balls (1) (3) (5) (7) and (9) are identical.

— length of the springs :

(2) (4) and (6) : 30 mm

(5) : 50 mm





3**FORKS - SHAFTS AND DETENTS****DISASSEMBLY****BA 10/4****BA 10/5****I**

- Recover the 3rd / 4th locking detent spring (6).
- Engage 4th gear.
- Drive the 1st / 2nd and 3rd / 4th forks' roll pins out.

IV

- Remove :
 - the reverse detent lock-out plug and spring (4).

BA 10/4 PARTICULARITY

- the reverse synchronizer detent lock plug and spring (8).

II

- Remove :
 - the 1st / 2nd lock detent cap,
 - the spring (2).

V

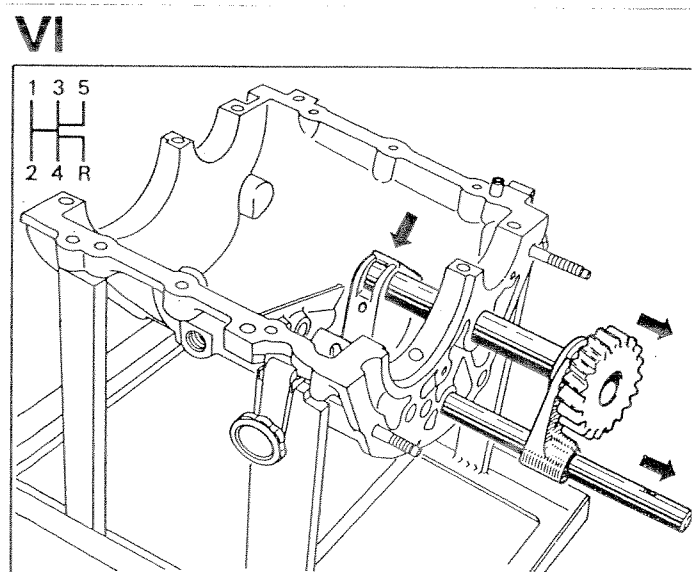
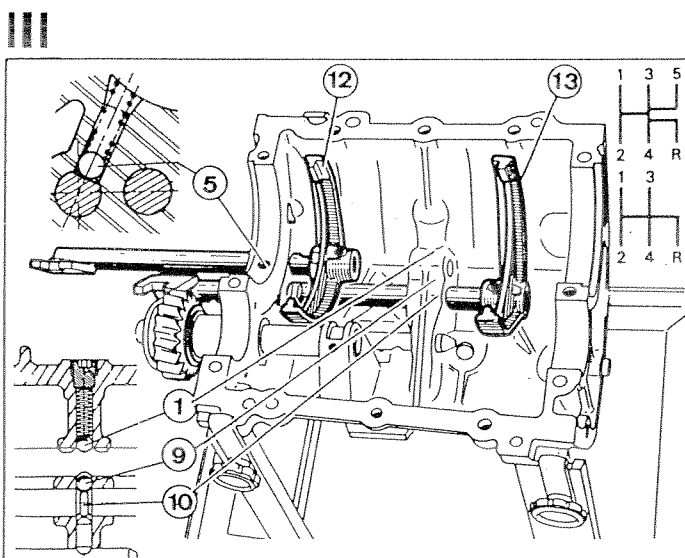
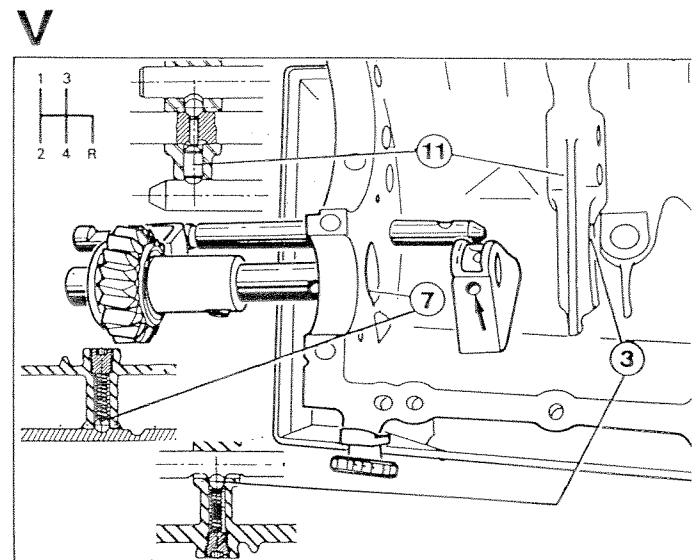
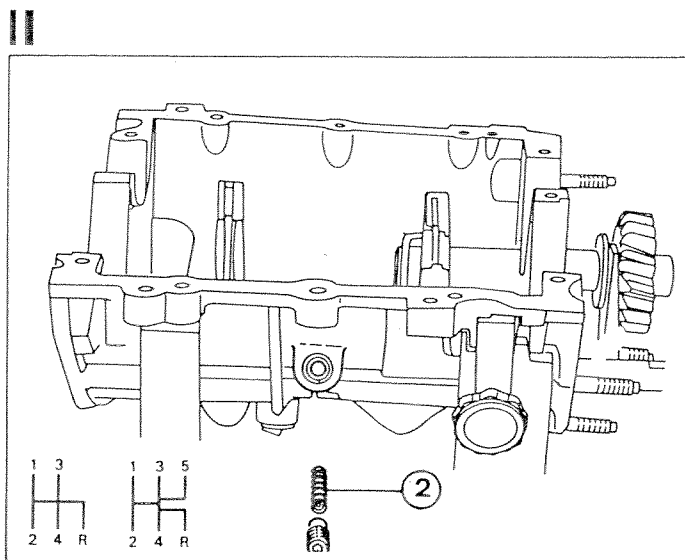
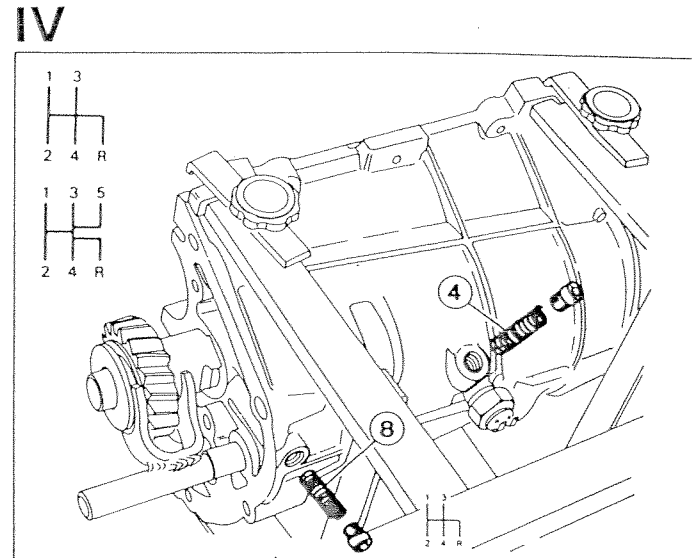
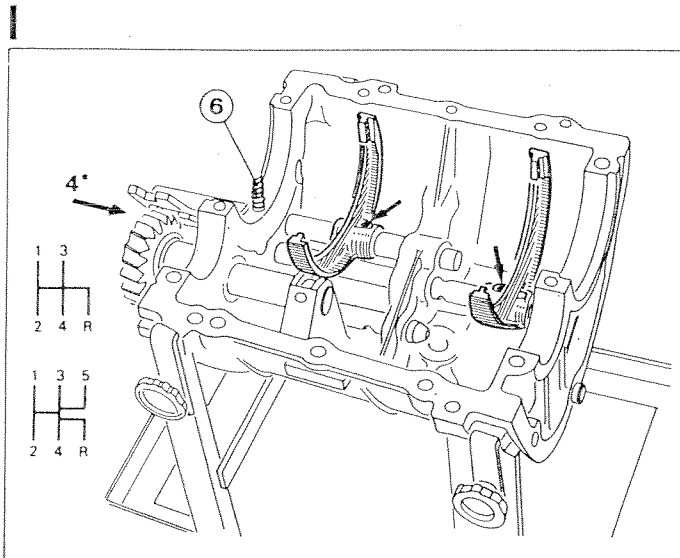
- Drive out the reverse shaft roll pin.
- Remove the assembly : pinion, shaft and synchro with reverse fork shaft.
- Recover :
 - the balls (3) and (7),
 - the lock-out detent (11).

III

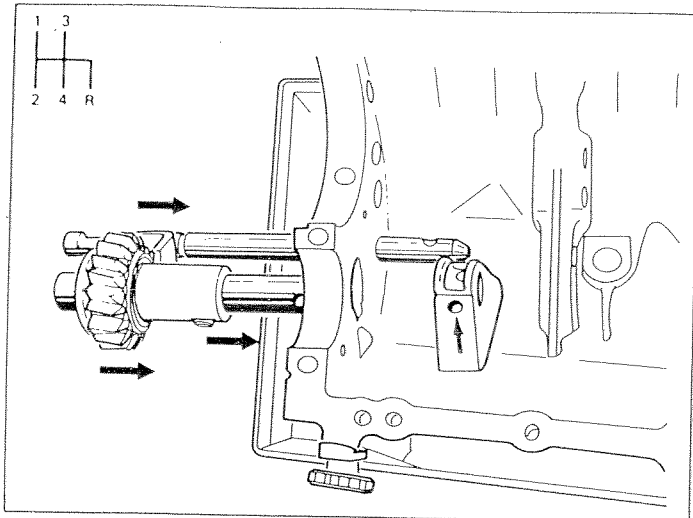
- Remove :
 - the 1st / 2nd fork shaft
 - the 1st / 2nd fork (12)
 - the 3rd / 4th fork shaft
 - the 3rd / 4th fork (13),
 - the balls (1) (5) and (9).
- Recover the lock-out needle (10) in the 3rd / 4th shaft.

VI

- Remove the reverse fork, shaft assembly with the reverse idler gear.
- Drive out the reverse shaft roll pin.
- Remove the reverse idler shaft.

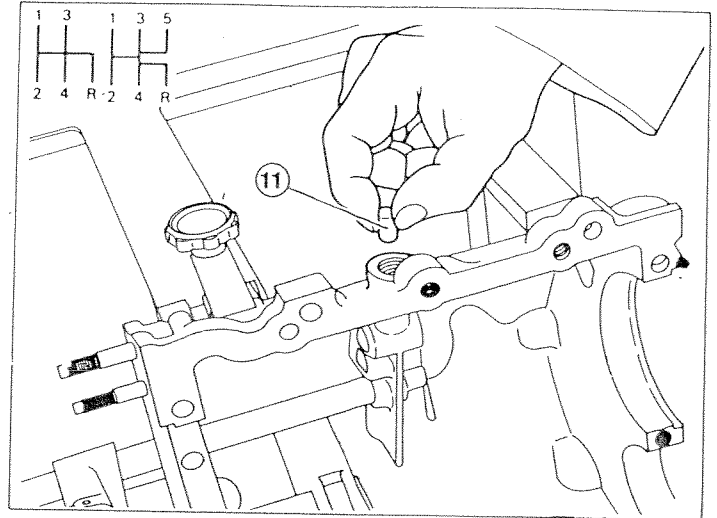


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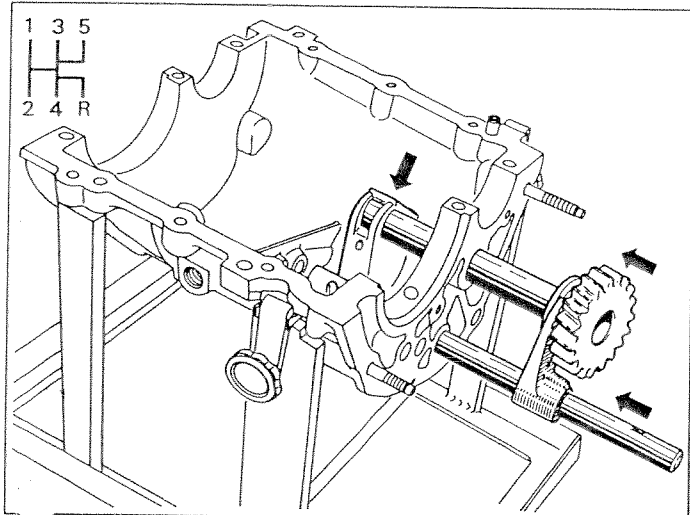
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IV



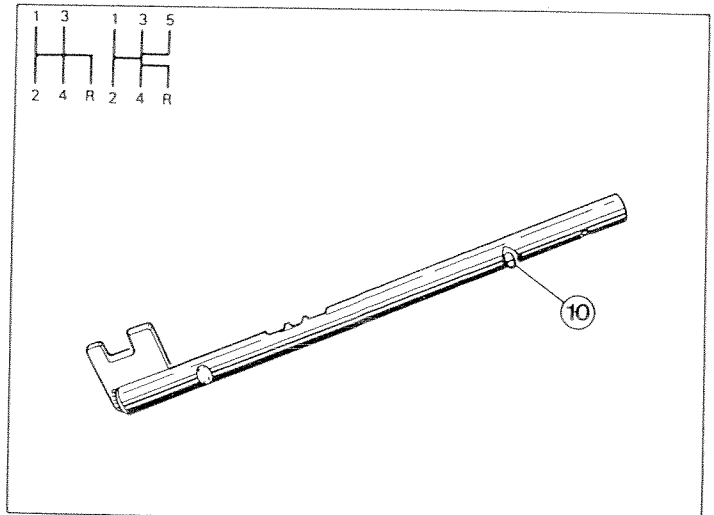
08.10.77. C 88

II



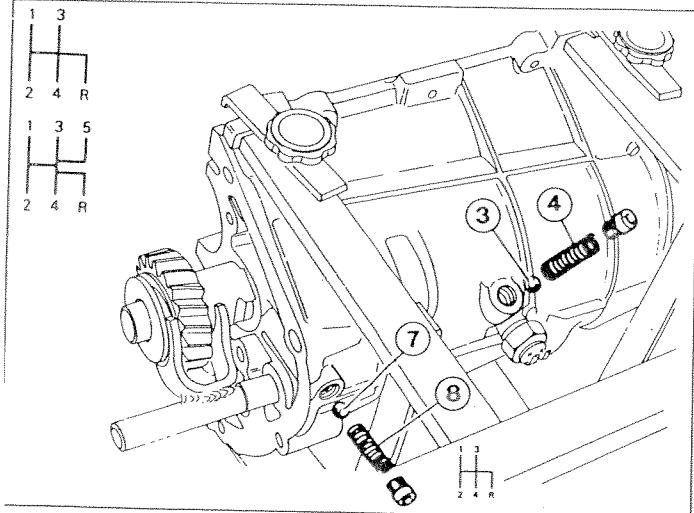
17.04.84. C 53

V



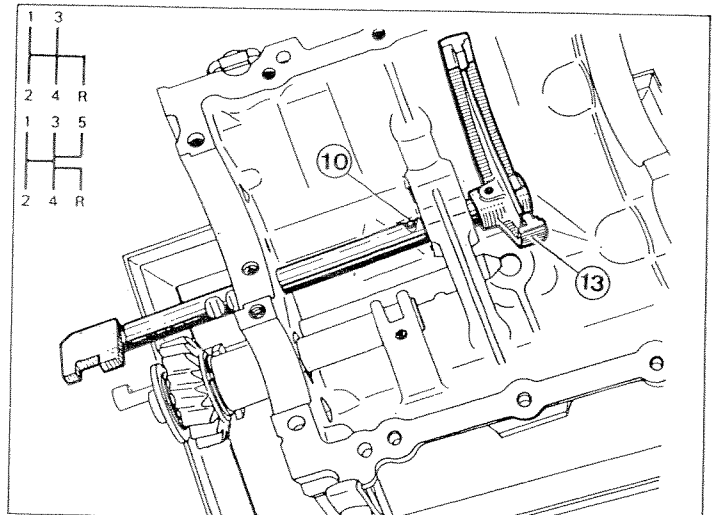
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III



17.04.84. C 59

VI



6569

BA 10/4
BA 10/5

FORKS-SHAFTS AND DETENTS

REASSEMBLY

3

I

- Install simultaneously : the pinion, the shaft, and the synchro bushing with the reverse fork shaft.
- Insert a new roll pin into the reverse shaft.

IV

- Insert the lock-out detent **(11)** and drive it until it contacts the reverse shaft.

II

- While aligning the roll pin holes, drive the idler shaft in with a mallet.
- Insert a new roll pin into the reverse shaft.
- Install simultaneously : the shaft / fork assembly with the reverse idler.

V

- Insert the grease coated lock-out needle **(10)** in its recess of the 3rd / 4th fork shaft.

III

- Insert :
 - a ball **(7)**,
 - a spring **(8)** 50 mm length.
- Insert :
 - a ball **(3)**
 - a spring **(4)** 30 mm length.
- Screw on the plugs coated with normal holding loctite, and torque to : **1.3 mdaN (9.43 ft.lbs)**.
- Bring the reverse fork shaft to "neutral".

VI

- Position the 3rd / 4th fork **(13)** with its shoulder toward the rear.
- Insert the 3rd / 4th fork shaft.
- IMPORTANT - Make sure that the lock-out needle (10) is in the fork shaft.**

PEUGEOT

3**FORKS-SHAFTS AND DETENTS****REASSEMBLY****BA 10/4****BA 10/5****I**

- Insert a lock-out detent ball **(9)** into the channel and drive it until it contact the 3rd / 4th shaft.

IV

- Install new roll pins to lock the 1st / 2nd fork **(12)** and the 3rd / 4th fork **(13)**.
- Insert into the 3rd / 4th detent channel :
 - a ball **(5)**,
 - a spring **(6)** 30 mm length.

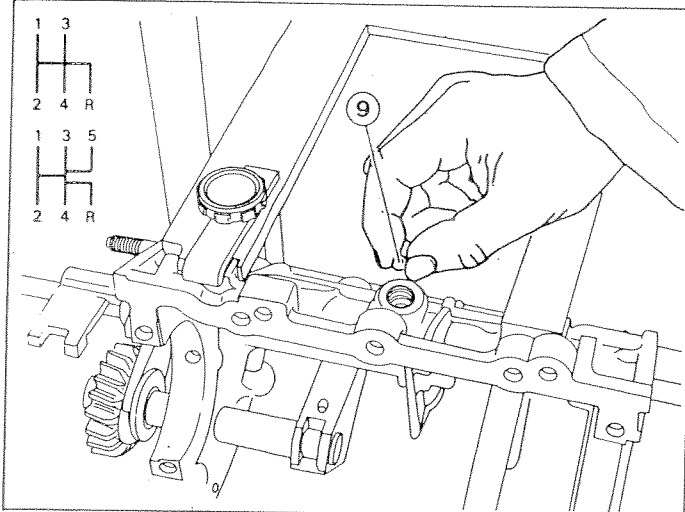
II

- Position the 1st / 2nd fork **(12)** with its shoulder toward the front.
- Insert the 1st / 2nd fork shaft.

III

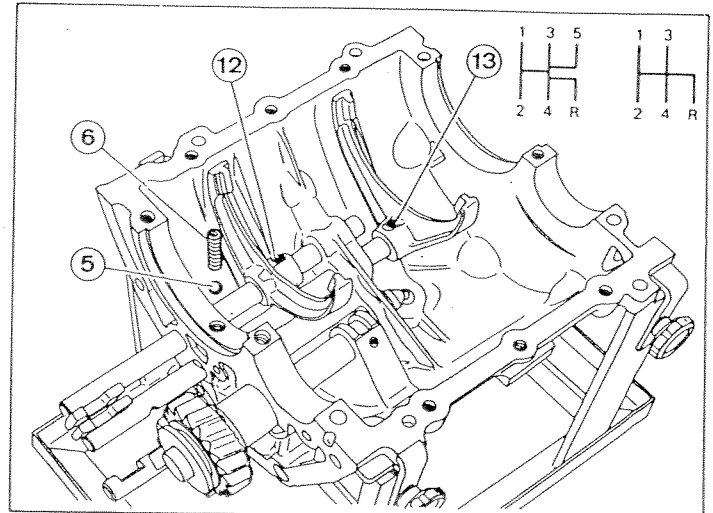
- Insert in the channel.
 - a ball **(1)**,
 - a spring **(2)** 30 mm length .
- Screw on the plug coated with normal holding loctite, torque to : **1,3 mdaN (9.43 ft.lbs)**.

I



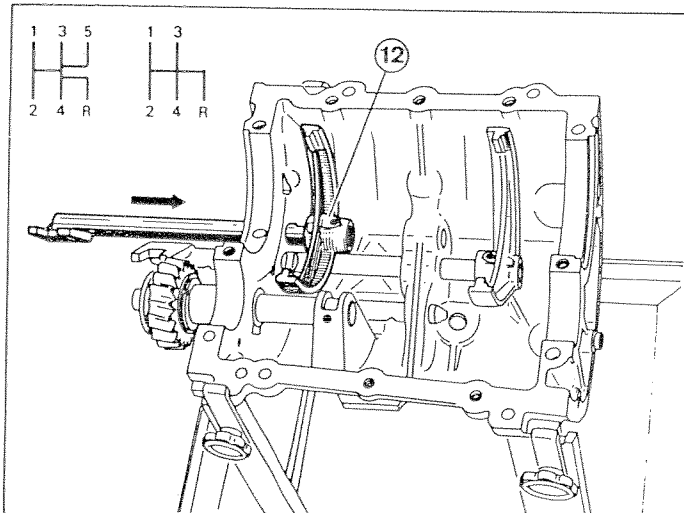
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IV



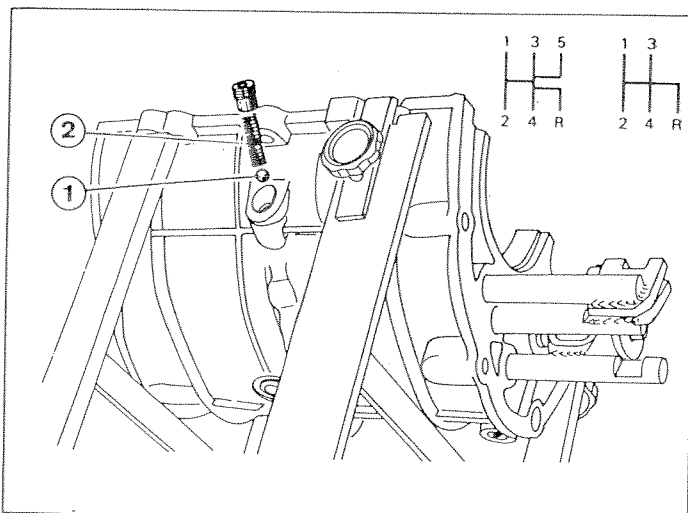
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II

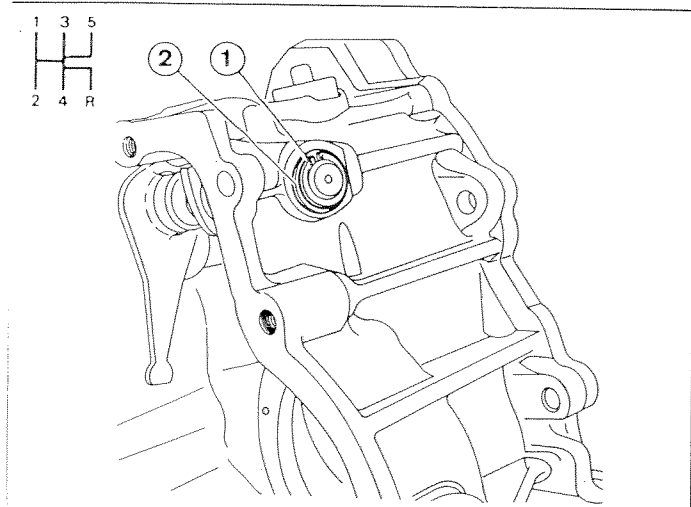


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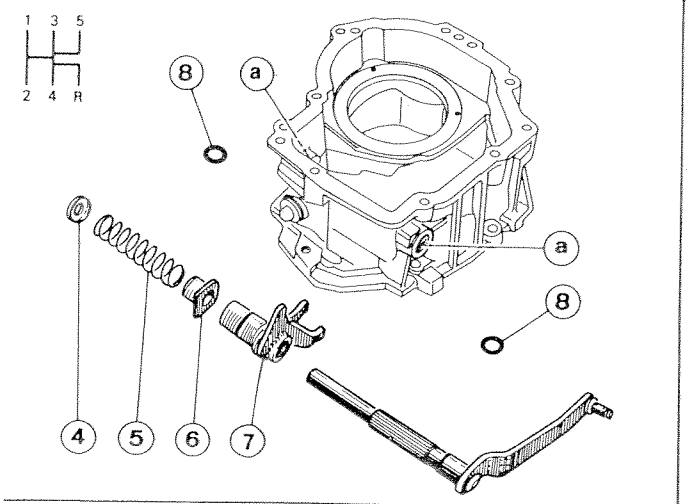
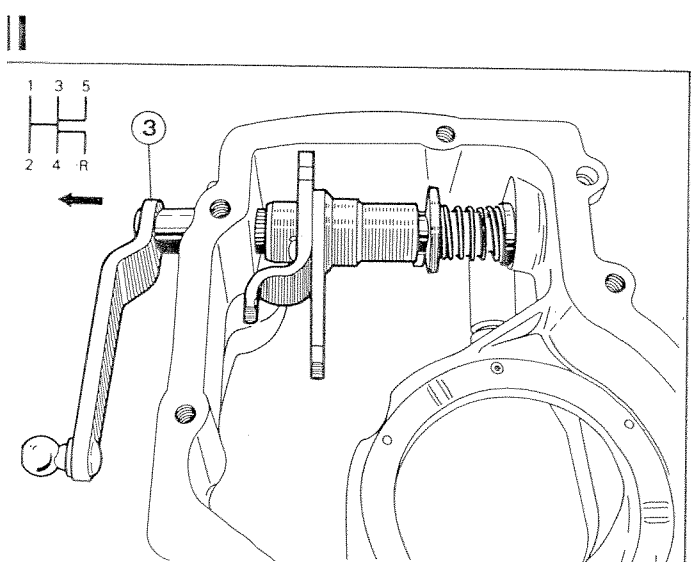
III



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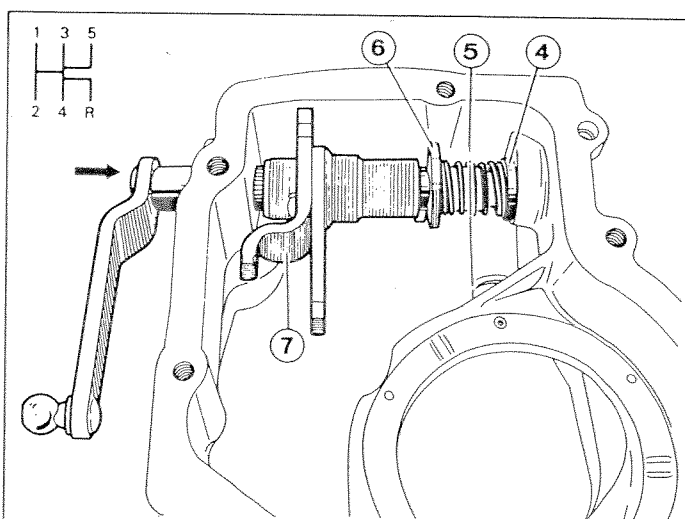
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3.10.77. C 73

17.04.84. C 80

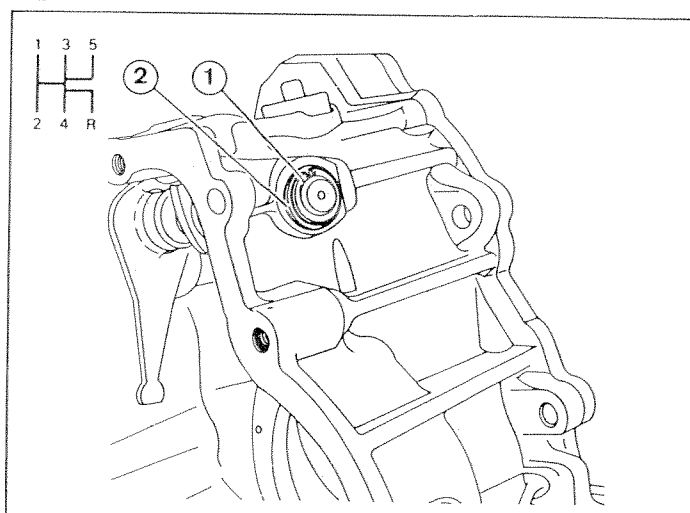
III



08.10.77. C 73

17.04.84. C 77

IV



08.10.77. C 75

I**DISASSEMBLY**

- Remove :
- the circlip (1),
- the washer (2).

II

- Remove the selector shaft (3).
- Recover :
- the cup (4),
- the spring (5),
- the bushing (6),
- the selector fingers (7).
- Extract the "O" rings (8) from their lodging (a).

III**REASSEMBLY**

- Install :
- two new pre-oiled "O" rings (8) (see illustration II).
- Insert shaft into housing.
- Position the selector fingers (7) as shown opposite.

IMPORTANT - Align the selector finger (b) with the lever (c) of the shaft.

- Install onto the shaft :
- the bushing (6) with the flat against the housing,
- the spring (5),
- the cup (4).

IV

- Install :
- the washer (2),
- the circlip (1).

I

DISASSEMBLY

- Check the front and rear mating faces of the housing for parallelism on a true surface.

If the warpage exceeds 0.10 mm (0.004") replace the bell housing.

IV

REASSEMBLY

- Coat the throwout bearing guide bore with **Molykote 321 R P.N. 9728.62.**
- Throwout bearing guide with drain hole (2) :
 - position the hole (2) toward the pressure relief slots of the housing (3).

II

- For oil seal type input shaft assembly :
 - remove the oil seal.

V

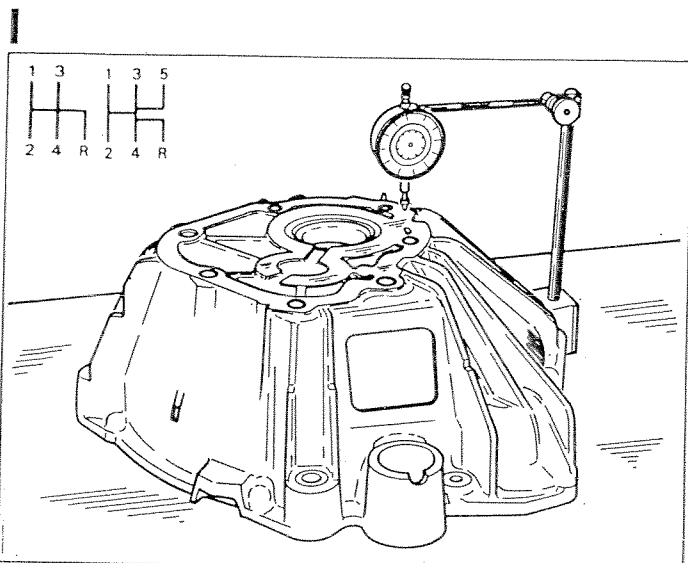
- Drive in the throwout bearing guide with :
 - the drift **(-).0310 D** for those guides used with oil slinger type input shafts,
 - the input shaft seal installing bushing **(-).0314 H** for the oil seal type input shafts
- Install the circlip **(1)** (see fig. VI).

III

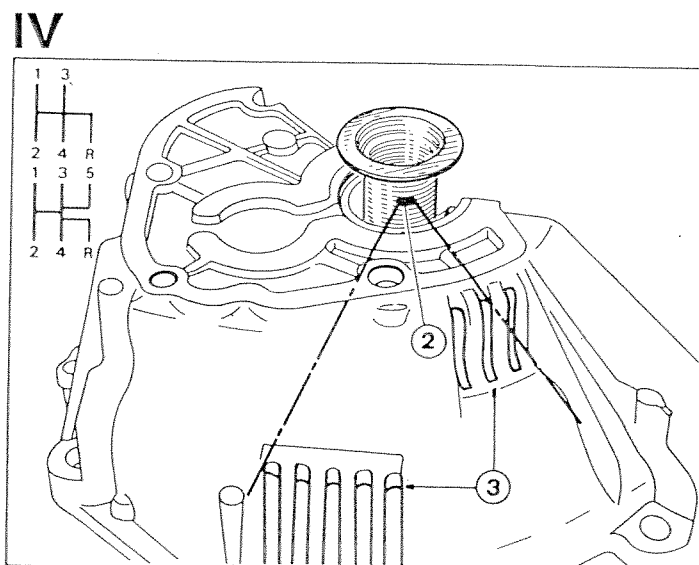
- Remove the circlip **(1)**.
- Drive out the throwout bearing guide using the press block **(-).0314 FY.**

VI

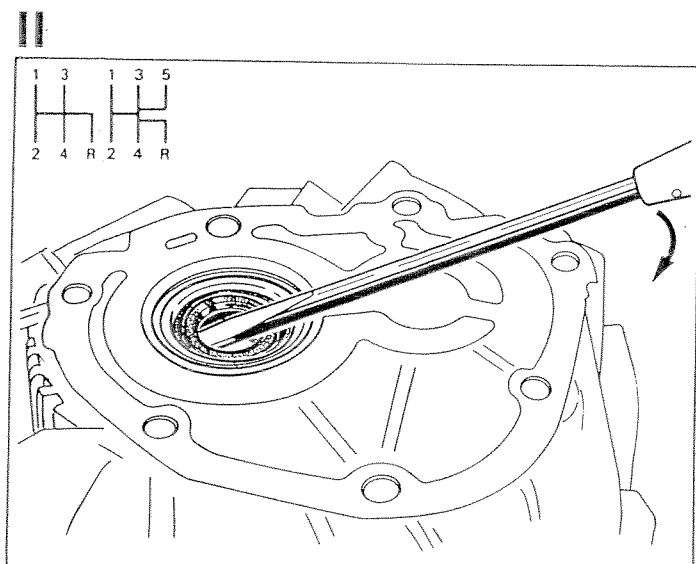
IMPORTANT - Do not install mainshaft seal until you have completed all the adjustments to prevent damaging the oil seal against the splines.



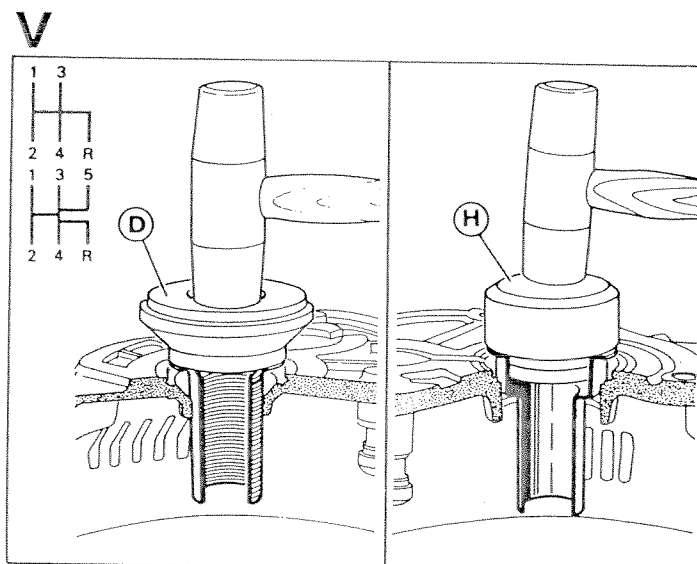
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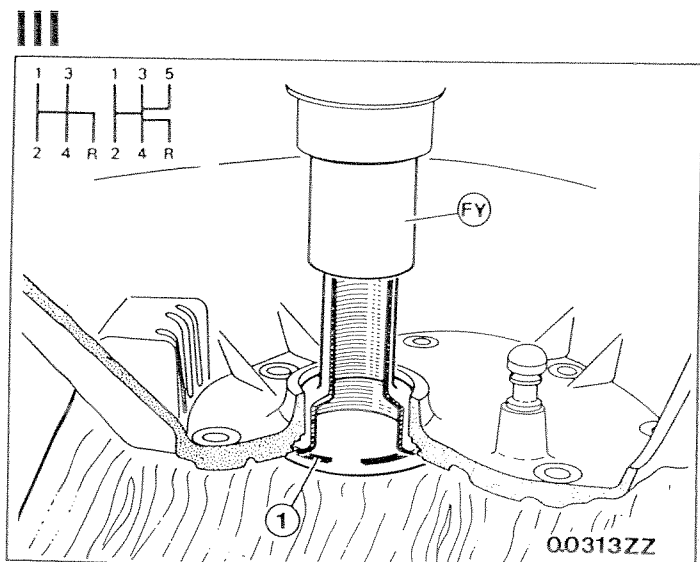
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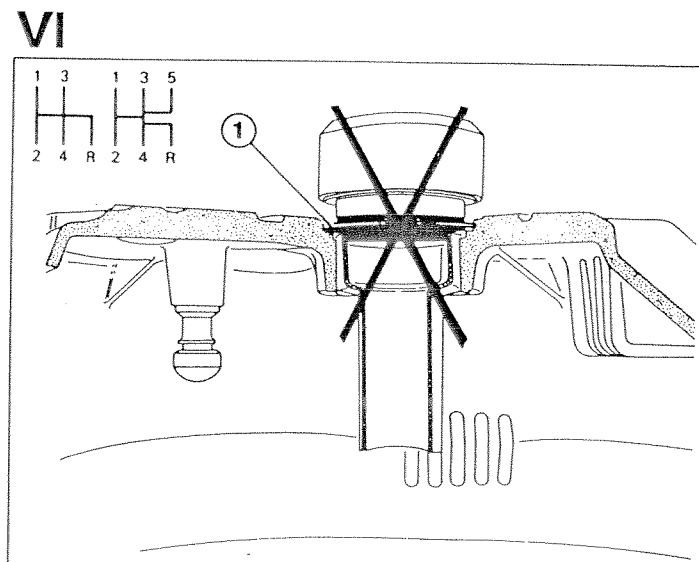
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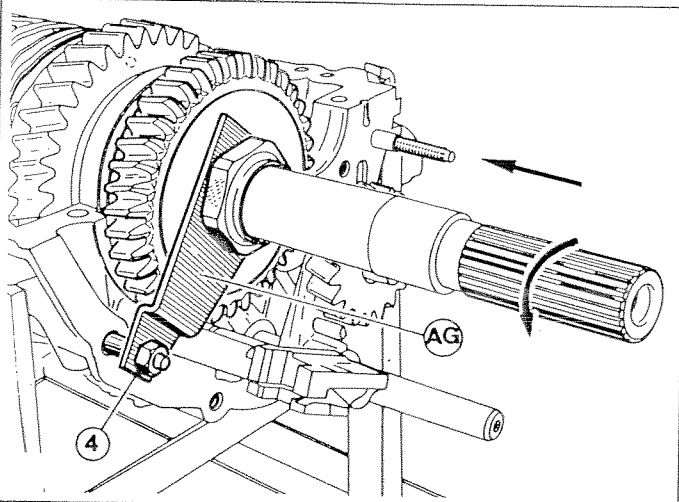
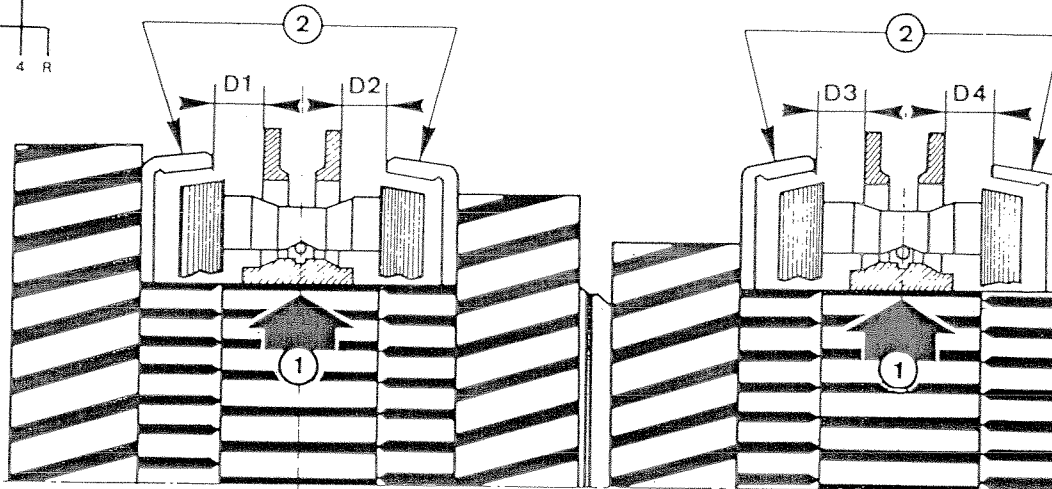
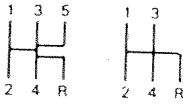
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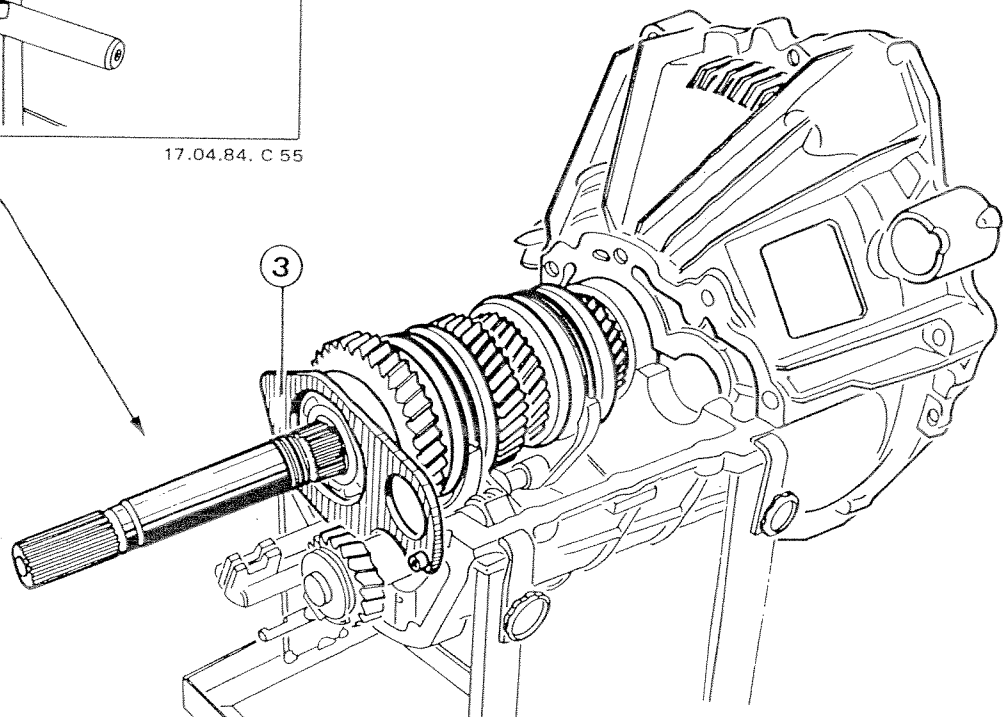
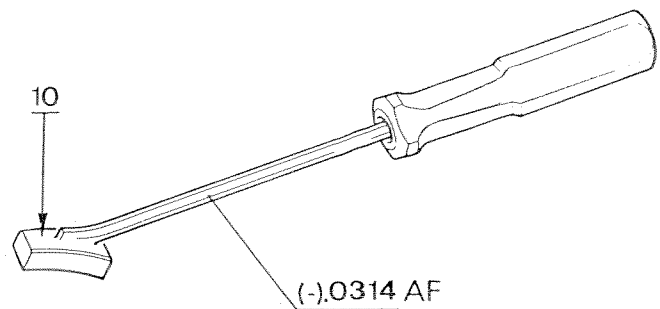
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25.05.81. C 75



17.04.84. C 55



17.04.84. C 119

PRINCIPLE

In the neutral position determined by the forks and their detents, the clutch dogs **(1)** must be centered as best as possible in relation to their respective pinions' synchronizer collars **(2)**.

It is, therefore, necessary to distribute the distance D1 - D2 and D3 - D4 evenly.

PREPARATION

— Assemble the input and mainshafts (see pages 52 and 53 fig. II).

— Install the assembly in the left half housing.

— Boltup :

- the bell housing to the left half housing.

— BA 10/4 and BA 10/5 2nd VERSION

- the bearing retainer plate **(3)**.

— BA 10/5 1st VERSION

Install :

- the reverse pinion

- the positioning gauge **(-).0314 AG**.

- the nut.

Push in the cluster shaft in order to eliminate the bearing play.

— Pivot the shaft in order to bring the positioning gauge onto the stud and maintain the assembly with nut **(4)** run up handtight.

Recheck that the 1st / 2nd and 3rd / 4th shift forks are in "neutral" position.

PRECEDURE

— Use the "go no-go" gauge **(-).0314 AF** referenced "10".

The clutch collars and driven pinions to be checked should be spread apart to their maximum.

This should be repeated for all the synchros to be checked.

When the gauge **(-).0314 AF** can be inserted without forcing, between each of the 4 synchro cones and the respective side of the synchro collars **(1)**, then the synchro centering is perfect.

3**SYNCHRONIZER CENTERING ADJUSTMENT****1st/2nd AND 3rd GEAR SYNCHRONIZERS****BA 10/4****BA 10/5**

The adjustment is made using shim (a).

NOTE - *Adjusting shims are available from 2,35 mm to 3,65 mm in increments of 0,05 mm.*

First case - The gauge fits easily in (1) - (2) and (3) Fig. II :

Second case - The gauge does not fit in one or two points :
Make the adjustment as follows.

II**CHECKING**

- Insert the gauge (-).0314 AF without forcing, between the cones of the pinions and the synchro collars in (1) (2) and (3).

IMPORTANT - Spread apart as much as possible the cone and the collar where the gauge is to be inserted, every time you check.

IV**THE GAUGE DOES NOT FIT IN (1) AND (3) :**

- Measure the clearance at (2) and note the reading.

ADJUSTMENT :

- Replace the shim (a) by a thinner shim.
The THICKNESS reduction should equal the value of the clearance noted above.

V**THE GAUGE DOES NOT FIT IN (1) :**

- Measure the clearance at (2) and note the reading.

ADJUSTMENT :

- Replace the shim (a) by a thinner shim.
The THICKNESS reduction should equal the value of the clearance noted above.

VI**THE GAUGE DOES NOT FIT IN (3) :**

- Measure the clearance at (2) and note the value.

ADJUSTMENT :

- Replace the shim (a) by a thinner shim.
The THICKNESS reduction should equal the value of the clearance noted above.

VII**THE GAUGE DOES NOT FIT IN (2) :**

- Measure the clearance in (1).
- Measure the clearance in (3).

ADJUSTMENT :

- 1) If the clearance in (1) is less than in (3), replace the shim (a) by one with thickness INCREASE = to clearance in (1).
- 2) If the clearance in (1) is more than in (3), replace the shim (a) by one with thickness INCREASE = to clearance in (3).

MEASUREMENT - ADJUSTMENT

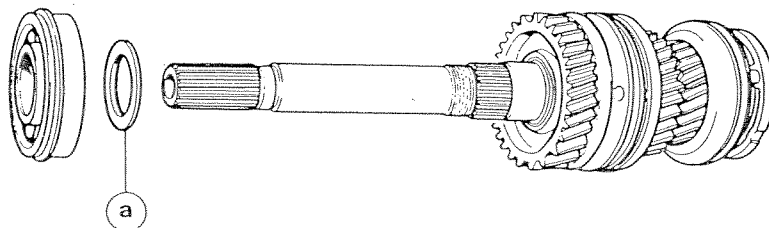
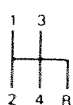
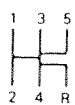
If the gauge does not fit in one or two points, determine the measurement which has to be made and read the play between the cone and the gauge (-).0314 AF for any of the four cases shown opposite.

REMINDER - Spread apart the cone and collar for each measurement.

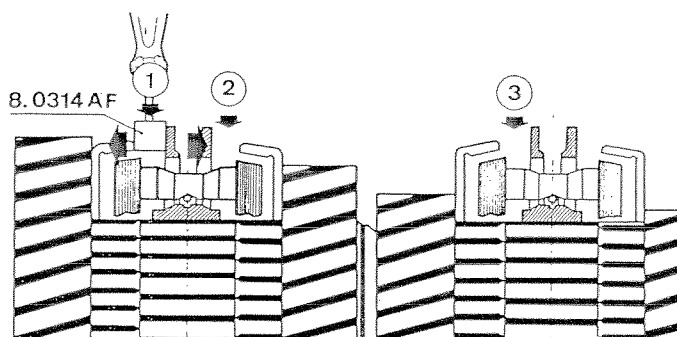
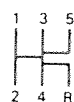
BA 10/4
BA 10/5

3

I

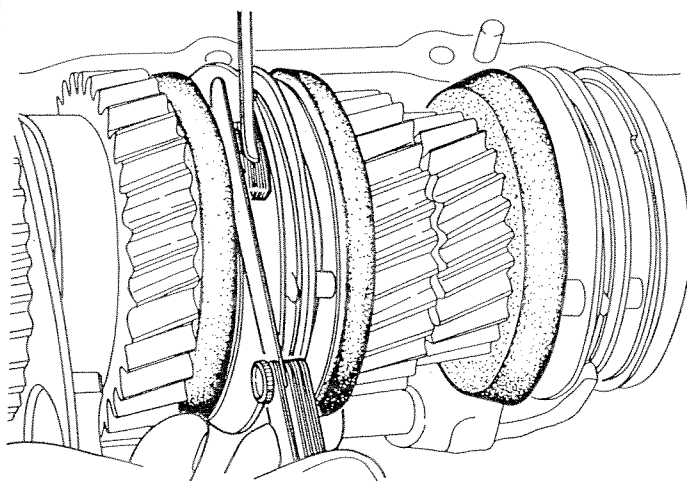
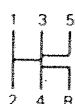


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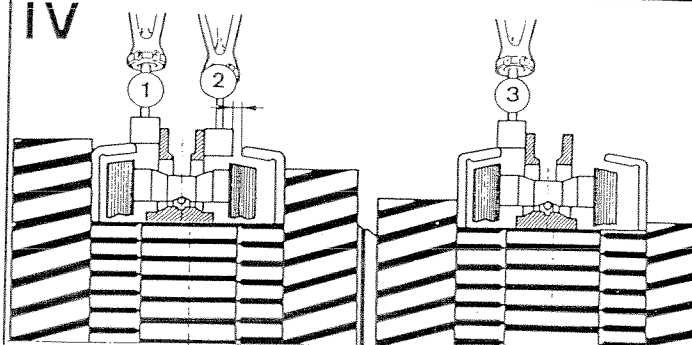
25.05.81. C 246 L.A

III

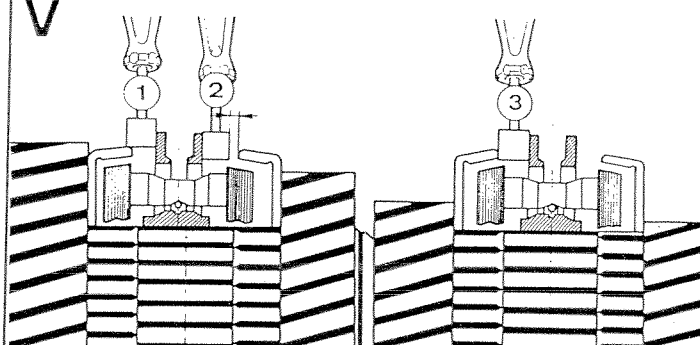


25.05.81. C 242

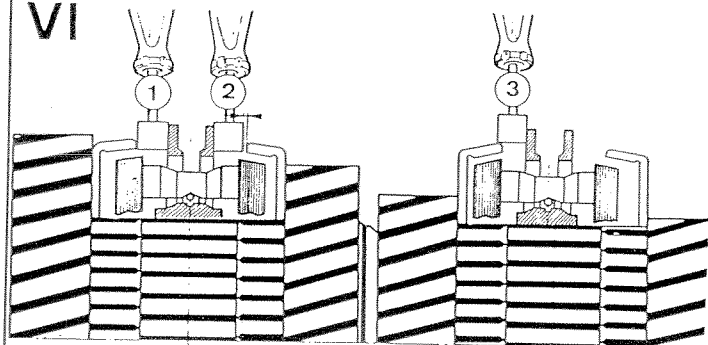
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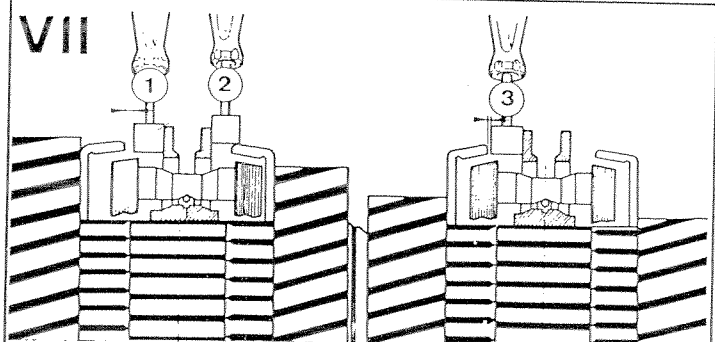
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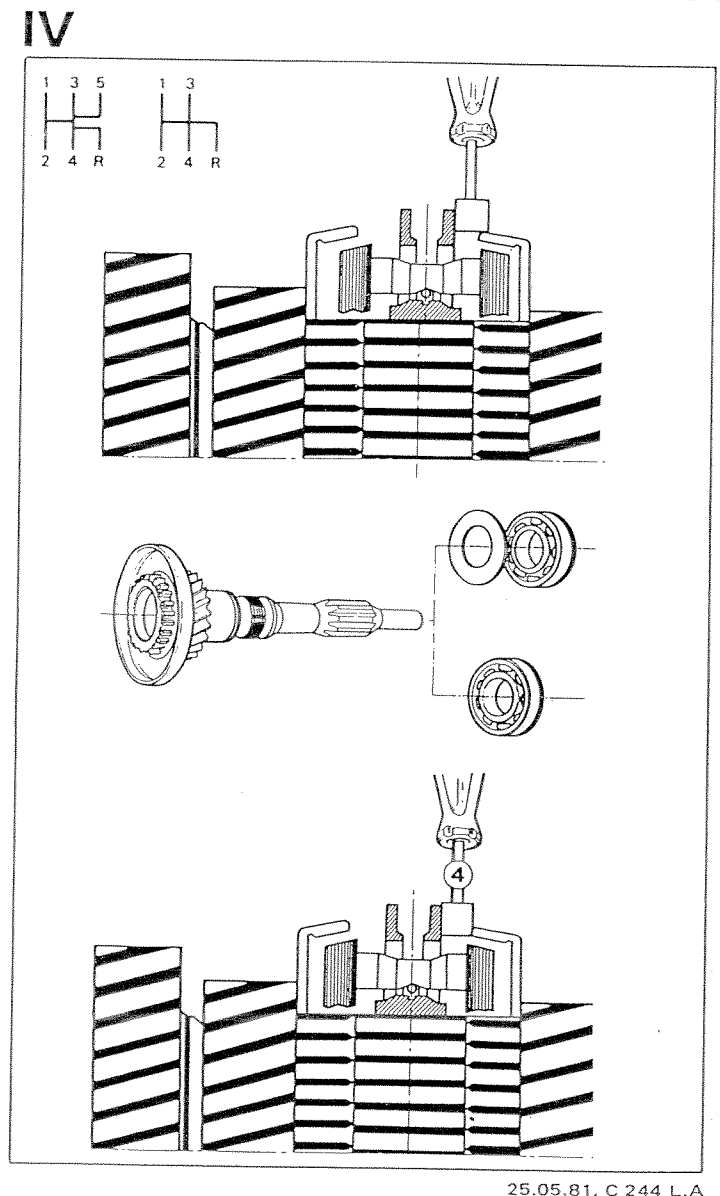
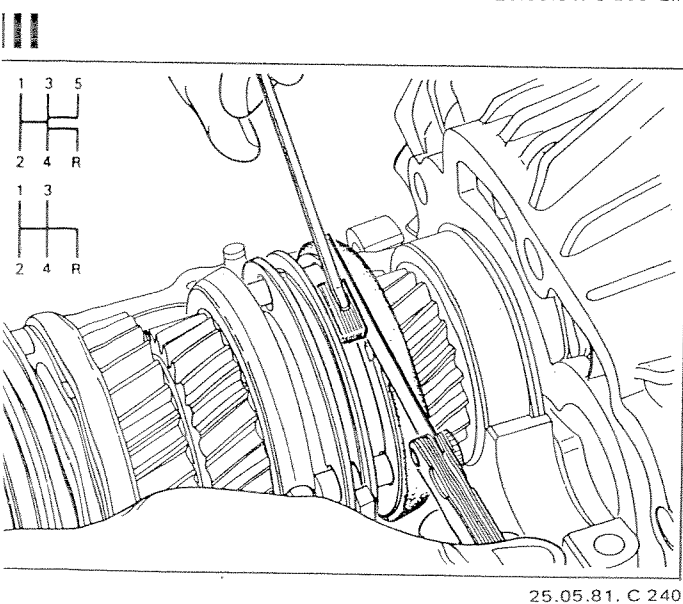
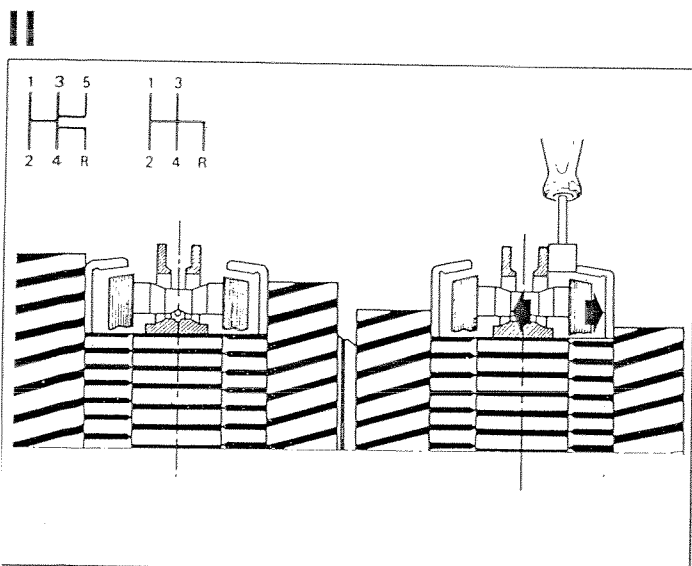
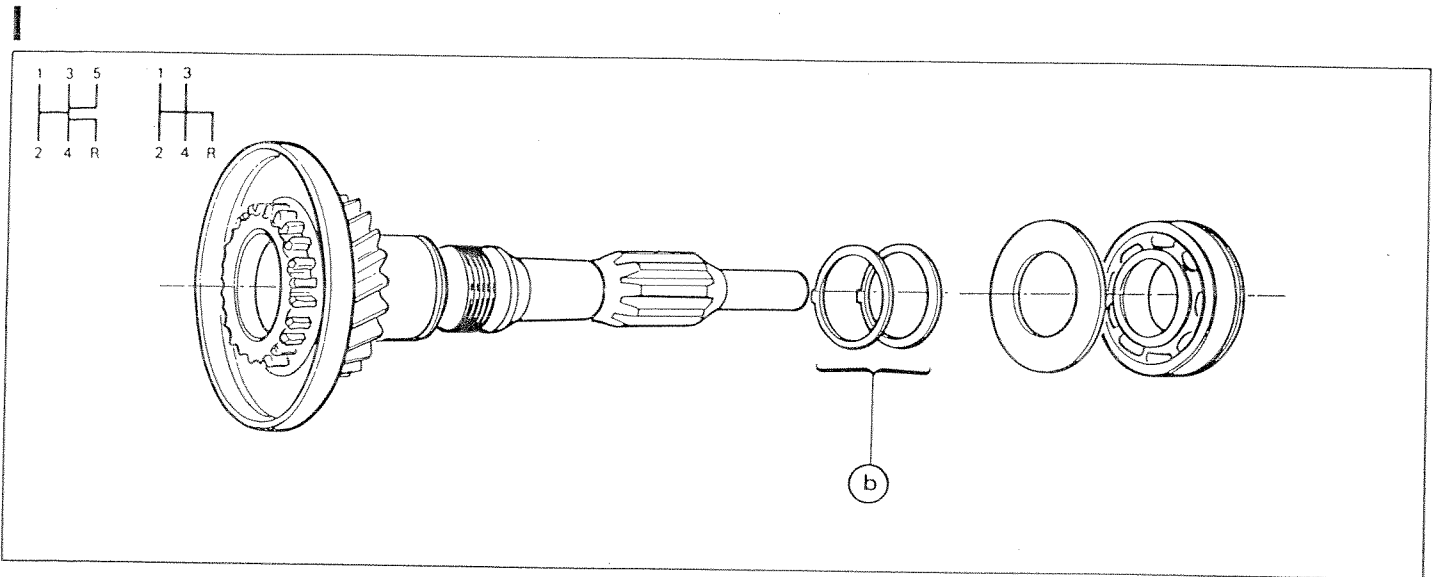
VI



VII



25.05.81. C 223 L.A



BA 10/4
BA 10/5

SYNCHRONIZER CENTERING ADJUSTMENT

4th GEAR SYNCHRONIZER

3

I

This adjustment is made using shims (b).

NOTE - *Adjusting shims available from 0.15 mm to 0.50 mm in 0.05 mm increments.*

- Use as few shims as possible combining the various thicknesses to reach desired thickness.

II

CHECKING

- Insert without forcing the gauge (-).0314 AF between the 4th gear synchronizer cone and the synchronizer collar.

IMPORTANT Spread apart the 4th gear pinion and the clutch synchro collar.

IV

2nd CASE

THE GAUGE DOES NOT FIT

- Remove :
 - the bell housing,
 - the input shaft.

Refer to pages 18 - 19.

- REMOVE THE SHIMS (b).
- Install the oil deflector (if it is required).
- Reinstall the bearing.

- Reinstall :
 - the input shaft,
 - the bell housing.
- Measure the clearance in (4) and note the value.

SPREAD apart the cone and the collar as much as possible.

ADJUSTMENT :

It will be necessary to install in (b) the shims whose total thickness will equal the measurement of the clearance.

III

FIRST CASE

THE GAUGE SLIDES FREELY :

- Measure the clearance between the gauge and the 4th gear synchro cone.

IF THE CLEARANCE IS EQUAL TO OR LESS THAN 1 mm.

- Retain the shims (b).

IF THE CLEARANCE IS MORE THAN 1 mm.

ADJUSTMENT :

It will be necessary to place shims in (b) with a total thickness equal to the sum of :

- the thickness of the (b) shims when measured,
- and the value of the play measured.

3

CLUSTER SHAFT
BEARING PRE-LOAD ADJUSTMENT

BA 10/4
BA 10/5

I

- Remove :
 - the bell housing,
 - the bearing retaining plate,
 - the input shaft and the main shaft.

IV

- Install the transmission support in a vise positioning the front of the transmission facing up.
- Apply pressure on the front cluster shaft bearing.
- Rotate the shaft to position the bearings.

II

Recover the spring (6) and the ball (5).

- Install :
 - the cluster shaft (1) together with its bearings.

IMPORTANT - Make sure that the two centering dowels (2) are in the right half housing.

V

- Tighten in the order below at :
 - 1 mdaN (7.25 ft.lbs.).
 - bearing bolts (4),
 - the rear plate (7).

III

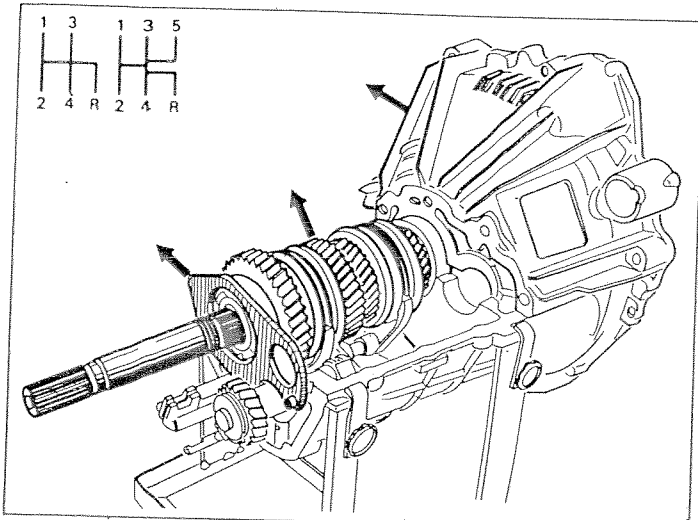
- Install :
 - the half housing with two center bearing bolts (4),
 - the bearing retaining plate (3) (this plate is held by : 4 screws on BA 10/4 and BA 10/5 2nd version 2 screws on BA 10/5 first version).

Hand tighten moderately.

VI

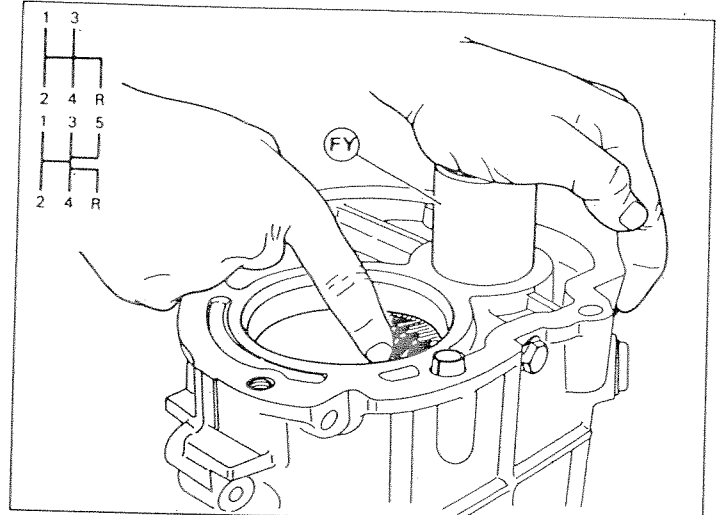
- Place the dial indicator on the end of the shaft (center the hole in the 8.0310 FZ support in relation to the shaft).
- Rotate the dial indicator through the whole 360° of the bearings' outer race.
- The warpage of the race in relationship to the front face of the half housings **MUST NOT EXCEED 0,03 mm.**

I



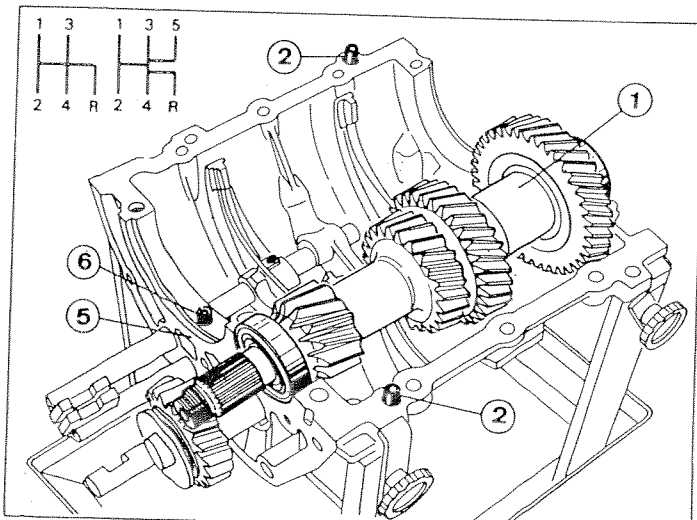
17.04.84. C 119

IV



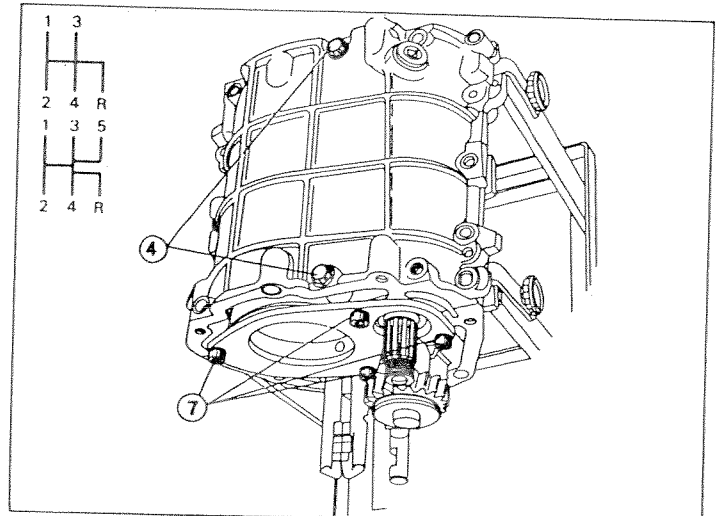
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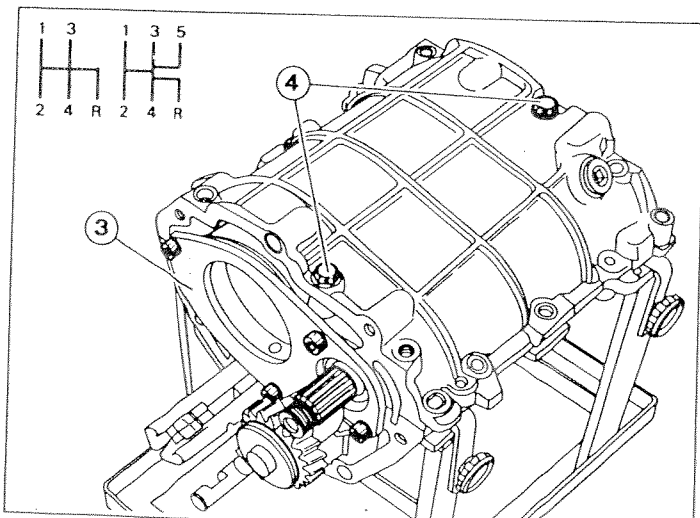
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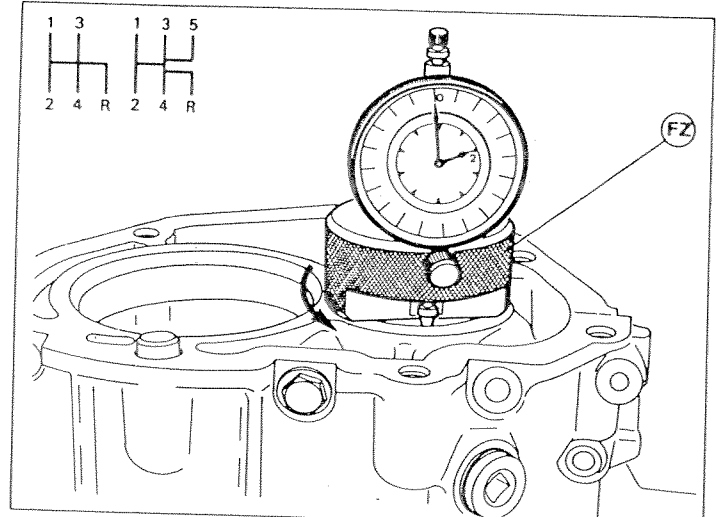
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III



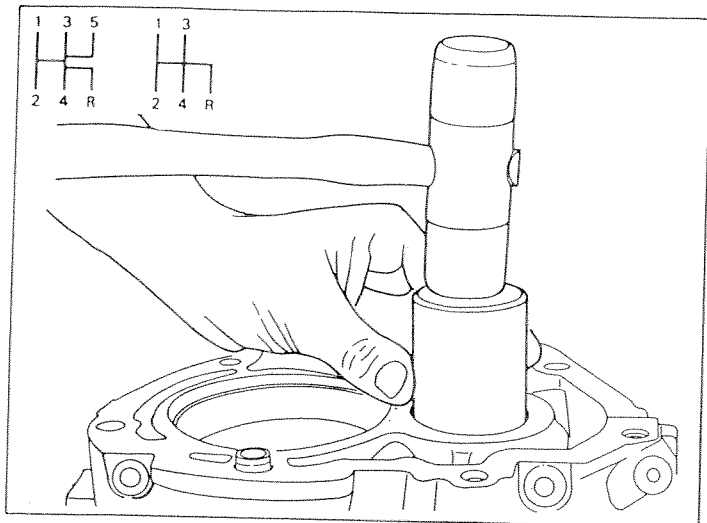
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VI



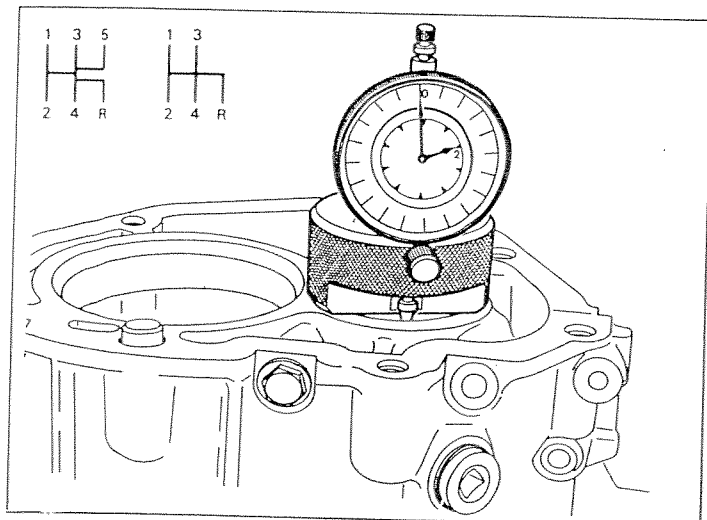
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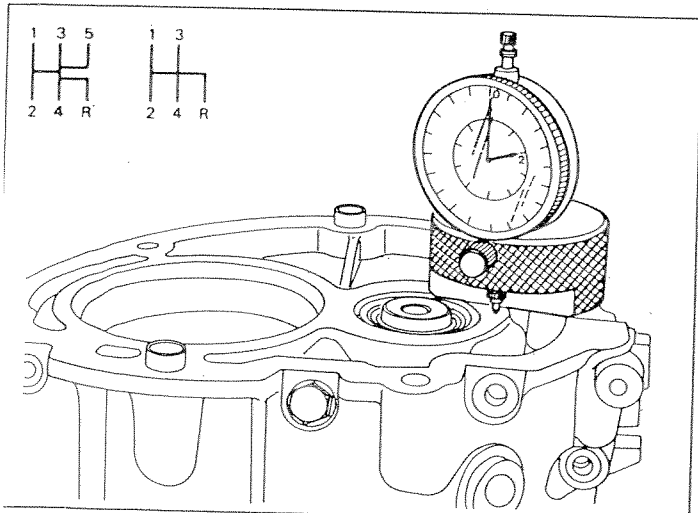
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II



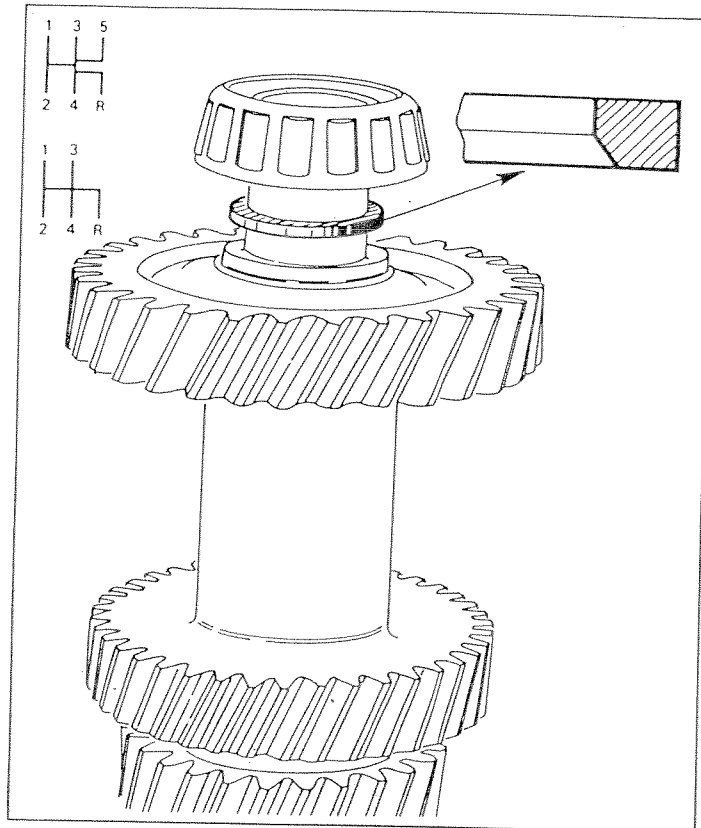
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III



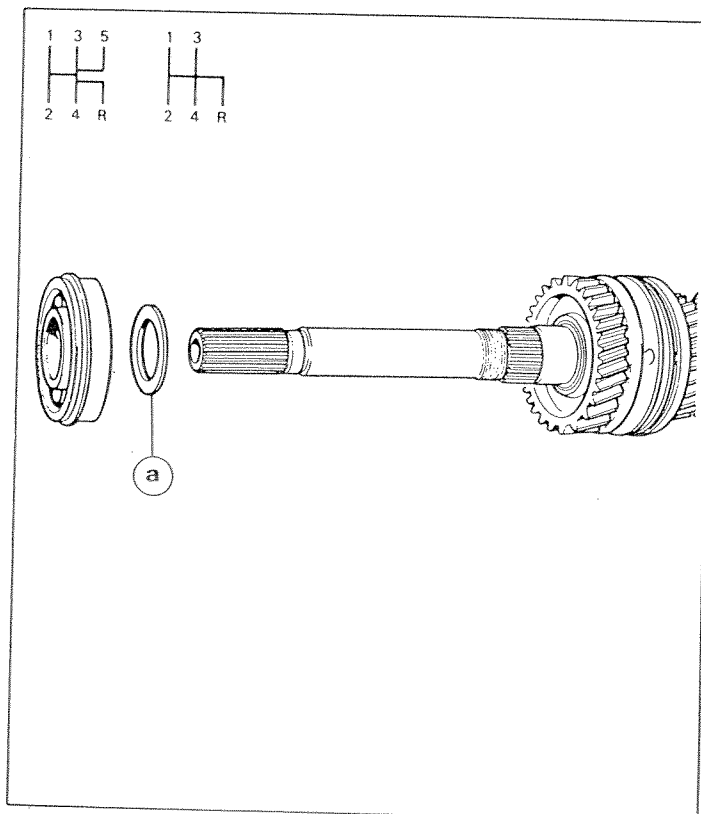
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IV



25.05.81. C 122

V



25.05.81. C 208

BA 10/4
BA 10/5

CLUSTER SHAFT ADJUSTMENT (Cnt'd)
FINAL ASSEMBLY CLUSTER AND MAIN SHAFT

3

I

- If the distortion exceeds 0.03 mm :
 - Straighten the outer race (tap gently with a mallet).

Make sure that this does not increase the rotating torque of the cluster shaft.
- Otherwise, loosen and retighten bearing bolt (4).
- Recheck the distortion.

II-III

- Zero the dial indicator on 2 and 0 with the feeler on the race (Fig. II).
- Move the dial indicator in such a way as to place the feeler on the front face of the housing (Fig. III).

NOTE THE READING ON THE DIAL INDICATOR.

- ADD to this reading : 0.10 mm for bearing preload
- Round off to the nearest 0.05 mm.

Example :

Reading on housing	4.27
Reading on bearing	<u>- 2.00</u>
	2.27
Preload	<u>+ 0.10</u>
	2.37

Round off to 2.35 mm

NOTE - Adjusting shims are available from 2.15 to 3.30 mm in increments of 0.05 mm.

IV

FINAL ASSEMBLY

- Remove :
 - the cluster shaft,

Refer to pages 24 and 25.
- Remove the front bearing.
- Install the shim whose thickness was just determined.

IMPORTANT - Position the inside chamfer toward the pinion.

- Reinstall the bearing on a press.

V

MAIN SHAFT

FINAL ASSEMBLY

- If necessary, replace the shim (a) as determined during the adjustment p. 42 (for procedure, see p. 22 - 23).

3

INPUT AND MAIN SHAFTS

FINAL ASSEMBLY

BA 10/4

BA 10/5

I

MAINSHAFT (Ctn'd)

- Install :
 - the bearing retaining plate (3) with the machined face toward the bearing (except 1st version BA 10/5).
 - the reverse gear driven pinion with the pinion teeth chamfer facing the rear,
 - a new nut (8).

IV

INPUT SHAFT

- Replace, if necessary, the shims (b) determined during the adjustment p. 45, (for procedure refer to pages 18 - 19).

II

- Torque the nut (8) to 5,5 mdaN (39.88 ft.lbs.).
- Stake the nut with tool 8.0310 L.

V

- Install :
 - a new spring washer (10).
 - a new circlip (11).

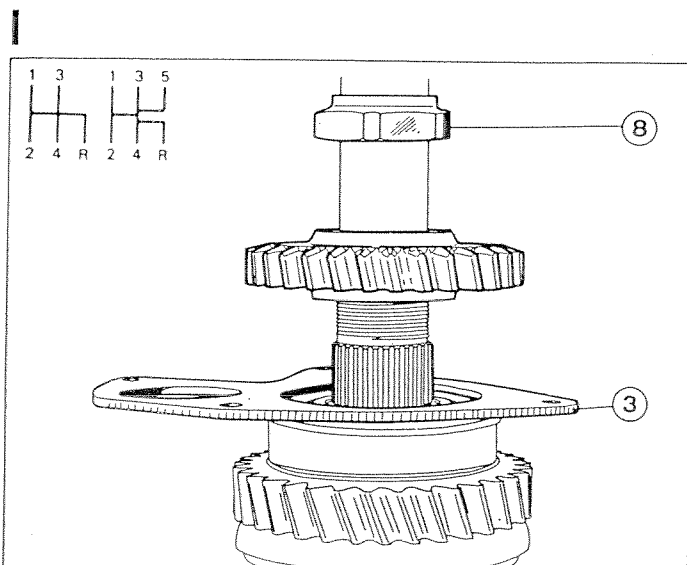
III

- Install the speedometer worm gear (9).

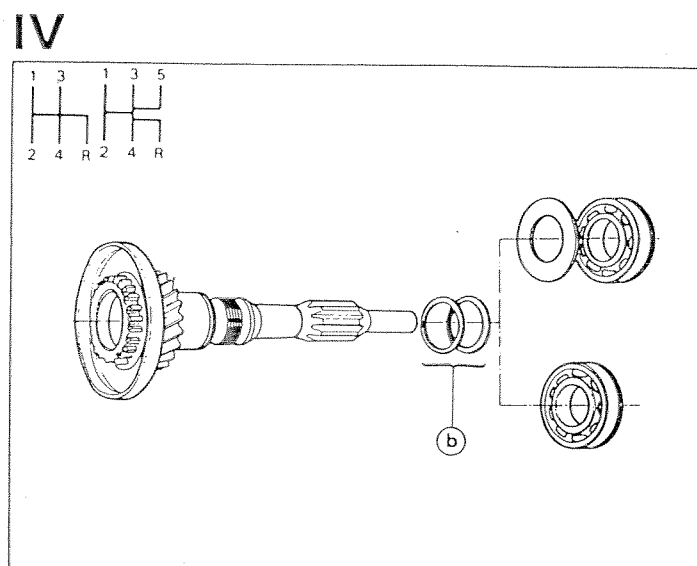
IMPORTANT - Position the undercut (a) toward the pinions.

VI

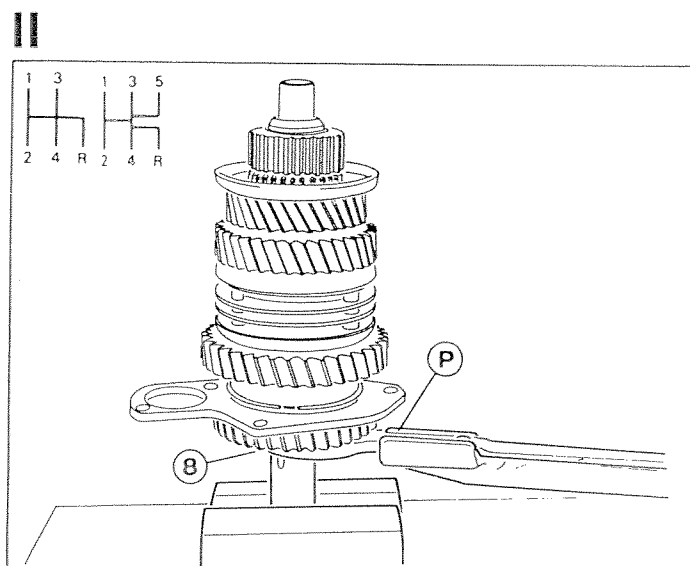
- Install the drift 8.0310 UZ on the shaft, machined face (c) toward the bottom.
- Apply a light pressure to compress the spring washer and position the circlip in front of its groove.
- Using water pump pliers, retighten the circlip until its diameter is flush with that of the machined portion (c) of the drift.



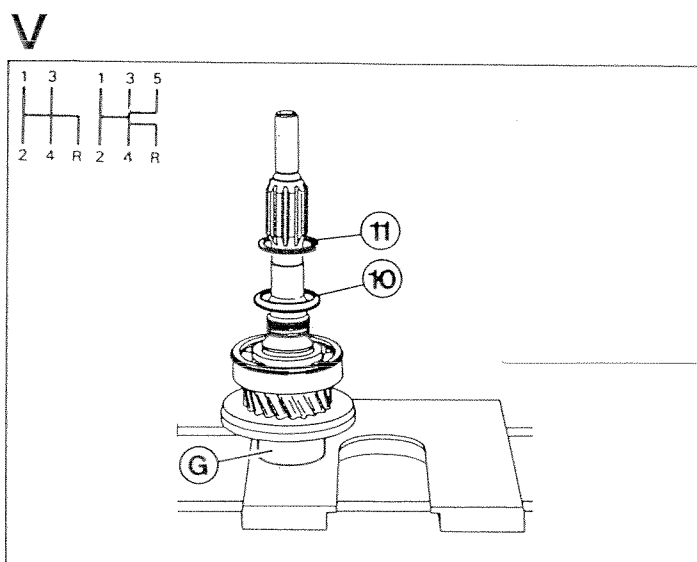
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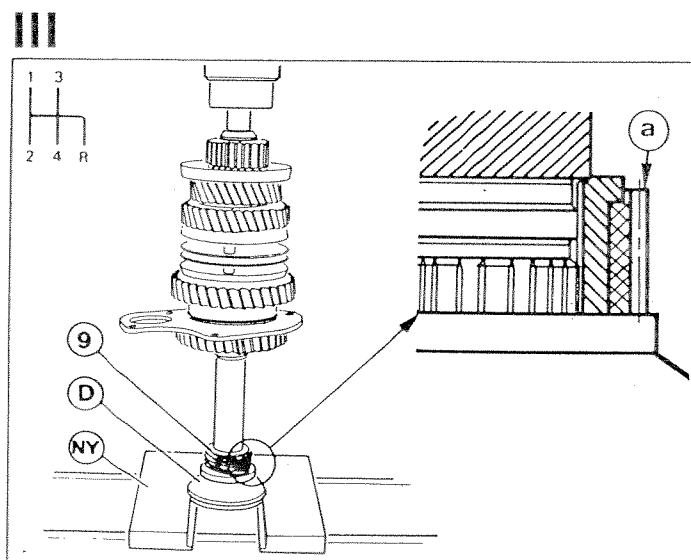
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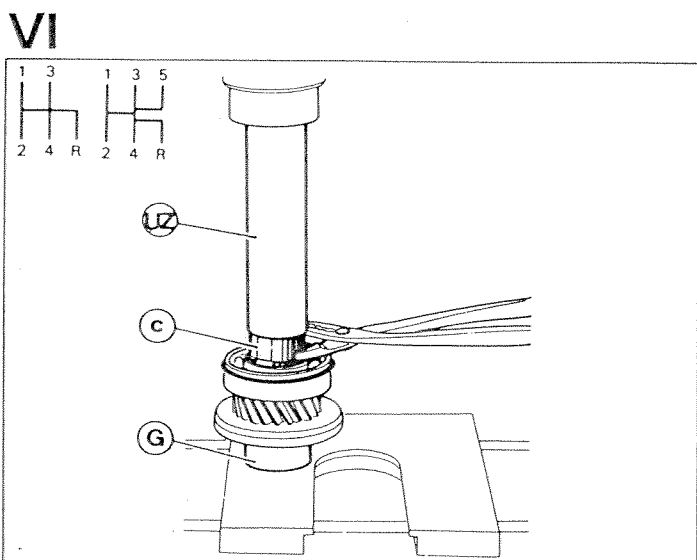
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25.05.81. C 120

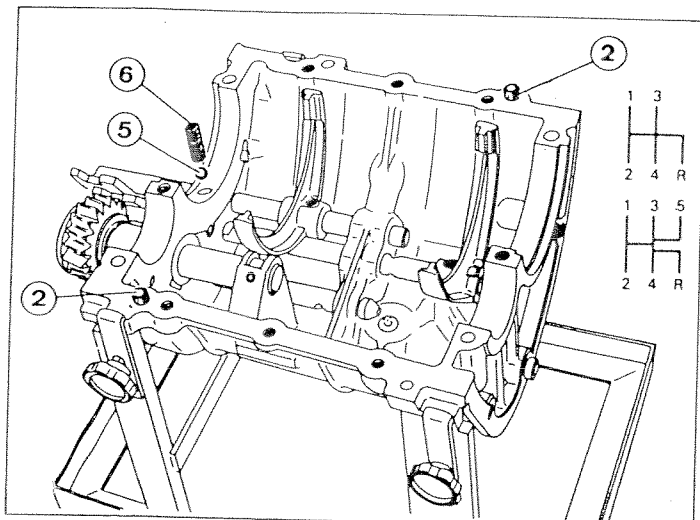


17.04.84. C 84



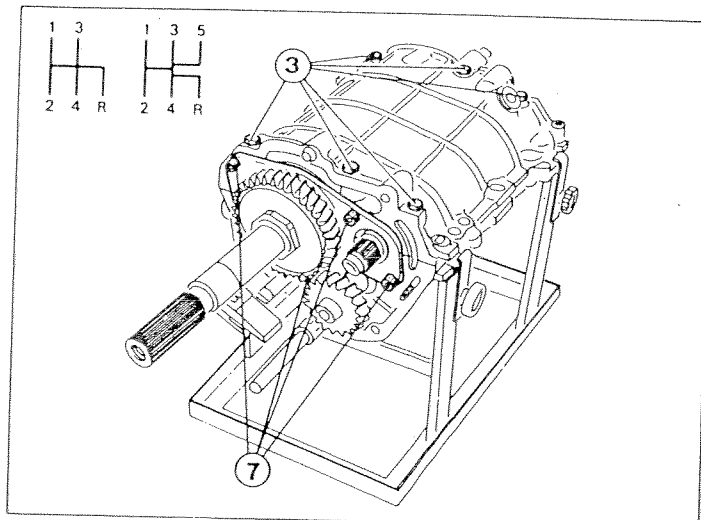
25.05.81. C 117

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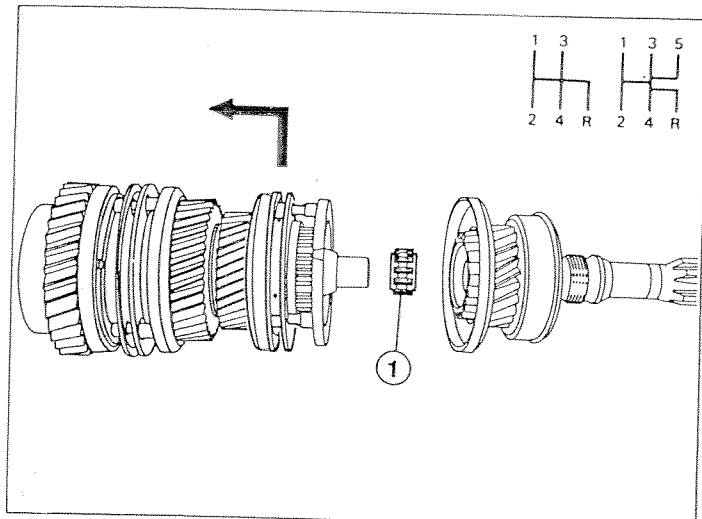
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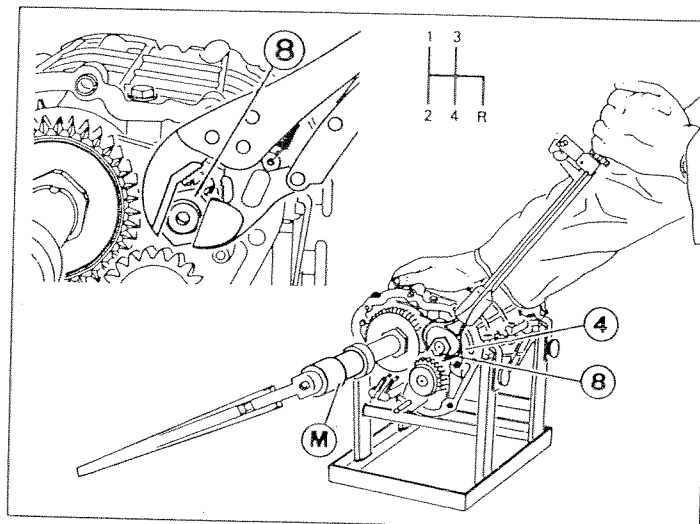
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II



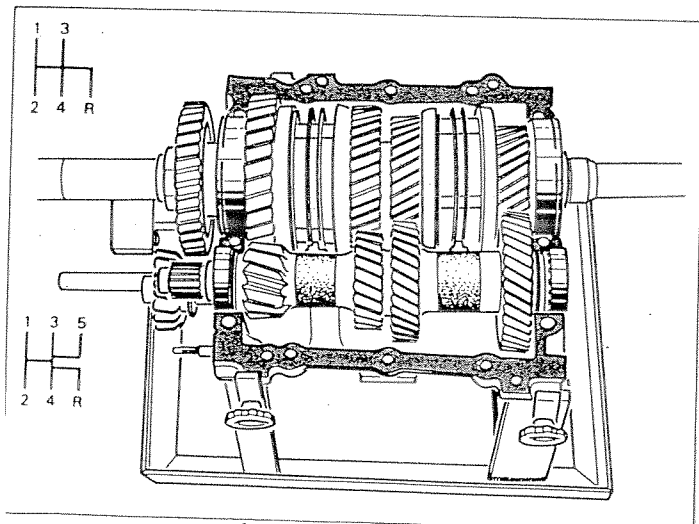
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V



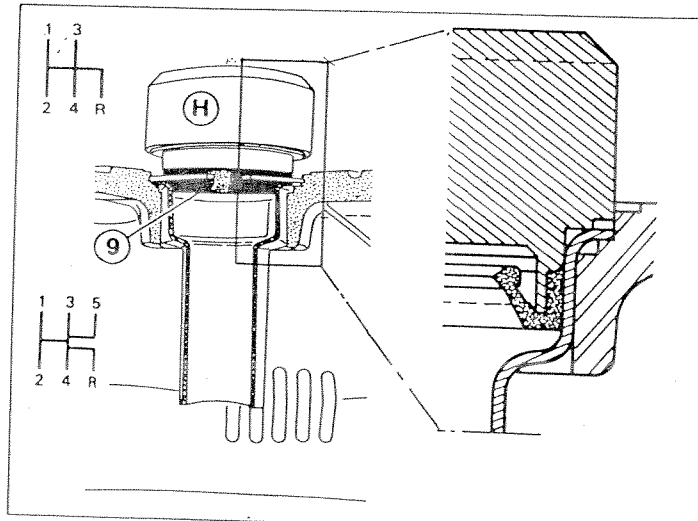
18.10.74. C 38

III



08.10.77. C 15

VI



25.05.81. C 75

I

- Insert into the lock-out channel :
 - the ball (5),
 - the spring (6).

IMPORTANT - Make sure the centering dowels (2) are in place.

IV

- Install the right half housing.
- Torque the 6 bearing bolts (3) to :
0,5 mdaN (3.63 ft.lbs.).

BA 10/4 and BA 10/5 2nd version

- Torque the 4 plate screws (7) to :
1 mdaN (7.25 ft.lbs.).

BA 10/5 1st version

- Install the cluster shaft bearing retainer plate.
- Torque the plate screws to **1 mdaN (7.25 ft.lbs.).**

II

- Engage the 3rd / 4th synchro respecting the marks made on disassembly.
- Insert the needle bearing cage (1) inside the input shaft.
- Assemble the main and input shafts.
- Place the synchro back to neutral.

V

- Install :
 - the pinion (4), with the boss to the front,
 - a new nut (8).
- Hold the mainshaft using the socket **8.0520 M.**
- Engage 4th speed.
- Torque nut (8) to **2.5 mdaN (18.13 ft.lbs.).**
- Stake the skirt of the nut (8) using a pair of vise-grips. **NEVER HAMMER IT.**
- Return the 3rd / 4th fork shaft to neutral.

III

- Install :
 - the gear trains in the housing while engaging the forks into the synchro collars,
 - the cluster shaft into the housing.
- Apply a smooth and even coat of sealant on the half housing mating surfaces and gasket planes.

VI

BELL HOUSING

Input shaft with oil seal.

- Install a new pre-lubricated oil seal (9).

NOTE - Install the oil seal in the right direction.

3

REASSEMBLY (Ctn'd)
DISASSEMBLY OF THE TAILSHAFT HOUSING

BA 10/4
BA 10/5

I

- Coat the rear face of the bell housing with a thin layer of sealer.

IMPORTANT - Make sure the centering dowels (10) are in place.

- Install the protector (-).0314 C over the input shaft splines.
- Intall the bell housing making sure the oil seal does not contact the input shaft splines.
- Torque the 7 bolts to **2.75 mdaN (19.94 ft.lbs.)** while torquing the bolts, rotate the input shaft to help seat the cluster shaft bearings.

IV

DISASSEMBLY OF THE TAILSHAFT HOUSING

NOTE - Should a problem occur on those parts which are not replaceable in the gear shift controls, replace the tailshaft housing.

II

- Loosen the 6 bearing bolts (3).
- Tap the half housings lightly with a mallet while turning the input shaft.
- Retorque the 6 bearing bolts (3) to **1.5 mdaN (10.88 ft.lbs.)**.
- Fit the 6 bolts (11) which hold the two half housings together, and tighten them to a torque of **1 mdaN (7.25 ft.lbs.)**.

V

- Install the strap (-).0310 K to protect the gasket plane.
- Remove :
 - the oil seal.

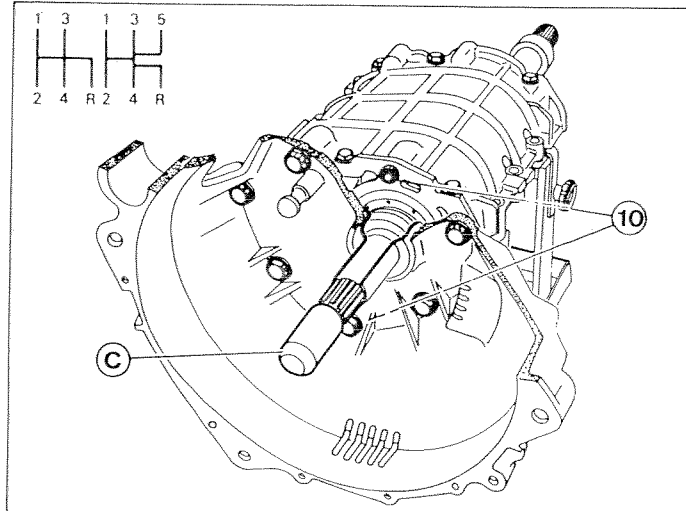
III

- Pack the dust boot (12) with grease.
- Install the clutch fork with the retaining spring (a) behind the dust boot.

VI

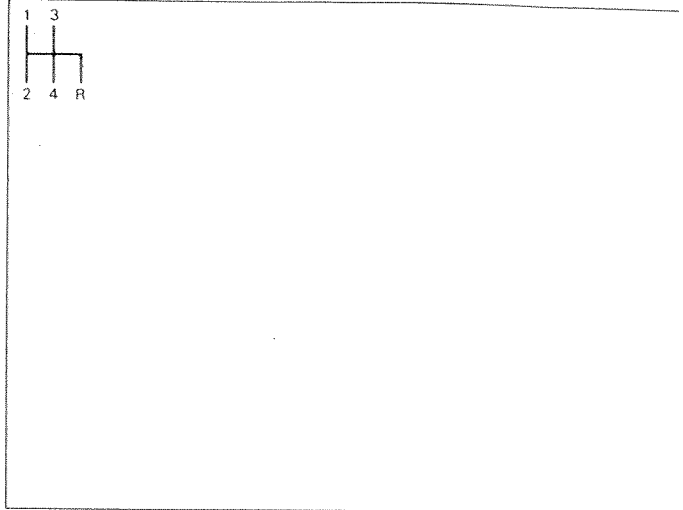
- Remove :
 - the needle bearing using drift (-).0310 A1Z.

I

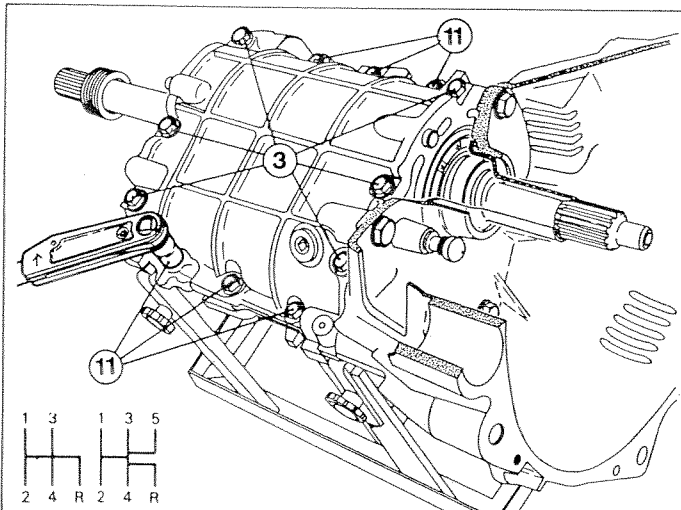


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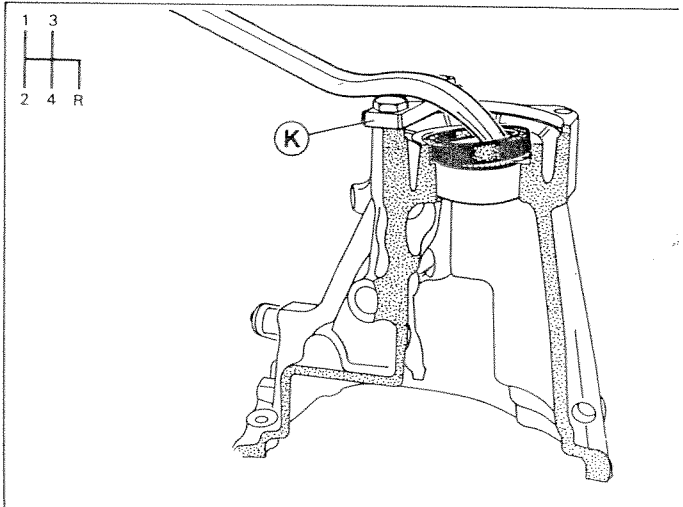


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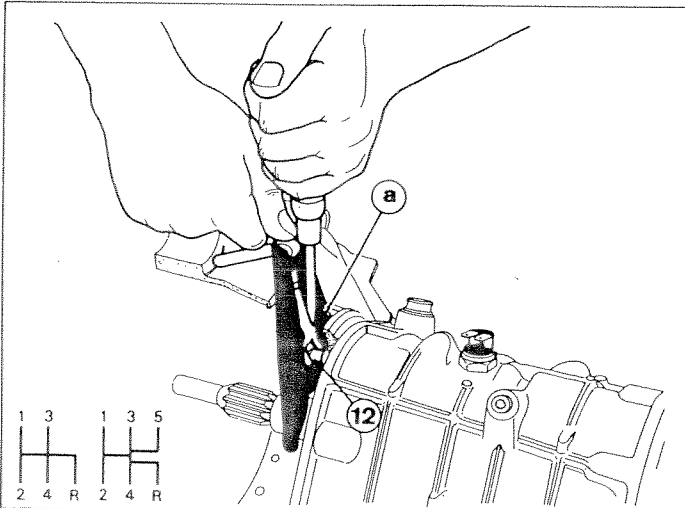
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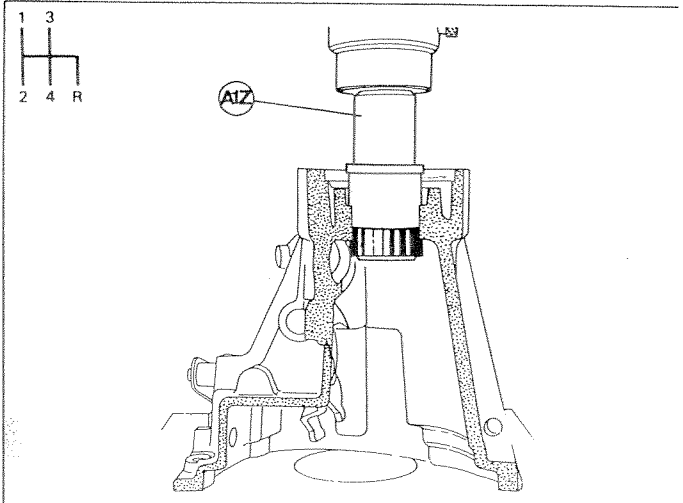


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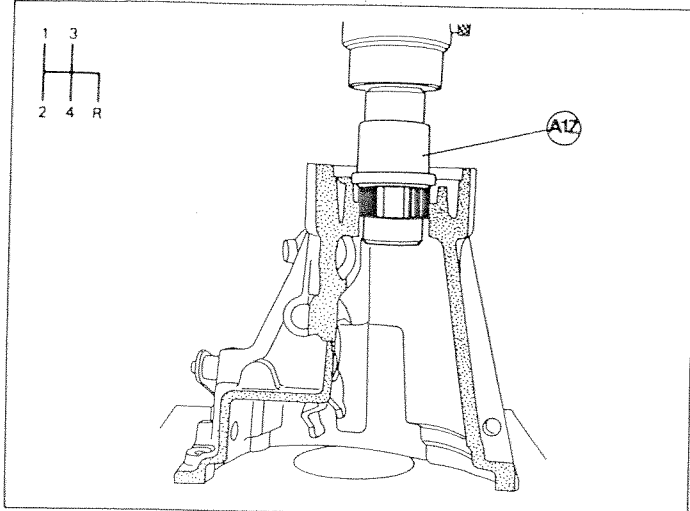


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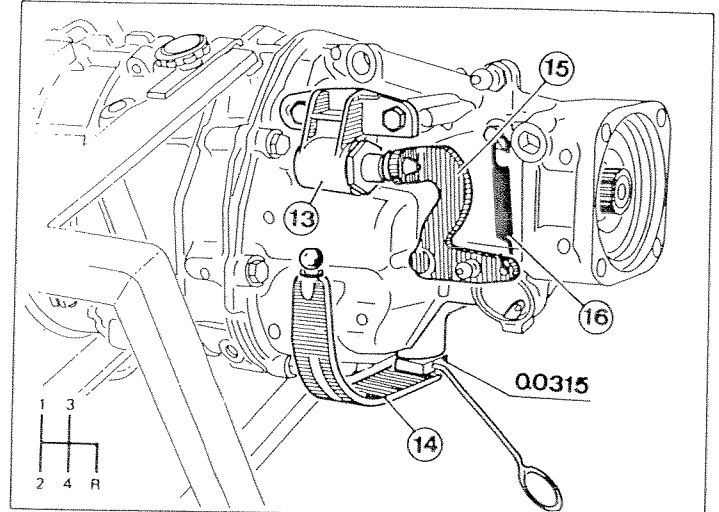
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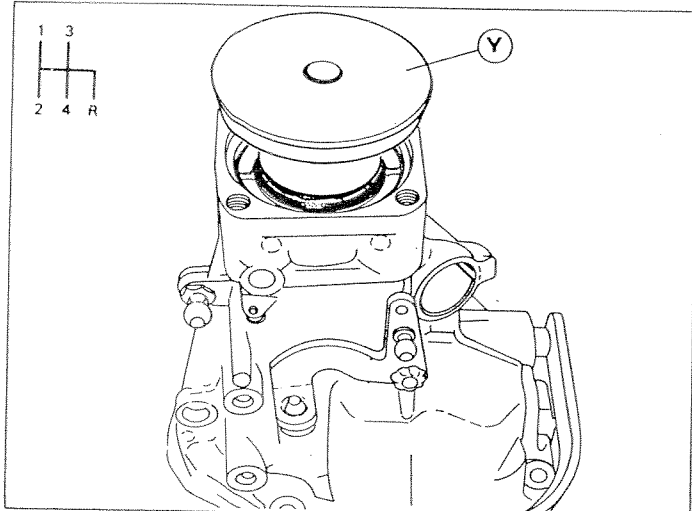
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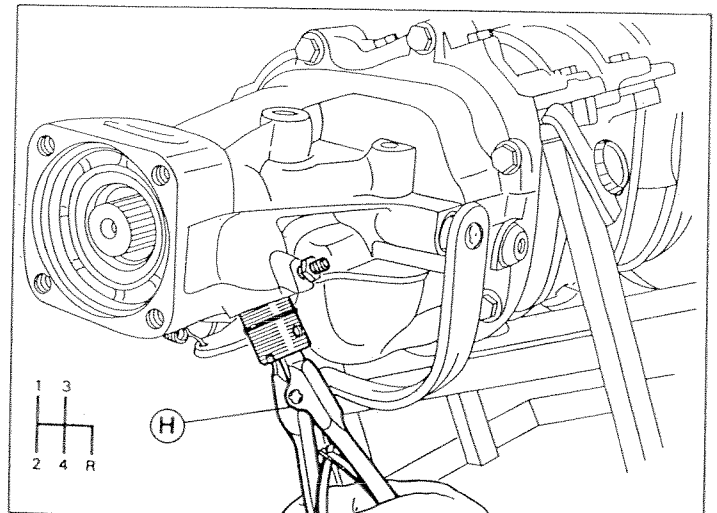
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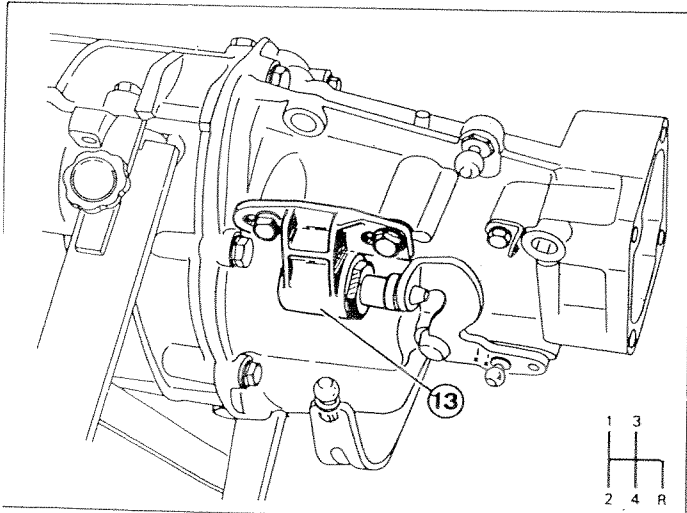
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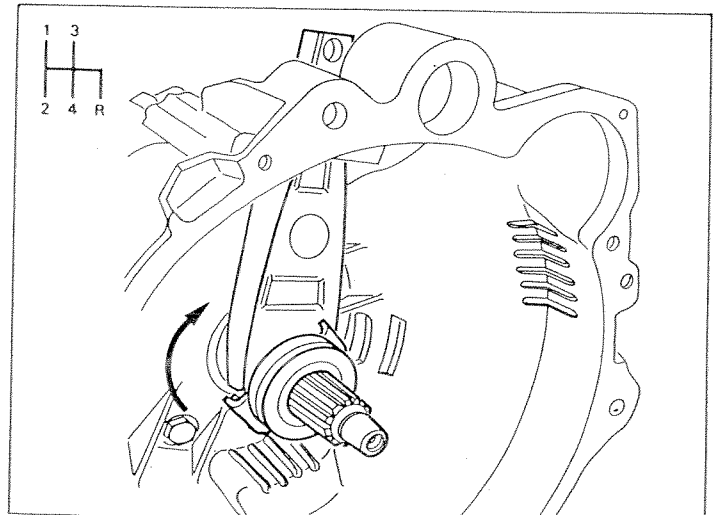
17.04.84. C 107

III



17.04.84. C 105

VI



05.01.74. C 190

I

TAILSHAFT HOUSING REASSEMBLY

IMPORTANT - The needle bearing must be replaced every time it is disassembled.

- Install a new needle bearing. Position it with the manufacturer's markings facing the drift (-).0310 A1Z.
- Lubricate the needle bearing.

IV

REVERSE LOCK-OUT PLUNGER ADJUSTMENT

- Insert gauge 0.0315 between engagement lever (14) and housing, maintaining lever against the gauge.
- Bring reverse lock-out (13) plunger into contact with selector lever (15).
- Lock the two bolts to 1,5 mdaN (10.88 ft.lbs.).
- Remove the gauge.
- Install the return spring (16).

II

- Install a new seal, push it in until it bottoms using installing ring (-).0314 Y.
- Lubricate the lip of the seal.

V

- Install the speedometer driven gear assembly with a new seal coated with white grease.
- Install set screw with its lock nut.

III

- Coat the mating face of the tailshaft housing with a thin layer of sealing compound.
- Install tailshaft housing while engaging the selector fingers into the fork shafts' gate.

NOTE - Place the stud or studs in the holes marked on disassembly.

- Torque to 1.5 mdaN (10.88 ft.lbs.).
- Install the reverse lock-out plunger (13).

VI

- Coat the throwout bearing guide tube with a thin coat of molykote grease.
- Install throwout bearing and lock it onto the fork.

I

- Place transmission vertically resting on the bell housing support pad 0.0313 ZZ.
- Place the 5th / Reverse fork shaft in 5th speed position.
- Place a thin and even coat of sealant on the rear of the half housings.

IMPORTANT - Make sure that the centering dowels are in place.

- Install the intermediate housing while engaging the selector finger into the fork shafts' gate.
- Torque : the nuts to : 1.75 mdaN (12.69 ft.lbs.).

IV

- Install :
 - the 5th gear driving pinion (4) and its needle cage

BA 10/5 2nd version PARTICULARITY

Install circlip (5)

II

- Install :
 - the 5th / Reverse intermediate shaft (1).
 - the 5th / Reverse synchronizer (2).

IMPORTANT - Position it in order that the mark made on disassembly is visible, or if a new part, with the circular groove on the face toward Reverse.

V

- Lubricate the machined surface of the main shaft 5th gear driven pinion bearing.
- Install the pinion as shown opposite.

NOTE - Apply a coat of non-abrasive lubricant to both faces of the bushing (-).0314 AC2.

CAUTION - Check all gears for proper meshing pinions.

III

- Install :
 - simultaneously the 5th / Reverse synchro collar with its fork.
- Mate the reference marks made on disassembly on hub and collar.
 - the retainer strap (-).0314 AE and bolt it down.
- Lock the fork with a new roll pin (3).

CAUTION - Do not damage the mating face.

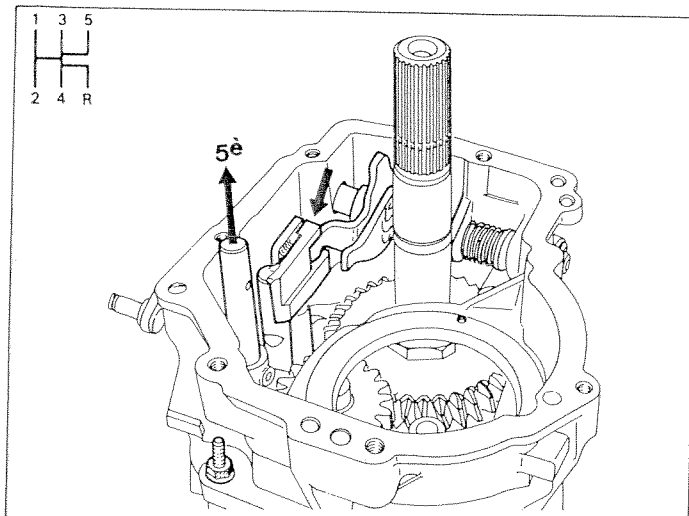
- Remove the retainer strap (-).0314 AE.
- Place the assembly in neutral.

VI

BA 10/5 2nd version PARTICULARITY

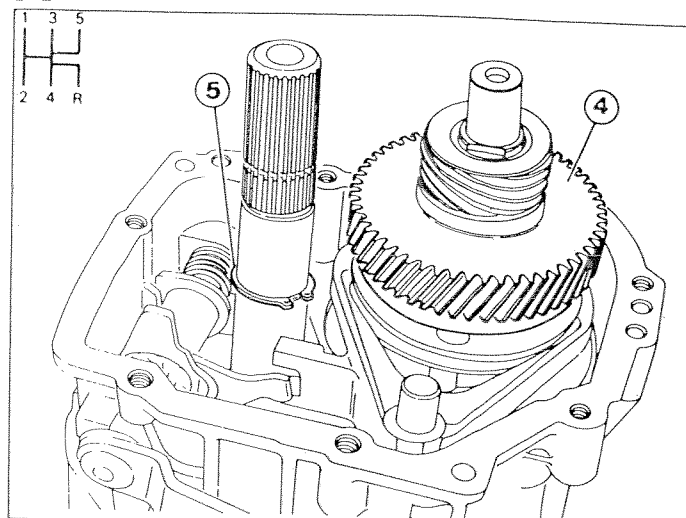
Install a new circlip (6).

I



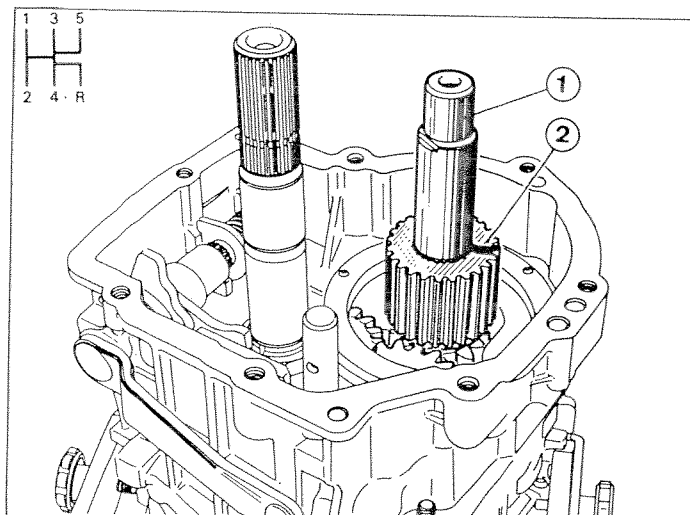
17.04.84. C 39

IV



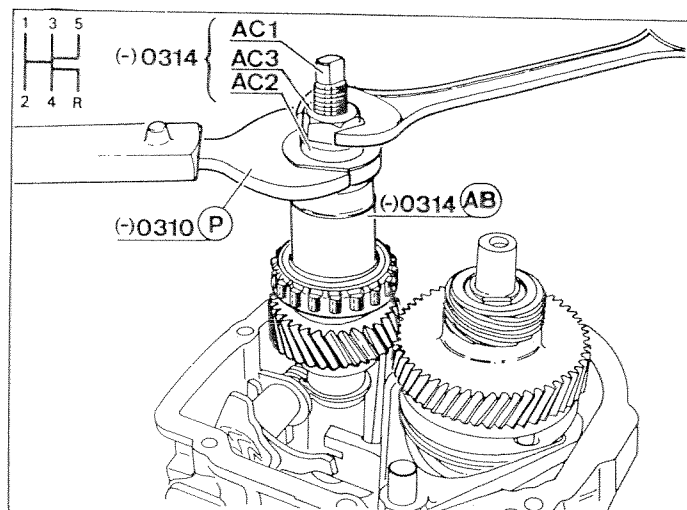
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II



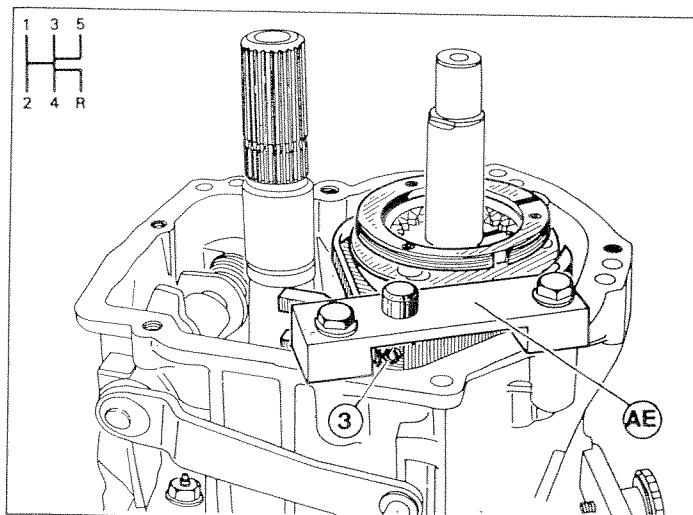
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V



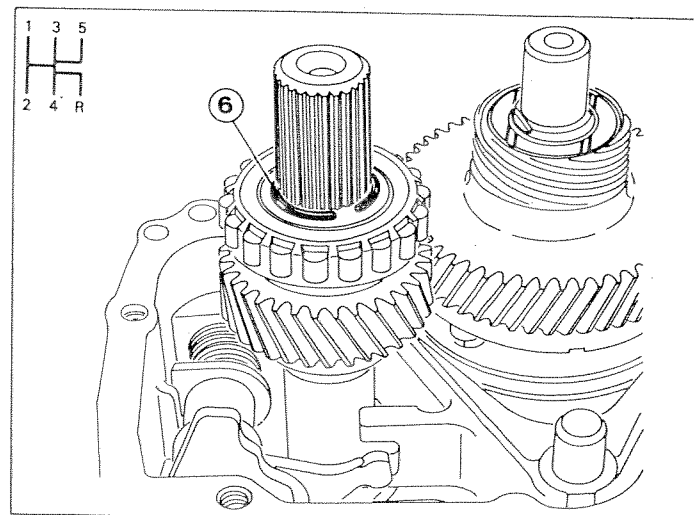
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III



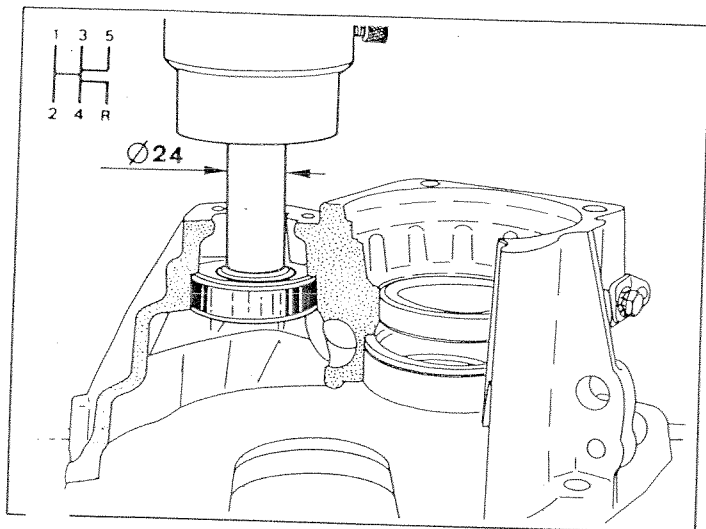
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VI



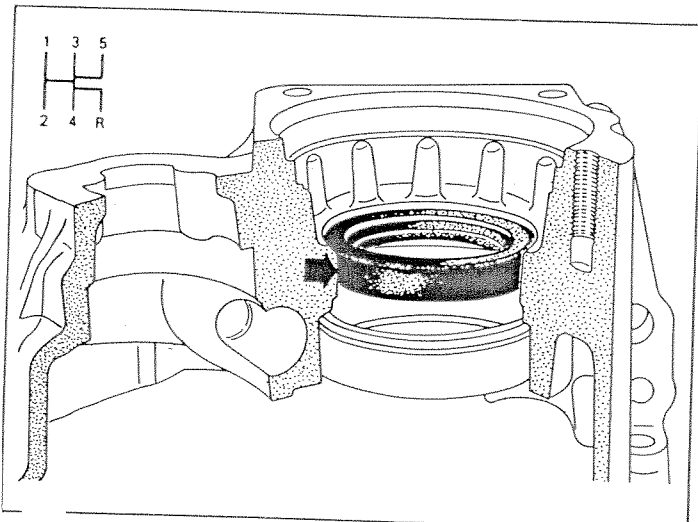
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I



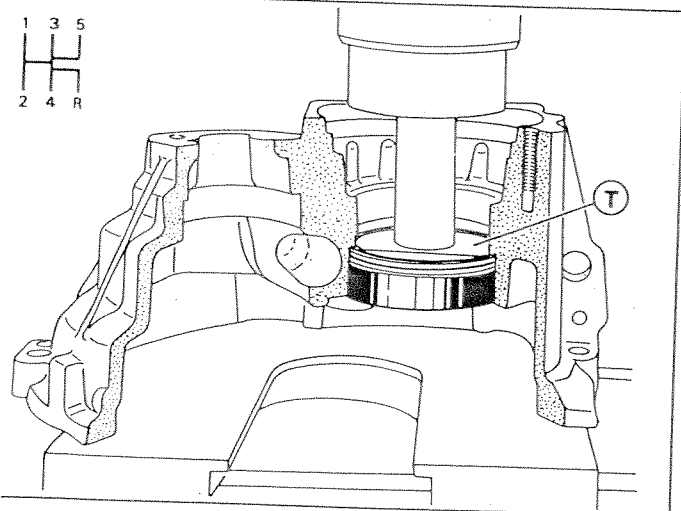
08.10.77. C 67

II



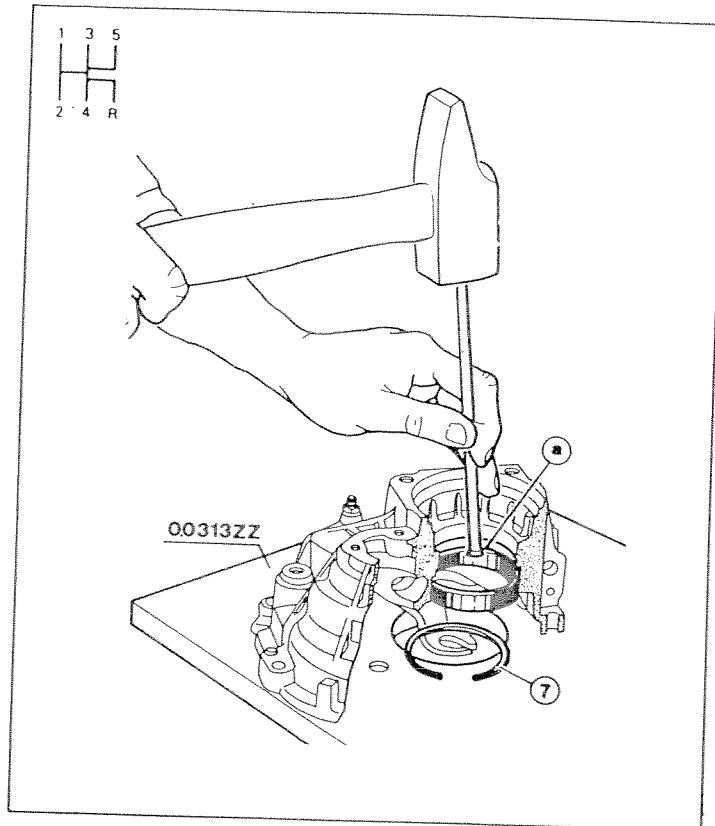
08.10.77. C 65

III



08.10.77. C 64

IV



17.04.84. C 118

BA 10/5

REASSEMBLY (Ctn'd) 5 SPEED TRANSMISSIONS - 1st and 2nd VERSION TAILSHAFT HOUSING DISASSEMBLY

3

I

- Remove :
- the ball bearing (press drift \varnothing 24 mm max.).

IV

BA 10/5 2nd VERSION

- Remove :
- the circlip (7).
- the bearing outer race : driving it out progressively through the 3 grooves of the housing (a) at 120° apart.

IMPORTANT - Use a drift which has no sharp edges to avoid gouging the housing's seal surface (use a push rod).

II

- Remove :
- the oil seal.

III

BA 10/5 1st VERSION

- Remove :
- the outer race of the bearing using press plate (-) 0314 T.
- Recover the adjusting shim.

PEUGEOT

PRELOAD OF THE MAINSHAFT TAPER ROLLER BEARINGS

I

PREPARING THE TAILSHAFT HOUSING

- Install :
 - a thickness of 4 mm of shims,
 - the bearing's outer race with press drift (-).0314 U.

IMPORTANT - Drive the two centering dowels into the housing.

II

- Place the tailshaft housing in position.
- Install the 3 bolts as shown opposite.
- **Hand tighten** these 3 bolts.

III

ADJUSTMENT

- Rotate the mainshaft.
- Retighten the 3 bolts by hand.

Using a set of feeler gauges :

- Check the housing mating faces for parallelism.
Correct if necessary.
- Record the gap between the two housings.

Calculation of shim thickness :

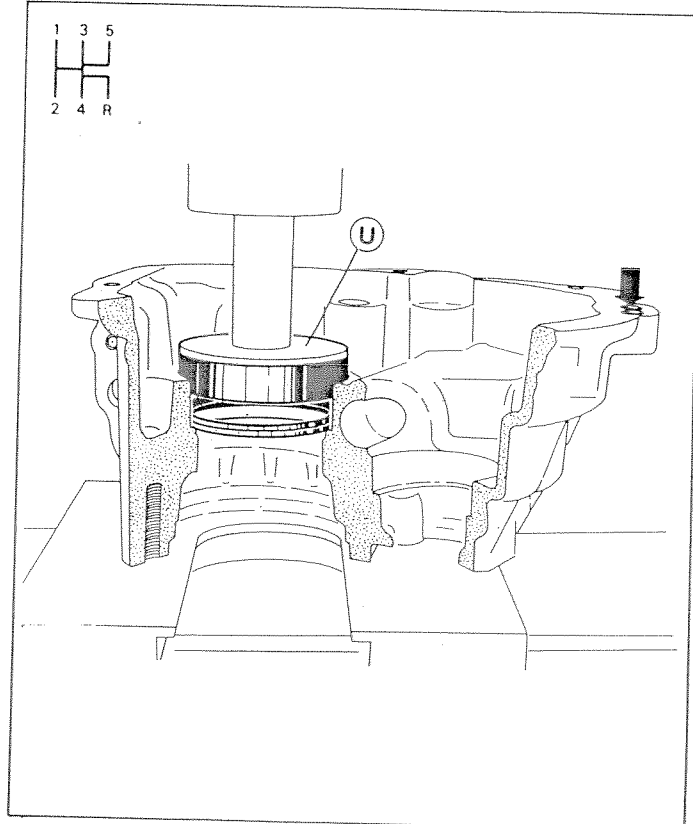
- thickness of base shim	4 mm
- measurement recorded	
- example	— 1.85 mm
- difference	2.15 mm
- preload	+ 0.10 mm
- shim to be installed	2.25 mm

NOTE - Shims are available from 1.5 to 2.95 mm in 0.05 mm increments.

IV

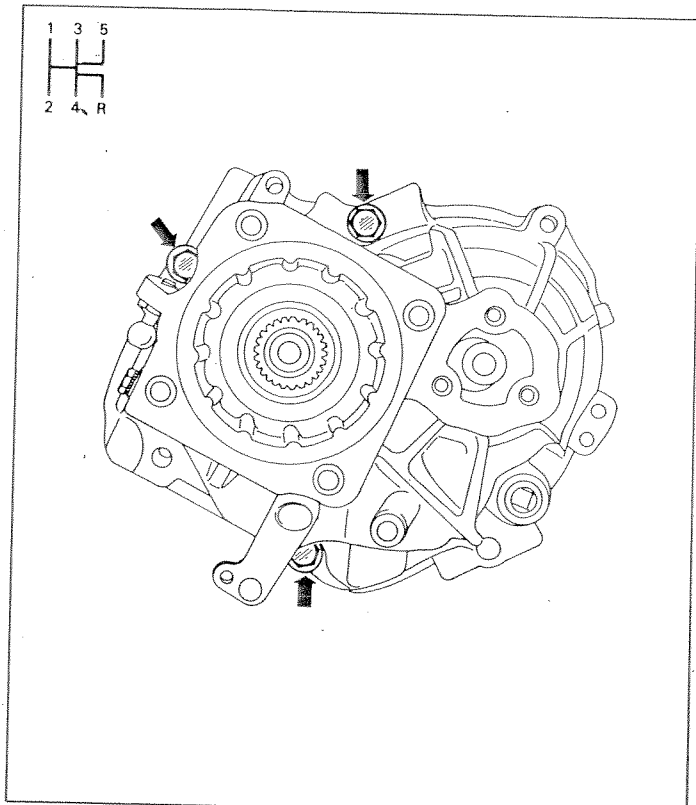
- Remove the tailshaft housing.
- Extract the bearing outer race.
- Recover the base shims.

I



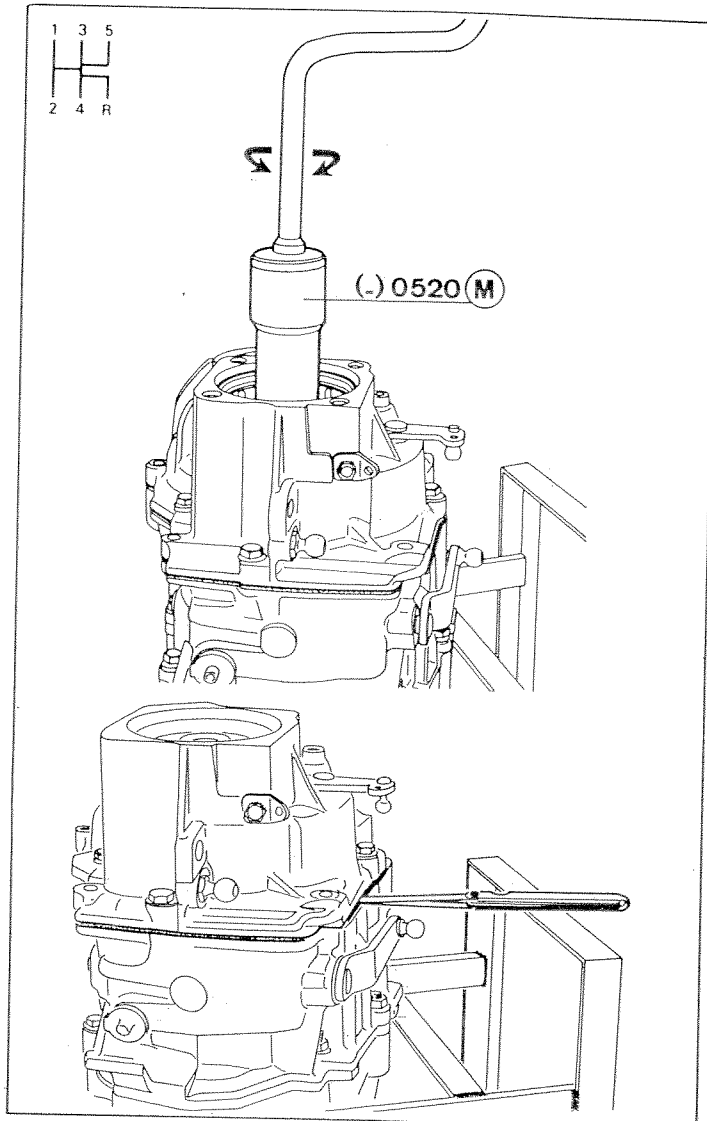
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II



08.10.77. C 175

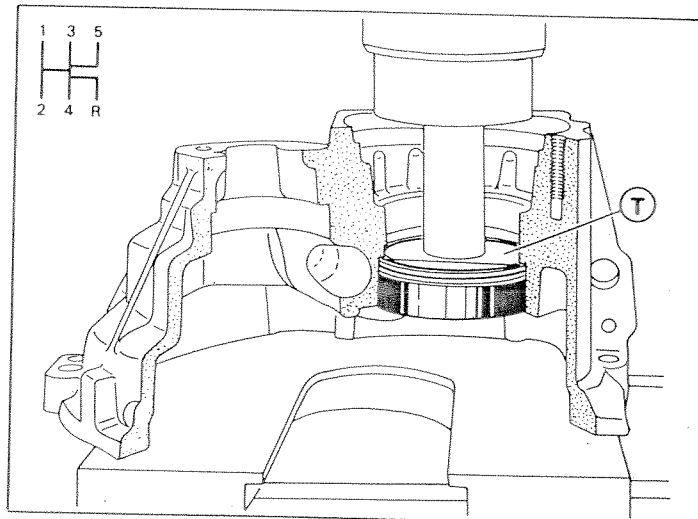
III



08.10.77. C 177

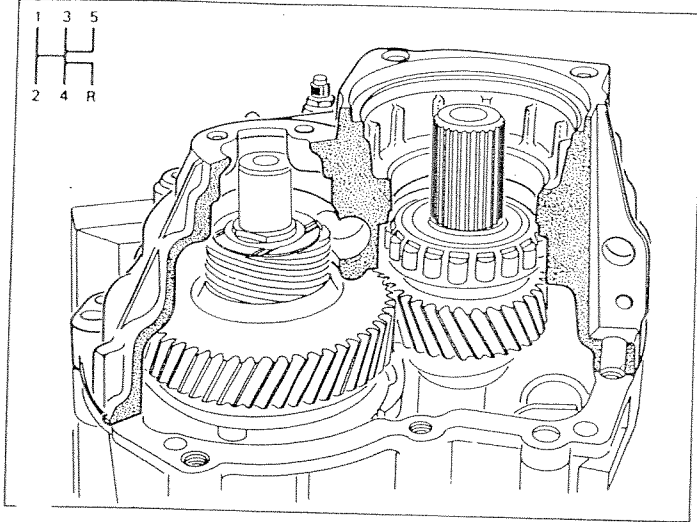
08.10.77. C 179

IV



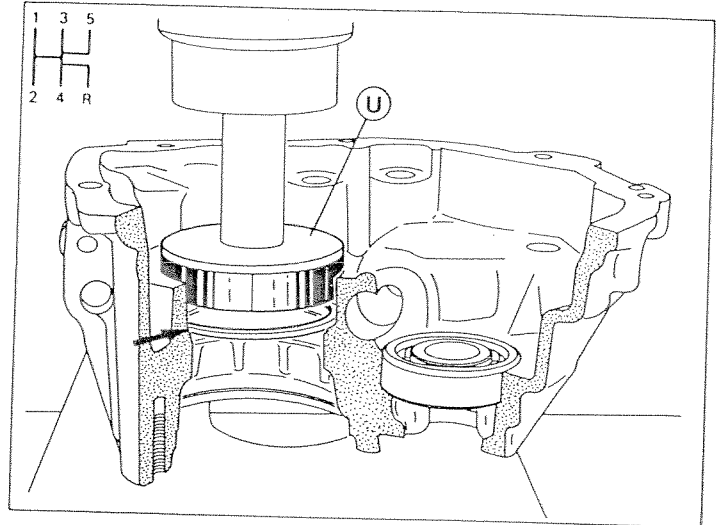
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I



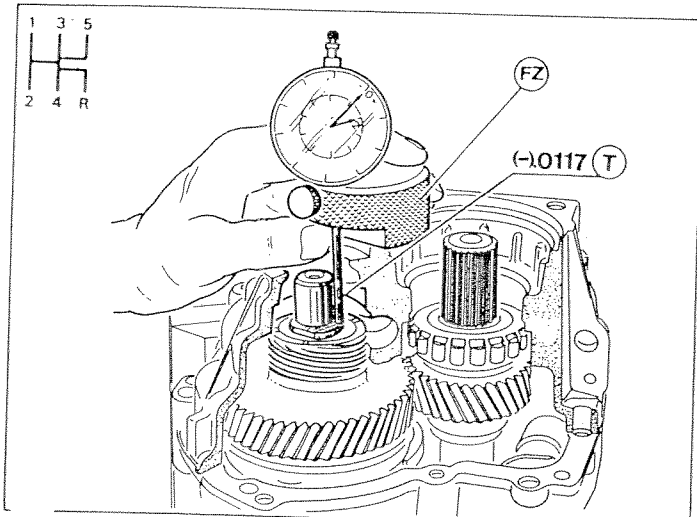
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IV



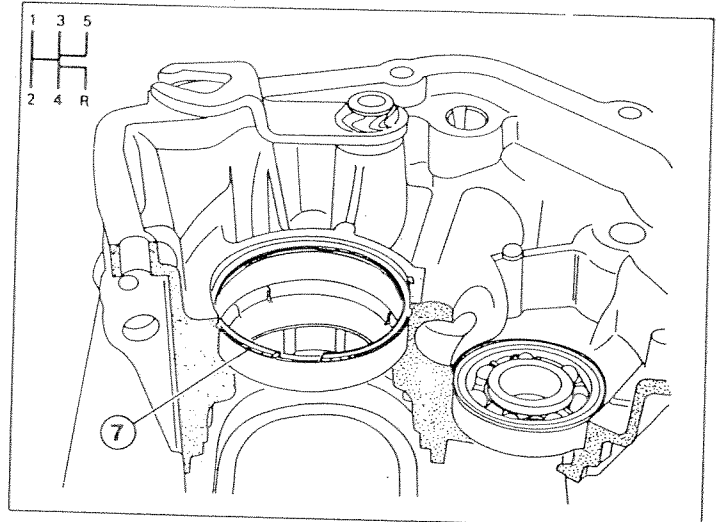
08.10.77. C 39

II



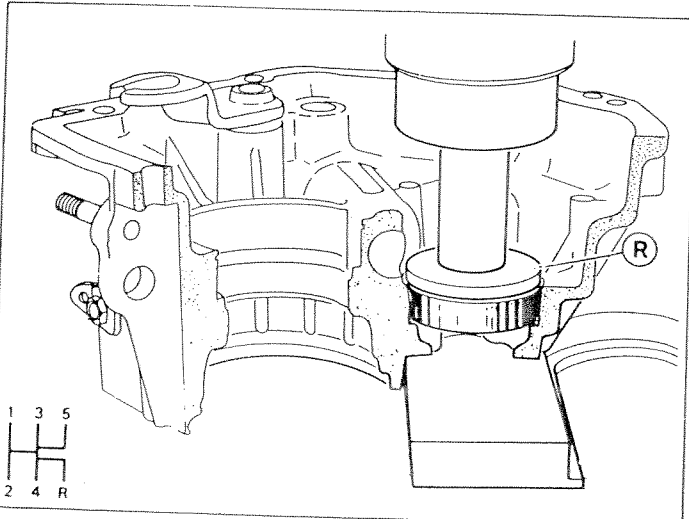
17.04.84. C 63

V



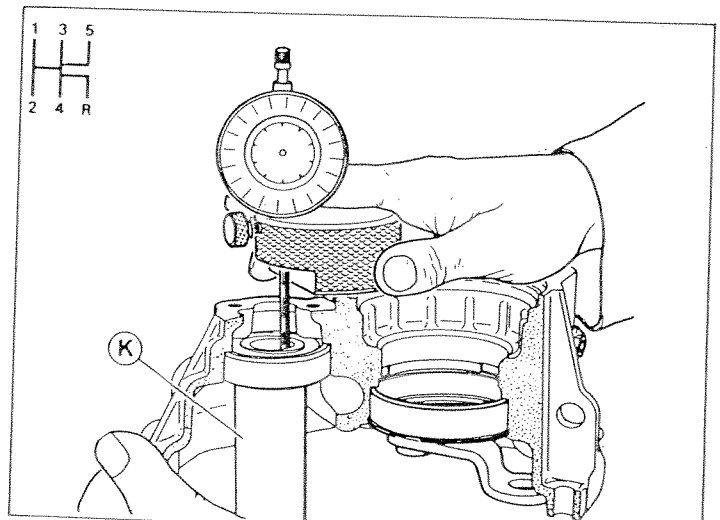
17.04.84. C 74

III



17.04.84. C 68

VI



17.04.84. C 78

ADJUSTMENT OF THE 5th / REVERSE INTERMEDIATE SHAFT BEARING FREE PLAY

I

- Install the tailshaft housing without its bearing.

IV

BA 10/5 1st VERSION

- Install the shim previously determined.

BA 10/5 1st and 2nd VERSIONS

- Install the bearing outer race with the press drift (-).0314 U.

II

- Dial indicator support (-).0314 FZ bearing against rear face of housing.

- Place the feeler extension (-).0117 T on the shoulder of the shaft (not on spacer).

- Zero the dial indicator at 2 and 0.

V

BA 10/5 2nd VERSIONS

- Install a new circlip (7).

III

- Remove the tailshaft housing.

- Install the ball bearing using the (-).0314 R press block.

VI

- With gauge block (-).0314 K clamped in a vise and the inner race bearing against the gauge block :

MEASURE

- Record the value shown on the dial indicator.
- Subtract 0.05 (play required).
- Round off to the nearest 0.05 mm.

example : dial indicator reading 1.58
 — 0.05
 1.53

install a 1.55 mm shim.

3

REASSEMBLY (Ctn'd)

5 SPEED TRANSMISSION 1st AND 2nd VERSIONS

BA 10/5**I**

ADJUSTMENT

NOTE - Shims are available from 1 mm to 2 mm in increments of 0.05 mm.

- Install :
- the spacer (8),
- the adjusting shim (9).

IV

- Install :
- the inspection plate (10) with a new gasket,
- a new prelubricated oil seal (white grease), using press drift (-).0314 Y.

II

Apply a thin even coat of sealing compound onto the tailshaft housing's mating face.

IMPORTANT Make sure the centering dowels are in place and protrude by approximately 5 mm.

V

- Install :
- the spring (11),
- the speedometer driven pinion with new prelubricated "O" rings.

III

Install :

- The tailshaft housing while engaging the selector finger into the selector forks shafts' gate.
- Draw housings together by tightening the 7 bolts and to assist in the assembling lightly tap with a mallet on the housing just above the intermediate shaft.
- Torque the bolts to 1,5 mdaN (10.88 ft.lbs.).

VI

- Coat the throwout bearing guide with a thin coat of MOLYKOTE grease.
- Install the throwout bearing and lock it on its fork.

