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SPECIFICATIONS

2

1973 and 1974 Models

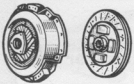
Identification of mechanisms and withdrawal pads

SPECIFICATIONS

3

1975 Model

Identification of mechanisms and withdrawal pads



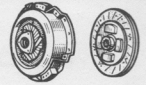
SPECIFICATIONS

R.1304 - R.1314 - R.1324) 1973 and 1974 Models
R.1313 - R.1323)

- IDENTIFICATION OF MECHANISMS AND WITHDRAWAL PADS -

| Vehicle type | MECHANISM | WITHDRAWAL PAD | Interchangeability instructions |
|----------------------------|--|---|---|
| R.1304 | <p>D = 38 mm (1-1/2")</p> <p>200 DB 325</p> | <p>F = 47 mm (1-27/32")</p> | <p>Do not fit a withdrawal pad having a diameter F = 44 mm (1-23/32") to a mechanism having a diameter D = 38 mm (1-1/2"). The withdrawal pad having a diameter F = 47 mm (1-27/32") may be fitted to a mechanism having a diameter D = 34 mm (1-11/32").</p> |
| R.1304 | <p>D = 34 mm (1-11/32")</p> <p>200 DBR 325</p> | <p>F = 47 mm (1-27/32") puis F = 44 mm (1-23/32")</p> | |
| R.1304 R.1314 R.1324 | <p>D = 34 mm (1-11/32")</p> <p>200 DBR 375</p> | <p>F = 44 mm (1-23/32")</p> | |
| R.1313 R.1323 | <p>D = 38 mm (1-1/2")</p> <p>200 DB 375</p> | <p>F = 47 mm (1-27/32")</p> | |
| R.1313 R.1323 | <p>D = 34 mm (1-11/32")</p> <p>200 DBR 375</p> | <p>F = 47 mm (1-27/32") puis F = 44 mm (1-23/32")</p> | |

SPECIFICATIONS



R. 1304 - R. 1314 - R. 1324

R. 1313 - R. 1323

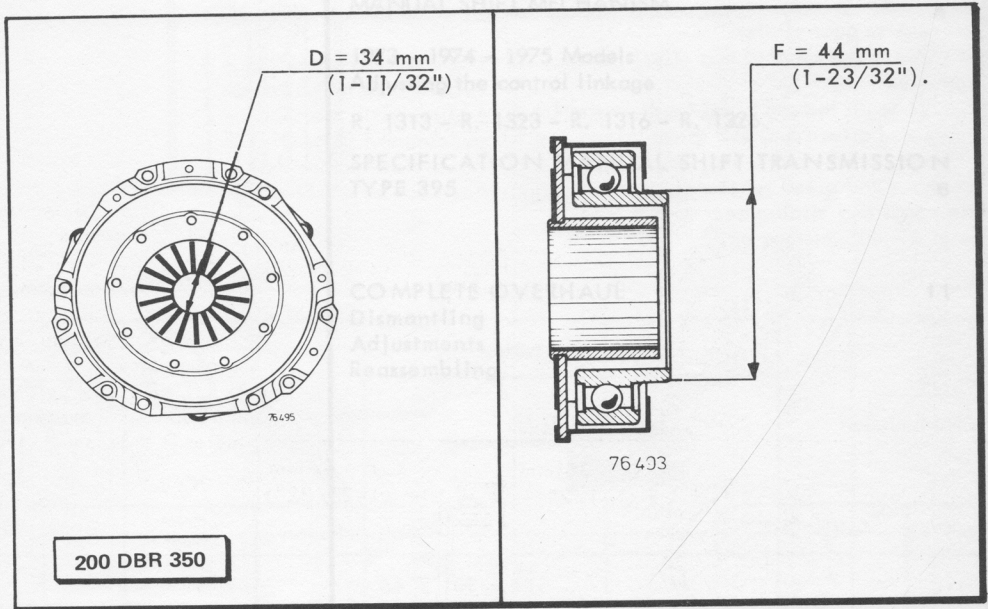
1975 Models

R. 1316 - R. 1326

R. 1308 - R. 1318 - R. 1328

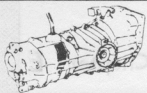
IDENTIFICATION OF MECHANISMS AND WITHDRAWAL PADS

The above vehicles are fitted with the 200 DBR 350 type clutch mechanism. This mechanism may be used as a spare part to replace the 200 DBR 325 and 200 DBR 375 type mechanisms.



MANUAL SHIFT TRANSMISSION**CONTENTS**

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| R. 1313 - R. 1316 - R. 1323 - R. 1326 - 1974 and 1975 Models | |
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| R. 1313 - R. 1323 - R. 1316 - R. 1326 | |
| SPECIFICATION MANUAL SHIFT TRANSMISSION TYPE 395 | 6 |
| COMPLETE OVERHAUL | 11 |
| Dismantling | |
| Adjustments | |
| Reassembling | |



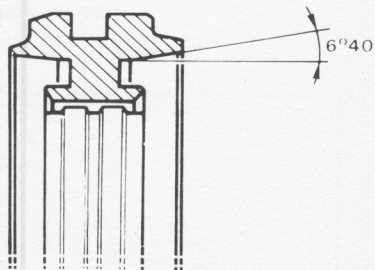
SPECIFICATIONS

R.1304 - R.1314 - R.1324 1974 Model

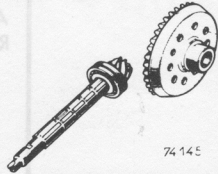
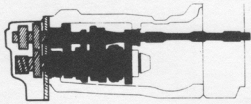

The above vehicles have been fitted with a type 352-30 transmission instead of a type 352-10 since October 1973.

The type 352-30 transmission has the following modifications :

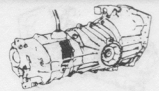
- new 1st, 2nd, 3rd and 4th speed reduction ratios.
- new reverse gear cluster.
- 1st - 2nd speed synchro dog clutch teeth strengthened :
 - 27 teeth instead of 30 teeth on the 1st speed driven and 2nd speed driven gears and on 1st-2nd speed sliding gear.
- new 1st - 2nd speed synchronisation : mobile cones and sliding gear with a taper angle of $6^{\circ} 40'$ instead of 7° .



76697

| Transmission | | Reduction ratios |  74145 | | Speedo drive | |
|--------------|--------|--|---|-------------|---|-------|
| | |  74146 | | |  74082 | |
| Type | Suffix | | Pinion | Crown wheel | Worm | Wheel |
| 352 | 30 | 1st (11 x 38) 3,46 | 9 | 34 | 6 | 13 |
| | | 2nd (17 x 38) 2,24 | | | | |
| | | 3rd (23 x 34) 1,48 | | | | |
| | | 4th (28 x 29) 1,04 | | | | |
| | | Reverse (12 x 37) 3,08 | | | | |

1975 model R.1304 - R.1308 - R.1314 - R.1318 - R.1324 - R.1328 vehicles are fitted with the type 352 - 30 transmission.




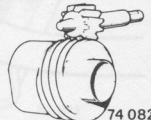
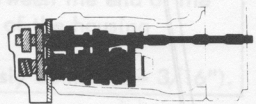
R. 1313 - R. 1323 - 1974 Model

The above vehicles are fitted with the type 395-00 (5 speed) transmission instead of the type 352-10 (4 speed) transmission.

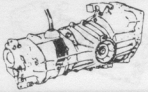
The type 395 transmission is similar overall to the type 365 transmission, repair instructions for which will be found in M.R.156.

However, this gearbox has the following special points :

- different 1st, 2nd, 3rd, 4th and 5th speed reduction ratios.
- identical differential to that fitted to the type 352-10 or 30 transmission.
- link rod controlled manual shift with modification to the selector fork shafts.

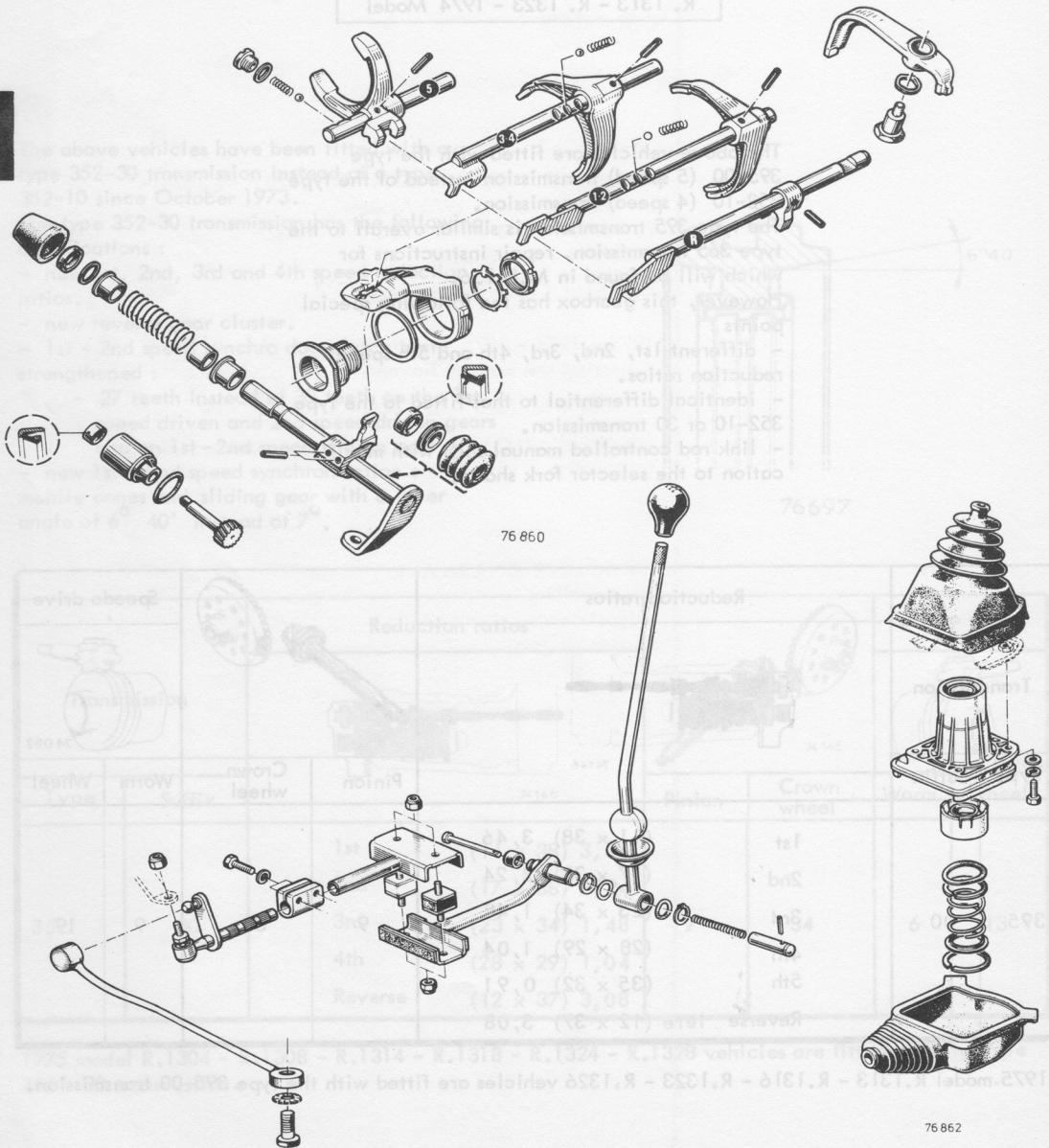
| Transmission | | Reduction ratios |  74 145 | |  74 082 | |
|--------------|--------|--|--|-------------|---|-------|
| | |  74 146 | | | | |
| Type | Suffix | | Pinion | Crown wheel | Worm | Wheel |
| 395 | 00 | 1st | (11 x 38) | 3,46 | | |
| | | 2nd | (17 x 38) | 2,24 | | |
| | | 3rd | (23 x 34) | 1,48 | | |
| | | 4th | (28 x 29) | 1,04 | | |
| | | 5th | (35 x 32) | 0,91 | | |
| | | Reverse | (12 x 37) | 3,08 | | |

1975-model R.1313 - R.1316 - R.1323 - R.1326 vehicles are fitted with the type 395-00 transmission.



MANUAL GEARSHIFT MECHANISM

R. 1313 - R. 1323 - R. 1316 - R. 1326 1974 and 1975 Models

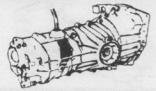


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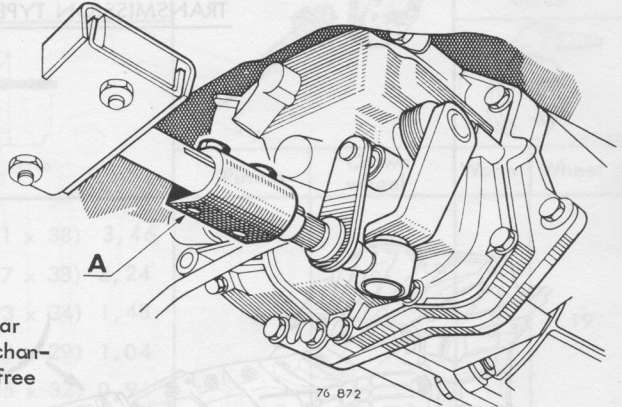
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76 862

ADJUSTING THE LINKAGE



Loosen the two bolts in collar (A).

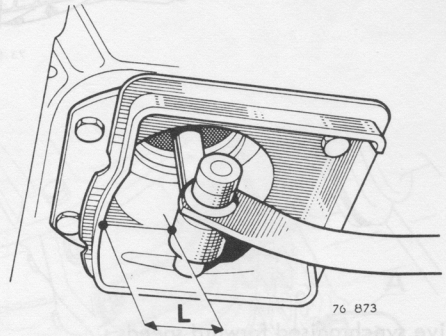


Once the two bolts are loosened in the collar which grips both sections of the control mechanism, move the shift lever several times to free the control mechanism.

Then place :

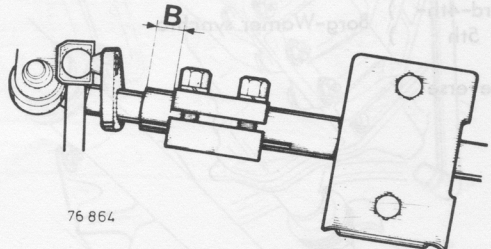
- the transmission in neutral.
- the shift lever in neutral, in the 3rd-4th plane, resting against the side of the housing.

Move the shift lever to obtain dimension $L = 32 \text{ mm}$ ($1 - 1/4''$) between the end of the lever and the inner wall of the housing (concave portion). Dimension L was previously 30 mm ($1 - 3/16''$).

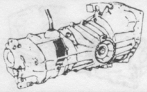


Line up the collar and tighten the two bolts.

$B = 13 \text{ to } 15 \text{ mm}$ ($33/64''$ to $19/32''$)

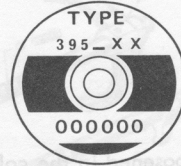
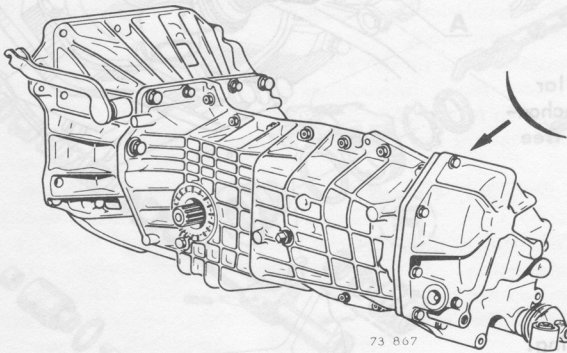


Check for ease of selection.



SPECIFICATIONS

TRANSMISSION TYPE 395

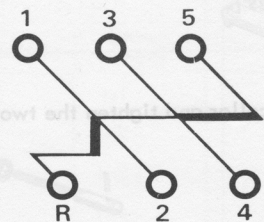


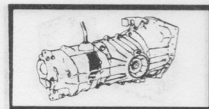
Five synchronised forward speeds :

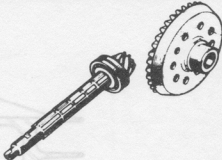
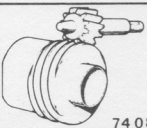
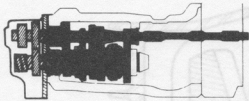
1st-2nd : Renault synchro

3rd-4th-5th) Borg-Warner synchro

Reverse.





| Trans- mission | | Reduction ratios |  74145 | |  74082 | |
|-------------------|--------|--|--|-------------|---|-------|
| | |  74146 | | | | |
| Type | Suffix | | Pinion | Crown wheel | Worm | Wheel |
| 395 | 00 | 1st (11 x 38) 3,46 2nd (17 x 38) 2,24 3rd (23 x 34) 1,48 4th (28 x 29) 1,04 5th (35 x 32) 0,91 Reverse (12 x 37) 3,08 | 9 | 34 | 9 | 19 |

LUBRICATION

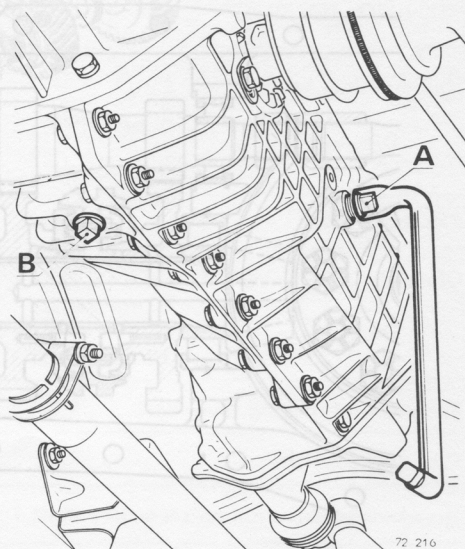
Refilling with oil is carried out by means of hole (A) on the side of the casing, which also acts as a level.
Draining is carried out by removing plug (B).

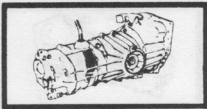
Capacity : 2 litres
(4.1/4 U.S. pts - 3.1/2 Imp. pts)

Oil grade : "For Service API GL 5" -
SAE 80 grade.

Checking the level

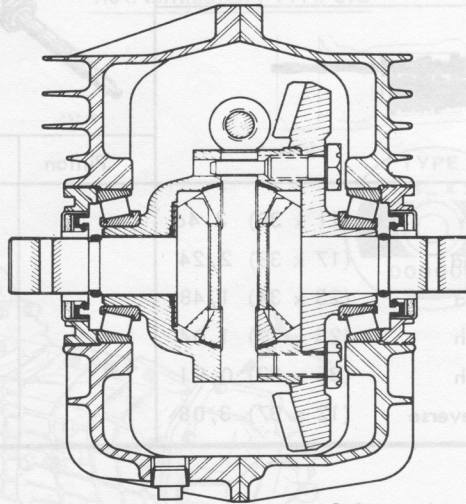
Unscrew plug (A) : B.Vi. 380-01 wrench.
The oil should just be flush with the bottom of the hole.



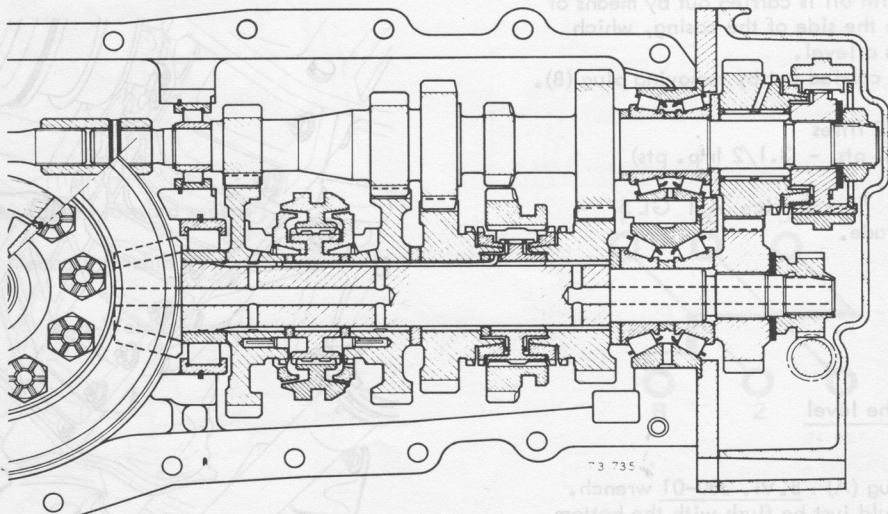


SPECIFICATIONS

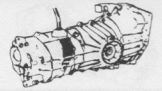
SECTIONS



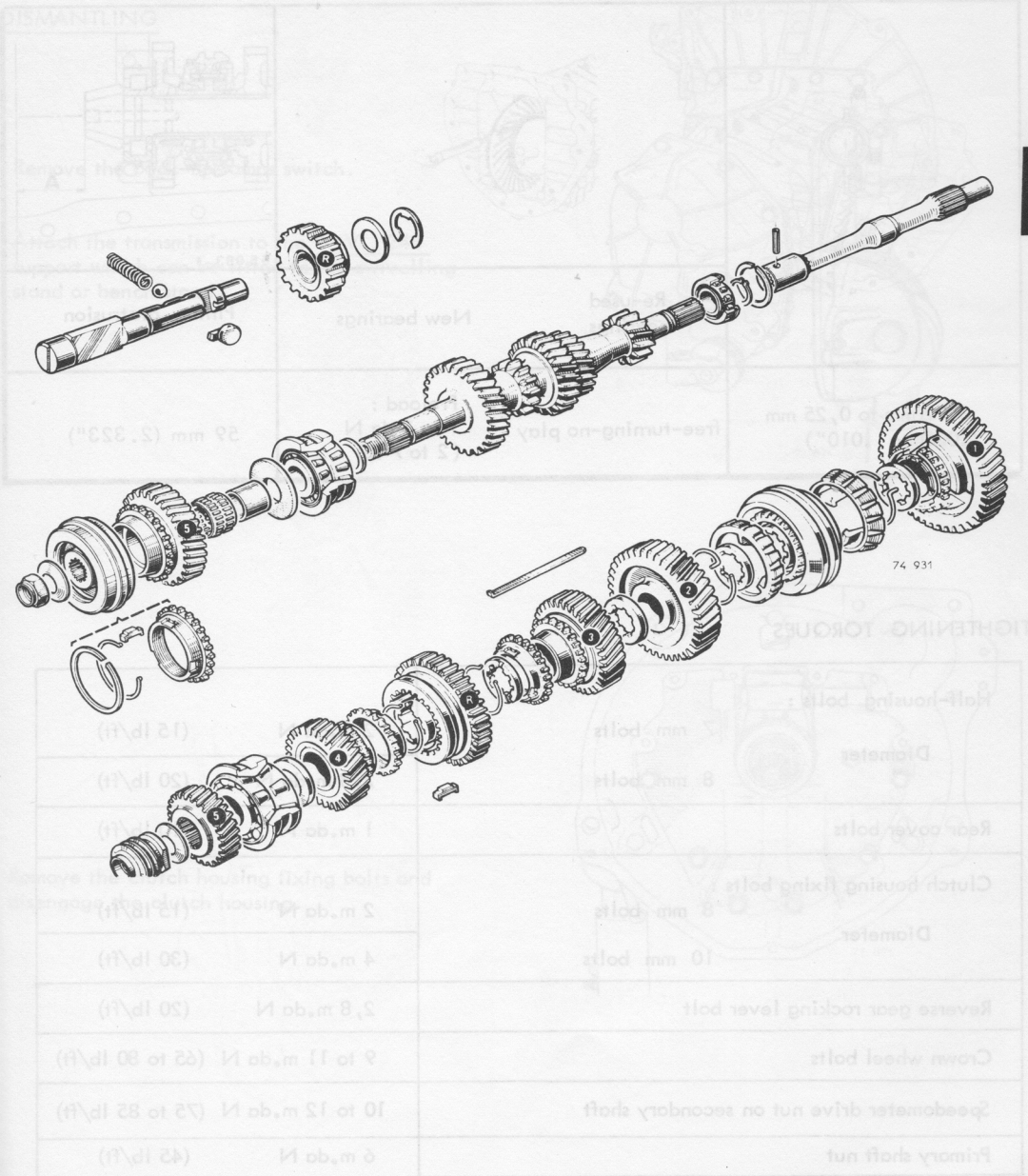
73 734 4

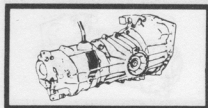


73 735



SETTINGS



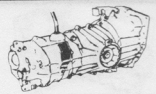


SETTINGS

| | | | |
|---------------------------------------|----------------------|---|-------------------|
| | | | |
| | Re-used bearings | New bearings | Pinion protrusion |
| 0,12 mm to 0,25 mm (.005 to .010") | free-turning-no play | Preload : 1 to 3 da N (2 to 7 lb) | 59 mm (2.323") |

TIGHTENING TORQUES

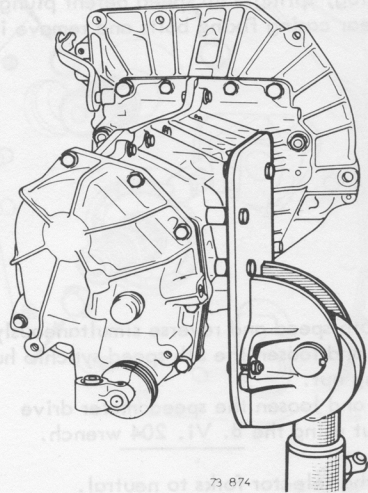
| | | | |
|--|-------------|-----------------|------------------|
| Half-housing bolts : | | | |
| Diameter | 7 mm bolts | 2 m.da N | (15 lb/ft) |
| | 8 mm bolts | 2,8 m.da N | (20 lb/ft) |
| Rear cover bolts | | 1 m.da N | (10 lb/ft) |
| Clutch housing fixing bolts : | | | |
| Diameter | 8 mm bolts | 2 m.da N | (15 lb/ft) |
| | 10 mm bolts | 4 m.da N | (30 lb/ft) |
| Reverse gear rocking lever bolt | | 2,8 m.da N | (20 lb/ft) |
| Crown wheel bolts | | 9 to 11 m.da N | (65 to 80 lb/ft) |
| Speedometer drive nut on secondary shaft | | 10 to 12 m.da N | (75 to 85 lb/ft) |
| Primary shaft nut | | 6 m.da N | (45 lb/ft) |



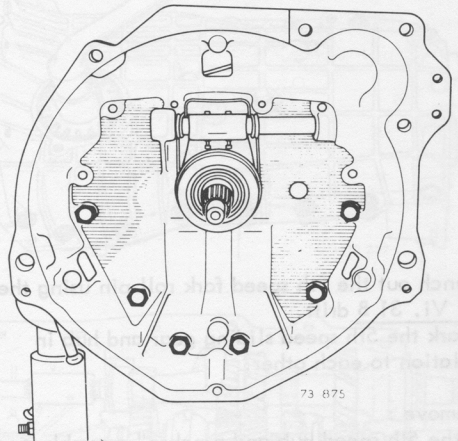
DISMANTLING

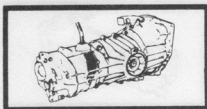
Remove the back-up lamps switch.

Attach the transmission to the B. Vi. 240 support which can be fitted to the swivelling stand or bench stand.



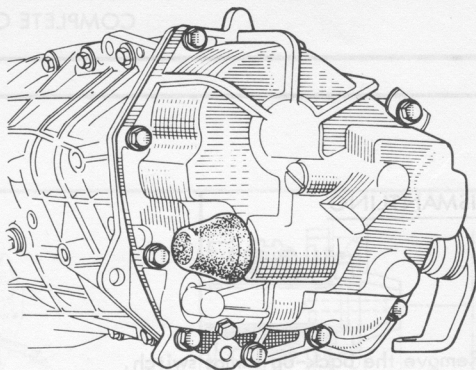
Remove the clutch housing fixing bolts and disengage the clutch housing.





Remove :

- the plug, spring, 5th speed detent plunger
- the rear casing fixing bolts and remove it.



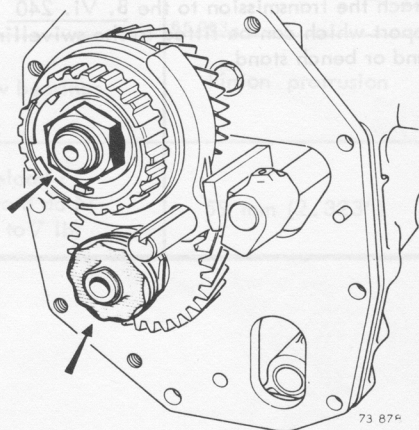
77552

Select 5th speed and reverse simultaneously.
Unlock and loosen the 5th speed synchro hub retaining nut.

Unlock and loosen the speedometer drive worm nut using the B. Vi. 204 wrench.

Return the selector forks to neutral.

Select 4th speed.



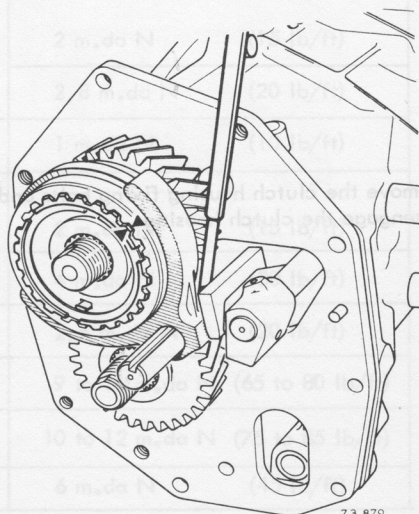
73 876

Punch out the 5th speed fork roll pin using the B. Vi. 31 B drift.

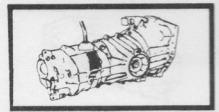
Mark the 5th speed sliding gear and hub in relation to each other.

Remove :

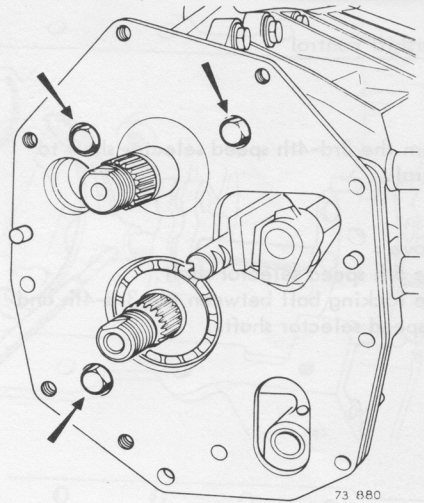
- "the 5th speed hub and synchro" assembly and fork
- the 5th speed gears.



73 879

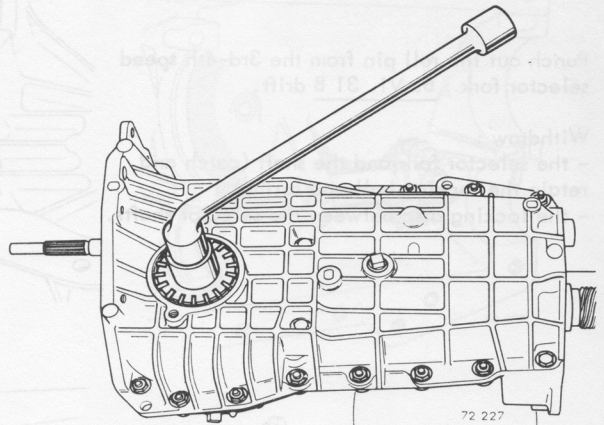


Remove the spacer plate fixing bolts and remove it.



Remove the differential adjusting ring nut lockplates.

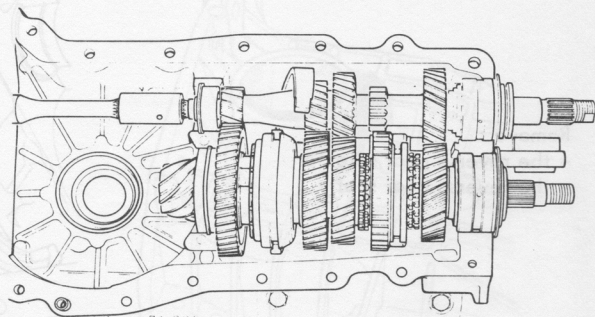
Unlock and unscrew the ring nuts : B. Vi. 377 wrench.

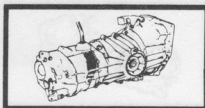


Unscrew the half-casing assembly bolts and separate them.

Remove :

- the differential
- the secondary gear train and the stop peg from the outer track ring on the double taper roller bearing
- the primary shaft.



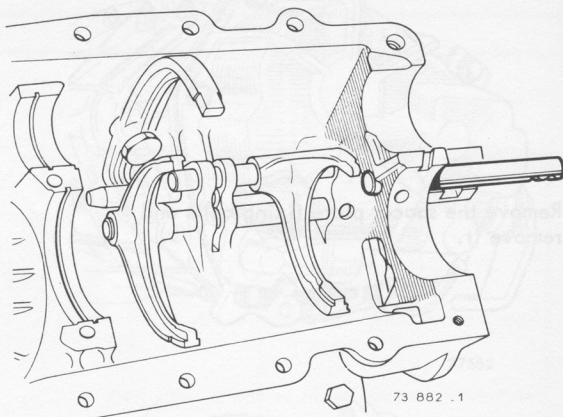


Gearshift control

Return the 3rd-4th speed selector shaft to neutral.

Remove :

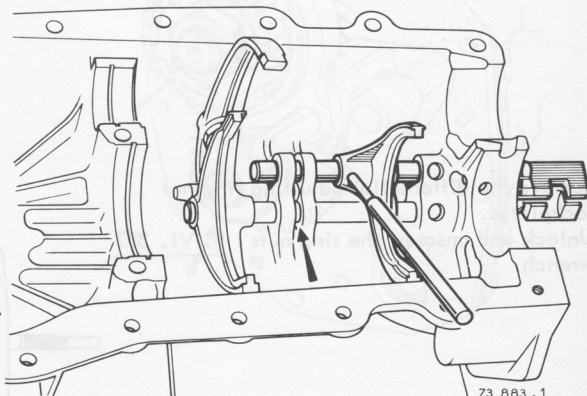
- the 5th speed selector shaft
- the locking ball between the 3rd-4th and 5th speed selector shafts.



Punch out the roll pin from the 3rd-4th speed selector fork : B. Vi. 31 B drift.

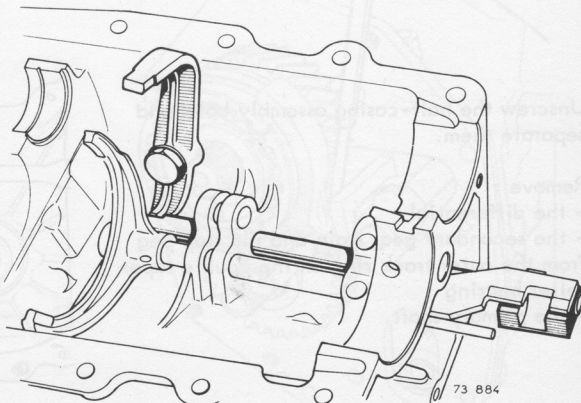
Withdraw :

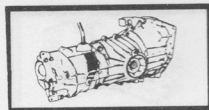
- the selector fork and the shaft (catch and retain the locking ball and spring)
- the locking disc between the selector shafts.



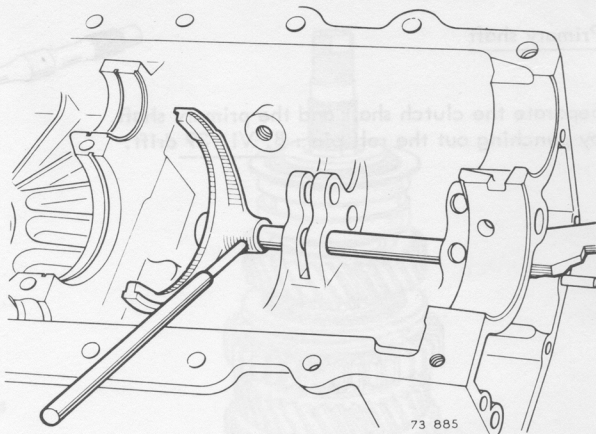
Remove :

- the reverse gear selector
- the reverse gear shaft.





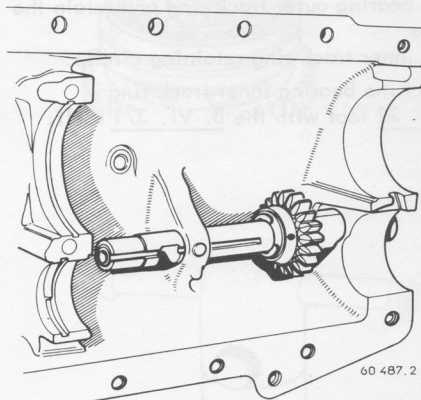
Using the B. Vi. 31 drift, punch the roll pin out of the 1st-2nd speed selector fork. Withdraw the selector shaft and fork (catch and retain the locking ball and spring).



Reverse gear wheel

Extract the circlip holding the gear wheel and remove :

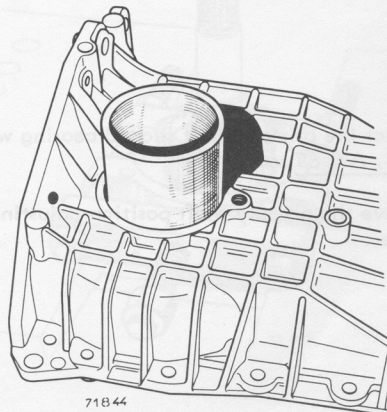
- the shaft, gear wheel, friction washer, and sleeve (catch and retain the ball and locking spring).

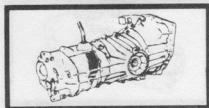


Half-casings

Drive out the bearing track rings using a piece of tube.

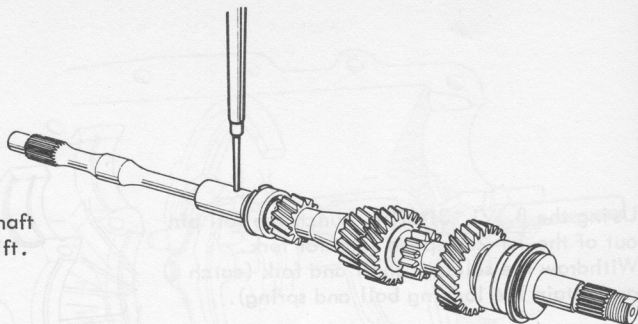
Remove the adjusting ring nut oil seals.





Primary shaft

Separate the clutch shaft and the primary shaft by punching out the roll pin : B. Vi. 39 drift.

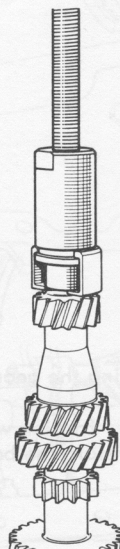


73 886

Remove :

- the bearing outer track ring and retain the rollers
- the inner track ring retaining circlip.

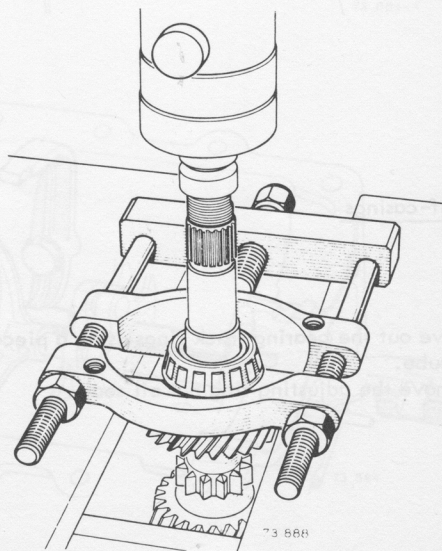
Extract the bearing inner track ring :
B. Vi. 22 tool with the B. Vi. 371 shell.



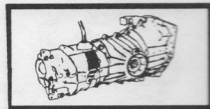
73 887

Extract the primary shaft second bearing with the T. Ar. 65 tool.

Remove the primary shaft position adjusting spacer.



73 888

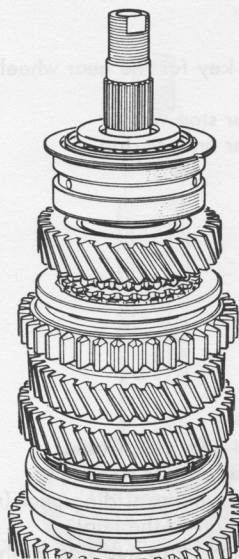


Secondary shaft

Place the shaft in a vice, holding it by the 1st speed gear.

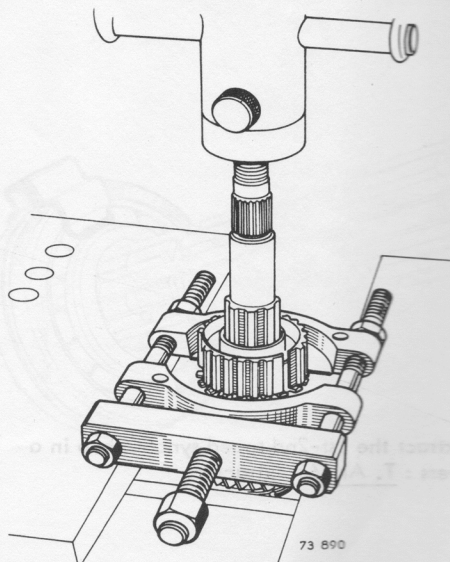
Remove :

- the double taper roller bearing
- adjusting washer for the final drive pinion protrusion
- 4th speed gear and its ring
- 3rd-4th speed synchro sliding gear and keys (mark the position of the sliding gear in relation to the hub).

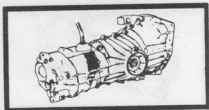


73 889

Extract the 3rd-4th speed synchro hub in a press : T. Ar. 65 extractor.

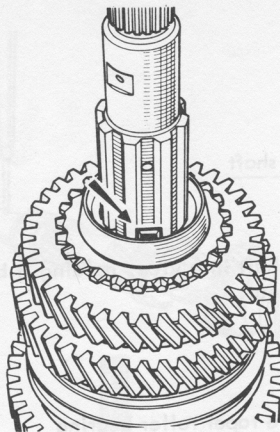


73 890



Remove :

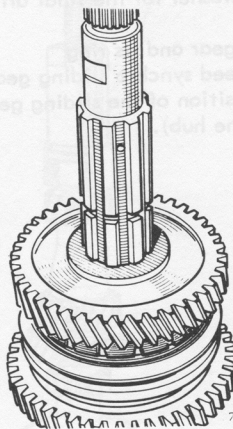
- the retaining key for the gear wheel stop washers
- 3rd speed gear stop washer
- 3rd speed gear and its ring.



73 891

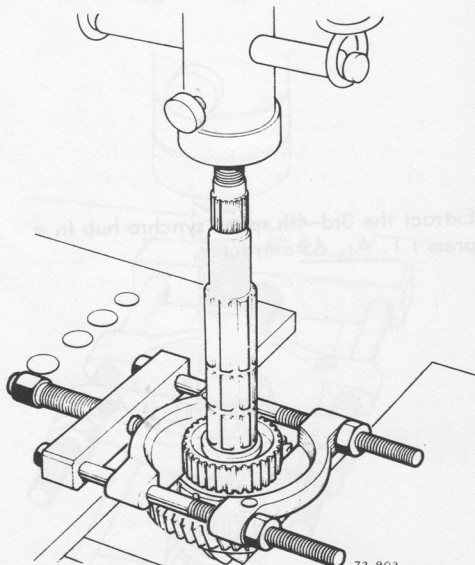
Remove :

- the 2nd speed gear stop washer
- 2nd speed gear and its ring
- 1st-2nd speed synchro sliding gear (mark its position in relation to the hub).
- 1st-2nd speed synchro hub stop washer.



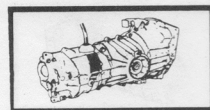
73 892

Extract the 1st-2nd speed synchro hub in a press : T. Ar. 65 extractor.



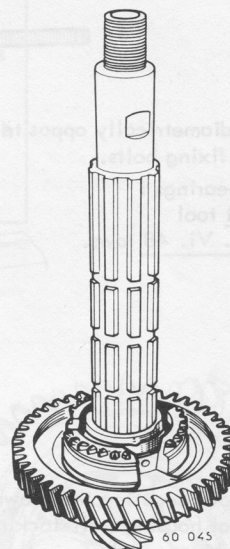
73 893

RE-ASSEMBLING



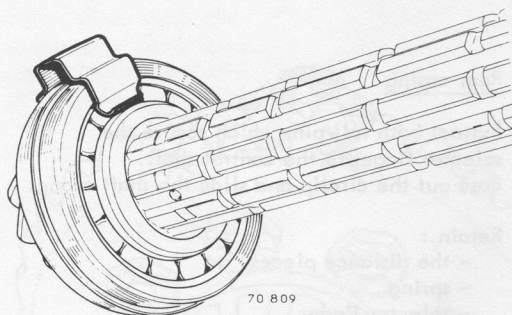
Remove :

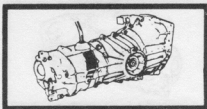
- the 1st speed synchro ring
- 1st speed gear stop washer
- 1st speed gear.



Fit the bearing outer track ring retaining clip to prevent the rollers from falling out : this clip is supplied with new crown wheel and pinion sets.

This bearing cannot be changed as the bearing inner track ring is bonded to the final drive pinion

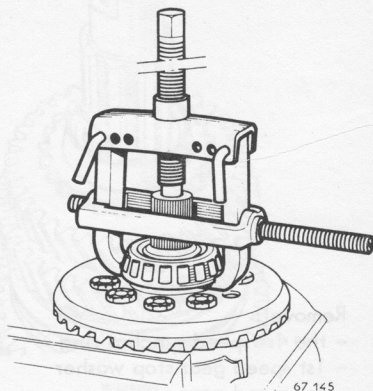
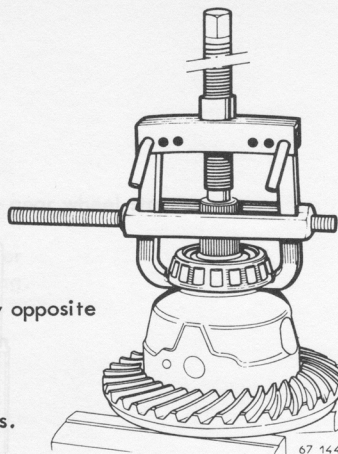




Differential

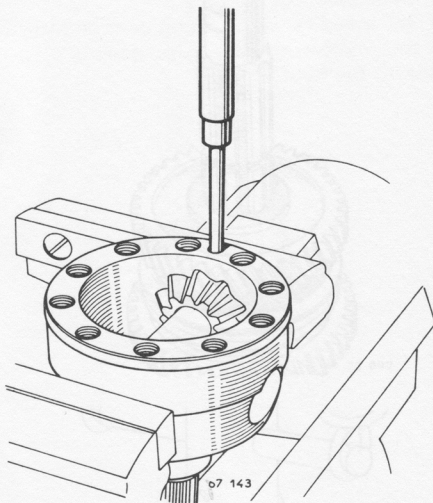
Remove two diametrically opposite crown wheel fixing bolts.

Extract the bearings :
B. Vi. 28-01 tool
fitted with B. Vi. 48 jaws.



Remove the bolts securing the crown wheel to the differential housing (self-locking bolts which cannot be re-used).
Punch out the roll pin retaining the planet wheel shaft : B. Vi. 31 B drift.

Separate the various parts



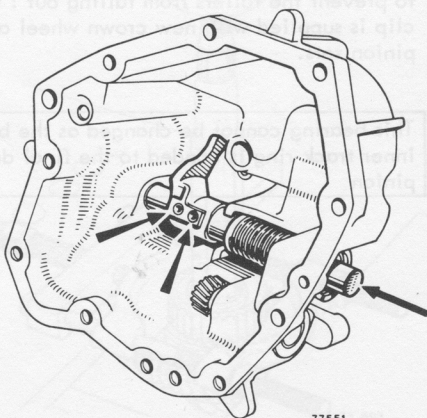
Rear casing

Extract both roll pins which secure the selector finger to the control shaft.
Ease out the circlip and slide the shaft along.

Retain :

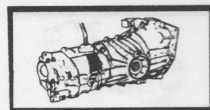
- the distance pieces
- spring
- selector finger

Remove the two seals on the casing.



The seals and roll pins must be changed at each dismantling

RE-ASSEMBLING



RE-ASSEMBLING

Matched components :

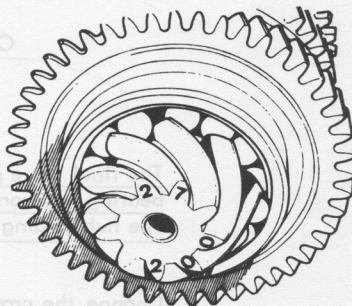
- crown wheel and pinion
- final drive pinion shaft and synchro hubs
- synchro hubs and sliding gears.

When re-assembling, an electric oven with a temperature range of up to 250° C must be used for any operation involving the 1st-2nd speed synchro hub.

Secondary shaft

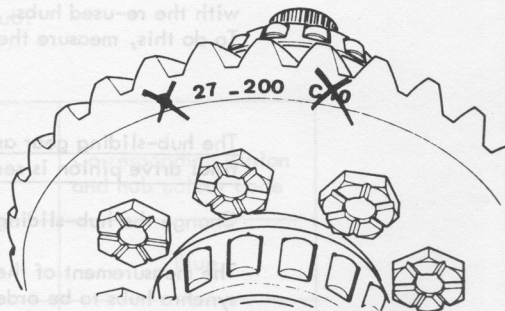
Matching of the crown wheel and pinion

The final drive pinion and crown wheel are lapped together during manufacture. They cannot be separated. If one of these parts is changed, its making part must be changed also.

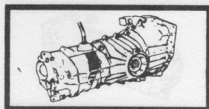


A common reference mark is shown on the crown wheel and final drive pinion

Example : 27-200 (27th pair machined on Day 200 of the year).



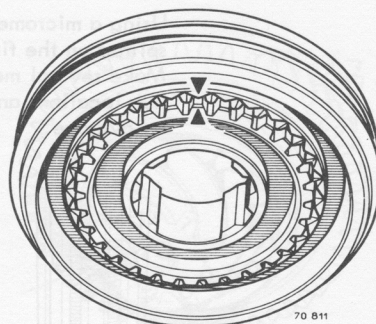
UNDER NO CIRCUMSTANCES MUST NOTICE BE TAKEN OF ANY OTHER MARKINGS ON THE CROWN WHEEL.



Preparing the synchros

The hub and sliding gear are matched

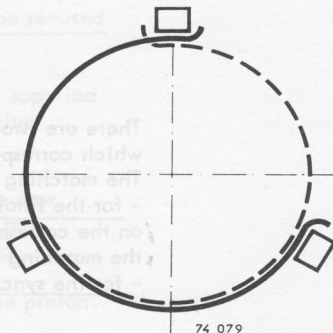
When a new synchro is concerned, mark both parts in relation to one another :
for the 1st-2nd speed synchro make the mark on the sliding gear (chamfer side) so that it is visible after assembling the hub.
Separate the two parts and clean them.



1st - 2nd speed synchro

Raise the electric oven temperature to 250° C (482° F).

Place the hub inside and wait 15 minutes to ensure that the centre of the part has also reached 250° C, maintaining the initial oven temperature during this time.

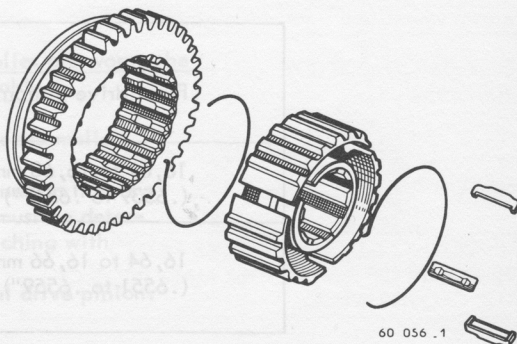


3rd - 4th speed synchro

Fit onto the hub :

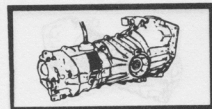
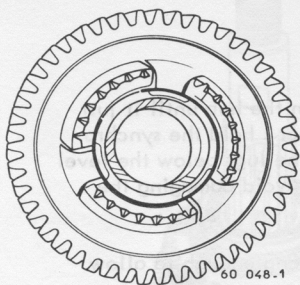
- the 3 keys
- the springs (see drawing)

- the sliding gear in the correct position : with its groove on the opposite side to the notch on the hub and with the mark in line with that on the hub (marks made during dismantling).



Re-assembling the secondary shaft

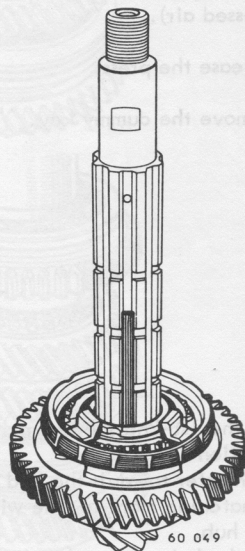
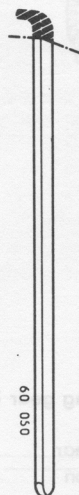
Fit the synchro spring onto the 1st speed gear so that it covers the 3 notches.



Fit the following onto the final drive pinion (with its bearing in position).

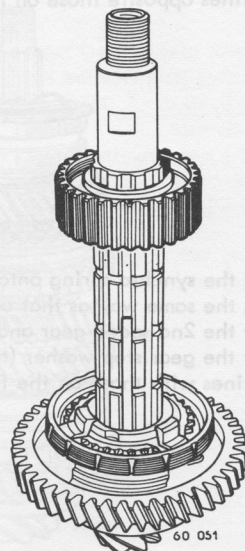
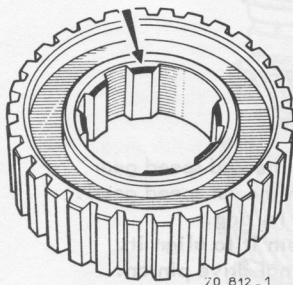
- the 1st speed gear and its ring
- the 1st speed gear stop washer ; turn it and hold it with a dummy key (the latter can be made from a washer retaining key by removing the tip).

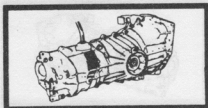
The dummy key must be fitted into one of the splines with an oil hole.
Remove the bearing outer track ring retaining clip.



Take the 1st-2nd speed hub from the oven and fit it onto the final drive pinion in the correct position.

- with one of the unsplined sections opposite the dummy key
- with its matching mark for the sliding gear facing towards the 2nd speed gear or the spline chamfer (arrow) facing towards the 1st speed gear.





Fit in position :

- the spacer plate (it is required for adjustment of the pinion protrusion)
- the 5th speed gear
- the wave washer
- the speedometer drive worm.

Hold the shaft in a vice by the 1st speed gear.

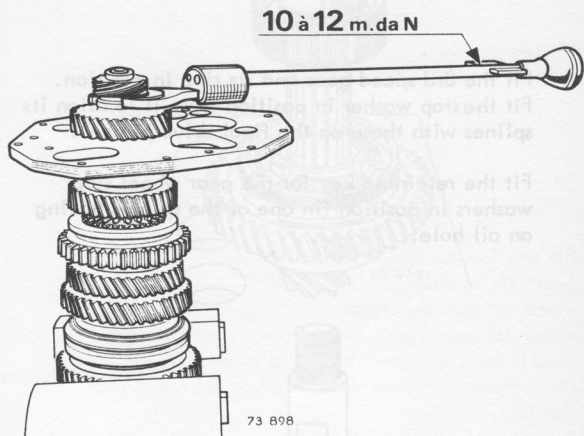
Select 1st gear.

Torque tighten up the speedometer drive worm :

Mot.50 torque wrench fitted with B. Vi. 204 wrench :

10 to 12 m.da N (75 to 85 lb/ft)

Do not lock it up, bearing in mind that the pinion protrusion will be adjusted later.



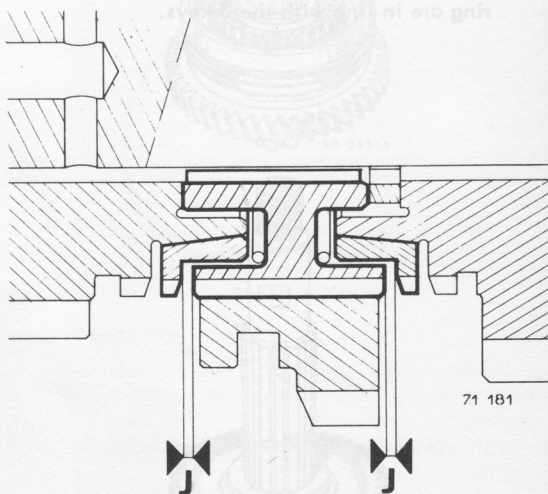
Check clearance J between the 3rd speed synchro ring and the hub rim :

J = 0,20 mm (.008") minimum

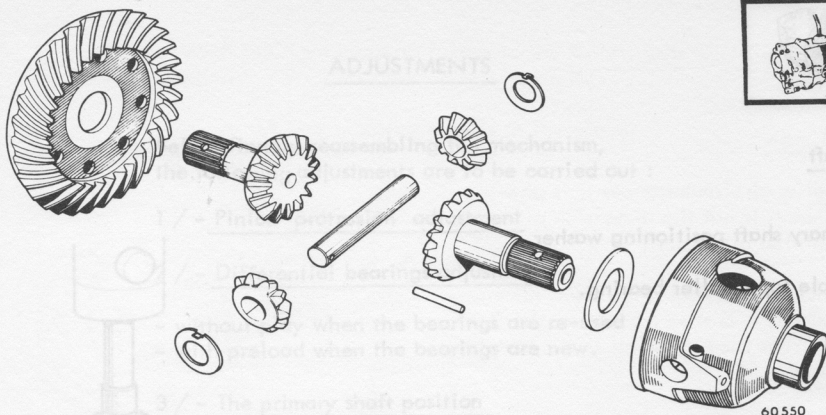
To do this :

- the synchro ring should be sticking to the gear cone
- the gear must be pressing against the hub.

Carry out the same procedure for the 4th speed synchro ring.



Differential



Fit the following into the differential housing:

- the bakelite impregnated washer, with the oil groove facing the sunwheel : use the washer which is 1,96 to 2 mm (.077 to .079") thick.

The washer 2,03 to 2,07 mm (.080 to .082") thick will be used only when the play in the sunwheel and planet wheel meshing is excessive.

- one sunwheel (dip it in EP 80 oil).

- the planet wheels and their thrust washers (with the locking tag in the hole in the housing)

Slide the planet wheel shaft in (line up the hole in the shaft with that in the housing).

Fit the roll pin in position: drive it about 5 mm (13/64") down inside the housing using the B.Vi. 31 B drift.

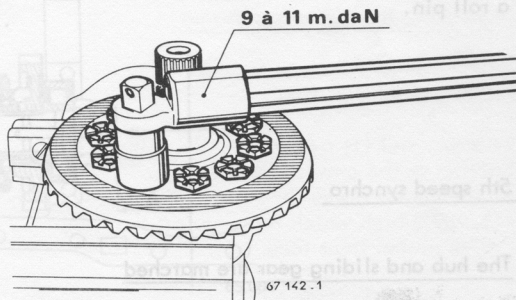
Dip the second sunwheel in EP 80 oil and fit it in the crown wheel.

Assemble the crown wheel to the differential housing using new self-locking bolts.

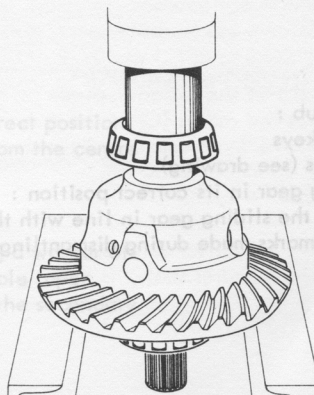
Torque tighten the bolts 9 to 11 m.da N (65 to 80 lb/ft).

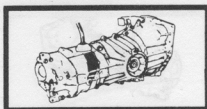
Fit the 'O' ring seals in position on the sunwheels.

After assembly, the differential may be slightly hard to turn.



Fit the bearings in position, using the press.





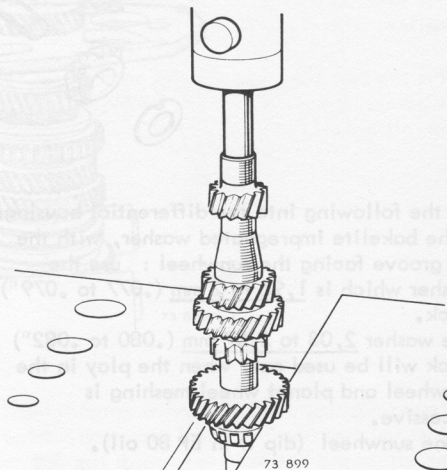
Primary shaft

Fit the primary shaft positioning washer.

Fit the double taper roller bearing.

Fit the roller bearing inner track ring in the press.
Arrange the rollers round the outer track ring
and slide the primary shaft through this assembly.
Fit the circlip.

Fit the clutch shaft to the primary shaft with
a roll pin.



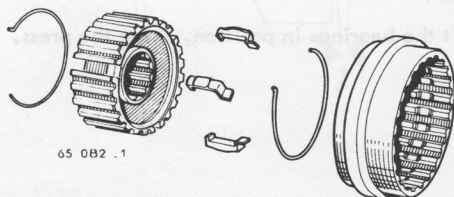
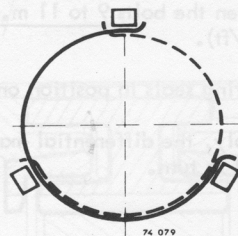
5th speed synchro

The hub and sliding gear are matched

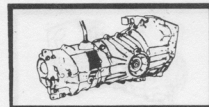
Fit on the hub :

- the three keys
- two springs (see drawing)
- the sliding gear in its correct position :

the mark on the sliding gear in line with that
on the hub (marks made during dismantling).



ADJUSTMENTS



Before finally reassembling the mechanism, the following adjustments are to be carried out :

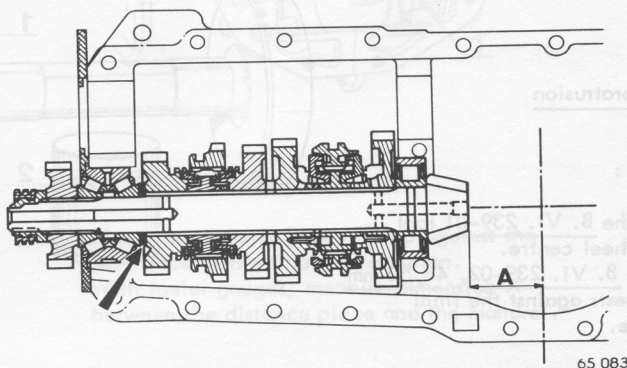
1 / - Pinion protrusion adjustment

2 / - Differential bearings adjustment

- without play when the bearings are re-used
- with preload when the bearings are new.

3 / - The primary shaft position

1 / - Pinion protrusion adjustment

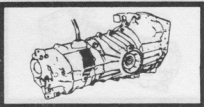


The final drive pinion position

The final drive pinion is in the correct position when its front face is distance A from the centre of the crown wheel :

$$A = 59 \text{ mm } (2,323\text{'})$$

This position is obtained by placing a washer of suitable thickness between the double taper roller bearing and the shoulder on the secondary shaft.



Exceptional case

Under exceptional circumstances it is possible that dimension A is not the dimension of the final drive pinion protrusion.

The difference (x) between the actual dimension and measurement A is then marked on the final drive pinion front face adjacent to the matching reference number.

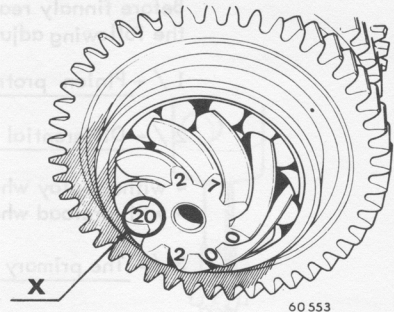
It is given in 1/100ths of a millimetre, for example 20.

The amount of pinion protrusion is then equal to A + the indicated difference.

In the example given below, it will be :

$$59 \text{ mm} + 0,20 \text{ mm} = 59,20 \text{ mm}$$

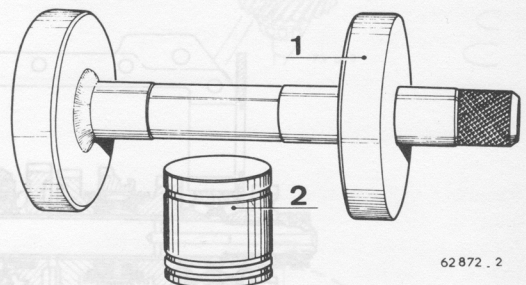
$$(2,323 + ,008 = 2,331")$$



Checking the pinion protrusion

It is carried out using :

- a mandrel (1) from the B. Vi. 239-01 tool, acting as the crown wheel centre.
- a distance piece (2) B. Vi. 239-02, 48,50 mm (1,909") high which rests against the final drive pinion front face.

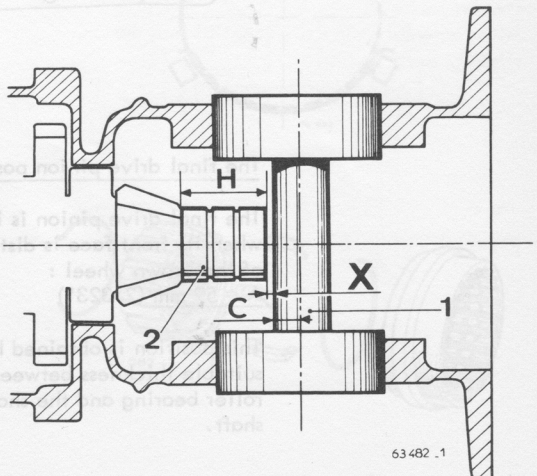


The height (H) of the distance piece (2) 48,50 mm (1,909") plus the radius (C) of the mandrel shaft (1) 10 mm (.394") represents a dimension of :
 $48,50 \text{ mm} + 10 \text{ mm} = 58,50 \text{ mm}$
 $(1,909 + ,394" = 2,303")$

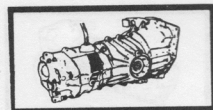
Dimension X, measured between the distance piece and the mandrel shaft, is then :

$$X = 59 \text{ mm} - 58,50 \text{ mm} = 0,50 \text{ mm}$$

$$(2,323 - 2,303 = 0,20")$$



Attach the right hand half-case to the B. Vi. 240 support.



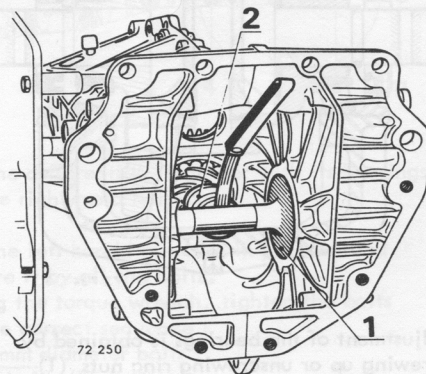
Remove the two locating dowels in the spacer plate.

Fit the secondary shaft.

Fit the left hand half-case and attach it with a few bolts (do not tighten them).

Fit the spacer plate.

Tighten the half-case fixing bolts.



Fit the mandrel in position (1).

Place the distance piece (2) up against the front face of the final drive pinion.

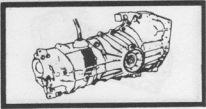
With feeler gauges, measure dimension X between the distance piece and the mandrel.

- If the measurement obtained is less than nominal, replace the pinion protrusion adjusting washer by a thinner one.

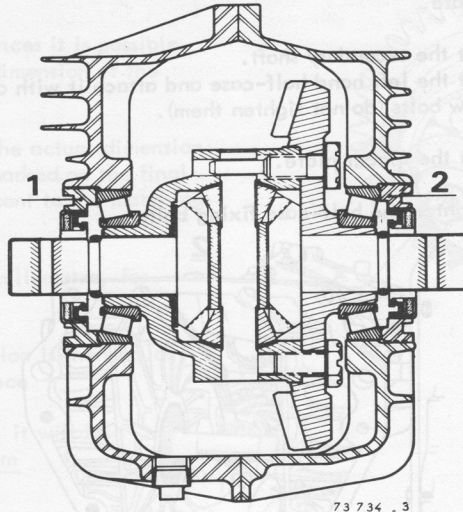
- If the measurement obtained is greater than nominal, replace the washer by a thicker one. Washers are available from 3,50 to 4,10 mm (.138 to .162") thick, in steps of 5/100ths mm (.002").

Having obtained the definite adjustment, remove :

- the checking tool
- the left hand half-case
- the secondary gear train



2/ Adjusting the differential bearings

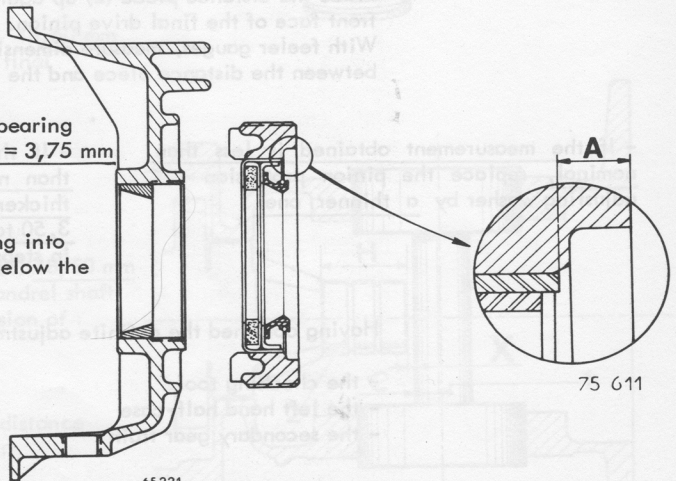


73 734 . 3

Adjustment of the bearings is obtained by screwing up or unscrewing ring nuts (1) and (2).

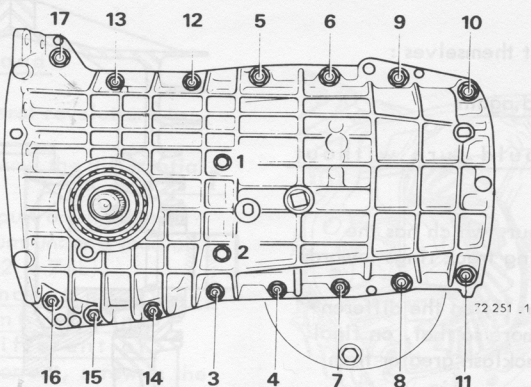
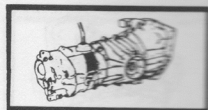
Fit the oil seal into each differential bearing adjusting ring nut. Hold dimension $A = 3,75 \text{ mm}$ (.148")

Fit the corresponding bearing track ring into each half-case, so that it is slightly below the inner face of the case.



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Fit the differential, together with its bearings,
in the right hand half-case.

Fit the left hand half-case in position and
secure it by all the bolts.

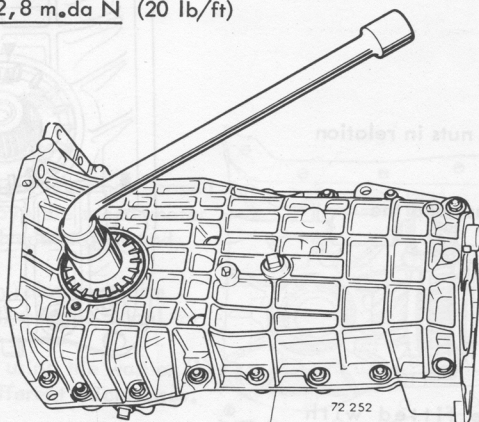
Using the torque wrench, tighten the bolts
in the correct sequence :

- 7 mm diameter bolts :

2 m.da N (15 lb/ft)

- 8 mm diameter bolts :

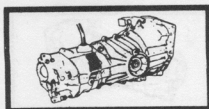
2,8 m.da N (20 lb/ft)



Smear the threads on the ring nuts and in the
case with "Blue Stop N".

Screw the adjusting ring nut into each half-case
until it just touches the bearing track ring :

B.Vi.377 wrench.



Two cases may then present themselves :

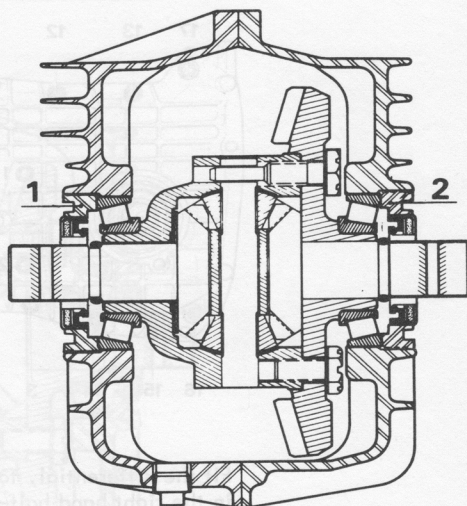
Bearings which can be used again

The differential should turn without play

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

- take care to turn the nut (1) on the differential housing side slightly more so that, on final assembly, an amount of backlash greater than normal is obtained.

When the differential assembly shows no sign of such play, stop screwing in the nuts.
The final adjustment is obtained.



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Mark the position of the ring nuts in relation to the case.

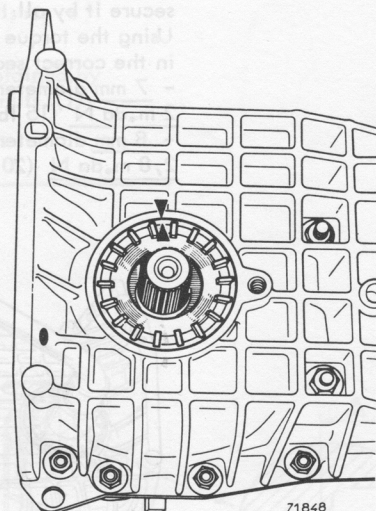
Remove the left hand half-case and the differential.

New bearings

New bearings must be fitted with a preload.

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

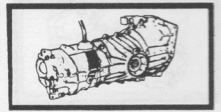
- take care to turn the nut (1) on the differential housing side slightly more, so that, on final assembly an amount of backlash greater than normal is obtained.



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When rotation of the differential becomes a shade hard, stop screwing in the nuts.

Check the preload.



Checking the preload

Turn the differential several revolutions to settle the bearings.

Wrap a piece of string round the differential housing.

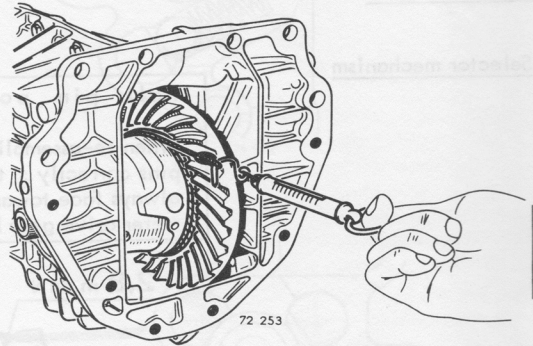
Using a spring balance, pull on the string. The differential should turn under a load of between 1 and 3 da N (2 to 7 lb).

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

If the adjustment is not correct, screw in the nut by a small amount on the housing side and check the preload once again.

When the adjustment has finally been obtained, mark the position of the nuts in relation to the case.

Remove the left hand half-case and the differential.



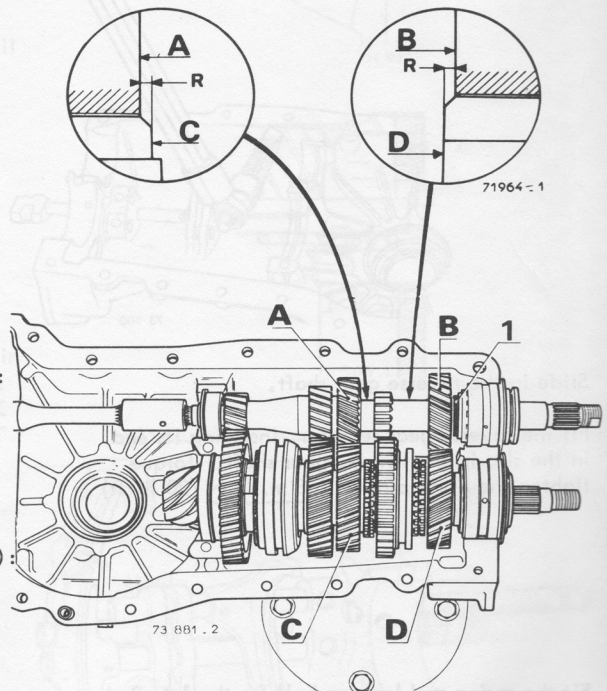
3/ Primary shaft position

Fit the following into the right hand half-case :

- the secondary shaft (remove the speedometer worm nut, wave washer, 5th speed gear and spacer plate).

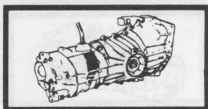
Position the primary shaft in relation to the secondary shaft (the gap (R) must be equal for both sets of gears).

This position is obtained by using the washer (1). Washers are available in different thicknesses.



When adjustment is complete, remove :

- the primary shaft
- the secondary shaft

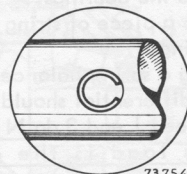


REASSEMBLING

Selector mechanism

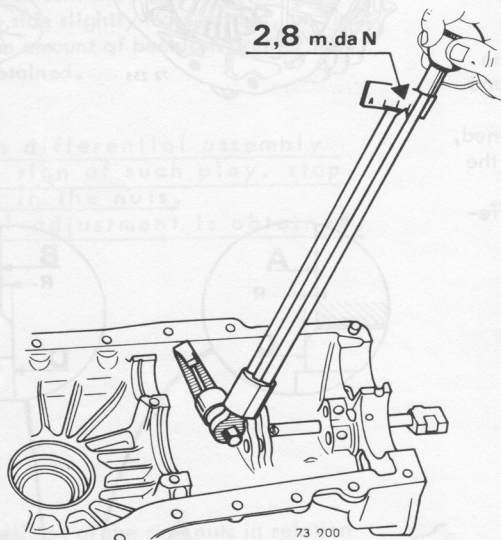
Roll pin position

When re-assembling, fit the roll pins correctly : their slots must always face towards the speedometer drive gear housing.



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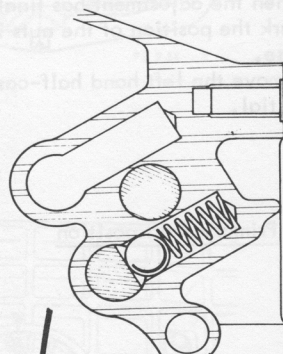
2,8 m.da N



73 900

Slide in the reverse gear shaft.

Fit the reverse gear selector, inserting its end in the slot in the reverse gear shaft. Torque tighten the pivot pin to 2,8 m.da N (20 lb/ft)

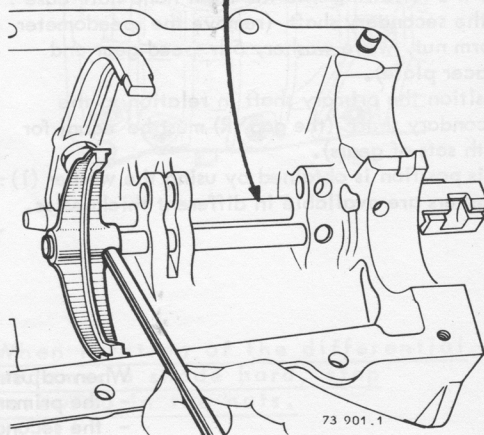


74 922 . 1

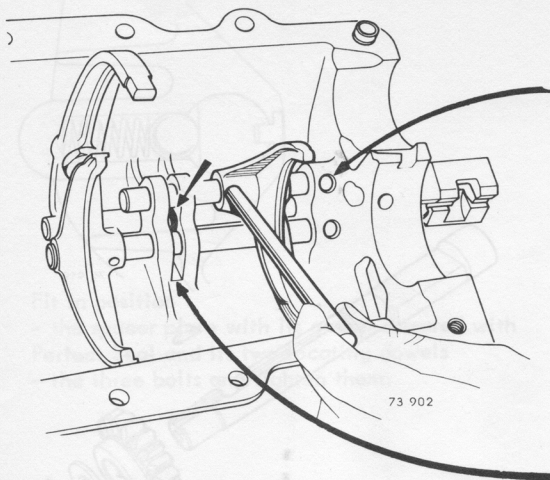
Fit the spring and locking ball for the 1st-2nd speed selector shaft.

Slide in the 1st-2nd speed selector shaft.

Position the 1st-2nd speed selector fork (hub facing the control end) and fit the roll pin.



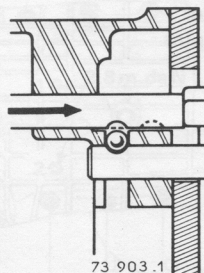
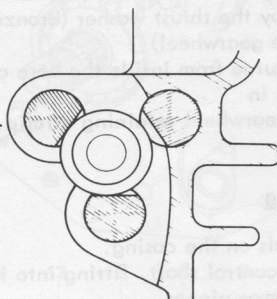
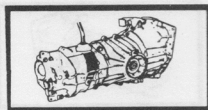
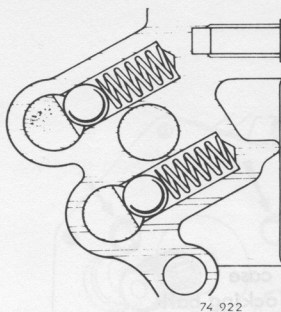
73 901 . 1



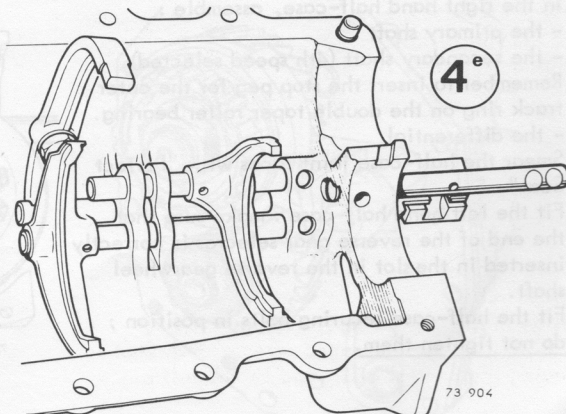
Position the locking disc between the selector shafts.

Fit the spring and locking ball for the 3rd-4th speed selector shaft.

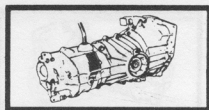
Slide the selector shaft in, position the fork (hub towards the differential) and fit the roll pin.



Fit the 5th speed selector shaft locking ball in position and slide the shaft in.



Select 4th speed and keep it in that position until the transmission has been completely assembled.



Reverse gearwheel

In the left hand half case :

- fit the spring and locking ball
- slide the shaft in and position the gearwheel (hub facing towards the differential end)
- followed by the thrust washer (bronze face towards the gearwheel)
- fit the guide from inside the bore and push the shaft fully in
- fit the gearwheel retaining circlip.

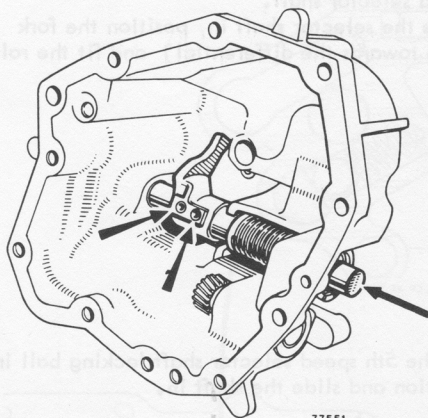
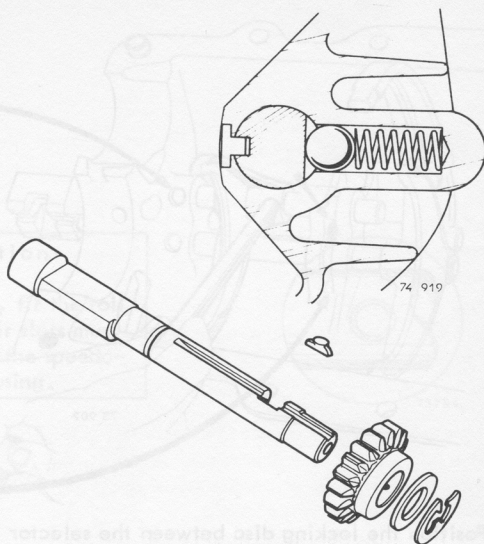
Rear casing

Fit the seals on the casing.

Insert the control shaft, fitting into it :

- the distance pieces
- spring
- circlip
- selector finger

Insert the roll pins



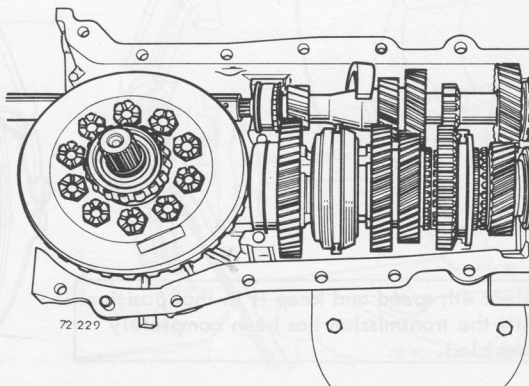
In the right hand half-case, assemble :

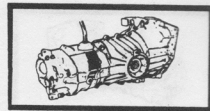
- the primary shaft
 - the secondary shaft (4th speed selected)
- Remember to insert the stop peg for the outer track ring on the double taper roller bearing.
- the differential

Smear the half-case joint faces with "Perfect Seal".

Fit the left hand half-case : make sure that the end of the reverse gear selector is correctly inserted in the slot in the reverse gearwheel shaft.

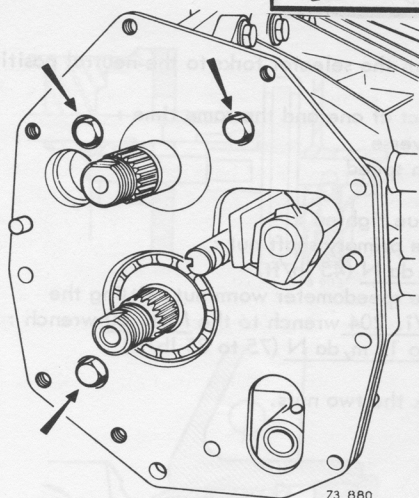
Fit the half-case securing bolts in position ; do not tighten them.





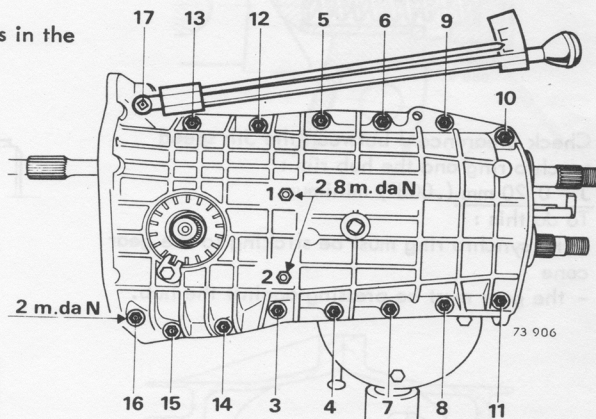
Fit in position :

- the spacer plate with its gasket smeared with Perfect Seal and its two locating dowels
- the three bolts and tighten them.



Torque tighten the half-case assembly bolts in the correct sequence :

- 7 mm dia, bolts
2 m. da N (15 lb/ft)
- 8 mm dia, bolts
2,8 m. da N (20 lb/ft)



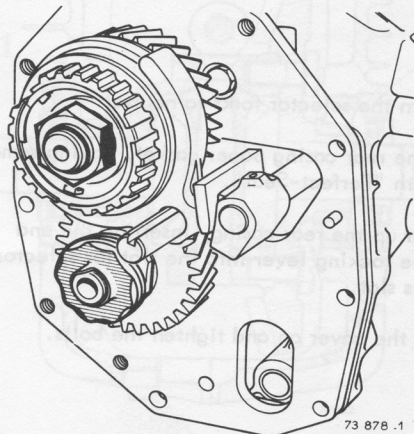
On the primary shaft, fit in position :

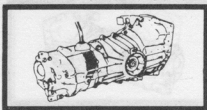
- the spacing washer
- needle roller bearing and its sleeve
- 5th speed driven gear
- "synchro-hub, sliding gear and fork" assembly
- wave washer
- synchro nut

On the secondary shaft :

- the 5th speed gear,
- wave washer
- speedometer worm nut.

Roll pin the 5th speed selector fork.





Return the selector forks to the neutral position.

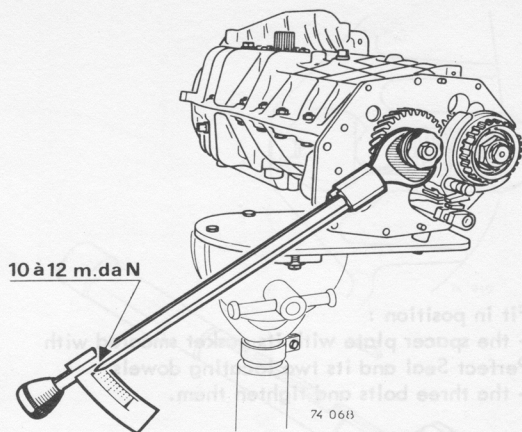
Select at one and the same time :

- reverse
- 5th speed

Torque tighten :

- the primary shaft nut :
6 m.da N (45 lb/ft)
- the speedometer worm nut, fitting the
B. Vi. 204 wrench to the Mot. 50 wrench :
10 to 12 m.da N (75 to 85 lb/ft)

Lock the two nuts.



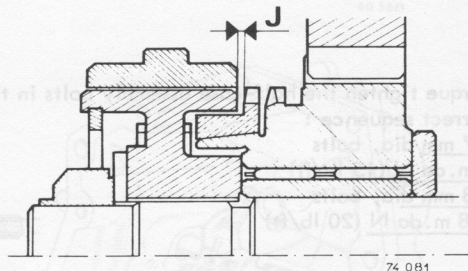
Check clearance J between the 5th speed

synchro ring and the hub rim :

$J = 0,20 \text{ mm } (.008")$ minimum

To do this :

- the synchro ring must be sticking to the gear cone
- the gear must be pressing against the hub.

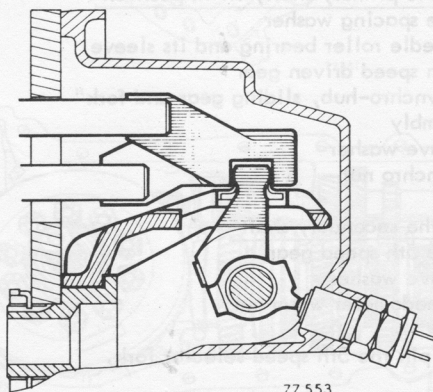


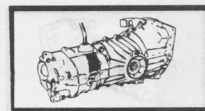
Return the selector forks to neutral.

Fit the rear casing paper gasket, having semared it with "Perfect-Seal".

Offer up the rear casing, inserting the end of the rocking lever into the slot for selector shafts slot.

Push the cover on and tighten the bolts.



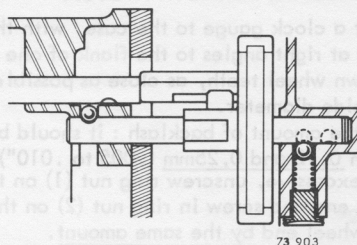


Fit :

- the locking ball
- the locking ball spring for the 5th speed selector shaft.

Smear the plug threads with "Blue-Stop N".

Fit the washer and screw in the plug.



73 903

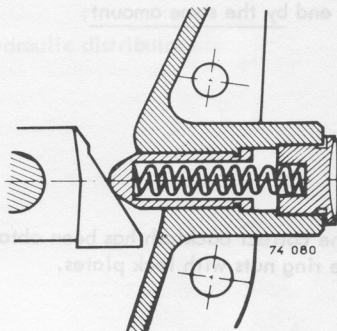
Fit :

- the plunger
- the 5th speed detent spring.

Smear the plug threads with "Blue-Stop N".

Fit the washer and screw in the plug.

Select neutral.



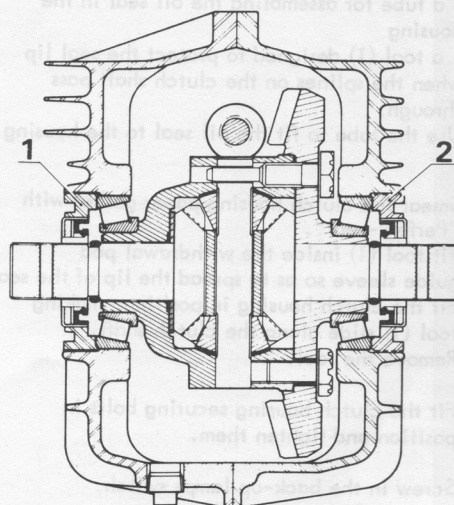
74 080

ADJUSTING THE CROWN WHEEL AND PINION BACKLASH

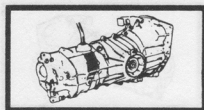
The correct amount of backlash is obtained by unscrewing ring nut (1) on the differential housing end and screwing in ring nut (2) on the crown wheel side by the same amount.

Check the amount of backlash by hand.

If it is really excessive, unscrew ring nut (1) on the housing end and screw in ring nut (2) on the crown wheel end in order to reduce the amount of backlash, before checking with a clock gauge.



74982

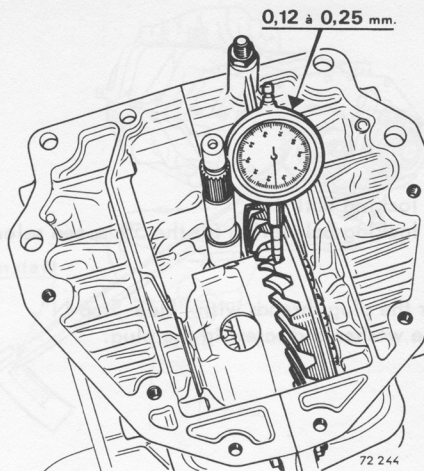


Then fit a clock gauge to the case, with the plunger at right angles to the flank of one of the crown wheel teeth, as close as possible to the outside diameter.

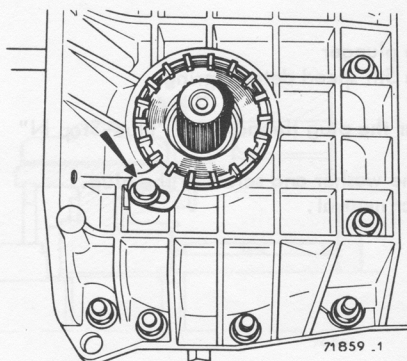
Check the amount of backlash : it should be between 0,12 and 0,25mm (.005 to .010")

If it is excessive, unscrew ring nut (1) on the housing end and screw in ring nut (2) on the crown wheel end by the same amount.

If it is insufficient, unscrew ring nut (2) on the crown wheel end and screw in ring nut (1) on the housing end by the same amount.



When the correct backlash has been obtained, lock the ring nuts with lock plates.



Carry on assembling the clutch housing using the B. Vi. 526 tooling which consists of :

- a tube for assembling the oil seal in the housing
- a tool (1) designed to protect the seal lip when the splines on the clutch shaft pass through.

Use the tube to fit the oil seal to the housing.

Smear the clutch housing paper gasket with "Perfect-seal".

Fit tool (1) inside the withdrawal pad guide sleeve so as to spread the lip of the seal.

Fit the clutch housing in position, making tool (1) slide along the clutch shaft.

Remove the tool.

Fit the clutch housing securing bolts in position and tighten them.

Screw in the back-up lamps switch.

