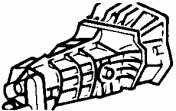
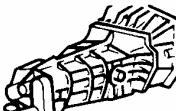
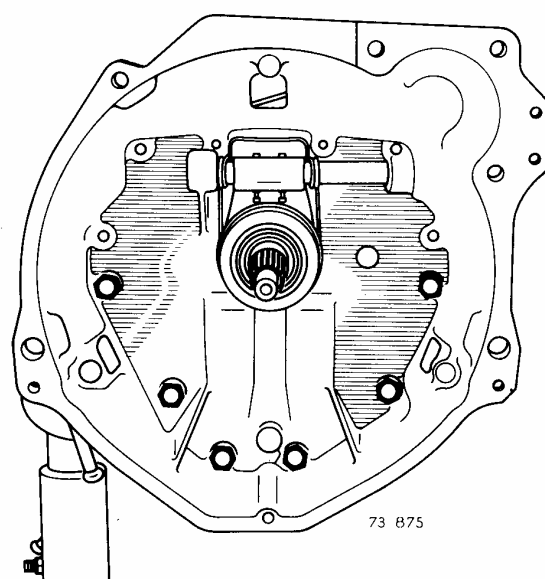
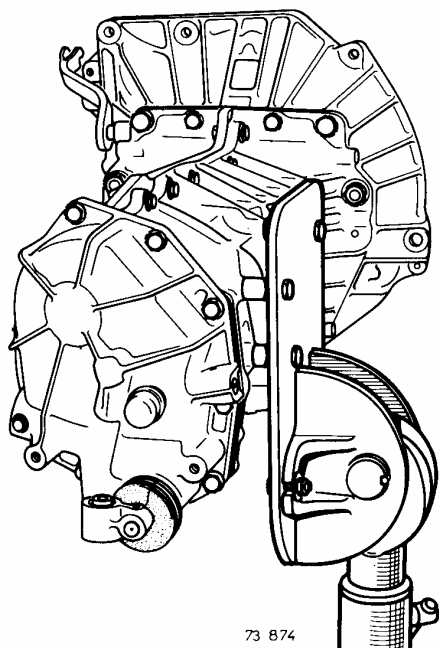


| | | | |
|--|-------------------|-----------|--|
|  | COMPLETE OVERHAUL | |  |
| | | Code 2010 | |
| TYPE 365-395 GEARBOXES | | | |

DISMANTLING

Remove the reversing lights switch.

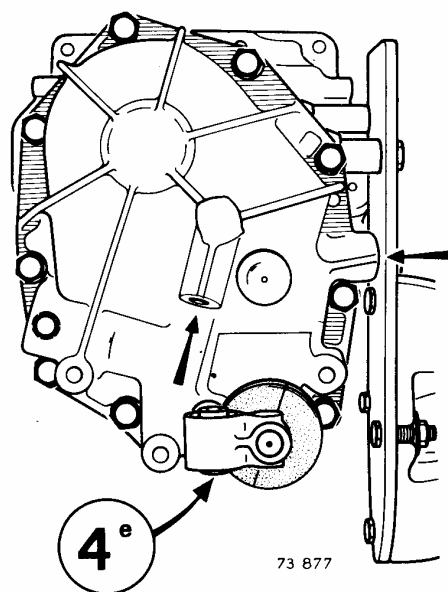
Attach the gearbox to support B.Vi.240 which can be fitted to the swivelling stand or bench stand.
Remove the clutch housing fixing bolts and remove it.

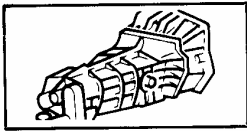


Select 4th speed

Remove :

- the plug, spring and 5th speed detent plunger
- and speedometer drive cover fixing bolts, remove the cover.





TYPE 365 - 395 GEARBOXES

Return the selector forks to neutral and 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 wrench B.Vi.204.

Return the selector forks to neutral.

Select 4th speed.

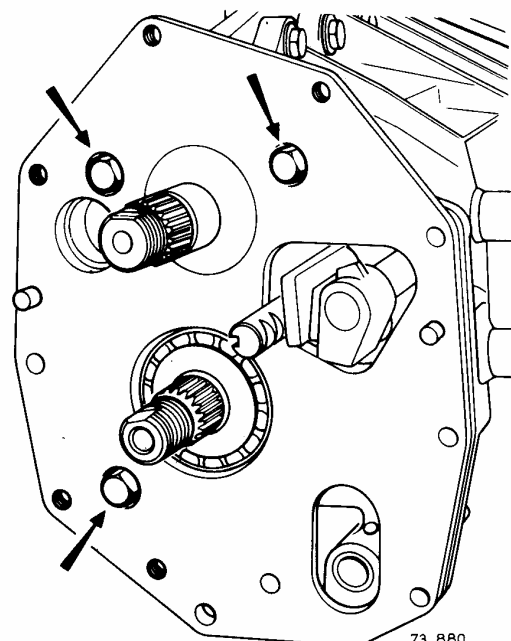
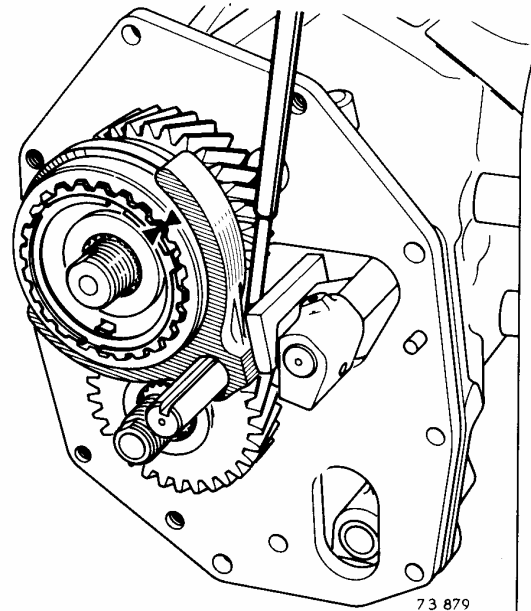
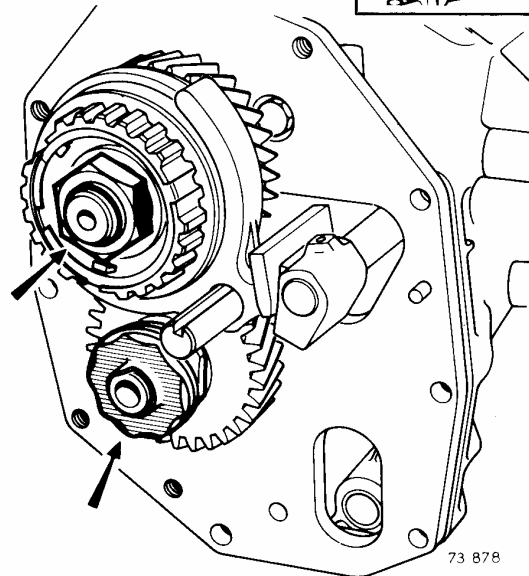
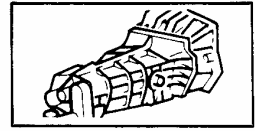
Punch out the 5th speed fork rollpin using drift B.Vi.31-01.

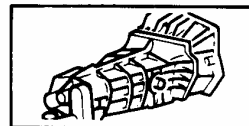
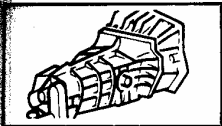
Mark the 5th speed sliding gear and hub in relation to each other.

Remove:

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

Unscrew the spacer plate fixing bolts and remove the plate.

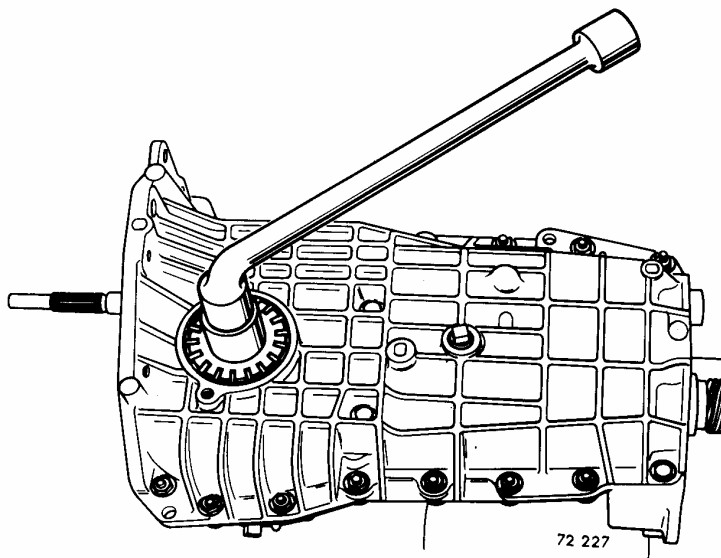




TYPE 365-395 GEARBOXES

Remove the differential adjusting ring nut lockplates.

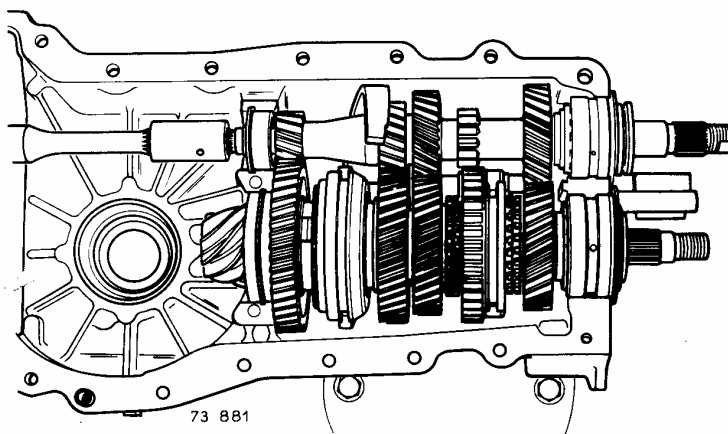
Unlock and unscrew the ring nuts using wrench B.Vi.377.



Unscrew the half-casing assembly bolts and separate them.

Remove :

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

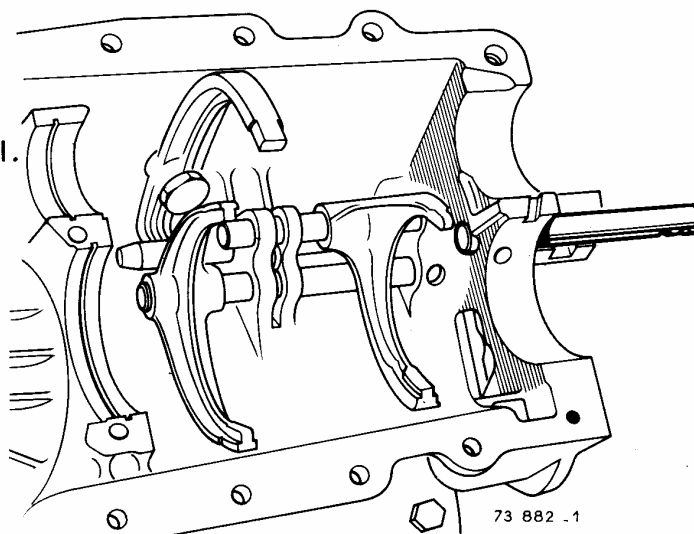


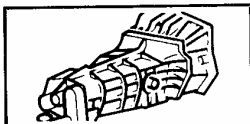
Gearshift control

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

Remove :

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



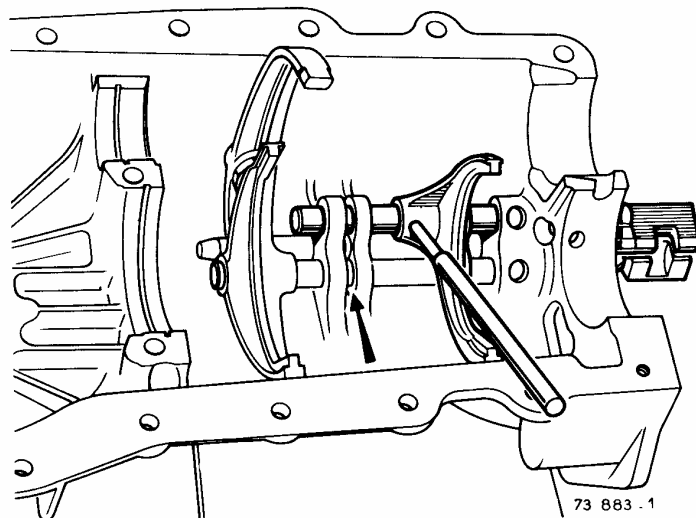


TYPE 365-395 GEARBOXES

Punch the rollpin out from the 3rd - 4th speed selector fork using drift B.Vi.31-01.

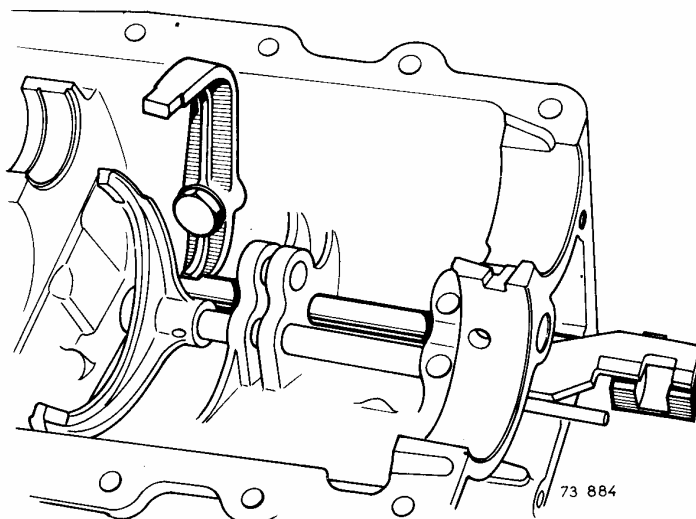
Withdraw :

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



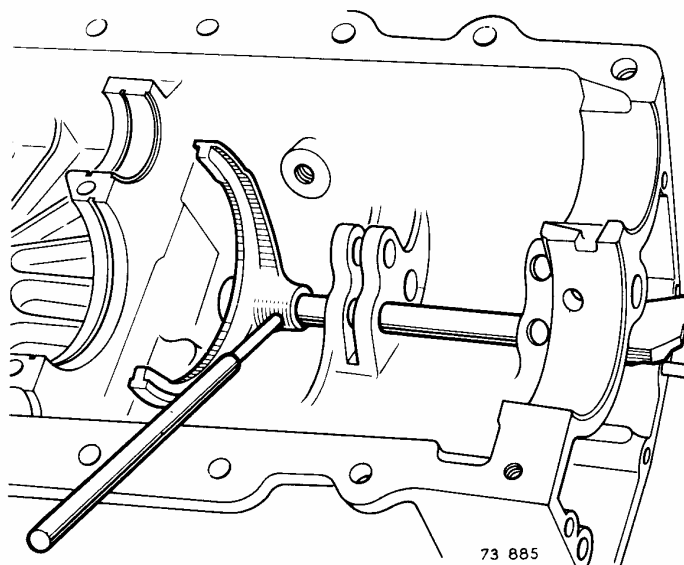
Remove :

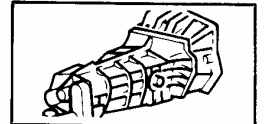
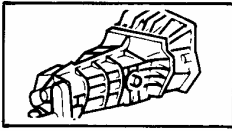
- the reverse gear selector
- and reverse gear shaft.



Using drift B.Vi.31-01, punch the rollpin out of the 1st - 2nd speed selector fork.

Withdraw the selector shaft and fork (catch and retain the locking ball and spring).



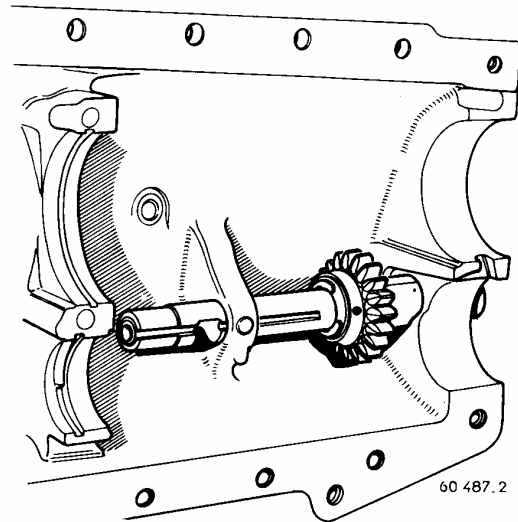


TYPE 365-395 GEARBOXES

Reverse gear wheel

Remove the circlip holding the gear wheel and extract:

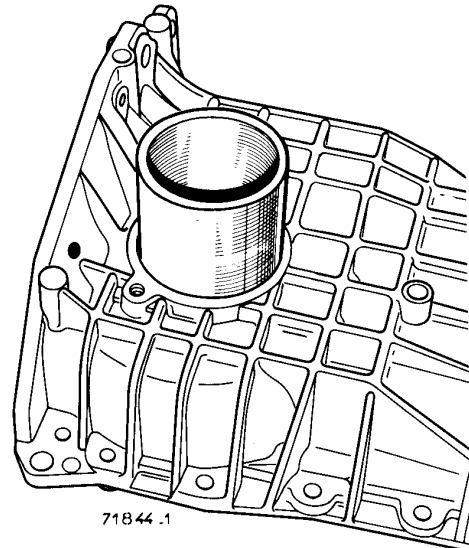
- the shaft, gear wheel, friction washer and sleeve (catch and retain the ball and locking spring).



Half-casings

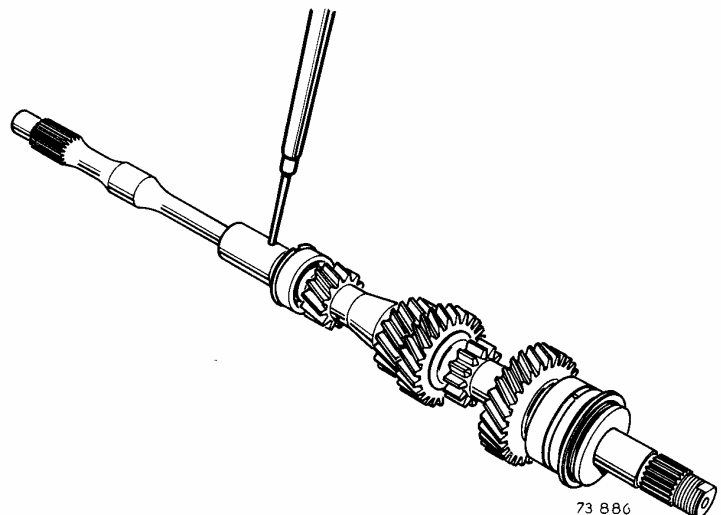
Drive out the bearing track rings using a piece of tube.

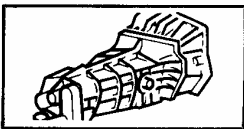
Remove the adjusting nut oil seals.



Primary shaft

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





TYPE 365-395 GEARBOXES

Remove:

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

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

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

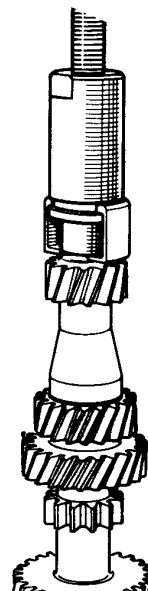
Remove the primary shaft position adjusting spacer.

Secondary shaft

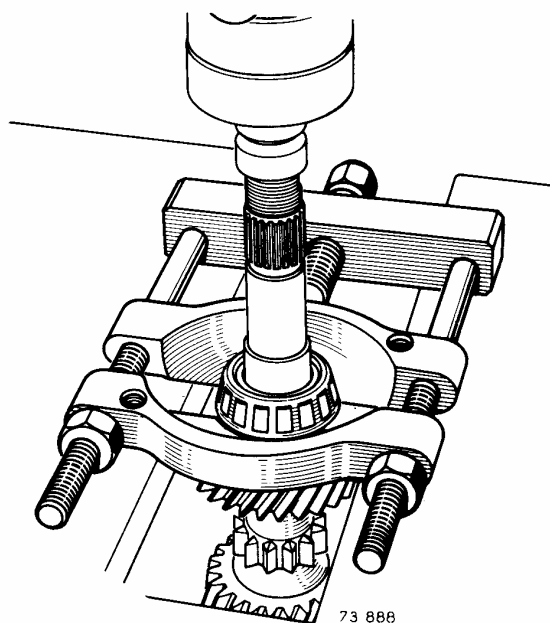
Place the shaft in a vice, holding it by the 1st speed gear.

Remove:

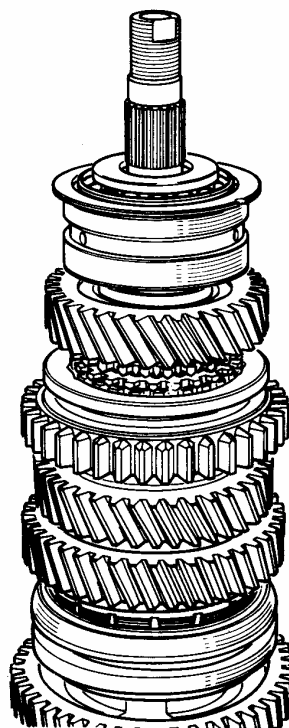
- the double taper roller bearing
- adjusting washer for final drive pinion protrusion
- 4th speed gear and ring
- and 3rd - 4th speed synchro sliding gear and the keys (mark the position of the sliding gear in relation to the hub).



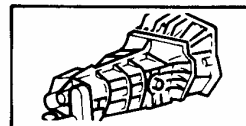
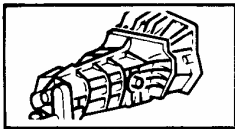
73 887



73 888

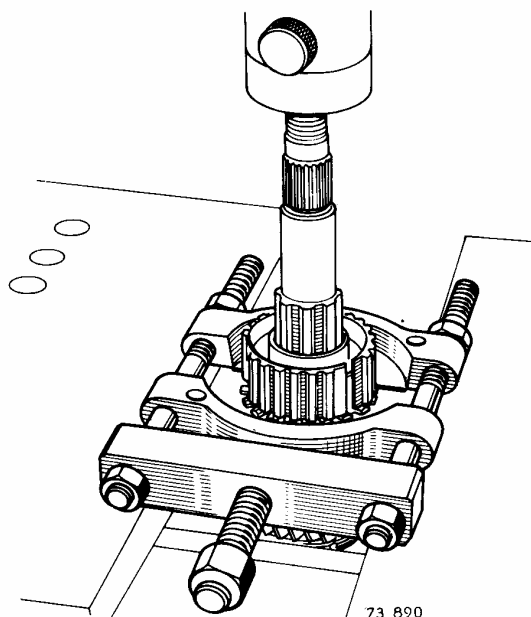


73 889



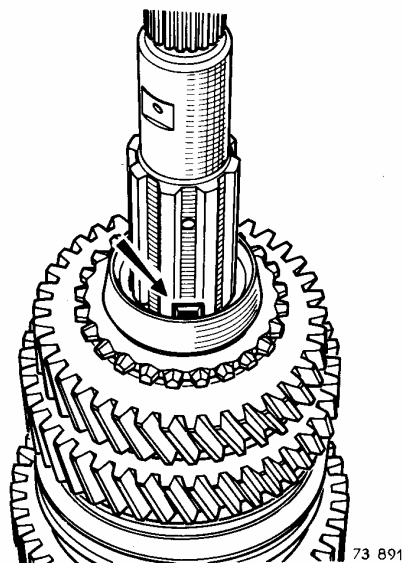
TYPE 365-395 GEARBOXES

Extract the 3rd - 4th speed synchro hub by means of a press: using extractor T.Ar.65.



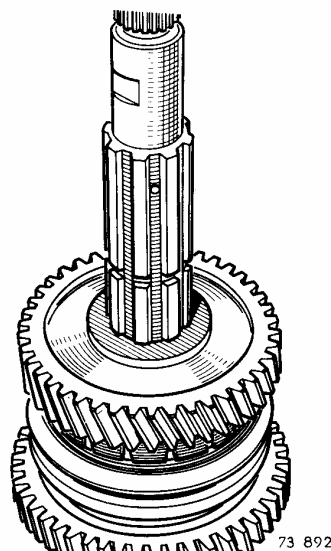
Remove:

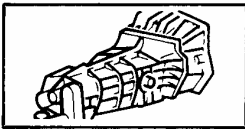
- the retaining key for the gearwheel stop washers
- 3rd speed gear stop washer
- and 3rd speed gear and its ring.



Remove:

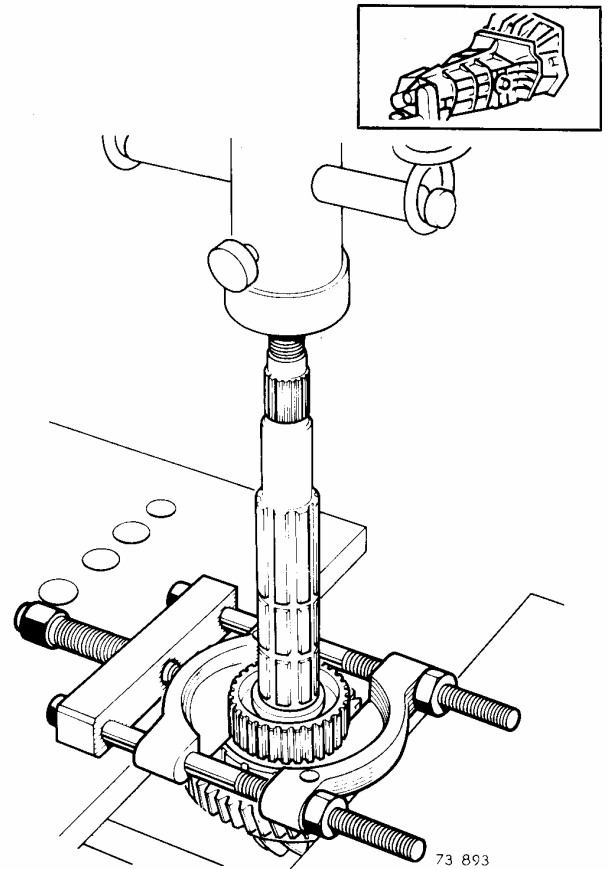
- the 2nd speed gear stop washer
- 2nd speed gear and its ring
- 1st - 2nd speed synchro sliding gear (mark its position in relation to the hub)
- and 1st - 2nd speed synchro hub stop washer.





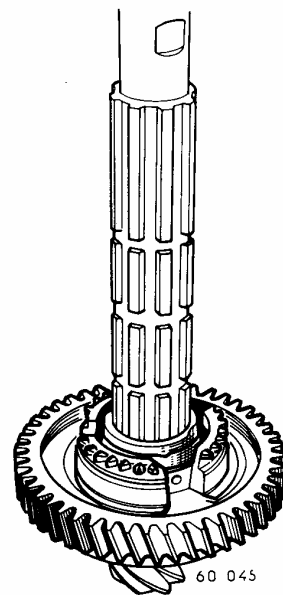
TYPE 365-395 GEARBOXES

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



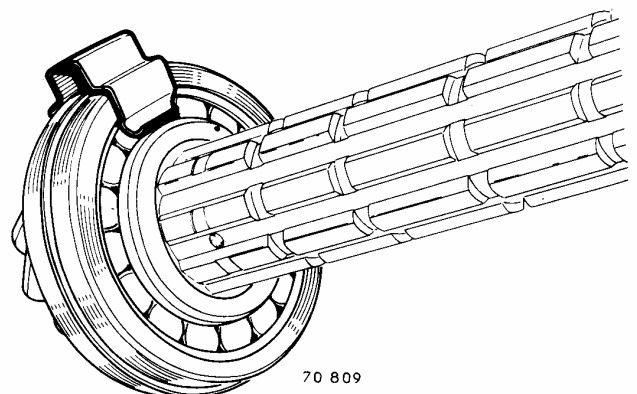
Remove:

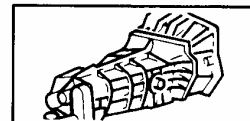
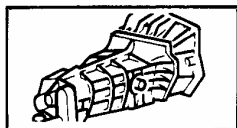
- the 1st speed synchro ring
- 1st speed gear stop washer
- and 1st speed gear.



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.



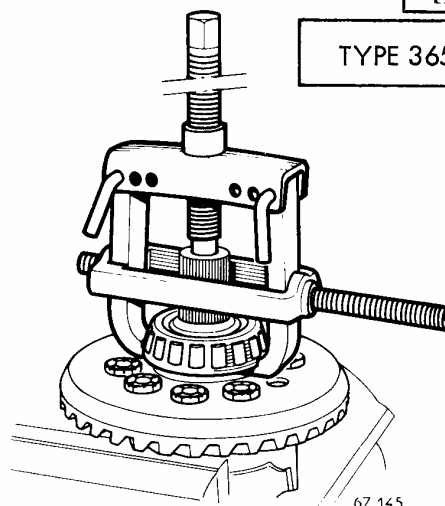


TYPE 365 GEARBOX

Differential

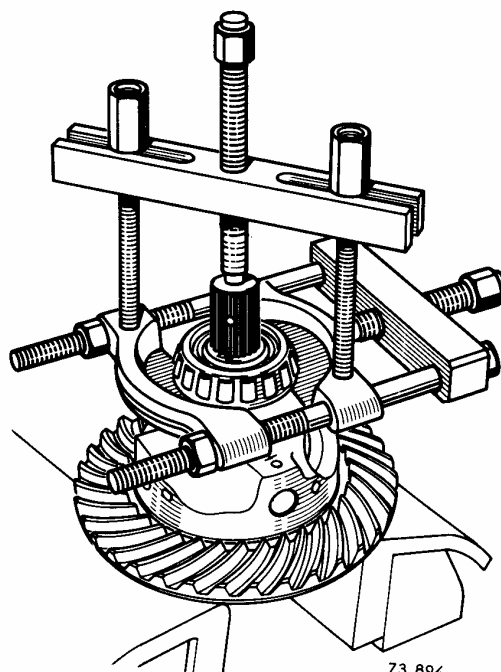
Remove two diametrically opposite crown wheel fixing bolts.

Extract the bearing using tool B.Vi.28-01 fitted with jaws B.Vi.48.



67 145

Extract the second bearing using tool T.Ar.65 and B.Tr.02.

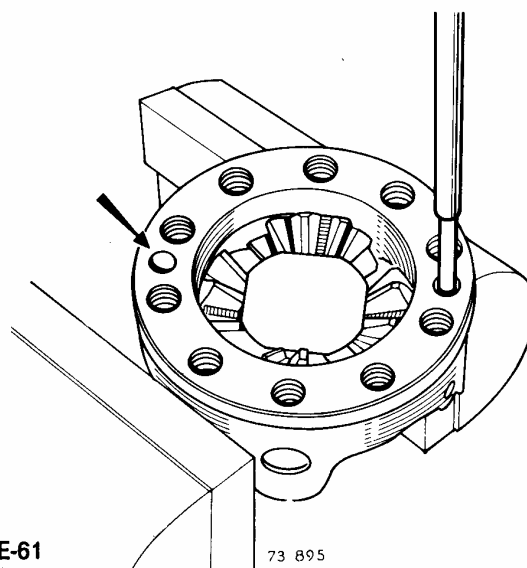


73 894

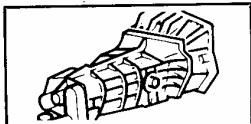
Remove the bolts securing the crown wheel to the differential housing (self-locking bolts which cannot be re-used).

Punch out the rollpin retaining the planet wheel shaft using drift B.Vi.31-01.

Separate the various parts.



73 895

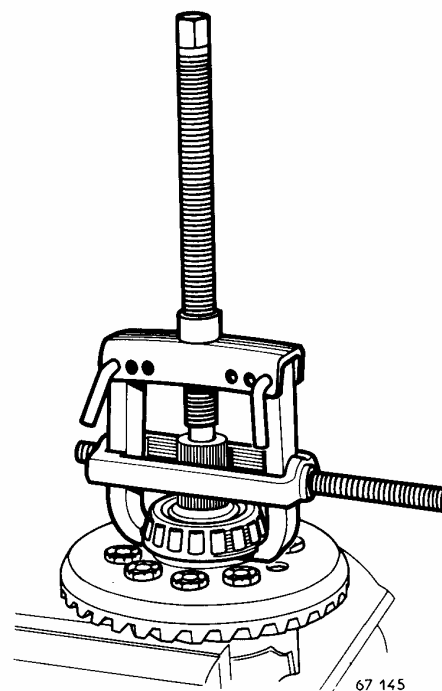
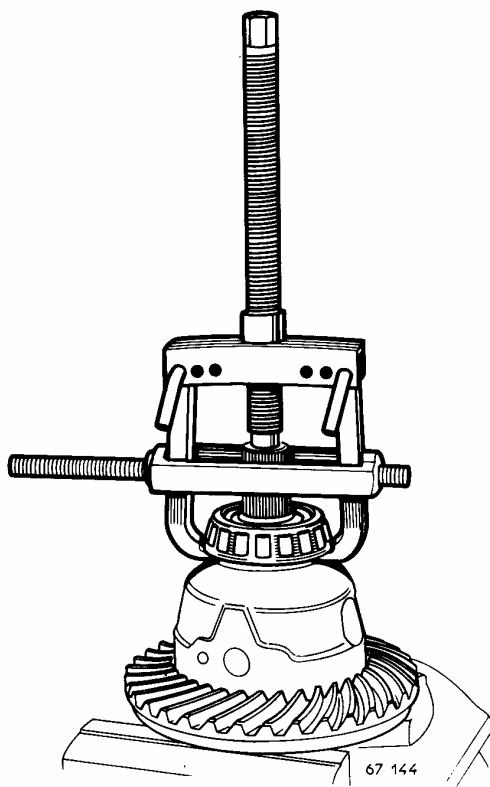
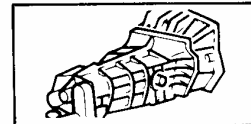


TYPE 395 GEARBOX

Differential

Remove two diametrically opposite crown wheel fixing bolts.

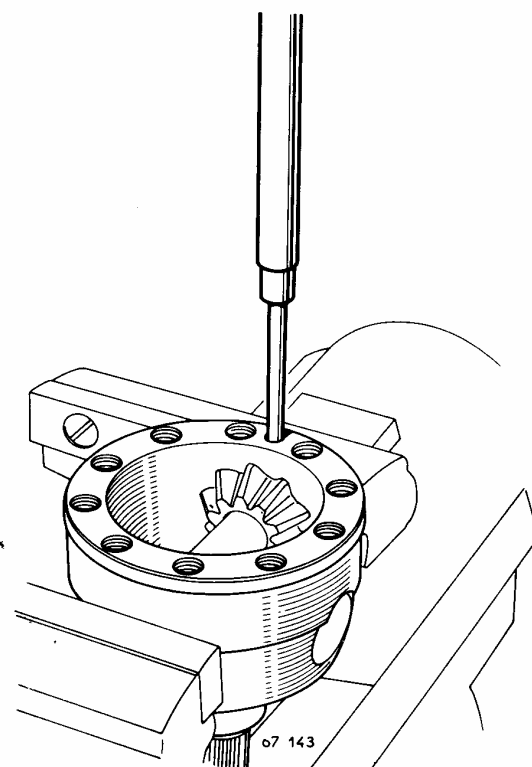
Extract the bearings using tool B.Vi.28-01 fitted with jaws B.Vi.48.

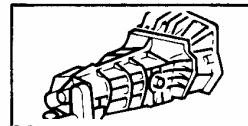
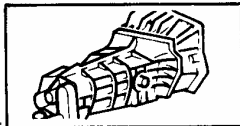


Remove the bolts securing the crown wheel to the differential housing (self-locking bolts which cannot be re-used).

Punch out the rollpin retaining the planet wheel shaft using drift B.Vi.31-01.

Separate the various parts.





TYPE 365 GEARBOX

Rear cover

Remove :

- the speedometer drive gear sleeve and its 'O' ring seal
- speedometer drive gear
- rubber cap protecting the rocking lever pivot shaft
- the rocking lever pivot shaft nut and washer.

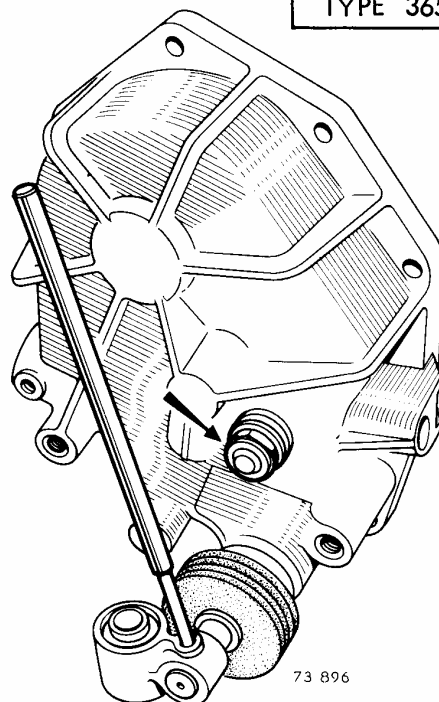
Punch out the rollpin in the control shaft end fitting using drift B.Vi.344.

Take out the various parts.

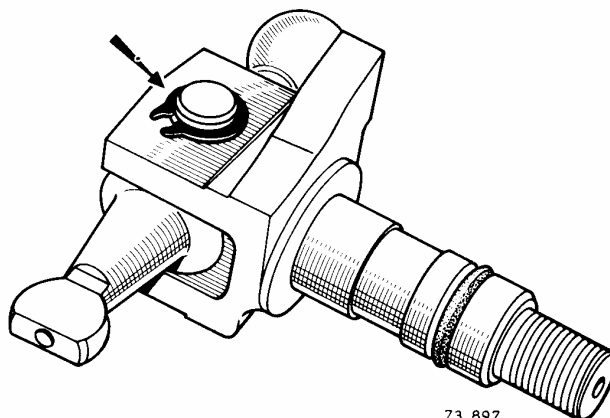
Remove the circlip retaining the rocking lever pivot shaft and remove it.

Remove the 'O' ring seal from the shaft.

The seals, rollpins and self-locking bolts must be changed.



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73 897

TYPE 395 GEARBOX

Rear cover

Extract both rollpins securing the selector finger on the control shaft.

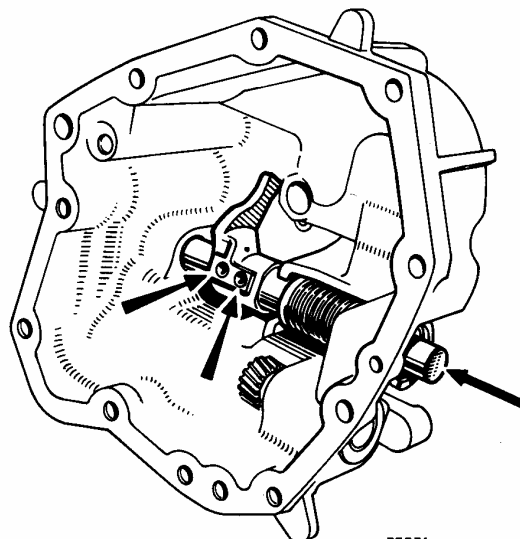
Spread the circlip and withdraw the shaft.

Retain :

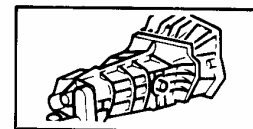
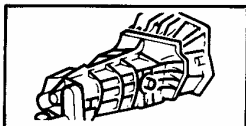
- the spacers
- spring
- and selector finger.

Remove both oil seals in the cover.

The seals and rollpins must be changed.



77551



REASSEMBLING

Matched components:

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

Synchro hubs assembly

Synchro hubs must be assembled:

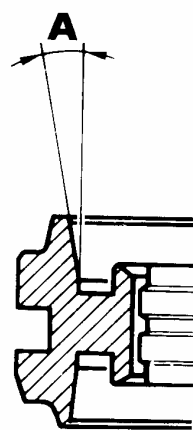
- hot, between 100 and 120°C (212 to 248°F), for the 1st - 2nd speed hub.
- at ambient temperature, for the 3rd - 4th speed hub.

Type 365 Gearbox

1st - 2nd synchro-ring assembly

Two types of synchronization:

- sliding gear - synchro ring with angle (A) = 9°
- sliding gear - synchro ring with angle (A) = 6° 40'.

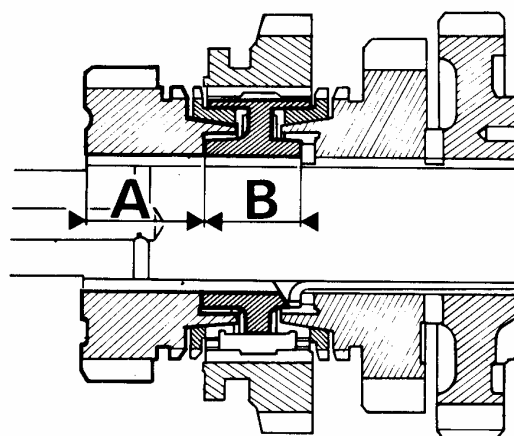


Parts machined with angle (A) = 9° cannot be used in place of parts with angle (A) = 6° 40' and vice versa.

76697

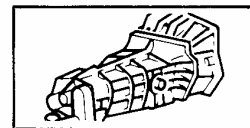
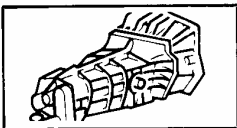
The 3rd - 4th speed hubs and 4th speed idler gears have been modified on 365 gearboxes from suffix 33.

Take care to match them correctly.



77025

| Identification | 4th speed idler gear | 3rd - 4th speed hub |
|-----------------------------------|----------------------|---------------------|
| Gearboxes - pre-suffix 33 | A = 27,5 mm (1.083") | B = 24 mm (.945") |
| Gearboxes - suffixes 33 - 34 - 35 | A = 30 mm (1.182") | B = 21,6 mm (.850") |



TYPE 365-395 GEARBOXES

Secondary shaft

Matching of crown wheel and pinion.

The final drive pinion and crown wheel are lapped together during manufacture.

They may only be used as a matching pair.

Changing one part automatically involves changing the other also.

A common reference mark is etched 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.

Exceptional case

The final drive pinion may have an additional number engraved on its end face.

This must be taken into account when adjusting pinion protrusion (see "Adjusting pinion protrusion").

Checking the parts

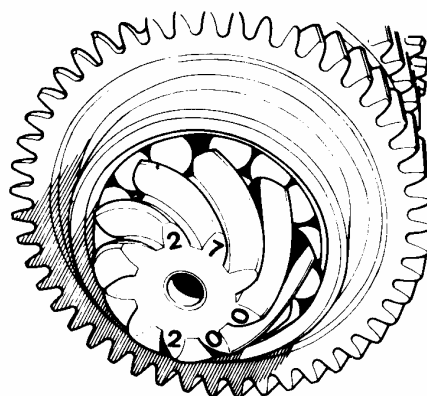
The final drive pinion, crown wheel or roller bearing are worn:

The "hub-sliding gear" assemblies can be re-used.

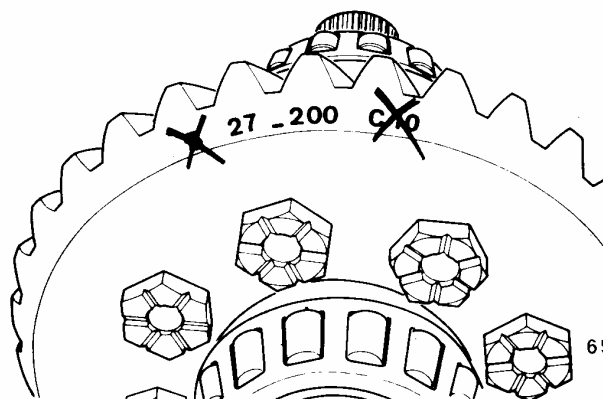
Change the crown wheel and pinion, the latter being supplied with the bearing fitted.

The measurement of the splines on the new final drive pinion to be ordered must be determined so that correct matching with the re-used hubs can be obtained.

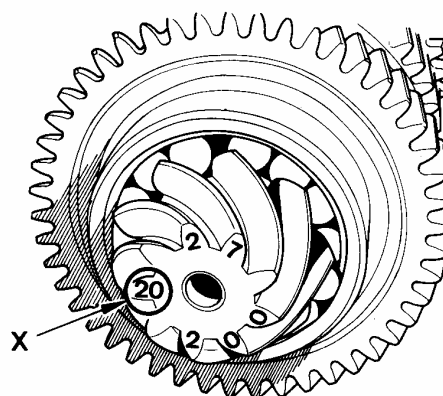
To do this, measure the old final drive pinion.



60553



65348-1



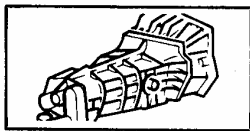
60553 - 1

The "hub-sliding gear" assemblies are worn, the final drive pinion is serviceable.

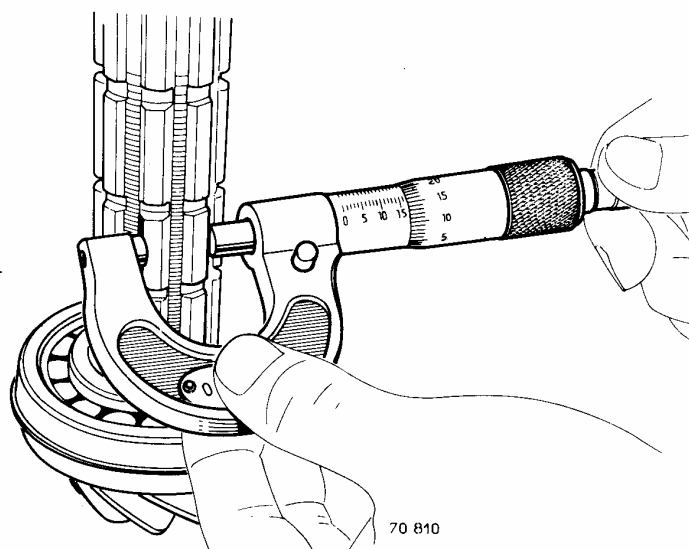
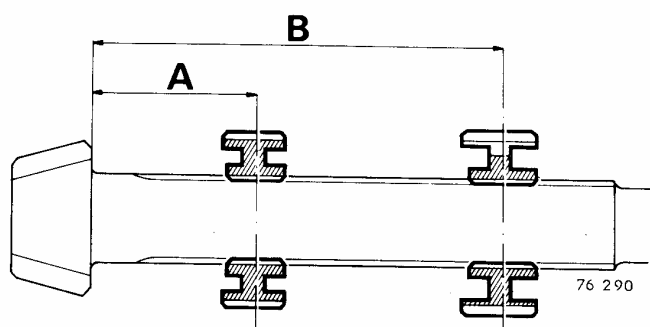
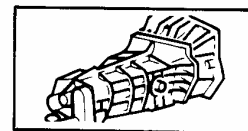
Change the hub-sliding gear assemblies.

The measurement of the splines on the new synchro hubs to be ordered must be determined so that correct matching with the final drive pinion can be obtained.

To do this, measure the final drive pinion.

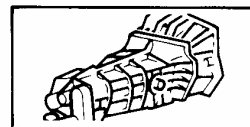
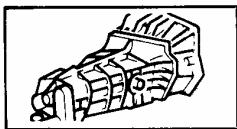


TYPE 365-395 GEARBOXES



Take measurements over several pairs of splines and select the largest value, then refer to the table below.

| Part to be changed | | Reference | Parts Department availability (colour) | | |
|--------------------|----------------------|---|--|-------------------|-------------------|
| | | | Final drive pinion | 1st-2nd speed hub | 3rd-4th speed hub |
| Final drive pinion | Pinion to be changed | Final drive pinion dimension | | | |
| | | below 16,63 mm (.655") | Red - Blue | | |
| | | for 16,63 mm (.655") and above 16,63 mm (.655") | Yellow | | |
| 1st-2nd speed hub | Existing pinion | below 16,63 mm (.655") | | Red - Yellow | |
| | | for 16,63 mm (.655") and above 16,63 mm (.655") | | White | |
| 3rd-4th speed hub | Existing pinion | below 16,63 mm (.655") | | | Blue - White |
| | | for 16.63 mm (.655") and above 16,63 mm (.655") | | | Red |



TYPE 365-395 GEARBOXES

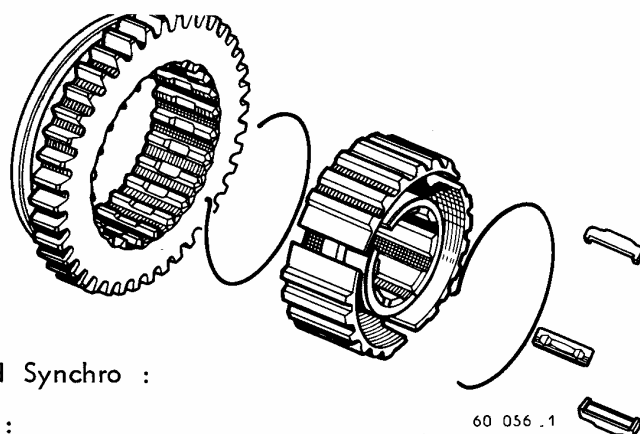
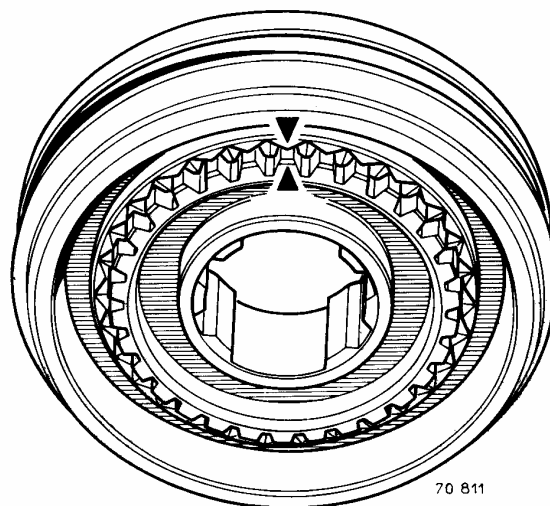
Preparing the synchros

The hub and sliding gear are matched

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

1st - 2nd speed Synchro :

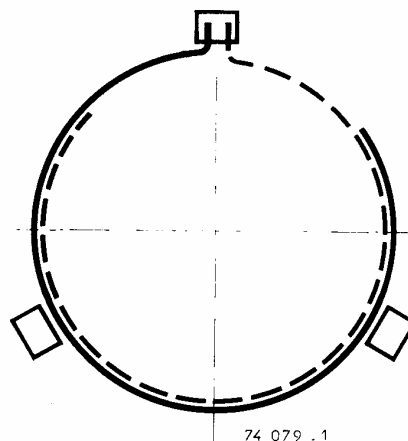
Raise the electric oven temperature to between 100 and 120°C (212 to 248°F). Place the hub inside and wait 15 minutes to ensure that the centre of the part also reaches 100 to 120°C, maintaining the initial oven temperature during this time.



3rd - 4th speed Synchro :

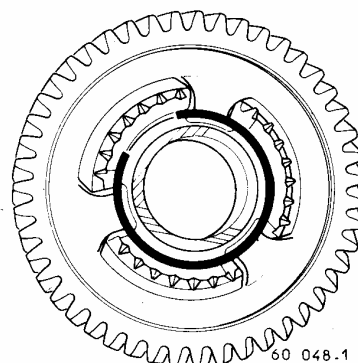
Fit onto the hub :

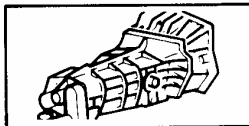
- 3 keys
- 2 springs (see drawing)
- and sliding gear in its correct position :
its groove on the opposite side to the notch on the hub
and with the mark in line with that on the hub (marks
made during dismantling).



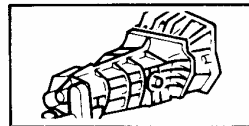
Re-assembling the secondary shaft

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





TYPE 365 - 395 GEARBOXES

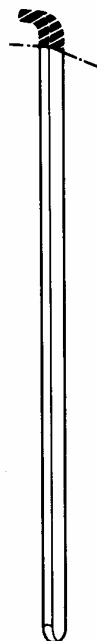


Fit the following onto the final drive pinion (with bearing in position) :

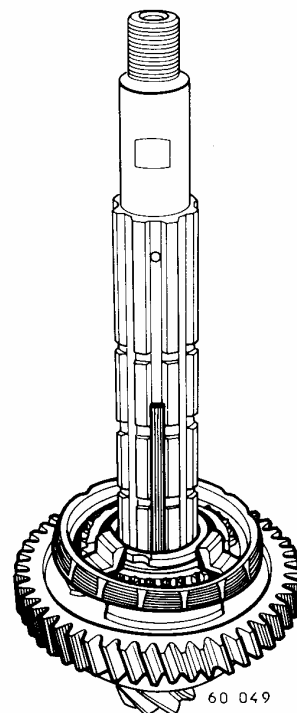
- the 1st speed gear and its ring
- the 1st speed gear stop washer ; turn it and hold it with a dummy key (the latter can be made from a washer retaining key by removing the tip).

Insert the dummy key in a spline with an oil hole.

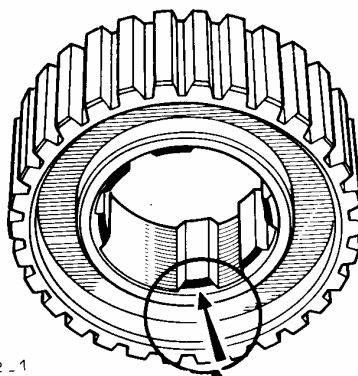
Remove the bearing outer track ring retaining clip.



60 050



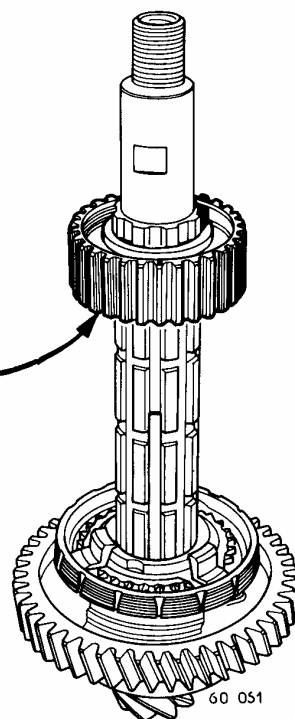
60 049



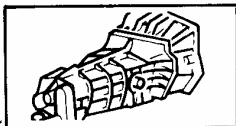
70 812 - 1

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 the part showing its matching mark with the sliding gear facing towards the 2nd speed gear or the spline chamfer (arrow) facing towards the 1st speed gear.



60 051

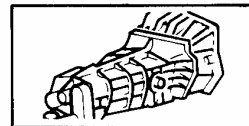


Push the hub on using a press until it just touches the stop washer : hold the synchro ring centrally with the lugs below the level of the stop washer so as not to damage the spring.

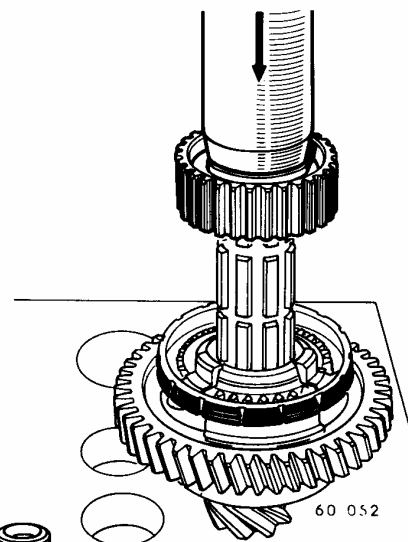
Hold the press down a sufficient time to allow the hub to cool down, (cooling down may be speeded up using compressed air).

Release the press.

Remove the dummy key.



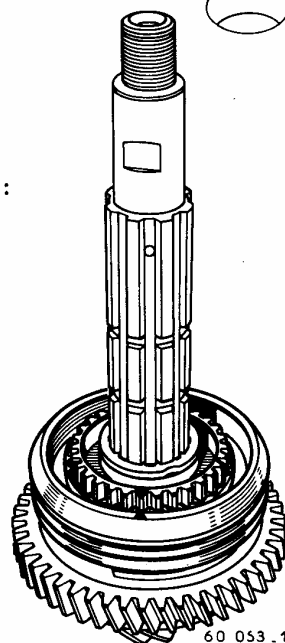
TYPE 365-395 GEARBOXES



Fit the 1st - 2nd speed synchro sliding gear in position :

- with chamfer facing 2nd speed gear
- with matching mark in line with that on the hub.

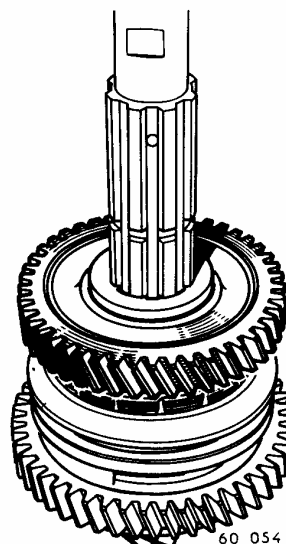
Fit the hub stop washer (turn it so as to align its splines opposite those on the final drive pinion).

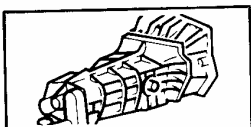


Fit the synchro spring onto the 2nd speed gear (in the same way as that on the 1st speed gear).

Fit the 2nd speed gear and its ring.

Fit the gear stop washer (turn it to align its splines with those on the final drive pinion).



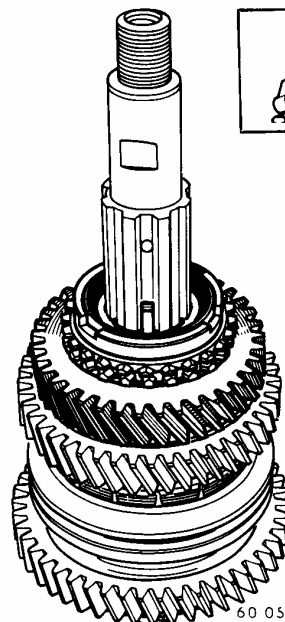


TYPE 365-395 GEARBOXES

Fit the 3rd speed gear and its ring.

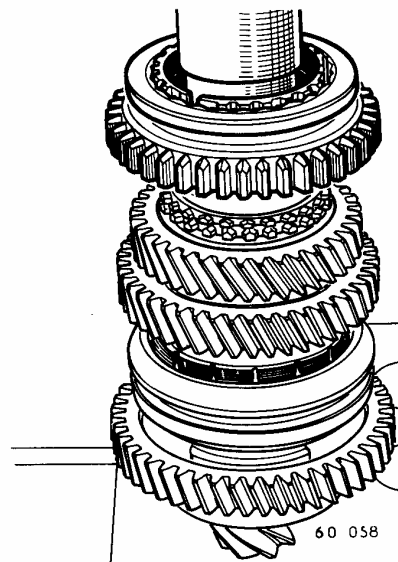
Fit the stop washer (turn it to align its splines with those on the final drive pinion).

Fit the retaining key for the gear wheel stop washers in position (in one of the splines having an oil hole).



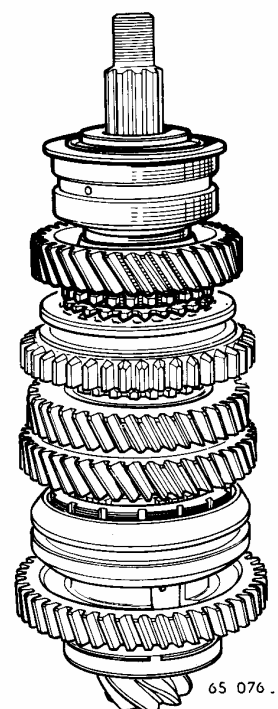
Fit the 3rd - 4th synchro using a press until it just touches the 3rd speed gear stop washer : with the notch on the hub facing the 3rd speed gear side and in line with the stop key.

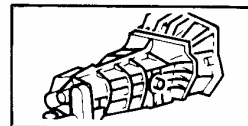
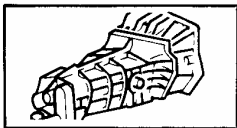
Make sure that the three notches on the synchro ring are in line with the 3 keys.



Fit :

- the 4th speed gear and its ring
- the pinion protrusion adjusting washer (the one removed during dismantling)
- the double taper roller bearing, the first bearing has an engraved mark.





TYPE 365-395 GEARBOXES

Fit in position :

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

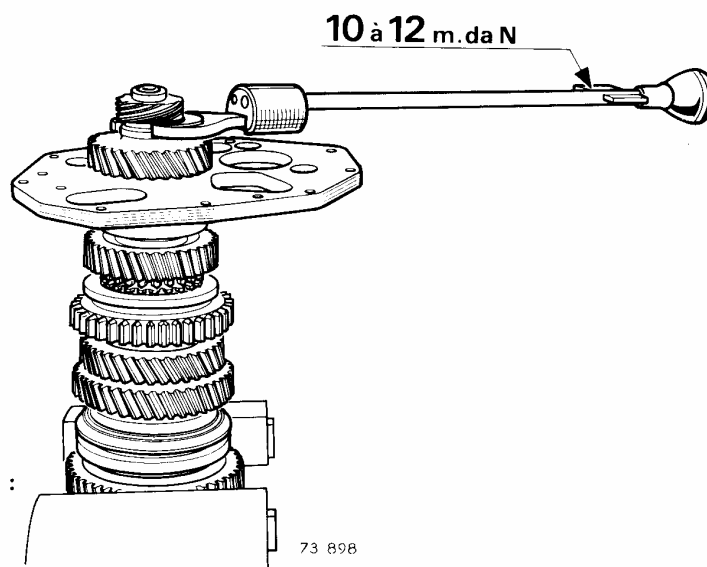
Hold the shaft in a vice by the 1st speed gear.

Select 1st gear.

Torque tighten the speedometer drive worm using torque wrench Mot. 50 fitted with wrench B.Vi.204 :

10 to 12 m. da N (75 to 90 lb/ft).

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

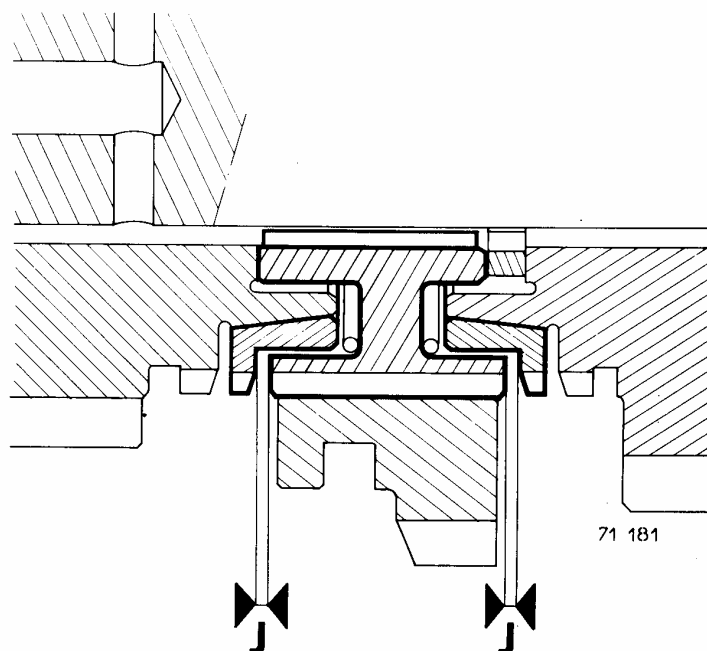


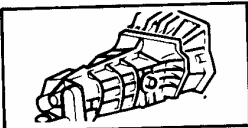
Check clearance J between the 3rd speed synchro ring and hub rim

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

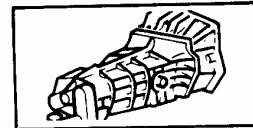
To do this :

- 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.

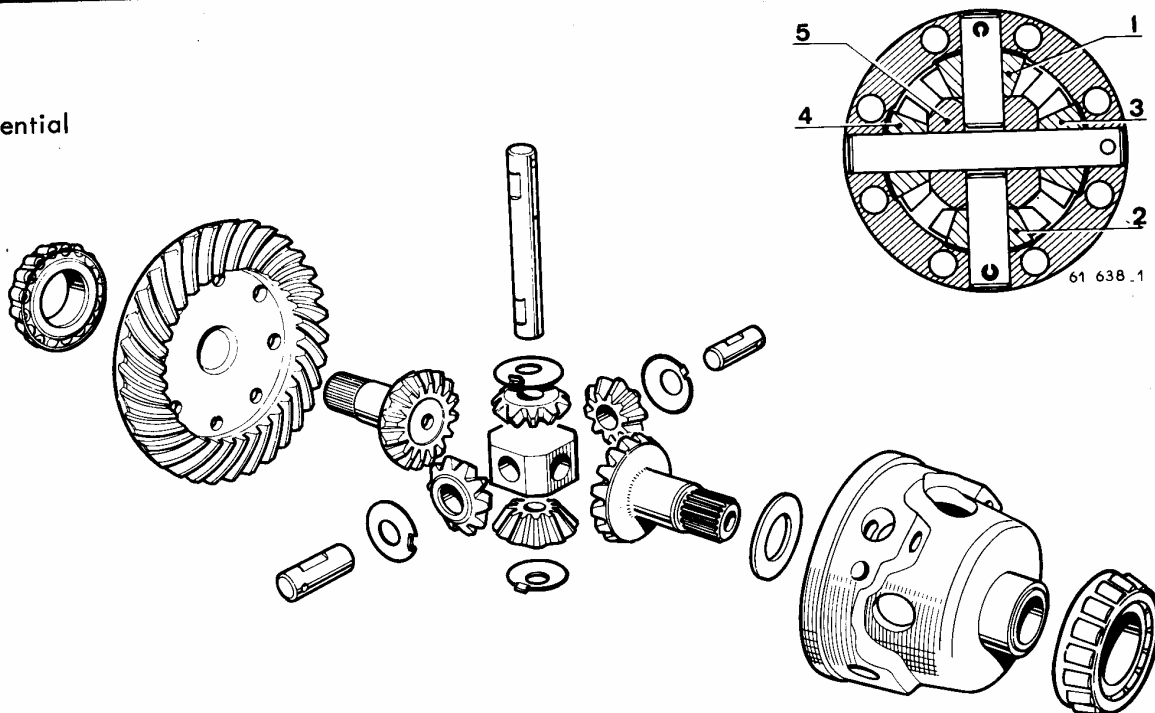




TYPE 365 GEARBOX



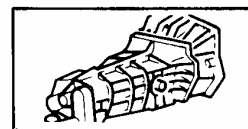
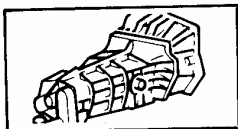
Differential



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 only be used when the play in the sunwheel and planet wheel meshing is excessive.
- one sunwheel (dip it in EP 80 oil).
- planet wheels (1 and 2) and their thrust washers (with the locking tag in the hole in the housing); slide the shafts in so that they do not protrude beyond the planet wheels
- planet wheels (3 and 4) and their thrust washers (with the locking tag in the hole in the housing) slide the shaft in so that it does not protrude beyond planet wheel (3).
- hub (5) : its chamfered ends must face towards the two small shafts.

Push all three shafts in as far as they will go, lining up their holes with those in the housing : rollpin the two small shafts.



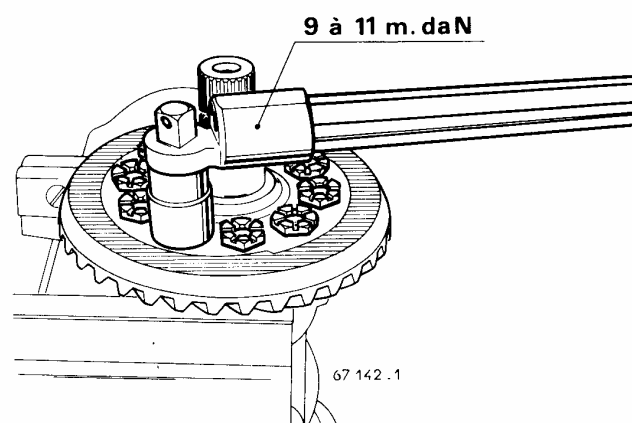
TYPE 365 GEARBOX

Assemble the crown wheel to the differential housing by means of new self-locking bolts : the bolt with the pip locks the larger planet wheel shaft.

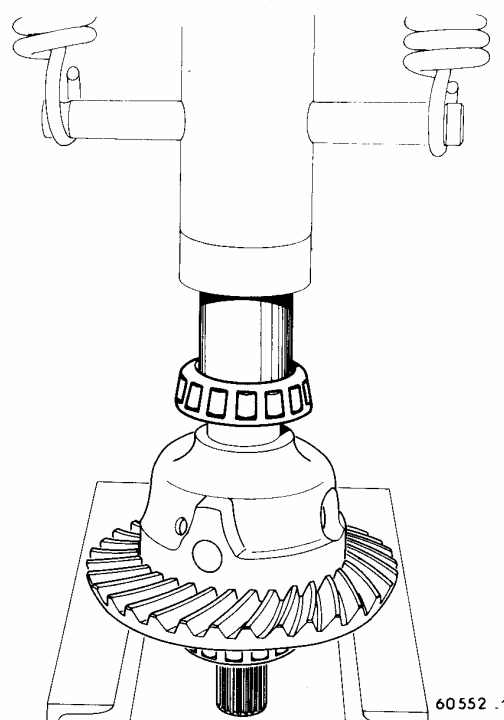
Torque tighten the bolts to 9 to 11 m.da N (67 to 82 1/2 lb/ft).

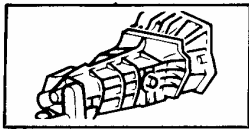
Fit the 'O' ring seals in position on the sunwheels.

The differential may be slightly hard to run after assembly.



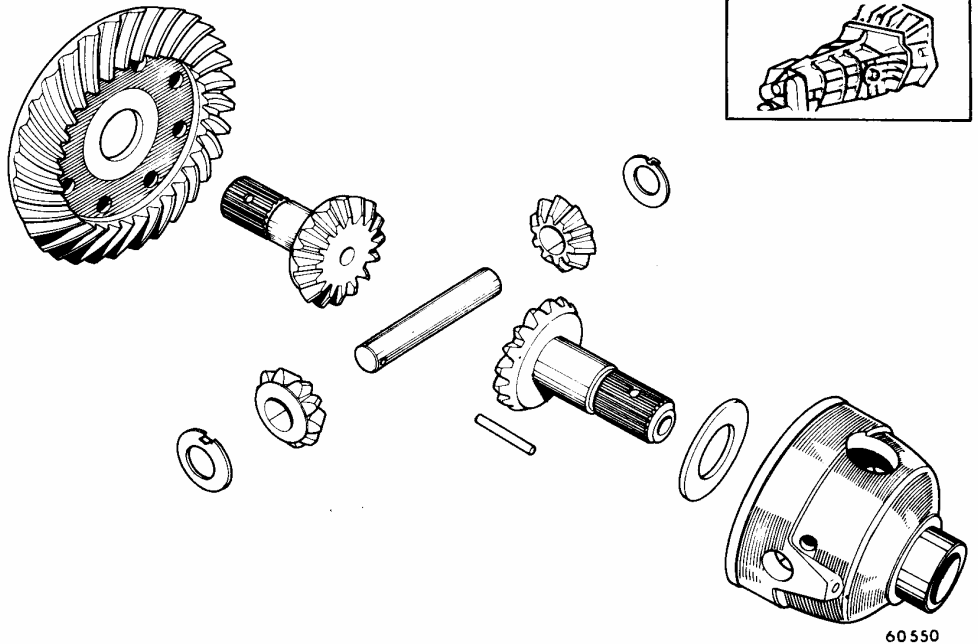
Fit the bearings in position using a press





TYPE 395 GEARBOX

Differential



Fit in the housing :

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

The spacing washer 2.03 to 2.07 mm (.080 to .082") thick will only be used if there is excessive play between the sunwheel and planet wheel teeth.

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

- the planet wheel and their friction washers (with the locking peg in the hole in the housing).

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

Fit the rollpin : recess it into the housing about 5 mm (13/64") using drift B.Vi.31-01.

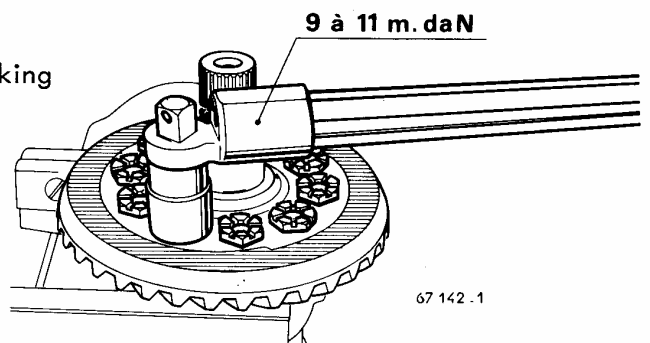
Dip the second sunwheel in EP 80 oil and fit it inside the crown wheel.

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

Torque tighten the bolts to 9 to 11 m.da N (67 to 82 1/2 lb/ft).

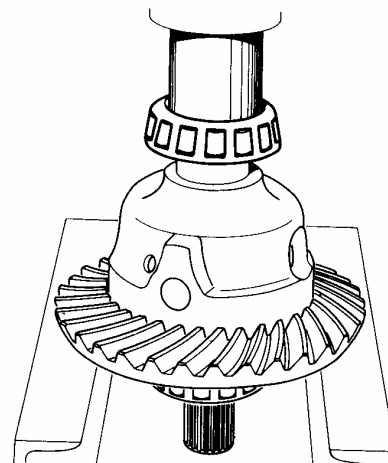
Fit the 'O' ring seals to the sunwheels.

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

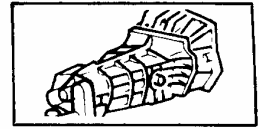
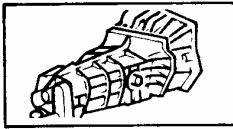


67 142 - 1

Fit the bearings using a press.



60552 .1



TYPE 365 - 395 GEARBOXES

Primary shaft

Fit the primary shaft positioning washer.

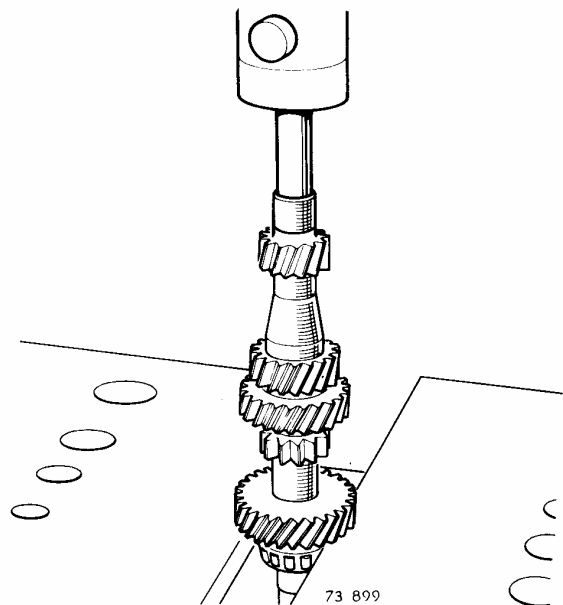
Fit the double taper roller bearing.

Fit the roller bearing inner track ring in the press.

Fit the rollers round the outer track ring and slide the primary shaft through this assembly.

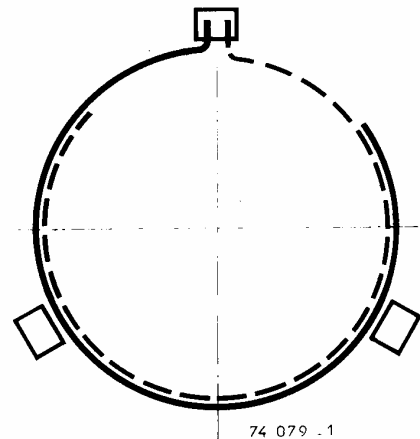
Fit the circlip.

g). Fit the clutch shaft to the primary shaft with a rollpin.



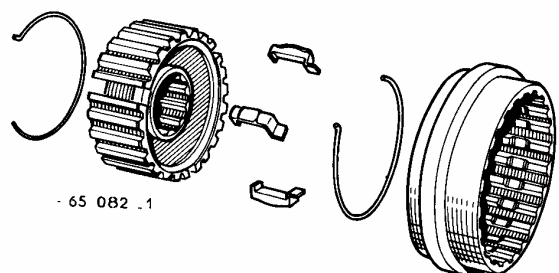
5th speed synchro

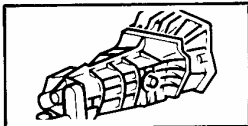
The hub and sliding gear are matched.



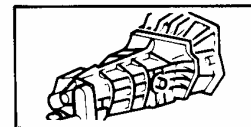
Fit on the hub :

- 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).





TYPE 365-395 GEARBOXES



ADJUSTMENTS

The following adjustments are to be carried out:
Before finally re-assembling the mechanism.

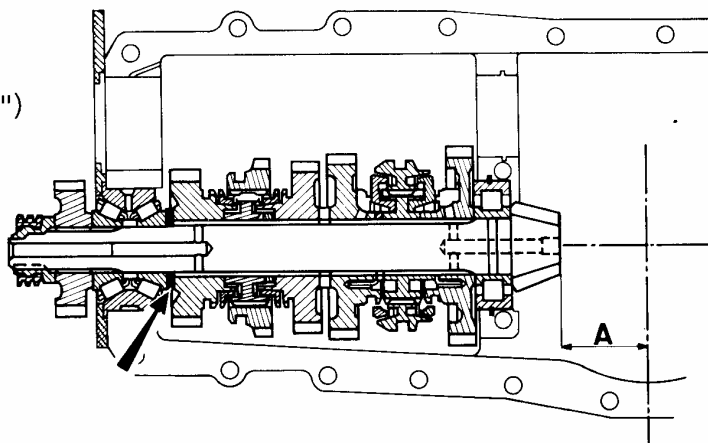
- 1 - Pinion protrusion
- 2 - Differential bearing setting
 - without play when the bearings are re-used
 - with preload when the bearings are new
- 3 - Primary shaft position

1) Pinion protrusion adjustment

The final drive pinion position

The final drive pinion is in the correct position when its front face is distance $A = 59 \text{ mm}$ (2.323") from the centre of the crown wheel.

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



65 083 .1

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 dimension A is then marked on the final drive pinion front face adjacent to the matching reference number.

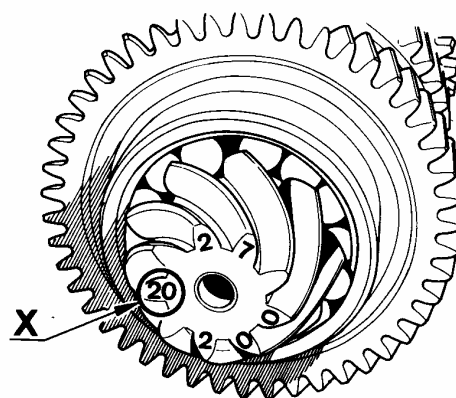
It is given in 1/100ths of a millimetre, for example 20.

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

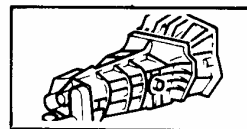
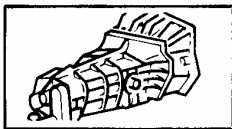
In the example given below, it will be:

$$59 \text{ mm} + 0.20 \text{ mm} = 59.20 \text{ mm}$$

$$(2.323 + .008 = 2.331")$$



60 553 - 1

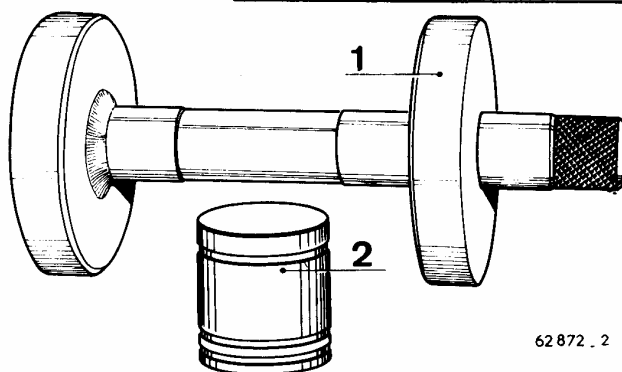


TYPE 365-395 GEARBOXES

Checking pinion protrusion

It is carried out using :

- mandrel (1) from tool B.Vi.239-01 acting as the crown wheel centre.
- distance piece (2) B.Vi.239-02, 48,50 mm (1.909") high which rests against the final drive pinion front face.



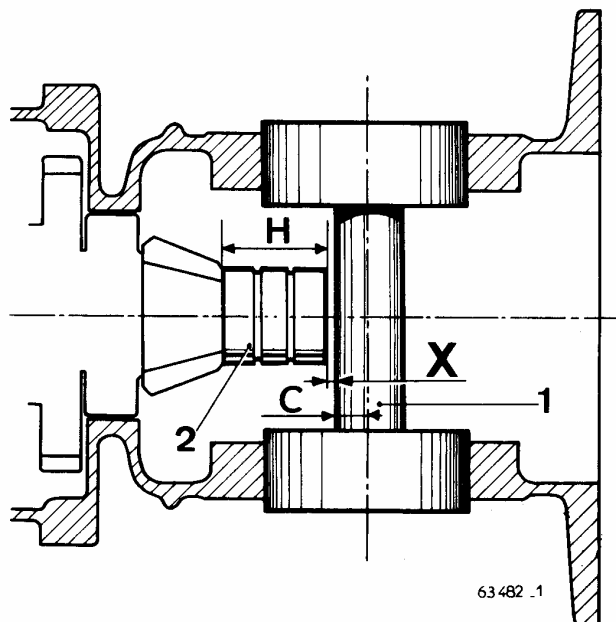
62 872 . 2

Height (H) of distance piece (2) 49,50 mm (1.909") plus radius (C) of 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 :

$$X = 59 \text{ mm} - 58,50 \text{ mm} = 0,50 \text{ mm} \\ (2.323 - 2.303 = 0.020")$$



63 482 . 1

Attach the R.H. half-case to support B.Vi.240.

Remove the two locating dowels in the spacer place.

Fit the secondary shaft.

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

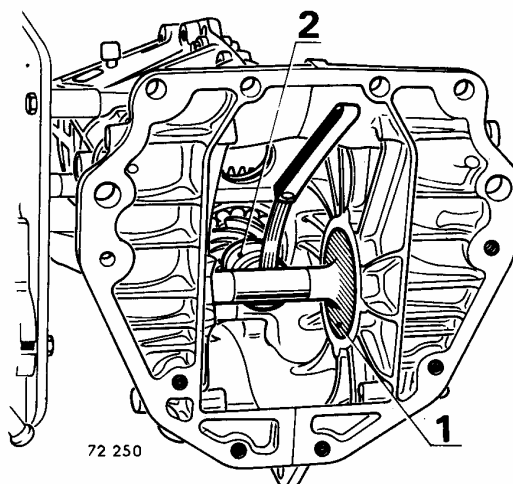
Fit the spacer plate.

Tighten the half-case fixing bolts.

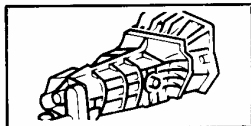
Fit the mandrel in position (1).

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

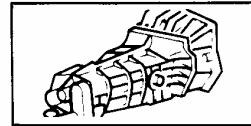
Measure dimension (X) between the distance piece and the mandrel with feeler gauges.



72 250



365 - 395 GEARBOXES



- 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.

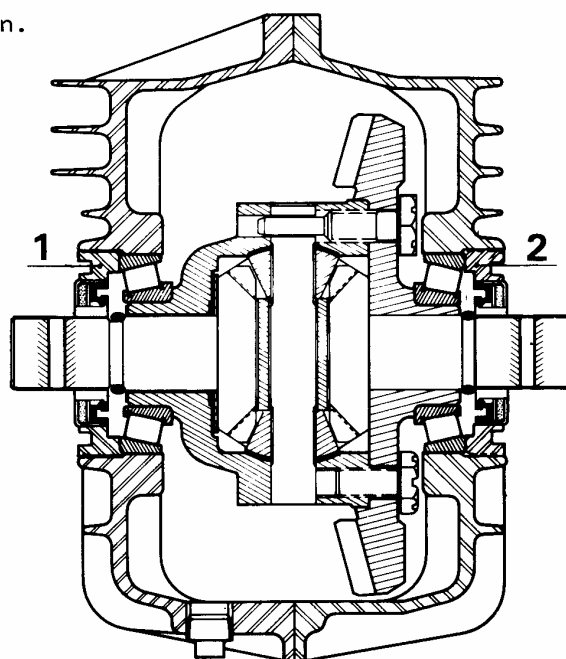
Washers are available from 3,50 to 4,10 mm (.138 to .162") thick in steps of 5/100ths mm (.002").

Having obtained the final adjustment, remove:

- the checking tool
- L.H. half-case
- and secondary gear train.

2 - Adjusting the differential bearings

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



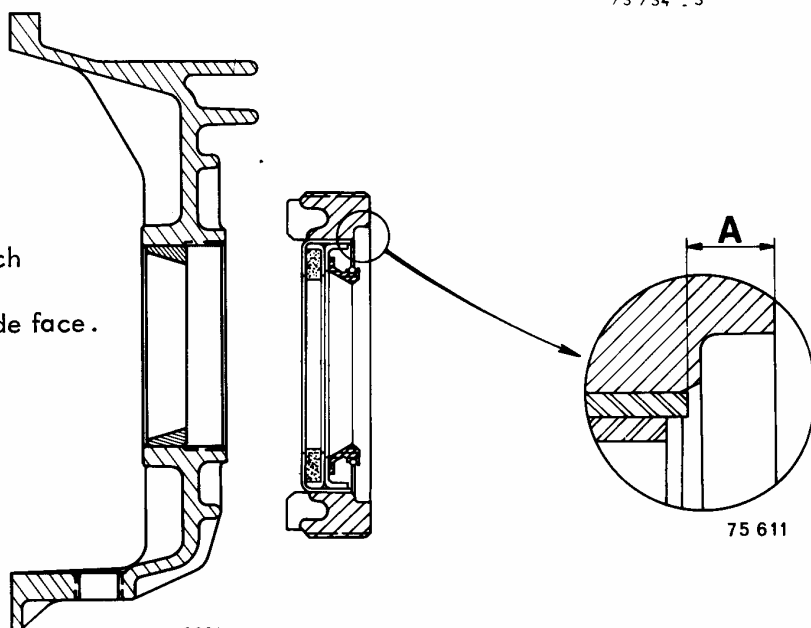
73 734 .3

Fit an oil seal to each ring nut.

Hold dimension (A) for the oil seal:

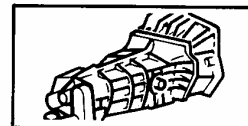
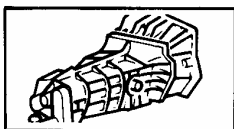
$$A = 3,75 \text{ mm } (.147")$$

Insert a bearing outer track ring in each half-casing, making sure that they are just below the level of the casing inside face.



75 611

65 221



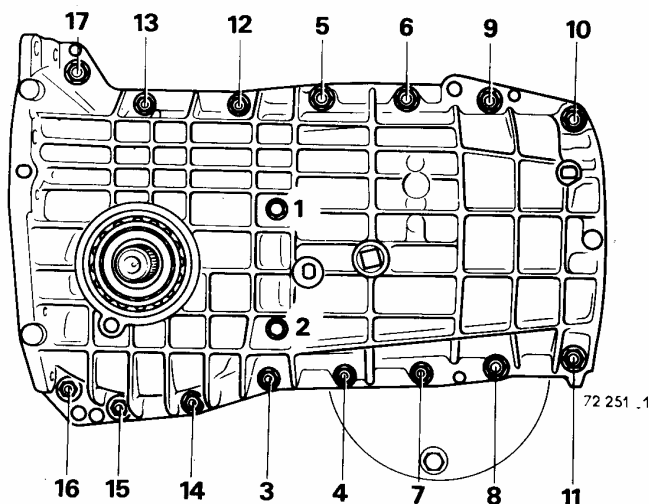
365 - 395 GEARBOXES

Fit the differential, with its bearings, in the R.H. half-case.

Fit the L.H. half-case and secure it by all the bolts.

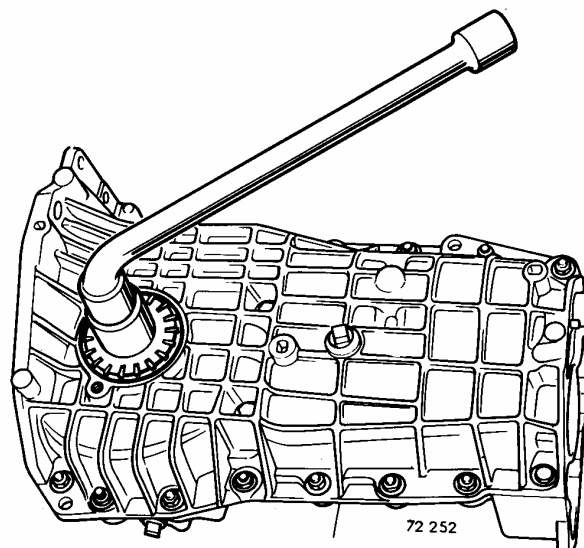
Torque tighten the bolts in the correct sequence, using the torque wrench:

- 7 mm diameter bolts: 2 to 2,5 m.da N (15 to 19 lb/ft)
- 8 mm diameter bolts: 3 m.da N (22½ lb/ft).



Smear the threads on the ring nuts and in the case with "Perfect-Seal".

Screw the adjusting ring nut into each half-case until it just touches the bearing track ring using: wrench B.Vi .377.



One is then faced with two possible methods:

Bearings which can be used again

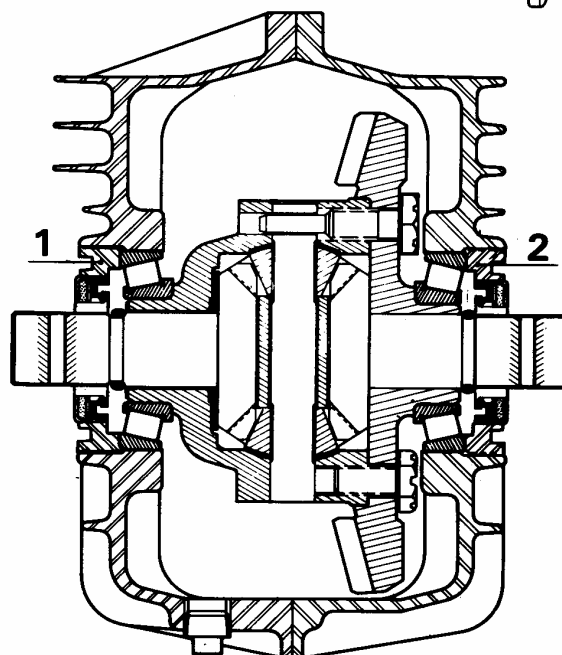
The differential should turn without play.

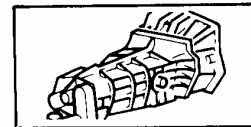
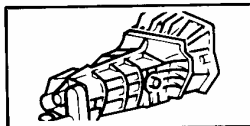
Continue to screw in the nut, which has the effect of pushing the bearing track rings towards each other:

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

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

The final adjustment has been arrived at.





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

Remove the L.H. half-case and differential.

New bearings

New bearings must be fitted with preload.

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

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

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 around the differential housing.

Pull on the string using a spring balance.

The differential should turn under a load of between 1 and 3 da N (2 to 7 lbs).

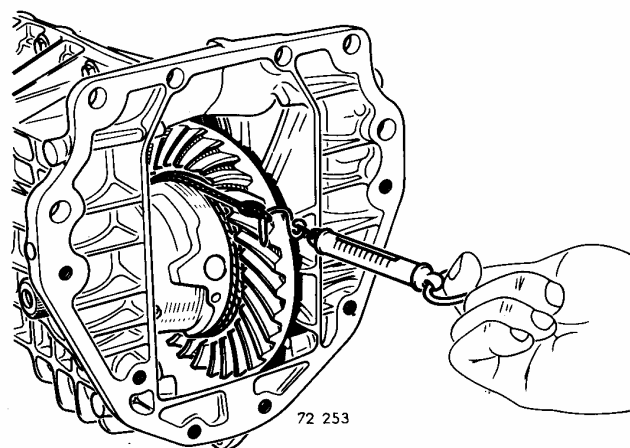
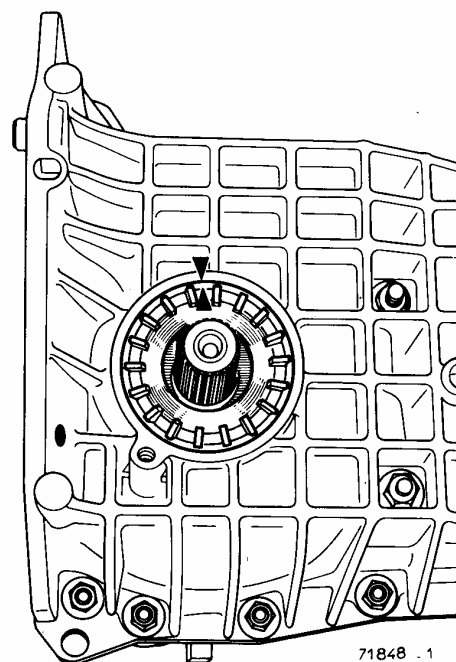
This load is the amount necessary to ensure a constant rotating movement of the differential.

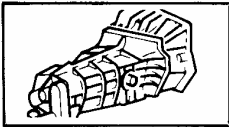
If the adjustment is not correct, screw in the nut by a small amount on the housing side and check the preload once again.

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

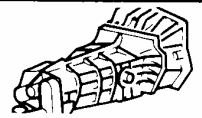
Mark the position of the nuts in relation to the case when the adjustment has finally been obtained.

Remove the L.H. half-case and differential.





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3 Primary shaft position

Fit the following into the R.H. half-case:

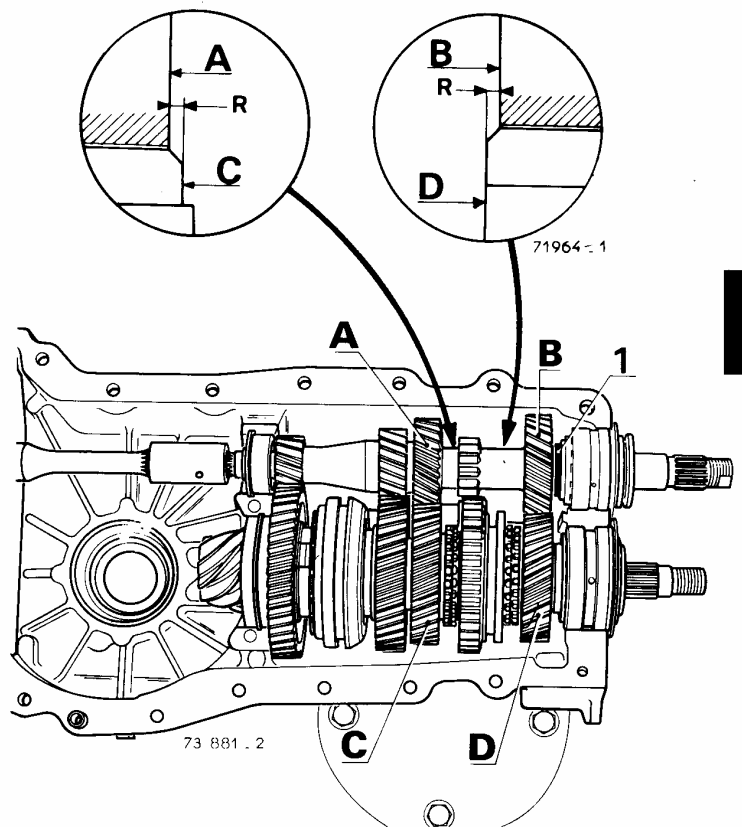
- the secondary shaft (remove the speedometer worm nut, wave washer, 5th speed gear and spacer plate).

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

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

When adjustment is complete, remove:

- the primary shaft
- and secondary shaft.

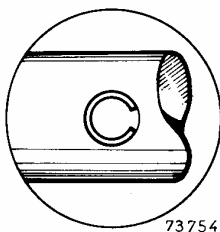


REASSEMBLING

Selector mechanism

Rollpin position

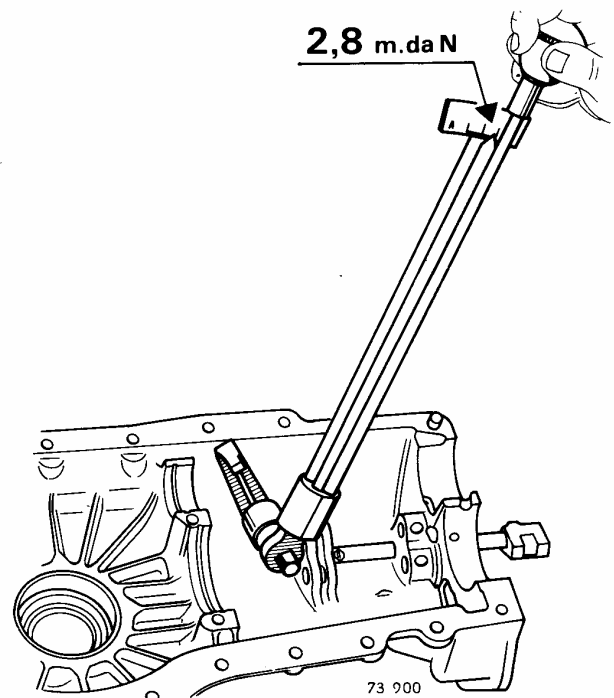
Fit the rollpins correctly when reassembling. Their slots must always face towards the speedometer drive gear housing.

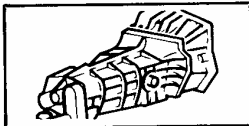


Slide in the reverse gear shaft.

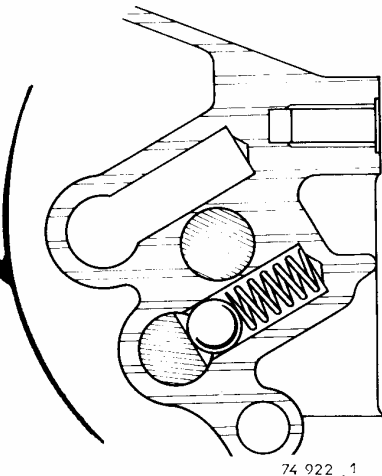
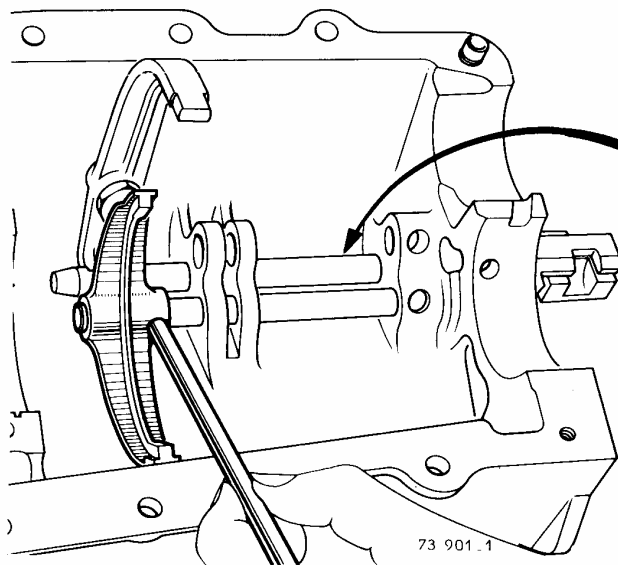
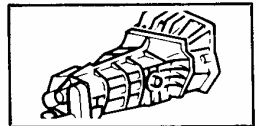
Fit the reverse gear selector, inserting its end in the slot in the reverse gear shaft.

Torque tighten the pivot pin to 2,8 m.da N (21 lb/ft).





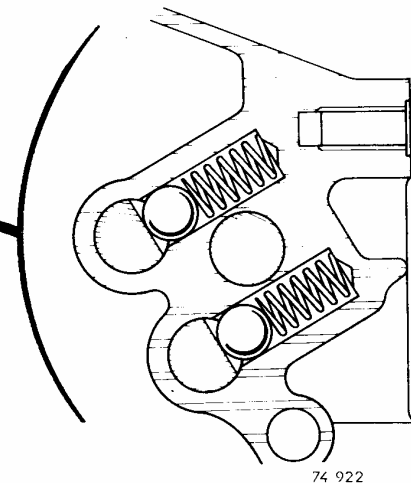
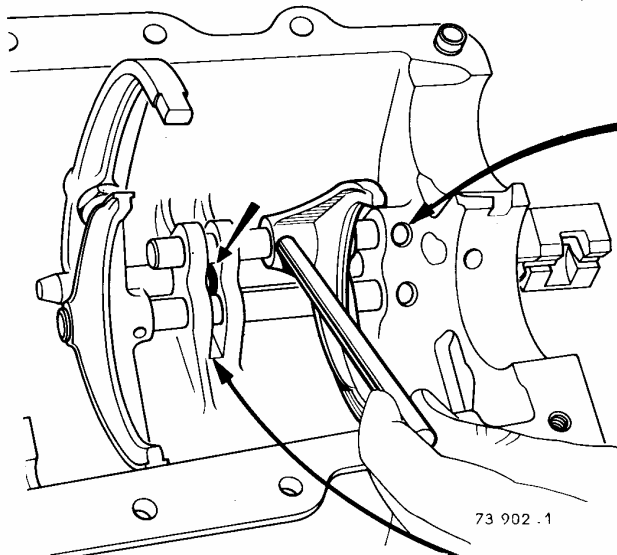
365 - 395 GEARBOXES



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

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

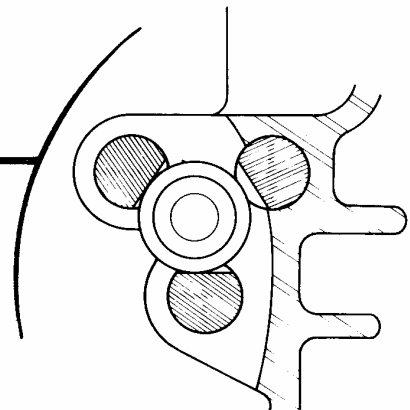
Position the 1st-2nd speed selector fork (hub facing the control end) and fit the rollpin.

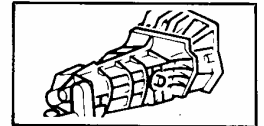
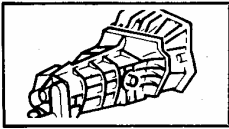


Position the locking disc between the selector shafts.

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

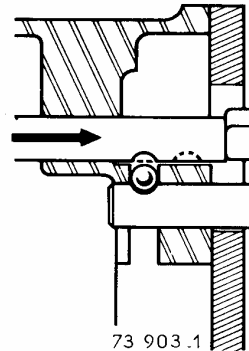
Slide the selector shaft in, position the fork (hub towards the differential) and fit the rollpin.





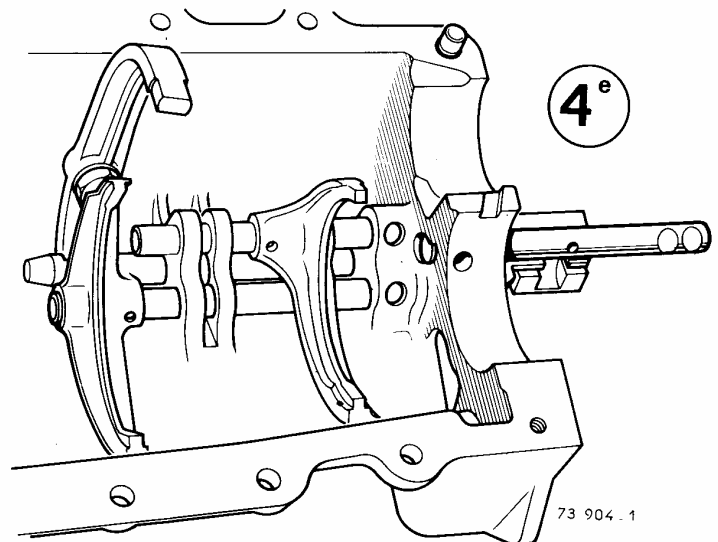
365 - 395 GEARBOXES

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



73 903.1

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



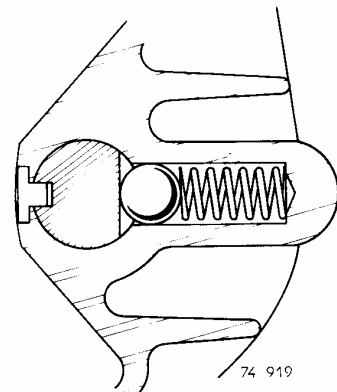
4^e

73 904.1

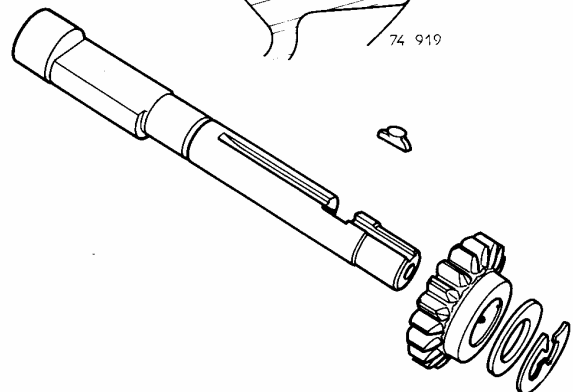
Reverse gear wheel

In the L.H. half case:

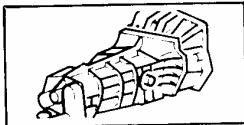
- fit the spring and locking ball
- slide the shaft in and position the gear wheel (hub facing towards differential end) followed by the thrust washer (bronze face towards gear wheel).
- fit the guide from inside the bore and push the shaft fully in.
- fit the gear wheel retaining circlip.



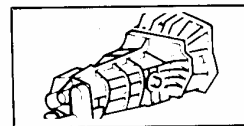
74 919



60 568



365 GEARBOX



Rear casing

Assembling

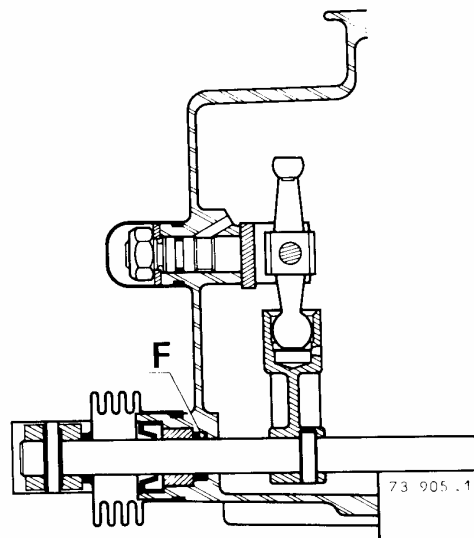
Fit felt washer (F) behind the bush

Fit in together:

- the rocking lever and pivot pin assembly
- and selector finger and control shaft.

Fit the washer in position and tighten the rocking lever pivot shaft nut; fit the rubber cover.

- Fit the control shaft end fitting and place the rollpin in position.
- Fit the speedometer drive gear and its guide sleeve fitted with an 'O' ring seal.



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Rear casing

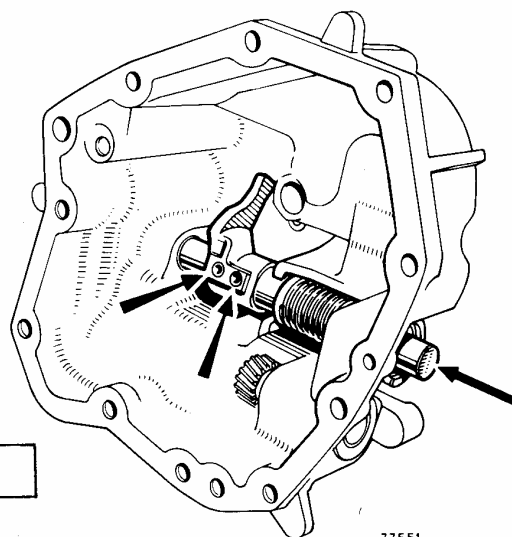
Assembling

Insert the oil seals in the casing

Insert the control shaft and fit:

- the spacers
- spring
- circlip
- and selector finger

Punch in both rollpins.



365 - 395 GEARBOXES

Assemble in the R.H. half-case:

- the primary shaft
- and secondary shaft (4th speed selected).

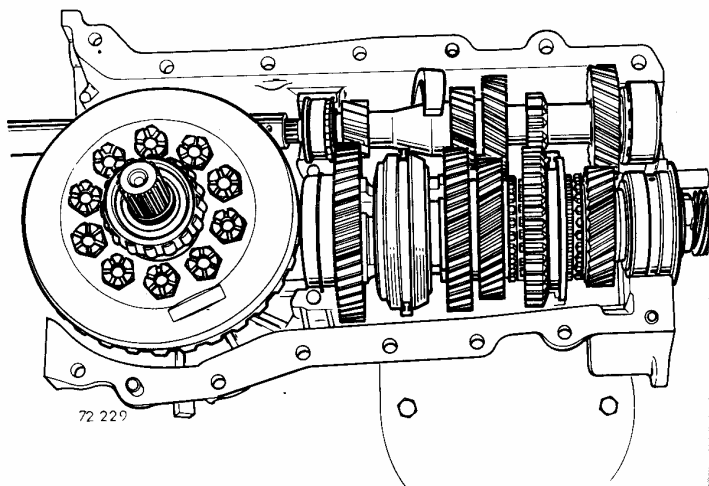
Remember to insert the stop peg for the outer track ring on the double taper roller bearing.

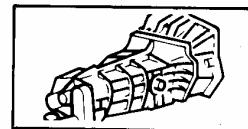
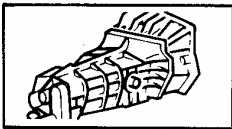
- the differential.

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

Fit the L.H. half-case: make sure that the end of the reverse gear selector is correctly inserted in the slot in the reverse gear wheel shaft.

Fit the half-case fixing bolts in position: do not tighten them at this stage.

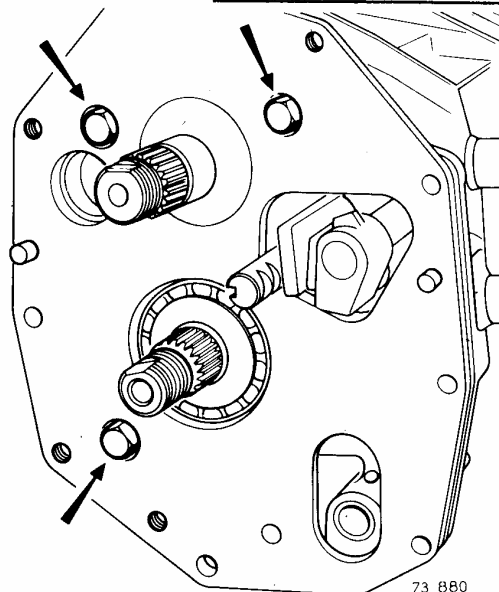




365 - 395 GEARBOXES

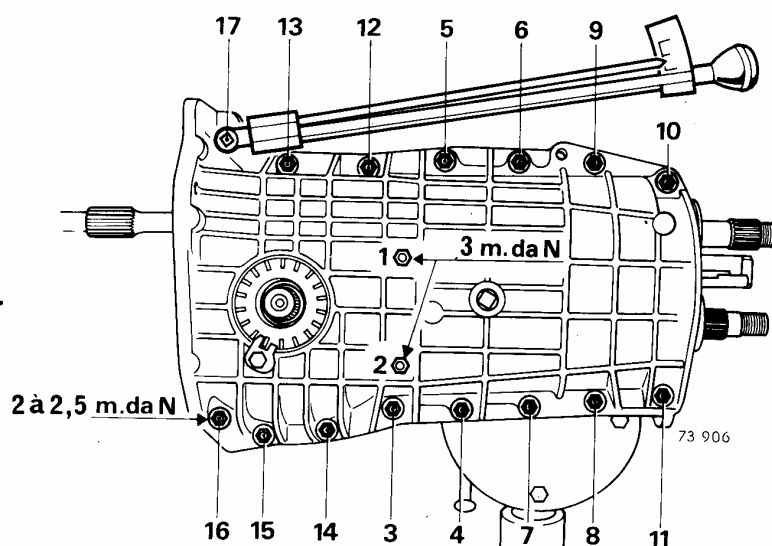
Fit:

- the spacer plate with 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 to 2,5 m.da N (15 to 19 lb/ft)
- 8 mm dia. bolts: 3 m.da N (22½ lb/ft).



Fit:

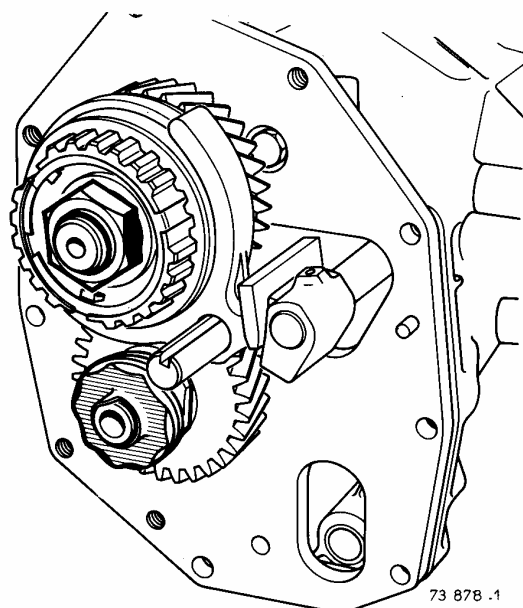
On the primary shaft:

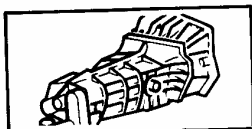
- the spacing washer
- needle roller bearing and sleeve
- 5th speed idler gear
- "synchro-hub, sliding gear and fork" assembly
- wave washer
- and synchro nut

On the secondary shaft:

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

Rollpin the 5th speed selector fork.





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Return the selector forks to neutral.

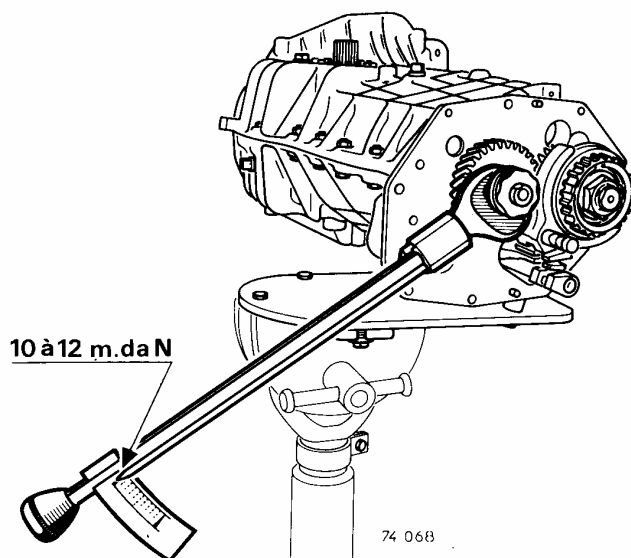
Select at one and the same time :

- reverse
- 5th speed

Torque tighten :

- the primary shaft nut :
10 to 12 m. da N (75 to 90 lb/ft)
- the speedometer worm nut, fitting wrench
B.Vi.204 to torque wrench Mot.50 :
10 to 12 m. da N (75 to 90 lb/ft).

Lock both nuts.

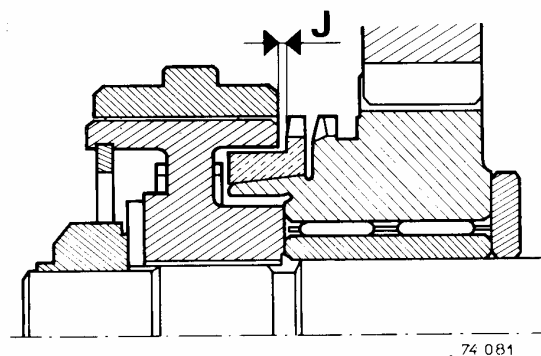


Check the clearance between the 5th speed synchro ring and hub rim :

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

To do this :

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



REFITTING

Rear casing

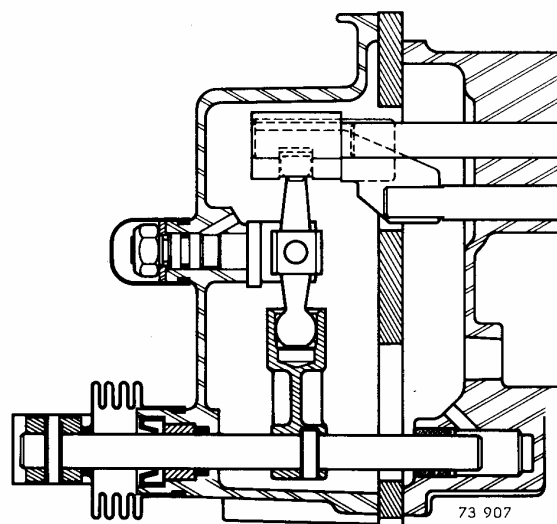
365 GEARBOX

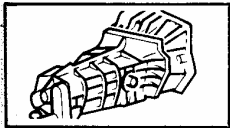
Return the selector forks to neutral and select 4th speed.

Fit the rear cover paper gasket smeared with "Perfect-Seal".

Offer up the speedometer drive cover, inserting the end of the rocking lever into the slot in the 3rd - 4th speed selector shaft.

Push the cover on and tighten the bolts.





395 GEARBOX

Return the forks to neutral .

Smear the rear casing paper gasket with "Perfect-Seal" and fit it.

Offer up the rear casing, inserting the end of the rocking lever in the slot in the shafts.

Push the casing home and tighten the bolts.

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Fit:

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

Smear the plug threads with "Perfect-Seal".

Fit the washer and screw in the plug.

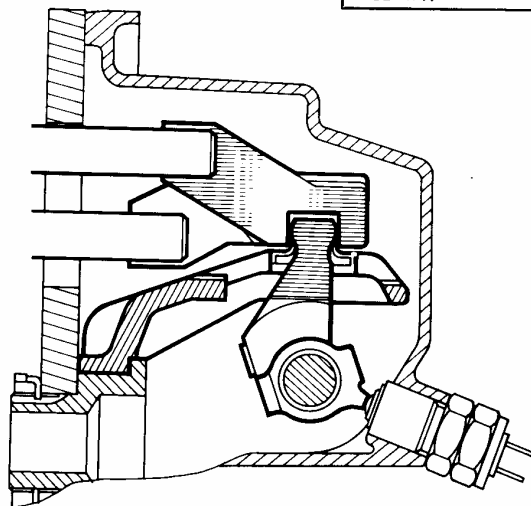
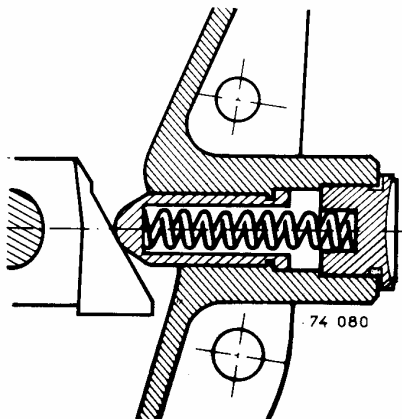
Fit:

- the plunger
- and 5th speed detent spring .

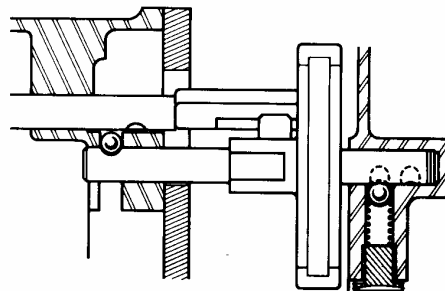
Smear the plug threads with "Perfect-Seal".

Fit the washer and screw in the plug.

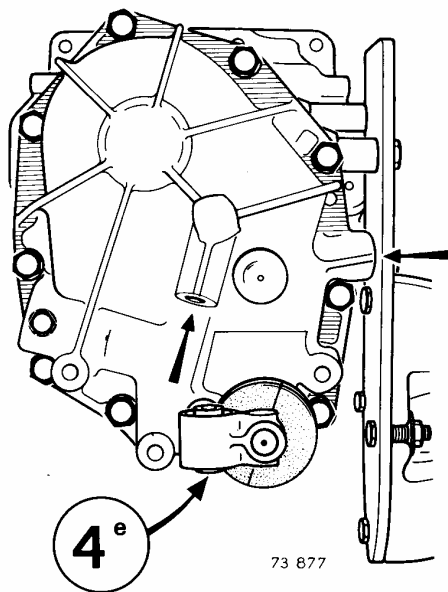
Place the gearbox in neutral .



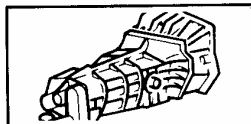
77 553



73 903



73 877



365 - 395 GEARBOXES

ADJUSTING CROWN WHEEL AND PINION BACKLASH

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

Check the amount of backlash by hand.

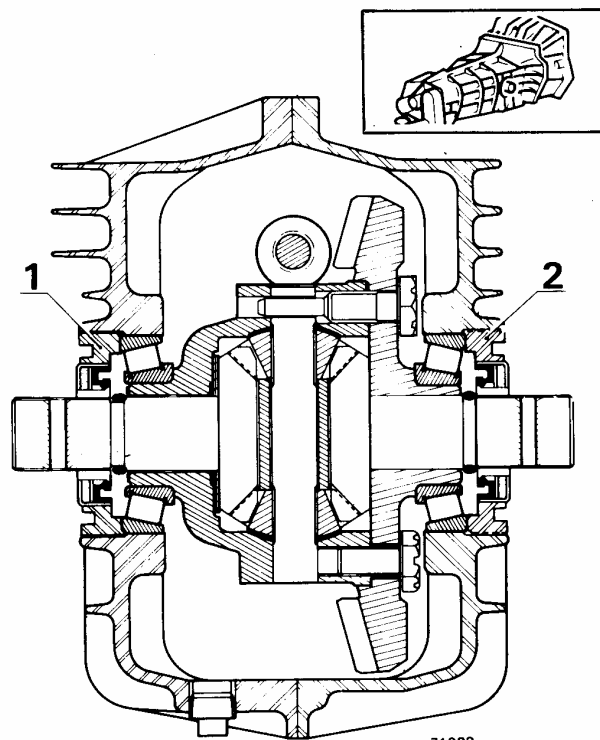
If it is really excessive, unscrew ring nut (1) on the housing end and screw in ring nut (2) on the crown wheel end to reduce the backlash before checking with a clock gauge.

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

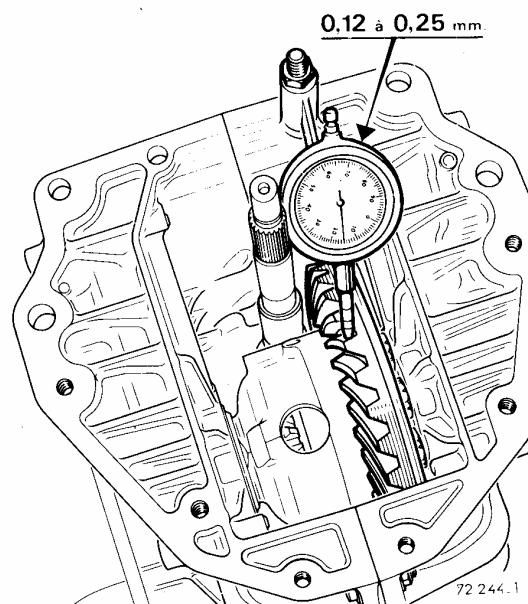
Check the amount of backlash: it should be between 0,12 and 0,25 mm (.0047 to .010").

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

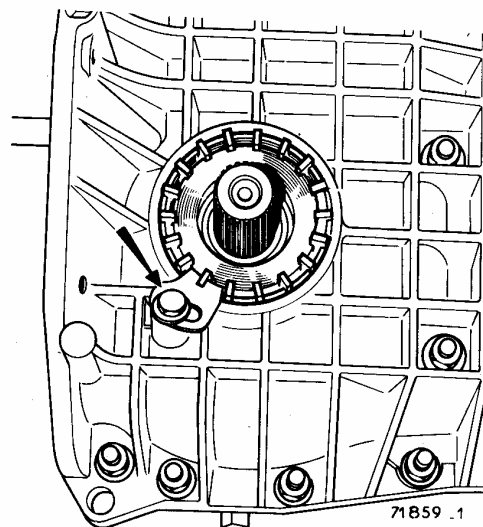
When the correct backlash has been obtained, lock the ring nuts with lock plates.



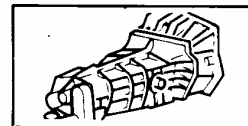
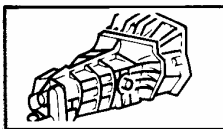
74982



72 244-1



71859-1

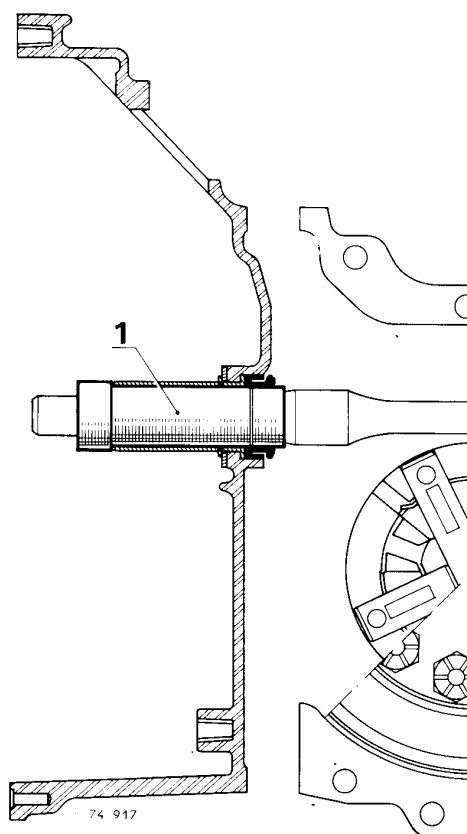


365 - 395 GEARBOXES

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

- a sleeve 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 sleeve to fit the oil seal to the housing.



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

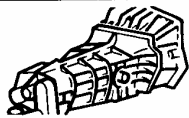
Fit tool (1) inside the withdrawal pad guide sleeve to spread the lip of the seal.

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.

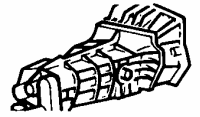
Screw in the reversing lamps switch.



SPEEDOMETER DRIVE COVER

Code 2013

Removing - Refitting



352 GEARBOX

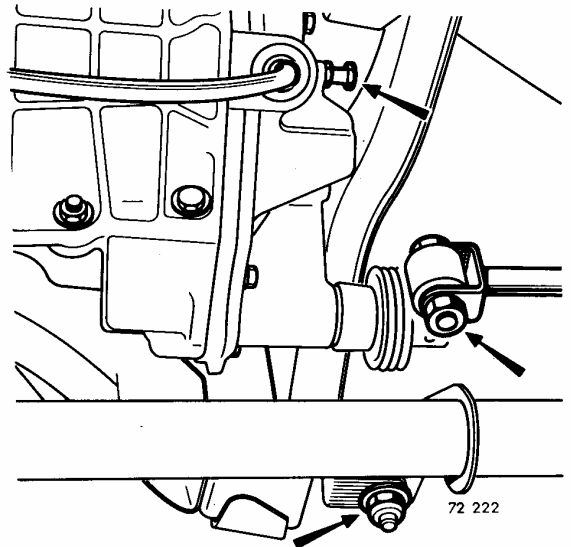
REMOVING

Drain the gearbox using wrench B.Vi.380-01.

Disconnect the speedometer cable.

Remove:

- the bolt on the gearshift control rod
- the nut securing the exhaust pipe to the transmission rear crossmember.



Take up the weight of the rear of the gearbox using a jack.

Remove:

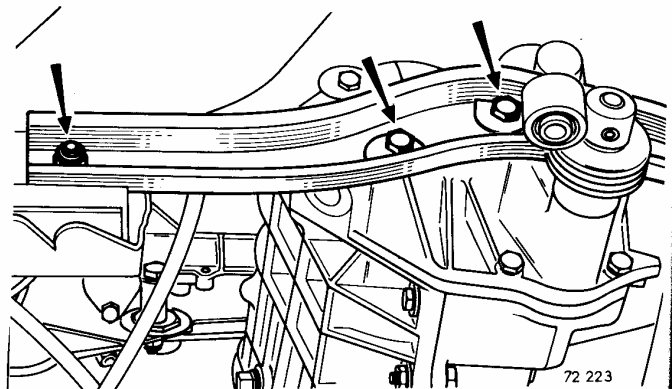
- the three bolts securing the rear crossmember to the gearbox,
- the two nuts securing the crossmember to the mounting pads on the side members.

Remove the crossmember.

Allow the rear end of the gearbox to come down.
Unscrew the bolts securing the rear casing and remove it.

Take off the gasket.

Clean the gasket face.



REFITTING

Fit the paper gasket smeared with 'Perfect-Seal' in position.

Offer up the cover, inserting the end of the rocking lever in the slot in the selector fork shafts.

Fit the bolts securing the cover and tighten them.

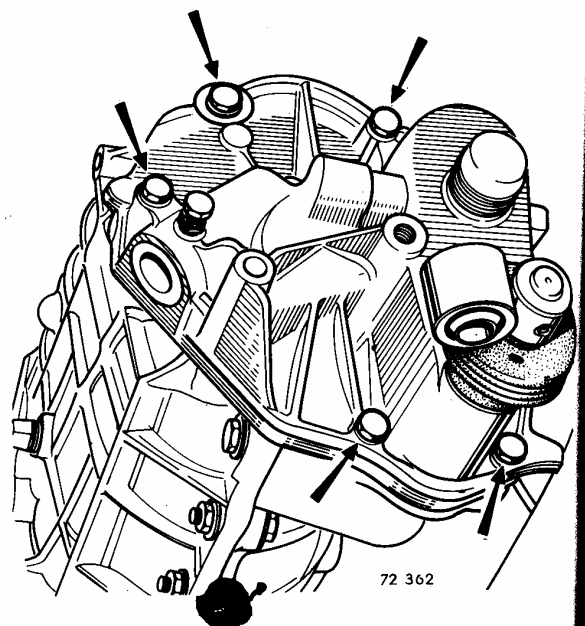
Refit the rear crossmember.

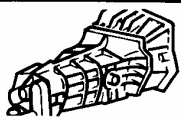
Attach the exhaust pipe.

Connect up the speedometer cable.

After having selected 4th gear, tighten the bolt on the gear shift control rod without holding the shift lever.

Fill the gearbox with oil.

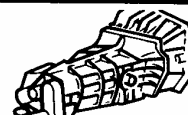




SPEEDOMETER DRIVE COVER

Removing - Refitting

Code 2014



365 - 395 GEARBOXES

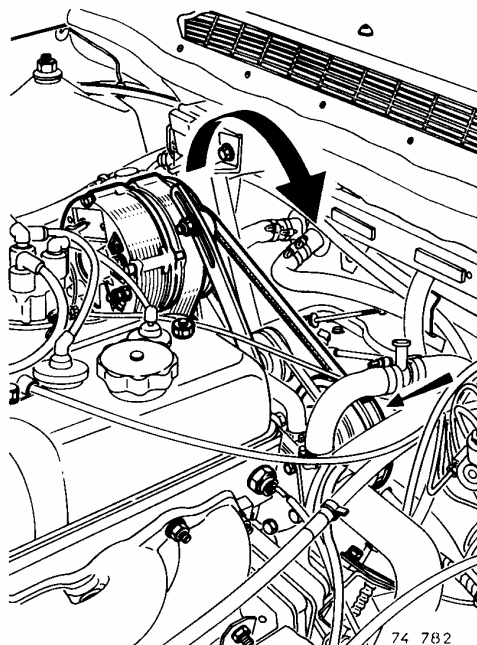
REMOVING

Disconnect battery.

Remove the camshaft and water pump pulleys.

Partly unscrew the alternator mountings and tilt the unit inwards: tighten it up in this position.

Insert spacer legs T.Av.509 between the shock absorber lower mounting pins and lower suspension arm hinge pins.



Place the front of the vehicle on stands.

Remove the exhaust pipe.

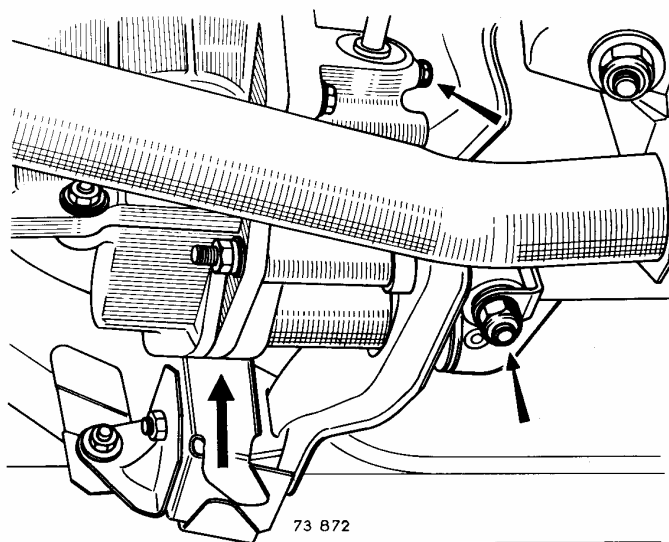
Drain the gearbox using wrench B.Vi.380-01.

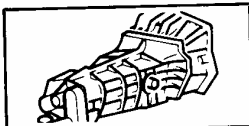
Disconnect:

- the speedometer cable,
- and gearshift control.

Raise the rear of the gearbox with a jack and remove the gearbox crossmember.

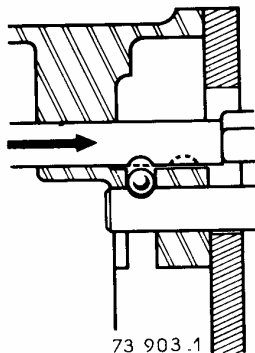
Remove the jack and allow the engine-gearbox transmission assembly to tilt.





365 - 395 GEARBOXES

Select 4th speed and hold it there until re-assembly is complete, when undertaking any operation which involves removal of the speedometer drive cover.

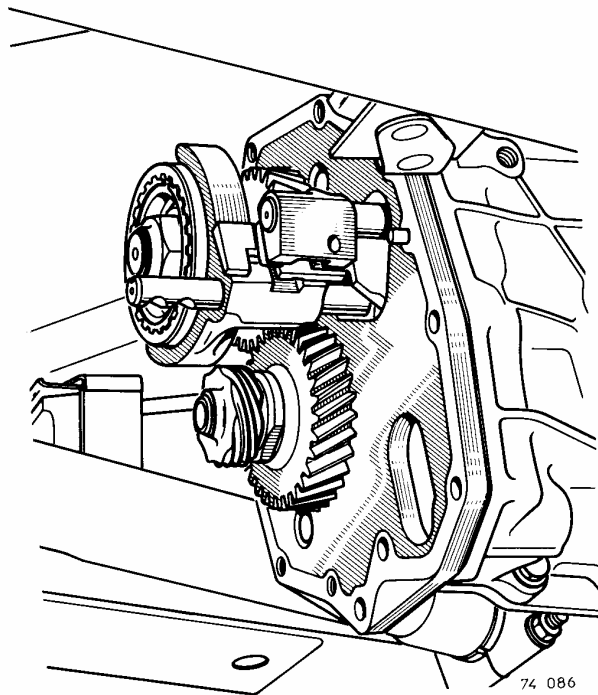


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Remove:

- the 5th speed selector shaft plug, locking ball and spring,
- the 5th speed detect plug, plunger and spring,

Unscrew the speedometer drive cover fixing bolts and remove it.

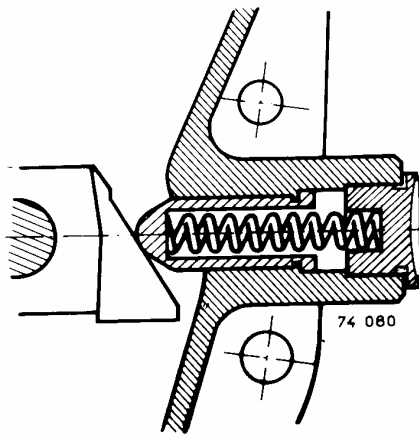


74 086

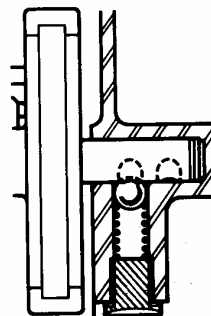
REFITTING

Carry out the removing operations in reverse order, paying attention to the following points:

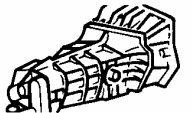
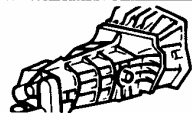
- Offer up the cover, inserting the end of the rocking lever into the slot in the 3rd-4th speed selector shaft while doing so (4th speed being selected),
- smear the plugs for the 5th speed locking ball and spring and detent plunger and spring with "Perfect-Seal".
- tighten the gearshift control link with 4th speed still selected and without holding the gearshift lever,
- fill the gearbox with oil.

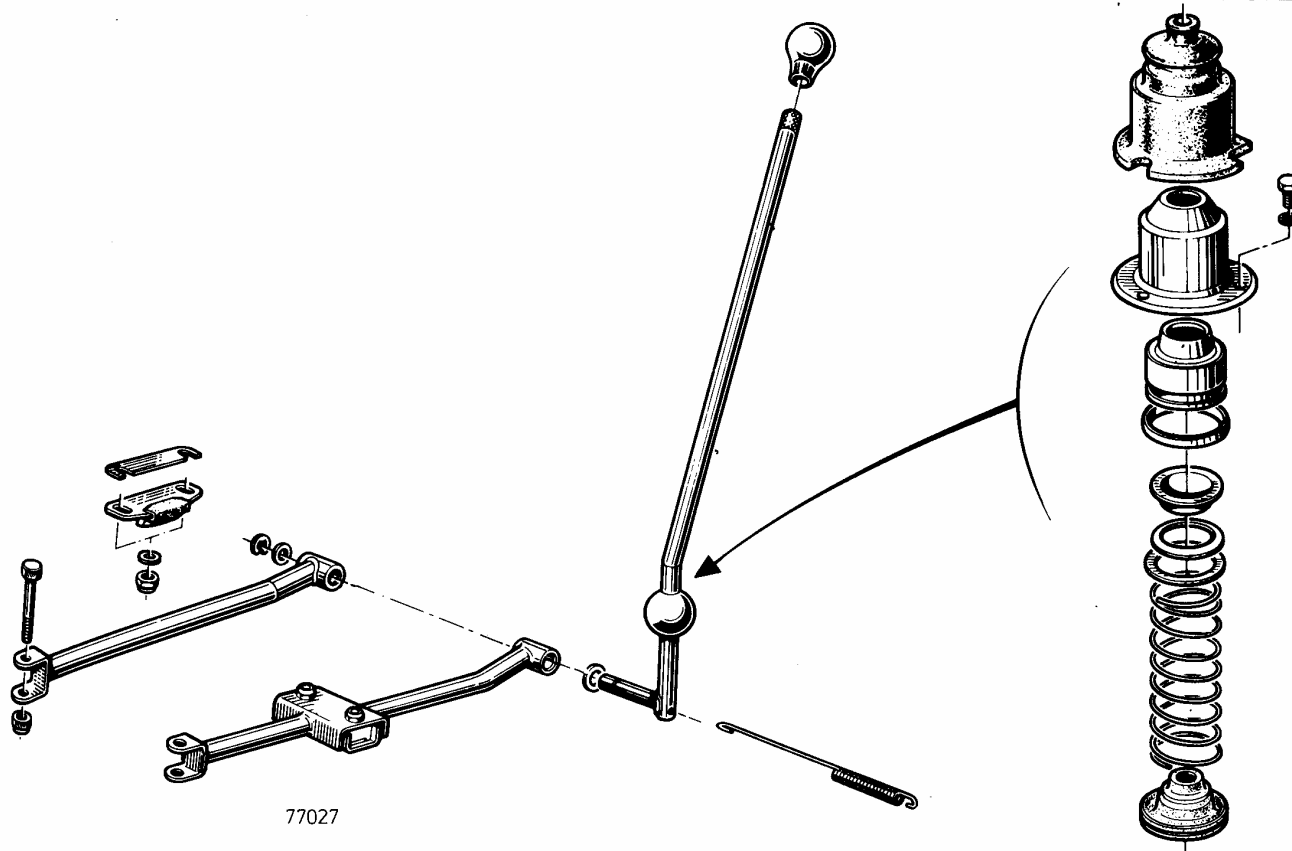


74 080



73 903.2

| | | | |
|---|----------------------------------|-----------------|---|
|  | GEARSHIFT CONTROL | |  |
| | Removing - Refitting - Adjusting | Codes 3196 3197 | |
| | | 352 - 365 - 395 | GEARBOXES |

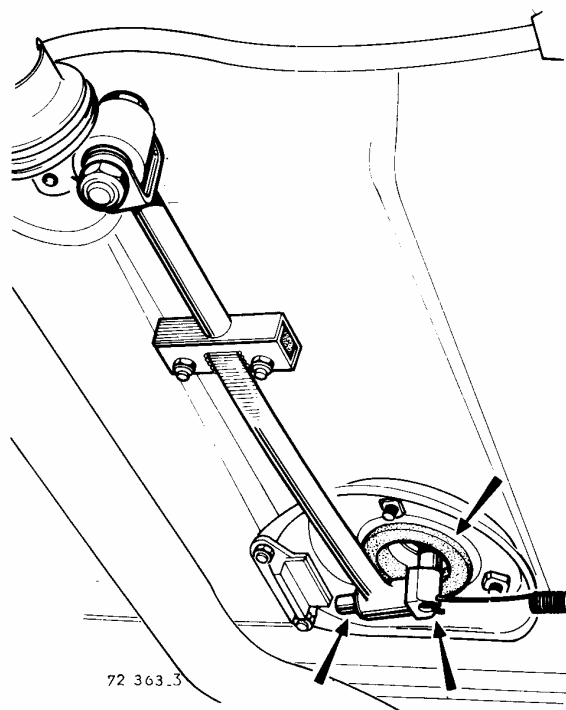


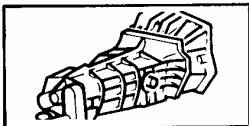
REMOVING

Unhook the lever return spring.

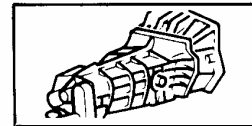
Ease out the circlip and withdraw the gearshift control lever from its spindle.

Free and remove the rubber bellows.



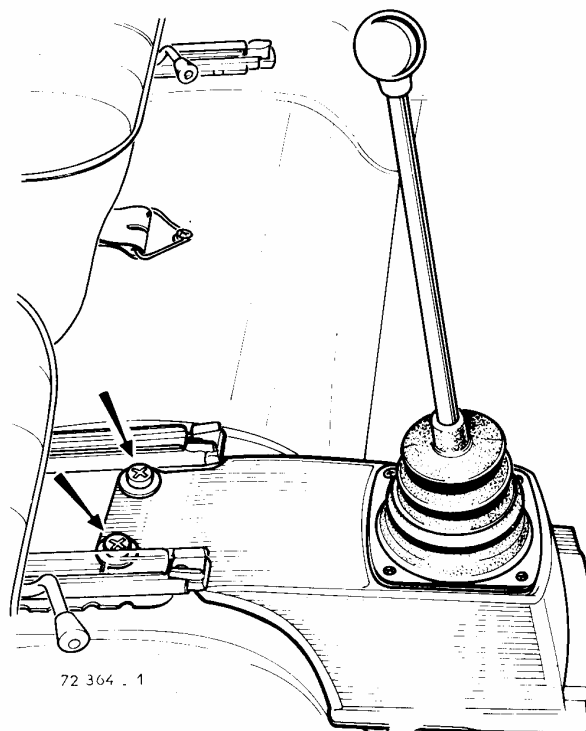


352 - 365 - 395 GEARBOXES



Remove the rubber bellows embellisher.

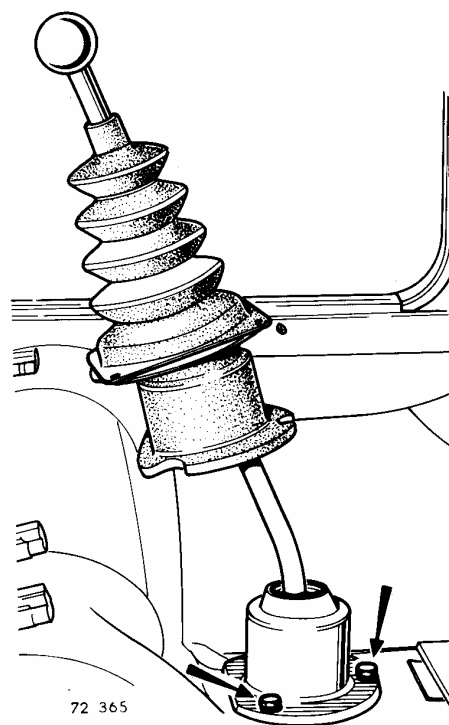
Remove the cover or console.

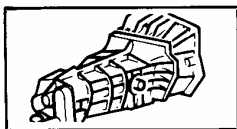


Free the protective bellows from the shift lever housing.

Remove the three screws securing the shift lever housing.

Remove the shift lever.



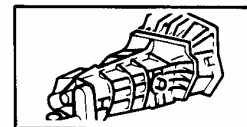


REFITTING - ADJUSTING

Carry out the removing operations in reverse order.

Select 4th speed and do not hold the lever when tightening the gearshift control lever bolt.

Check the setting of the reverse gear lock plate.

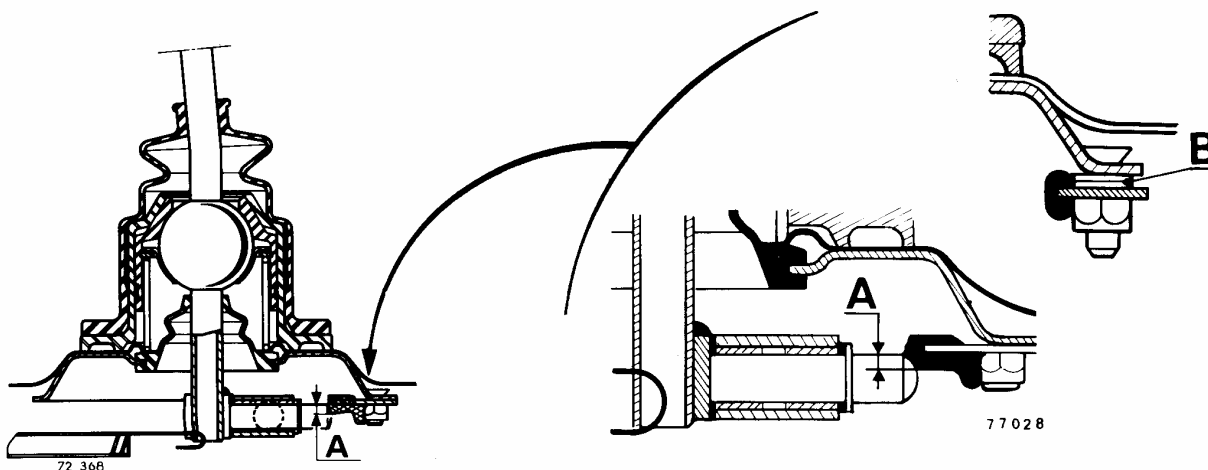


352 - 365 - 395 GEARBOXES

Hold dimension (A), the end of the lever resting against the plate:

A = 5 to 6 mm (13/64 to 1/4").

Fit setting washers (B) between the plate and floor panel to obtain the correct setting.



OVERHAULING THE GEARSHIFT LEVER

DISMANTLING

Remove:

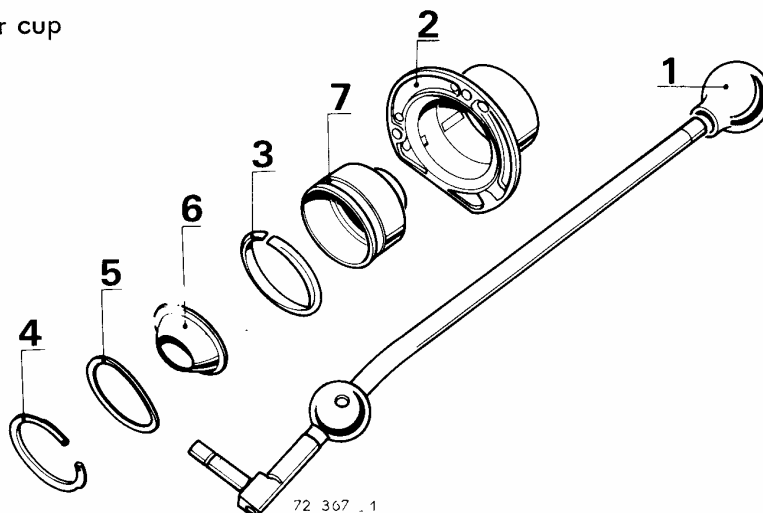
- the spring
- knob (1) after breaking it in two
- both rubber bellows
- housing (2)
- plastic sleeve (3)
- retaining circlip (4) on ball joint lower cup
- wave washer (5)
- ball joint lower cup (6)
- ball joint upper cup (7)

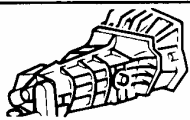
REASSEMBLING

Carry out the removing operations in reverse order.

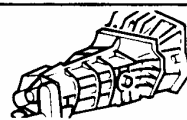
Lubricate all pivot points with Molykote BR.2 grease.

Use glue (Araldite, for example), to fit the gear lever knob.





ADJUSTING LINK-TYPE SHIFT MECHANISM

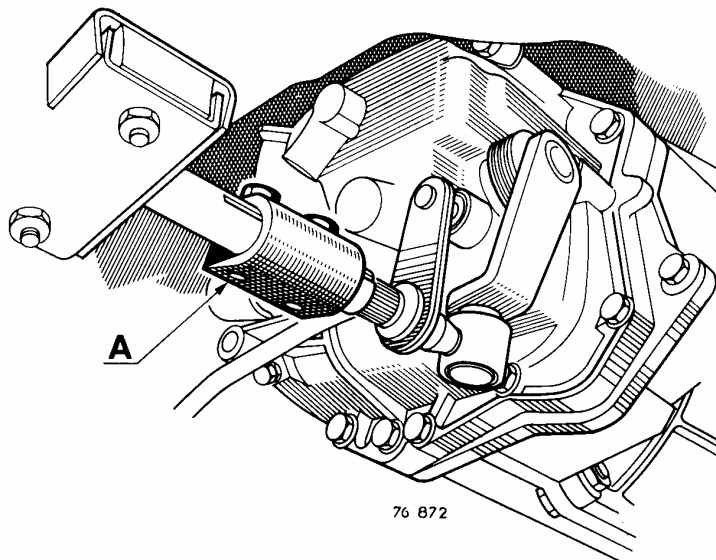


365 - 395 GEARBOXES

The ball joints must not be removed from their seats as they could be damaged. Refer to beginning of chapter "Removing - Refitting type 365 and 395 gearboxes".

Partly unscrew both clamp (A) nuts.

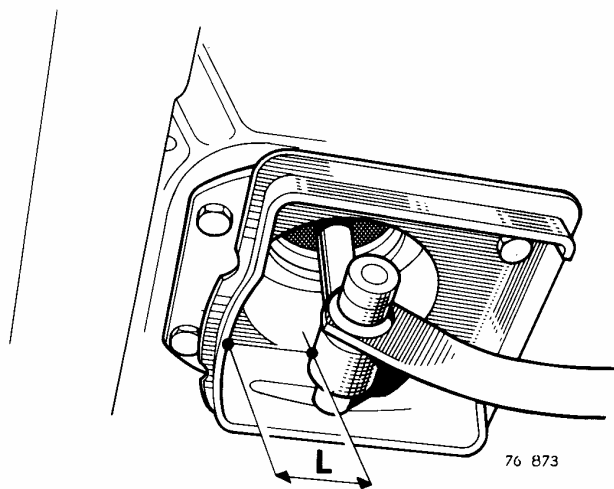
Unscrew the two caliper bracket bolts and move the shift lever several times to free both sections.



Place:

- the gearbox in neutral
- the shift lever in neutral, in the 3rd-4th speed plane and resting on the side of the case.

Hold dimension $L = 32 \text{ mm}$ ($1 \frac{1}{4}''$) between the end of the lever and the side of the case (concave zone). Dimension L was previously 30 mm ($1 \frac{3}{16}''$).



Position the clamp correctly and tighten both bolts.

$B = 13 \text{ to } 15 \text{ mm}$ ($\frac{17}{32}$ to $\frac{19}{32}''$).

Check selector action and gear changing.

