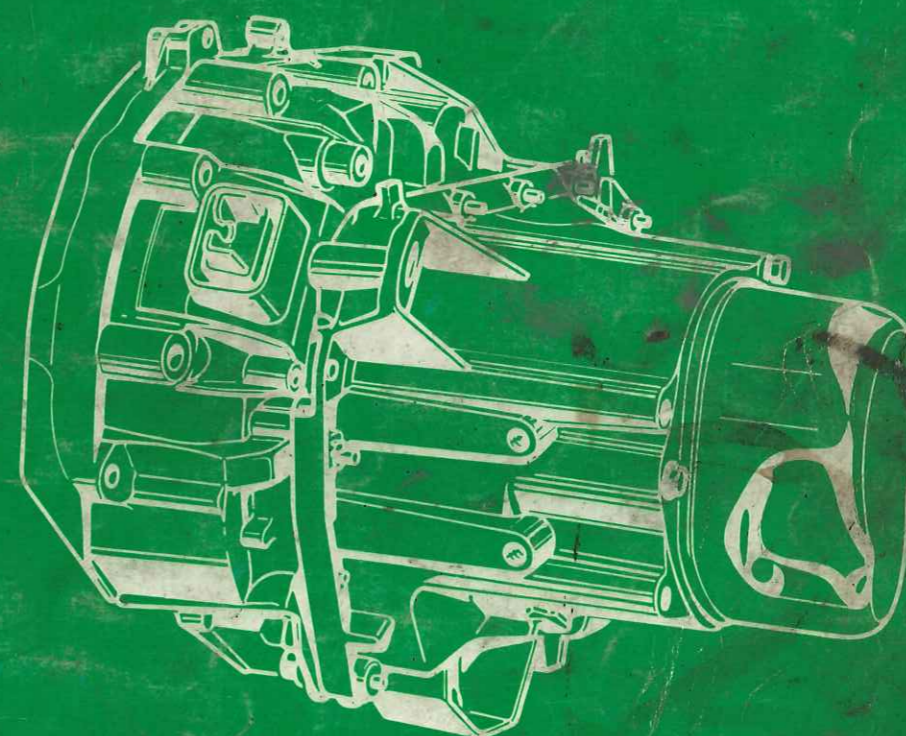


TURBORENAULT.CO.UK

B.V. JB

77 11 093 922

Edition Anglaise



RENAULT

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RENAULT

Manual gear boxes

Type	Range
JB0	Renault 5 Renault Extra Renault 9 Renault 11 Renault 19 Renault Clio
JB1	Renault 5 Renault Extra Renault 9 Renault 11 Renault 19 Renault Clio
JB2	Renault 21
JB3	Renault 5 Renault 9 Renault 11 Renault 19 Renault 21 Renault Clio
JB4	Renault 5 Renault Extra Renault 9 Renault 11 Renault 19 Renault Clio
JB5	Renault 5 Renault 9 Renault 11 Renault 19 Renault Clio

*This document cancels and replaces technical notes n° 1217
1244 - 1290 - 1294 and MR JB gear box, part no. 77 11 080 027*

77 11 093 922

Edition Anglaise

"The repair methods given by the manufacturer in this document are based on the technical specifications current when it was prepared.

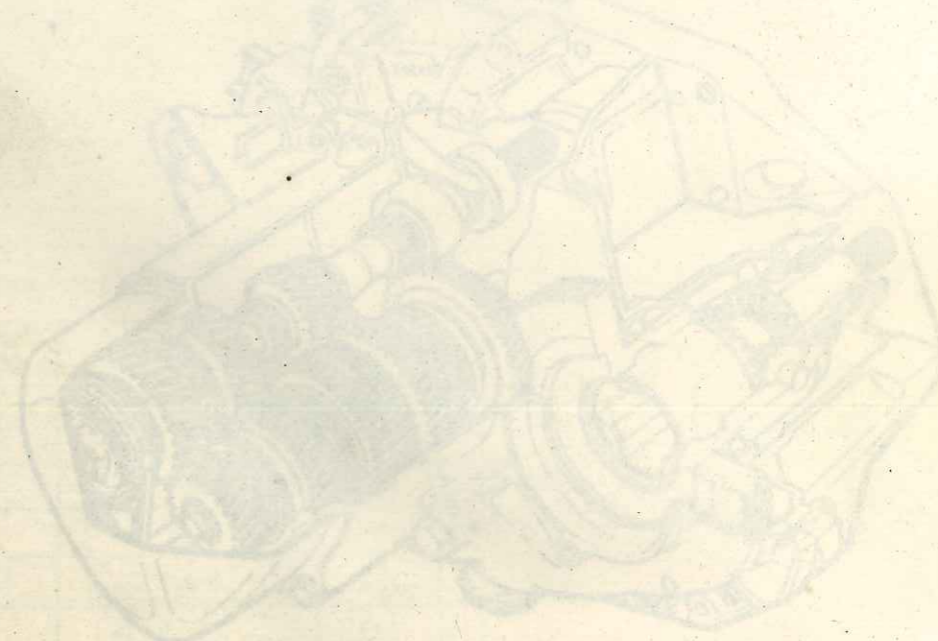
The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed".

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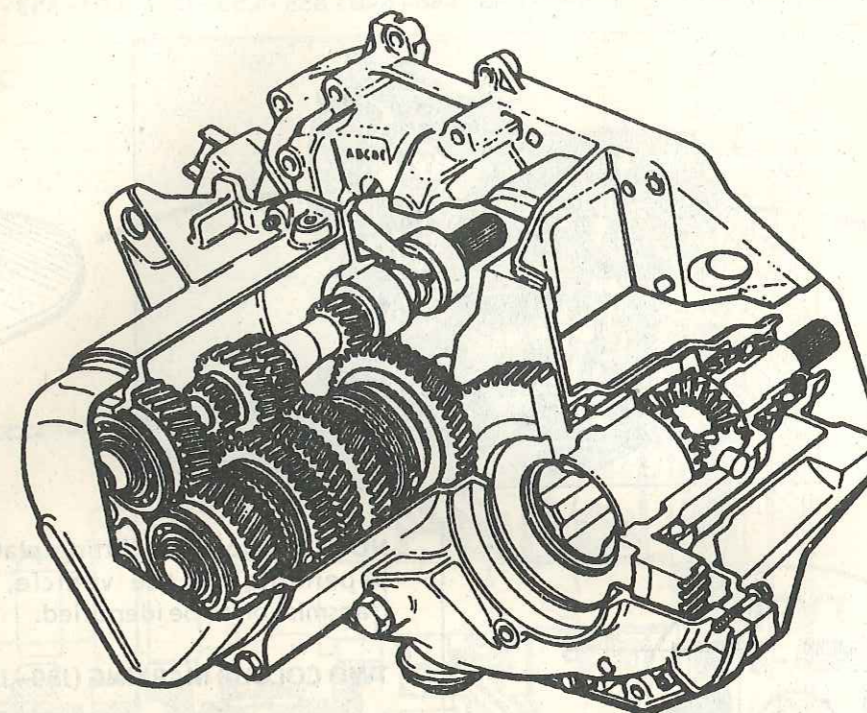
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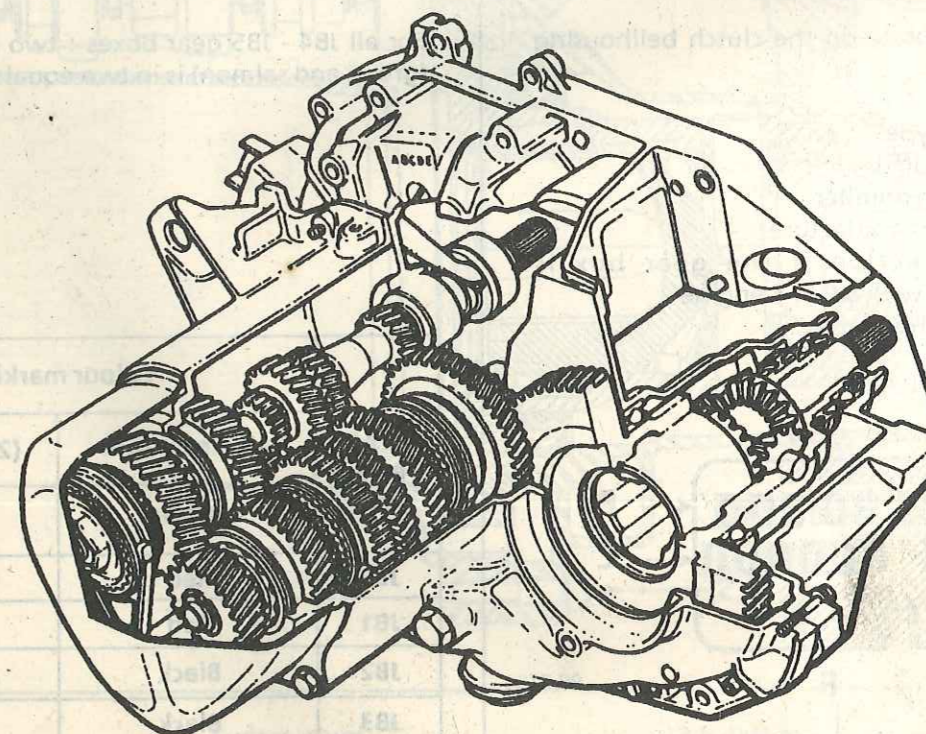
	Pages
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JB0
JB2
JB4



JB1
JB3
JB5

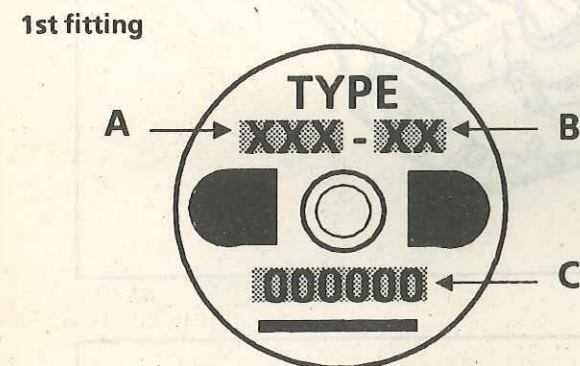
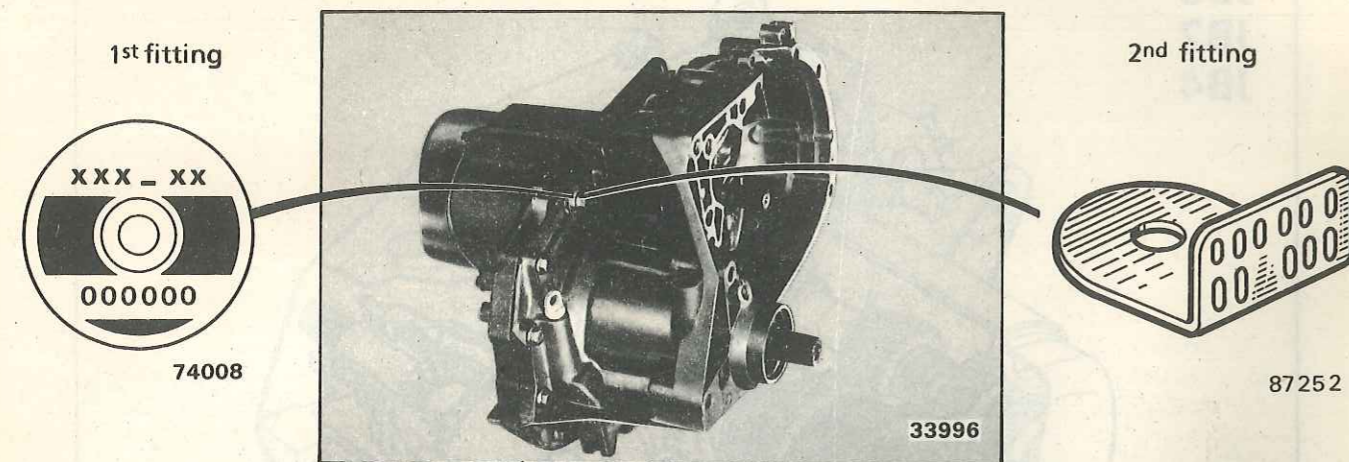


MANUAL GEAR BOX Identification

21

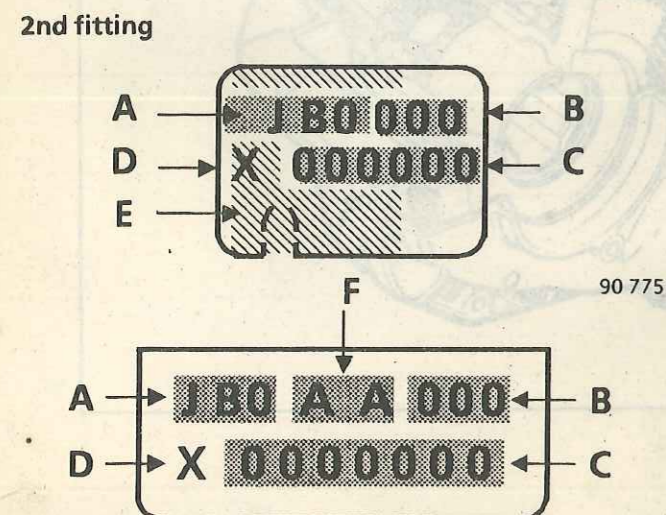
The JB type gear box is fitted to the following vehicles :

L42 - B37 - C37 - S37 - B40 - C40 - F40 - S40 - B48 - K48 - L48 - S48 - B53 - C53 - D53 - L53 - S53 - B57 - C57 - S57



An identification plate on the clutch bellhousing shows :

- A : Gear box type.
- B : Gear box suffix.
- C : Fabrication number.
- D : Factory of manufacture.
- E : Cut-out section if the gear box is assembled with a C or E engine.
- F : Homologation letter.



NOTE : certain 2nd fitting plates are coloured ; depending on the vehicle, this allows the transmission to be identified.

TWO COLOUR MARKING (JB0 - JB1 - JB3)

2/3 of the surface is painted with a colour for the gear box type, to match it with the transmission.

The remaining 1/3 of the surface is painted with a colour depending on the gear box suffix.

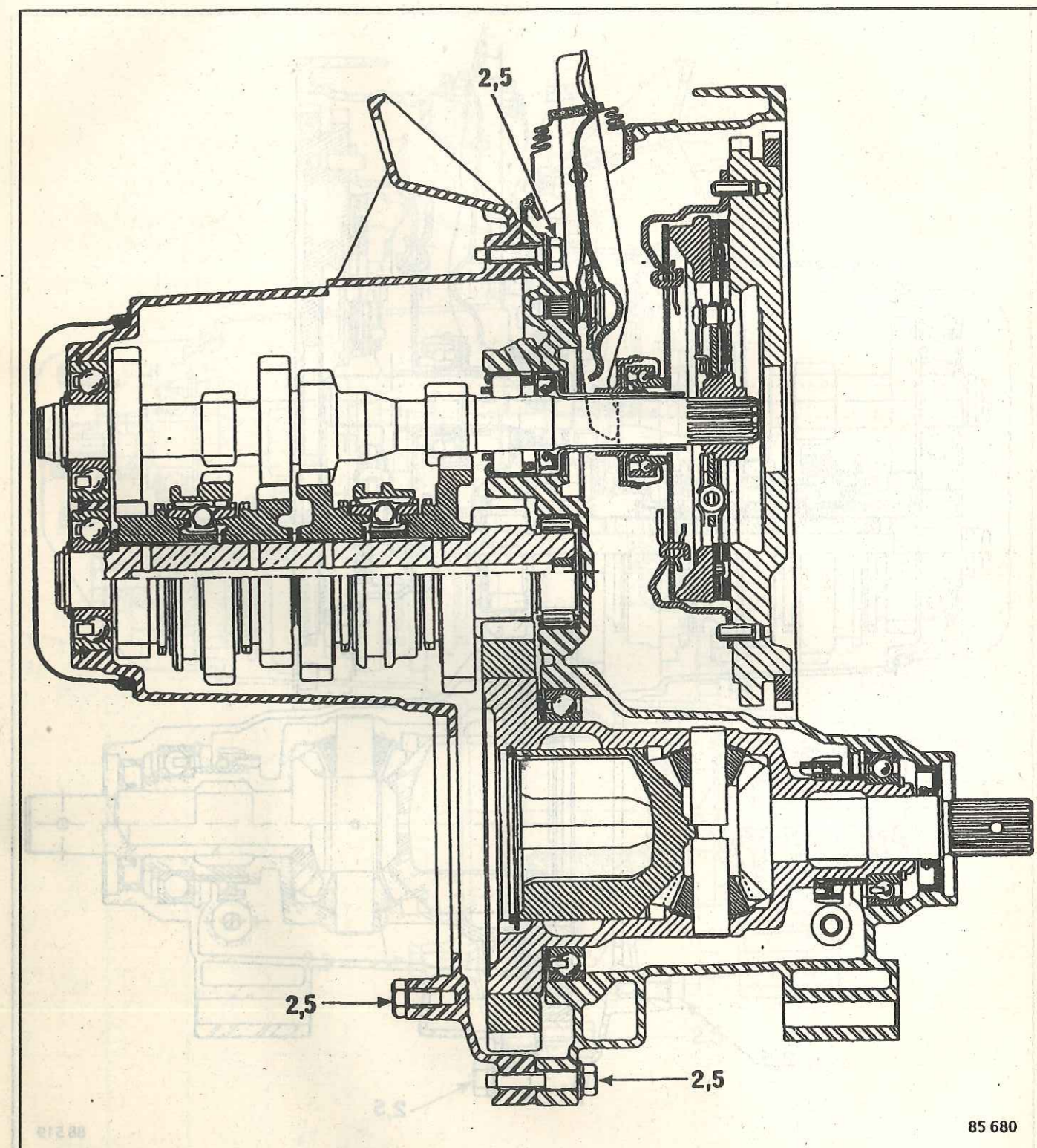
For all JB4 - JB5 gear boxes : two colour marking (green and salmon) is in two equal stripes.

GEAR BOX TYPE	Colour marking	
	Whole surface	(2/3 of surface)
	OLD	NEW
JB0	Red	Orange
JB1	Red	Red
JB2	Black	Aluminium
JB3	Black	Black

MANUAL GEAR BOX Section - tightening torques (in daN.m)

21

4 speed gear box - 1st fitting



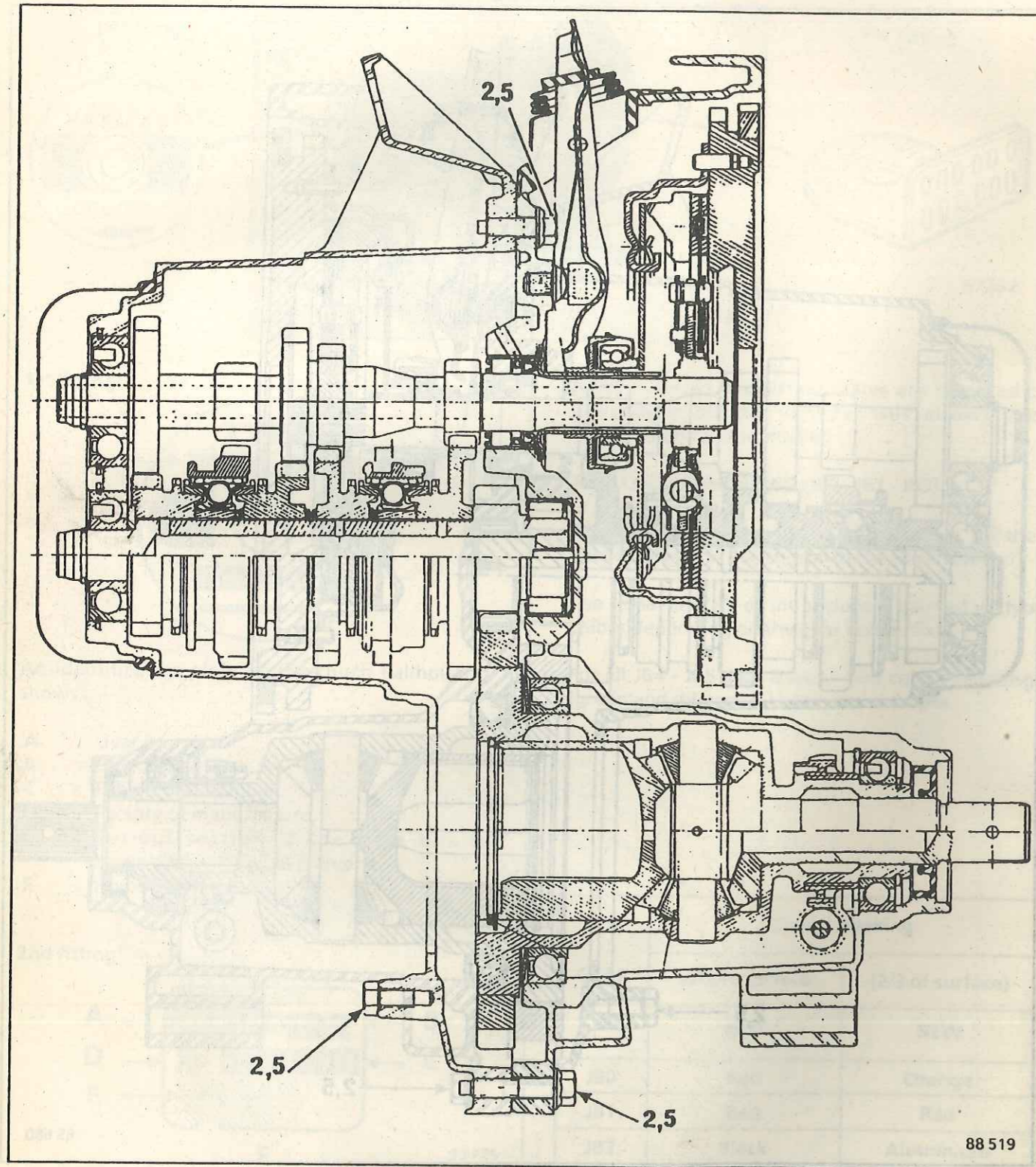
Switch plugs 2,5 daN.m
Rear housing bolts 2,5 daN.m
Threaded stop 1,9 daN.m

MANUAL GEAR BOX

Section - tightening torques (in daN.m)

21

4 speed gear box - 2nd fitting



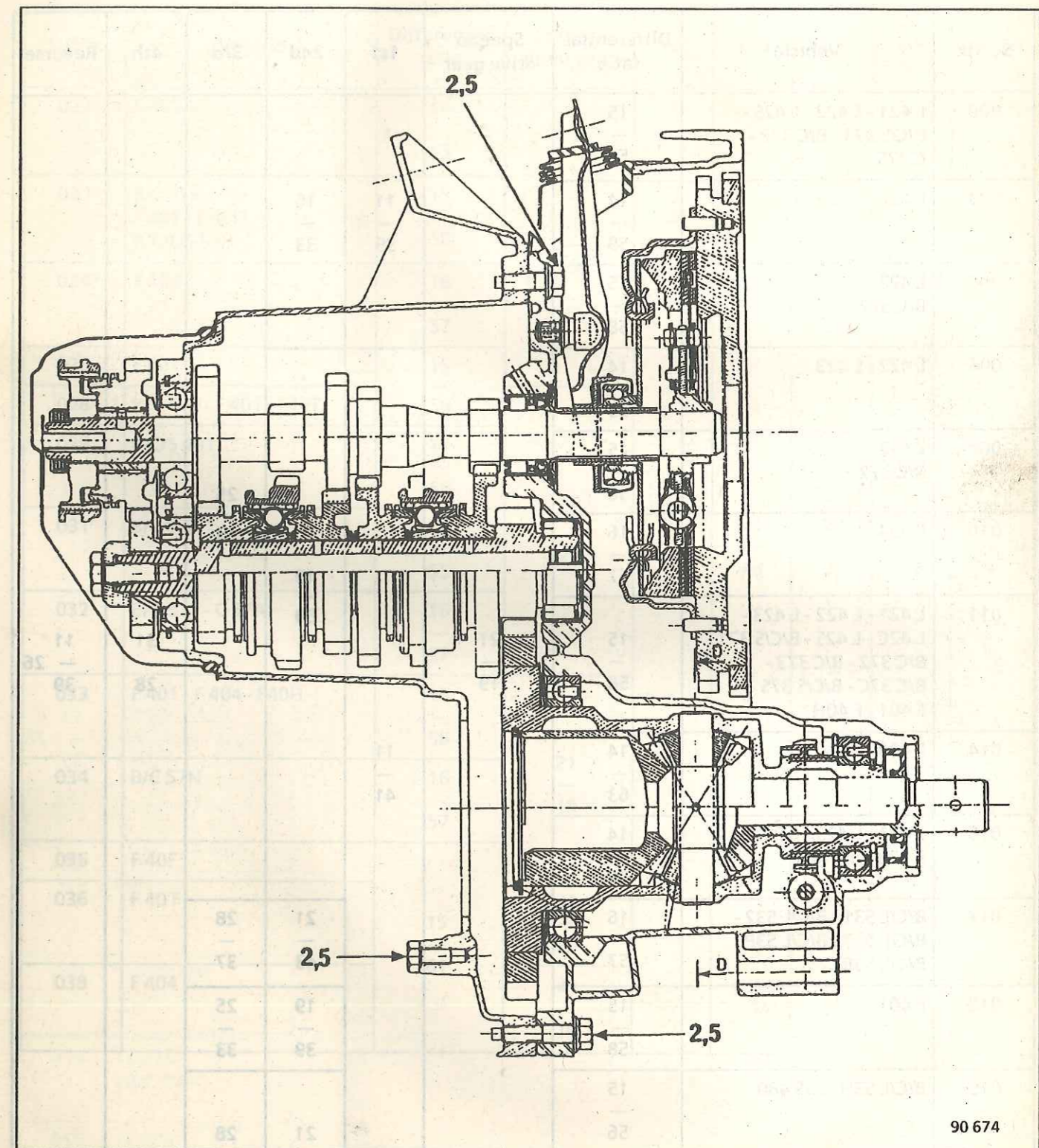
Switch plugs 2,5 daN.m
Rear housing bolts 2,5 daN.m
Threaded stop 1,9 daN.m

MANUAL GEAR BOX

Section - tightening torques (in daN.m)

21

5 speed gear box



Switch plugs 2,5 daN.m
Rear housing bolts 2,5 daN.m
5th gear resistance point 1,9 daN.m

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MANUAL GEAR BOX Ratios

21

JBO

Suffix	Vehicle	Differential ratio	Speedo drive gear	1st	2nd	3rd	4th	Reverse		
000	L 421 - L 422 - L 42S - B/C/S 371 - B/C 372 - C 37S	15 — 58	21 — 19	11 — 39	16 — 33	25 — 33	31 — 28	11 — 26 39		
003	L 422	14 — 59								
004	L 422 - B/C 372	15 — 58								
006	L 422 - L 423	14 — 59								
008	L 422 - B/C 372	15 — 58								
010	F 404	16 — 57		11 — 41	19 — 39				21 — 43	28 — 37
011	L 421 - L 422 - L 423 - L 42C - L 42S - B/C/S 371 - B/C 372 - B/C 373 - B/C 37C - B/C/S 37S - F 401 - F 40H	15 — 58								
014	F 400	14 — 63								
016	L 422 - L 423 - B 372 - B 373 - B/C 401	14 — 59								
017	B/C/L 531 - B/C/L 532 - B/C/L 537 - B/C/L 53P - B/C/L 53R	16 — 57								
018	F 401	15 — 58								
019	B/C/L 53H - K/S 480	15 — 56								
021	B 372 - B 401	14 — 59								

MANUAL GEAR BOX Ratios

21

JBO

Suffix	Vehicle	Differential ratio	Speedo drive gear	1st	2nd	3rd	4th	Reverse
022	F 400	14 — 63	21 — 19	11 — 41	21 — 43	28 — 37	31 — 28	11 — 26 39
023	B/C 37S F 401 - F 40H B/C/L/S 530	15 — 58						
024	F 404	16 — 57						
025	F 401	15 — 58						
028	B/C 400 - F 401 - F 40T	17 — 56	21 — 20					
029	B/C/S 401	16 — 55						
031	B/C/S 571	16 — 57						
032	B/C 572 - C 57A	15 — 58						
033	F 401 - F 404 - F 40H	16 — 57	21 — 19					
034	B/C 57N	15 — 61						
035	F 40F	21 — 20						
036	F 40 F	21 — 19						
038	F 404							

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MANUAL GEAR BOX Ratios

21

JB2

Suffix	Vehicle	Differential ratio	Speedo drive gear	1st	2nd	3rd	4th	Reverse
000	K/L/S 481 K/L 482 K/L 48M	17 — 56	21 — 19	11 — 41	19 — 39	25 — 33	31 — 28	11 — 39 26
002	B/K/L/S 481 B/K/L 482 K/L 48M				21 — 43	28 — 37		

JB4

Suffix	Vehicle	Differential ratio	Speedo drive gear	1st	2nd	3rd	4th	Reverse
000	L421 - L 42S B/C 371 - B/C 37S F 401 - F40H - B/C/L/S 530	15 — 58	21 — 19					
001	B/C/S 400 B/C 401 B/C 40F							
002	B/C/S 401 - B/C 40H	17 — 56	21 — 20					
003	B/C 40F	16 — 57		11 — 41	19 — 39	25 — 33	31 — 28	11 — 39 26
004	B/C/S 40F B/C/S 571	16 — 55						
006	B/C/L 531 B/C/L 53P	16 — 57	21 — 19					
008	B/C 572		21 — 20					

MANUAL GEAR BOX Ratios

21

JB1

Suffix	Vehicle	Differential ratio	Speedo drive gear	1st	2nd	3rd	4th	5th	Reverse
001	L 421 - L 422 L 423 - B/C 371 B/C 372 - B/C 373	14 — 59						33 — 25	
004	L 421 - L 424 B/C/S 374	15 — 58						37 — 27	
005	L 422 - L 423 B/C 372 - B 373	14 — 59		11 — 39	16 — 33		31 — 28	33 — 25	
006	L 424 B/C 374	15 — 58						37 — 27	
007	L 424 B/C 374	14 — 59						33 — 25	
008	B/C 373		ELEC SPEEDO						
009	L 421 - L 422 L 423 - L 424 L 42A - L 42C L 42R - L 42S B/C 371 - B/C 372 B/C/S 373 - B/C 37A - B/C 37C B 37R - B/S 37S	15 — 61	21 — 19			25 — 33			11 — 39 26
011	L 424 - B/C/S 374 F 401 - F 402 F 407 - F 40H	15 — 58							
012	B 373	15 — 61	ELEC SPEEDO	11 — 41	19 — 39		30 — 29	34 — 27	
013	B/C/S 404	17 — 56	21 — 20						
014	L 424 B/C 374	15 — 58							
015	L 424 B 374	16 — 57	21 — 19						
016	L 422 - L 423 B/C 372 - B 373 B 374	17 — 56							

MANUAL GEAR BOX Ratios

21

JB1

Suffix	Vehicle	Differential ratio	Speedo drive gear	1st	2nd	3rd	4th	5th	Reverse		
018	L 423 B/C 373 B/C 402	14 — 63	21 — 19	11 — 41	19 — 39	25 — 33	30 — 29	34 — 27	11 — 39 26		
019	L 424 B/C/S 374 F 404	15 — 58									
020	B/C 404	16 — 57	11 — 39								
021	F 404	15									
022	B 402	61	21 — 43		28 — 37	39 — 31					
023	F 401 - F 402 F 407 - F 40H F 40M - B/C/L 532	15 — 58									
025	L 423 - L 424 L 42A - L 42C L 42S - B/C 373 B/C 37A - B 37C F 401 B/C/L/S 537 B/C/L/S 530 B/C/L 53A L/B/C 53R	15 — 61					19 — 19				
026	F 402	15 — 58						19 — 39		25 — 33	34 — 27
027	F 402 B/L 53H										
028	B/C/S 404	17 — 56					21 — 20	21 — 43		28 — 37	39 — 31
029	B 402 B/C 48D - K/S 480 B/C/L 53G	15 — 61	21 — 19								
030	F 404 L 424 B/C/S 374	15 — 58									
031	B/C/S 404	16 — 57	21 — 20	21 — 43	28 — 37	39 — 31					
032	F 404	15 — 61	21 — 19								

MANUAL GEAR BOX Ratios

21

JB1

Suffix	Vehicle	Differential ratio	Speedo drive gear	1st	2nd	3rd	4th	5th	Reverse
033	L 423 B 373	14 — 63	21 — 19	11 — 41	21 — 43	28 — 37	30 — 29	39 — 31	11 — 39 26
034	B/C/L 531 B/C/L 53P	16 — 57							
035	B/C/S 401 B/C 403 B/C/S 407 - B 40H	16 — 55							
036	B/C 400 - F 401 F 40T	15 — 61							
037	C 402 B/C/S 40F	17 — 56	21 — 20						
038	B/C 402 - B/C 40F B/C/S 571	16 — 57							
039	B/C 570	14 — 59							
043	B/C/S 572 B/C 573 - B/C 57A B/C 57B - B/C 57J B/C 57L - B/C 57T	16 — 57							
044	F 401 - F 40H	15 — 58	21 — 19						
045	B/C 57N B/C 57P	14 — 59		11 — 34	22 — 41			41 — 31	
046	B/C/S 572 B/C/S 57A B/C/S 57R		21 — 20						
047	F 40F		21 — 19						
048	F 40A - F 40U F 40V - F 40Y	14 — 63						39 — 31	
049	F 40A		21 — 20	11 — 41	21 — 43				
050	F 40F								
051	F 407	14 — 59	21 — 19						

MANUAL GEAR BOX Ratios

21

JB3

Suffix	Vehicle	Differential ratio	Speedo drive gear	1st	2nd	3rd	4th	5th	Reverse
001	B/C 37F - B/C 376 L 426 - L 42F	16 — 57	21 — 19	11 — 41	19 — 39			34 — 27	
002	B/C 375 L 425	15 — 61	ELEC SPEEDO	11 — 34	19 — 35			33 — 25	
003	B/C 376	16 — 57		11 — 41	19 — 39			34 — 27	
009	C 405	15 — 56		11 — 34	19 — 35			33 — 25	
010	L 426 - L 42F L 42L - L 42N B/C 376 - B/C 37F B/C 37G - B/C 37L B 37M - C 37N K/L/S 481 K/L/S 482 K/L 48F	16 — 57		11 — 41	19 — 39			34 — 27	
011	B/C 375 L 425	15 — 61	ELEC SPEEDO	11 — 34	19 — 35	25 — 33	30 — 29	33 — 25	11 — 39 26
012	B 376	16 — 57		11 — 41	19 — 39			34 — 27	
013	B 376 L 426	15 — 61	21 — 19						
014	C 405	15 — 56	ELEC SPEEDO						
017	B 376 L 481 - L 482 K/L 48E - K/L 48J K/L 48N	15 — 61	21 — 19	11 — 34	19 — 35			33 — 25	
019	C 409	15 — 58	21 — 20						
021	L 42E B/C 37E	14 — 59	21 — 19						
022	K/L 482	15 — 58		11 — 41	19 — 39			34 — 27	

MANUAL GEAR BOX Ratios

21

JB3

Suffix	Vehicle	Differential ratio	Speedo drive gear	1st	2nd	3rd	4th	5th	Reverse
023	B/C 408		21 — 41	11 — 39				34 — 27	
024	B/C 40G B/C 40K		20 — 34	11 — 35				33 — 25	
026	C 376 - B/C 37D B/C 37F - B 37H B/C 37L - C 37N L 42D - L 42L L 42F - L 42N K/L/S 481 K/L/S 482 K/L 48F - K/L 48M	16 — 57		11 — 41	19 — 39	25 — 33		34 — 27	
027	B/K/L/S 481 B/K/L/S 482 B/K/L 484 B/K/L 48E - K 48F B/K/L 48J L/B 48L - K/L 48M K/C 48N B/C/L 533 - L 53B B/C/D 53C B/C/L 53M	15 — 61		11 — 34	22 — 41			41 — 31	
028	L 42D - L 42F L 42N - C 37D B/C 37F - B 37H C 37N B/K/L/S 481 B/K/L/S 482 K/L 48E B/K/L 48F B/K/L/S 48H K/L 48M B/C/L 533 B/C/L/S 534 B/C/L 53B B/C 53E B/C/L 53C B/C/L/S 53J		21 — 19			28 — 37	30 — 29		11 — 39 26
031	B/K 482 B 533 B/L 536	15 — 58							
032	C 405	15 — 56	ELEC SPEEDO	11 — 34	19 — 35	25 — 33		41 — 31	

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MANUAL GEAR BOX Ratios

21

JB3

Suffix	Vehicle	Differential ratio	Speedo drive gear	1st	2nd	3rd	4th	5th	Reverse
033	C 409	15 — 58	21 — 20	11 — 34	22 — 41	28 — 37		41 — 31	
034	B/C 408	16 — 57		11 — 41	21 — 43			39 — 31	
035	B/C 40G B/C 40K				22 — 41				
036	L 425 B/C 375	15 — 61	ELEC SPEEDO	11 — 34	19 — 35	25 — 33		41 — 31	
037	L 42E B/C 37E B/C/D/L 53C B/C/L 53F	14 — 59	21 — 19			22 — 41		28 — 37	
038	B 376 L 426 K/L 48U	15 — 61		11 — 41	21 — 43				
041	B/C/S 576 B/C/S 57L	17 — 56	21 — 20				30 — 29	39 — 31	11 — 39 26
044	B/C/L 539 B/C/D/L 53D	15 — 61	21 — 19	11 — 34	19 — 35	25 — 33			
045	B/C 574	16 — 55	21 — 20	11 — 41	21 — 43	28 — 37		41 — 31	
046	B/C 574 - B/C 57C B/C 57U	15 — 58		11 — 34	22 — 41				
047	B/L 57B	16 — 55	21 — 19	11 — 41	21 — 43	25 — 33		39 — 31	
048	C 575 - C 57D	14 — 59		11 — 34	19 — 35				
050	F 40N - F 40P	15 — 58		11 — 41	21 — 43			28 — 37	
051	B/C/L 539 B/C/D/L 53D	15 — 61		11 — 34	19 — 35	25 — 33			

MANUAL GEAR BOX Ratios

21

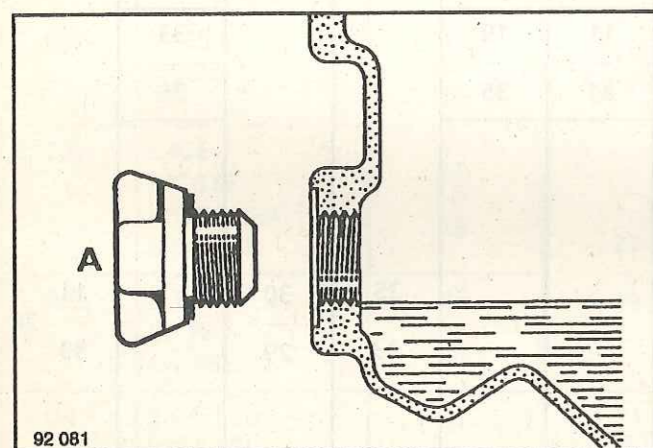
JB5

Suffix	Vehicle	Differential ratio	Speedo drive gear	1st	2nd	3rd	4th	5th	Reverse			
000	L 421 - L 422 B/C/L 42S B/C 371 - S 372 B/C/S 375 B/L/S 530	15 — 61	21 — 19	11 — 41	19 — 39	25 — 33	30 — 29	34 — 27	11 — 39 26			
001	B/C/S 401 B/C 403 - B/C 407 B/C 40H - B/C 40J B/C 40M	16 — 55	21 — 20					11 — 41		19 — 39	34 — 27	
002	B/C 403	15 — 61		11 — 34	19 — 35							33 — 25
003	B/C 402 - B/C 407 B/C/S 40F	17 — 56		11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
004	B/C 400	15 — 61	11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
005	B/C 402 - B/C 40F B/C/S 571	16 — 57										
006	B/C/L 531 C 53P	15 — 58		11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
007	F 401 - F 40H	15 — 58	11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
008	B/C 40F	15 — 58										
009	L 422 - L 423 B/S 372 - B 373	15 — 61		11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
010	B/C 572	16 — 57	11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
015	B/C/S 572	14 — 59										
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27
				11 — 41	19 — 39	25 — 33	30 — 29		34 — 27			
			11 — 41					19 — 39		25 — 33	30 — 29	34 — 27

CAPACITY (in litres)	4 speed gear box		5 speed gear box	
Plug without dipstick : <i>normal level</i>	JB0 JB2	3,25	JB1 JB3	3,40
Plug with dipstick : <i>lower level</i>	JB4	2,75	JB5	2,90
Plug without dipstick : From September 89	JB4	2,75	JB5	2,90

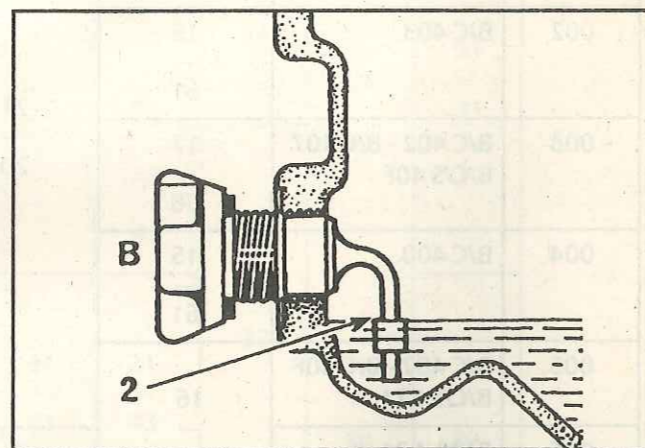
CHECKING THE LEVEL

Plug (A) without dipstick



Fill to the level of the opening

Plug (B) with dipstick



Wipe the dipstick section.

Replace the plug without screwing it in, the dipstick section pointing down.

Remove the plug, the level should be at the boss (2).

1st draining	D r a i n i n g frequency	Oil quality
No draining	No draining	TRANSELF TRX 80W*

(*) If there are local supply difficulties, this oil may be obtained from the parts department under part number 77 01 422 306 (5 litre can only).

SPECIAL PRECAUTIONS

TRANSELF TRX 80 W oil is a high technology product which requires certain precautions to be taken to avoid water ingress, which pollutes the oil even in small quantities and may cause the gear box to jam.

When topping up the gear box oil level, do not add another type of oil to TRX oil.

STORAGE AND USE

All opened cans must be carefully sealed, in order to avoid water or foreign bodies entering the oil.

In particular :

- 1) Cans must be stored in a sheltered position, (away from rain, snow or sharp projections) in a horizontal position.
- 2) If oil is taken using a syringe, the can must be resealed after use.
- 3) Do not store cans next to washing areas.
- 4) Do not transfer oil to larger containers.

HIGH PRESSURE WASHING

1) On the vehicle :

Plug the gear box breather.

2) Gear box removed :

All openings must be correctly plugged to avoid water entering the gear box.

The following gear boxes :

JB0 } 4 forward gears
JB2 }
JB4 } 1 reverse gear

JB1 } 5 forward gears
JB3 }
JB5 } 1 reverse gear

are fitted with BORG-WARNER synchronisers.

Gear boxes JB4 and JB5 are different from the JB0 - JB1 - JB2 - JB3 gear boxes in the following main points :

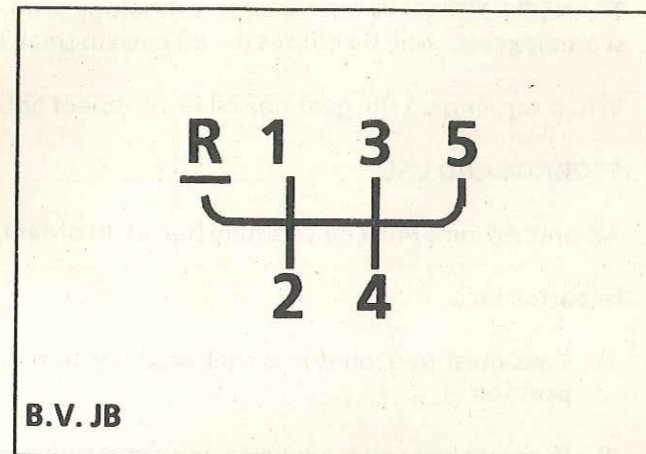
- dimensions of clutch bellhousing and mechanism housing,
- light alloy differential housing and reduced dimension crown wheel,
- primary shaft and idle gears have different tooth sizes,
- sunwheel has a lighter stem,
- Ø of bearings on primary and secondary lines is reduced,
- tube guide assembly.

The parts are not interchangeable.

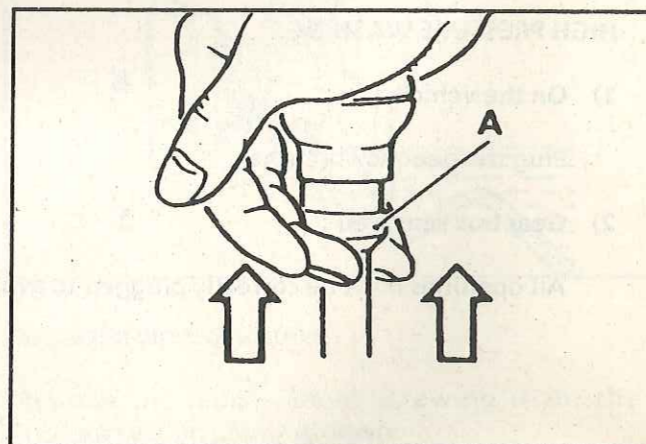
Special notes for JB2 and JB3 gear boxes

The differential is mounted on taper roller bearings instead of ball bearings.

GEAR LAYOUT



To select reverse gear, lift ring (A) and move the lever.



MATCHED PARTS

Synchroniser and sliding gear hubs.

in all cases it is recommended to mark the sliding gears in relation to the hubs and the hubs in relation to the shafts.

HOUSINGS

The guide dowel has a bearing and lip seal and may only be removed after the clutch bellhousing has been removed.

The ball bearing for the stem sunwheel is mounted and fixed on the differential housing and in the clutch bellhousing and differential housing.

The secondary shaft bearing on the final drive gear side is inserted into the housing but may be removed.

DIFFERENTIAL

The differential ratio cannot be altered.

The left hand driveshaft sunwheel is a sunwheel spider.

All types : Ball bearing mounting.

JB2 and JB3 : taper roller bearing mounting.

SHAFTS

The lip seal and the guide tube rollers are in direct contact with the primary shaft.

Incorrect seating requires the primary shaft to be replaced.

The hubs are mounted free on the secondary shaft and are held during movement by circlips.

The reverse gear is sold fitted to the shaft.

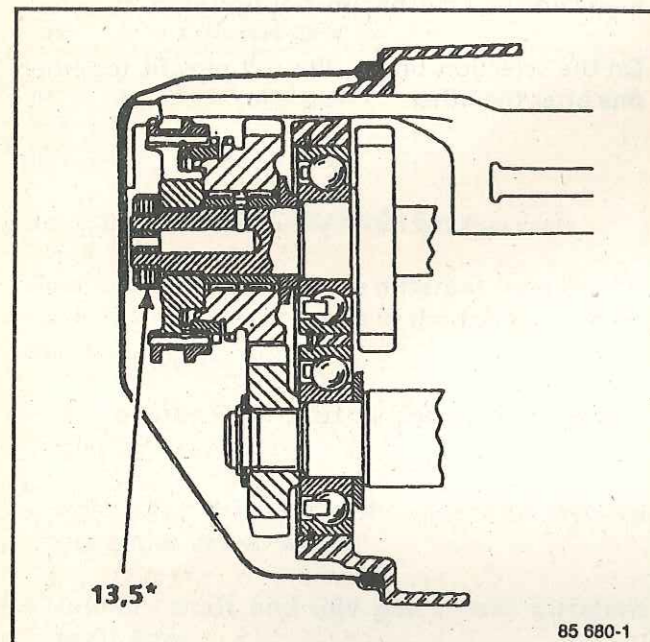
INTERNAL CONTROLS

The 5th gear fork has two plastic pads which are lubricated by a mechanism housing pipe.

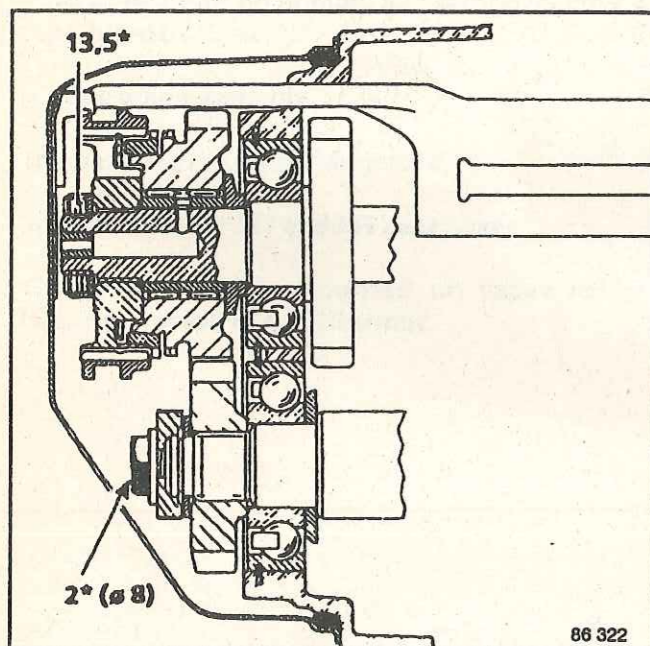
On the selection finger, the roll pins fit together one after the other.

Fixed 5th gear mounting:

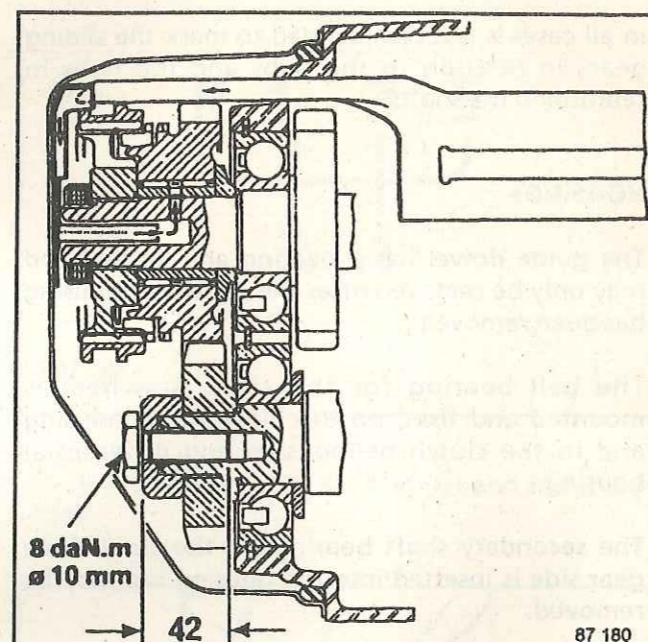
1st fitting



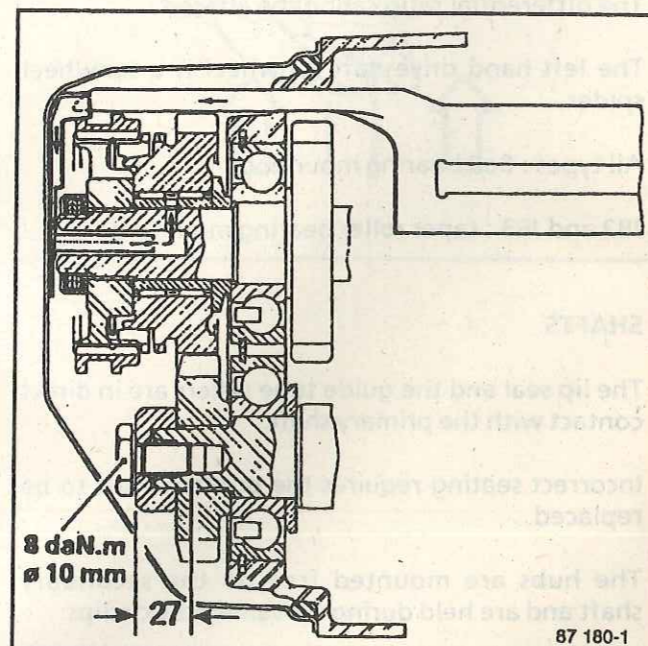
2nd fitting



3rd fitting



4th fitting



Special notes:

Reduction in thread depth at the end of the secondary shaft receiving the fixed 5th gear mounting bolt.

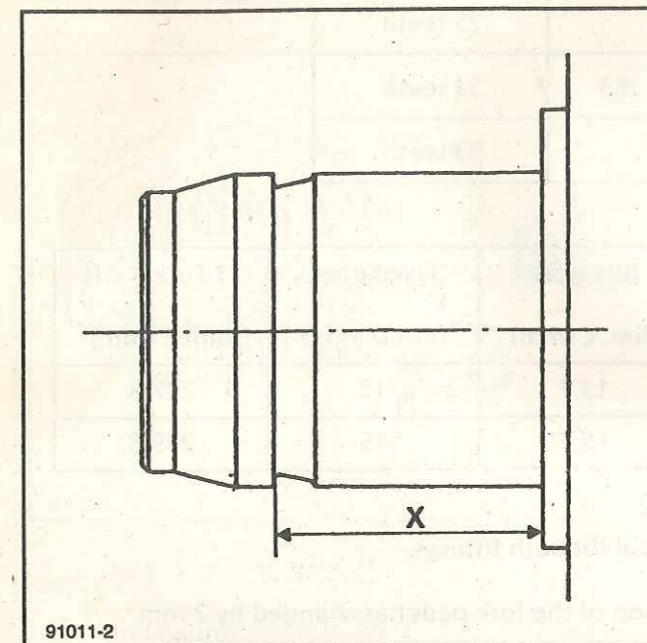
A 27 mm long bolt must be used.

* Bond with "Loctite Frenbloc"

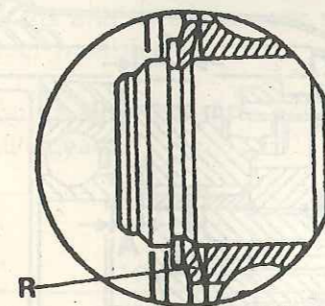
PRIMARY AND SECONDARY SHAFTS ON JB0 AND JB2 GEAR BOXES.

Change in circlip groove on primary and secondary shafts, and the rubber washer fitted on the shafts.

1st fitting

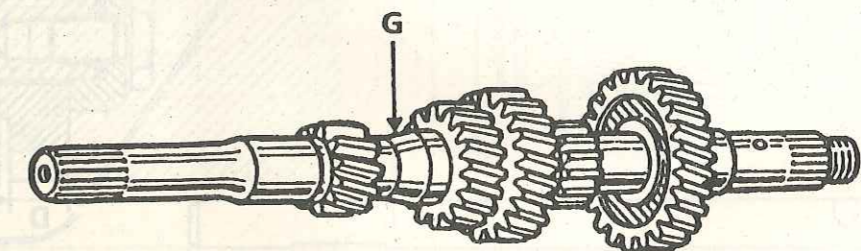


Assembly using bellville washer "R" Ø 35,6 mm thickness 2,6 mm.



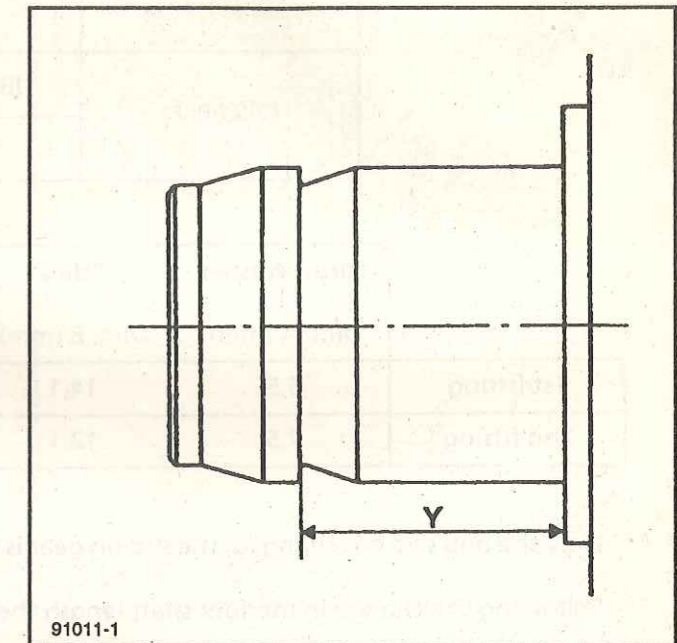
The correct bellville washer must be fitted on the appropriate shaft.

To identify the new shafts ; only the primary shaft is marked : Groove "G" on the 1st/2nd shaft section.



On JB2 gear boxes, this modification is accompanied by the fitting of sealed bearings (Ø 62 mm).

2nd fitting



Special note:

New circlip groove profile repositioned by 0,2 mm.

$$Y = X - 0,2$$

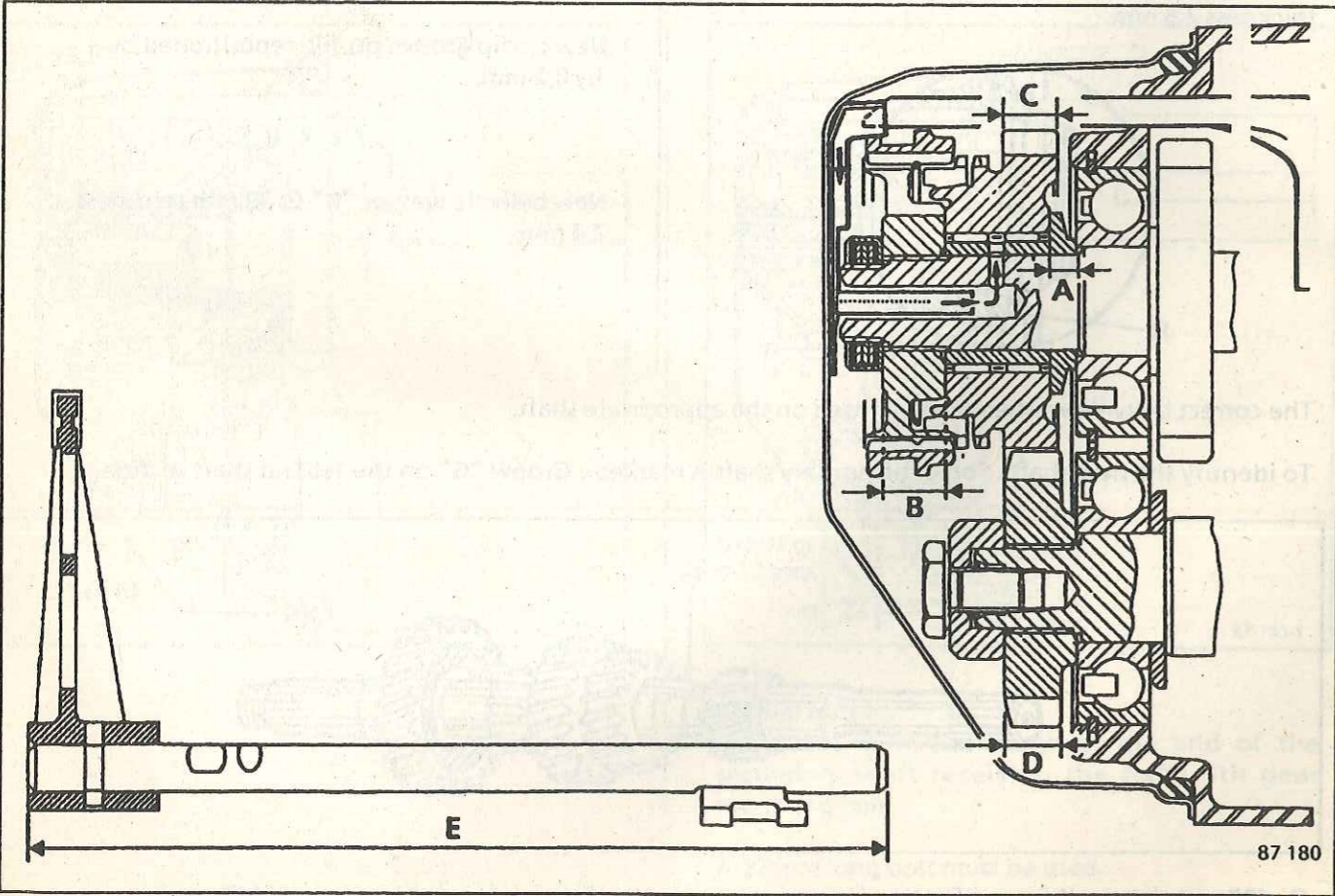
New bellville washer "R" Ø 33 mm thickness 2,4 mm.

Increase in the size of 5th gear teeth for gear boxes of type JB1/JB3.

Fixed gears	JB1 and JB3	27 teeth
	JB3	25 teeth
Idle gears	JB1 and JB3	34 teeth
	JB3	33 teeth

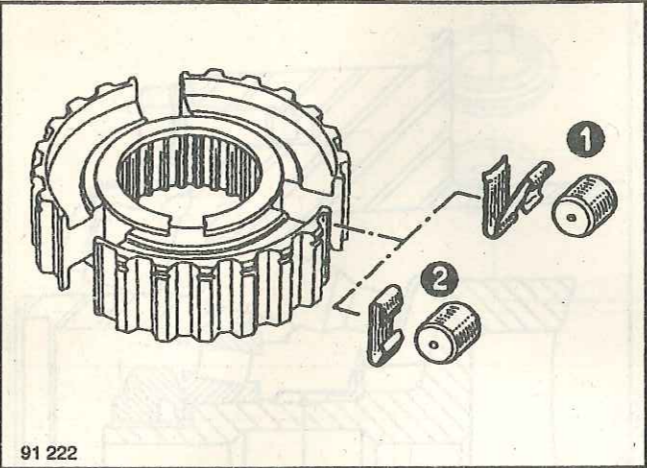
	Thrust washer dim. A (mm)	*Hub Dim. B (mm)	Idle gear Dim. C (mm)	Fixed gear Dim.D (mm)	** Fork shaft Dim.E (mm)
1st fitting	5,5	14,1	13,7	13	237,3
2nd fitting	7,5	12,1	15,7	15	239,3

- * Only the hub size has changed, the sliding gear is identical for both fittings.
- ** Following the change in the fork shaft length the position of the fork pads has changed by 2 mm.



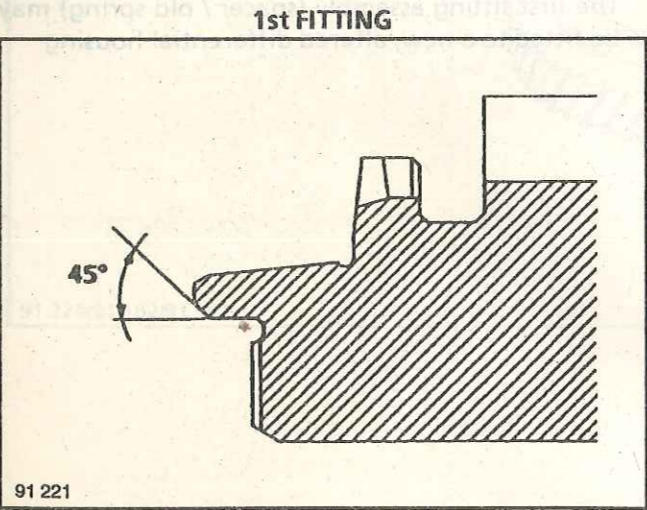
Change in type of 3rd/4th synchroniser roller spring(BORG-WARNER)

The "Z" springs used previously have now been replaced by "heart" springs.

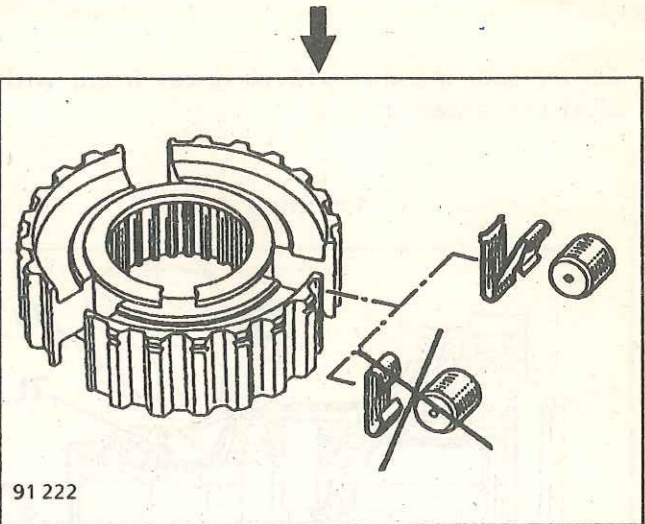


In order to fit the new "heart" springs, the opening chamfer for the groove and tongue joint under the 3rd and 4th idle gear synchronising cone has been modified.

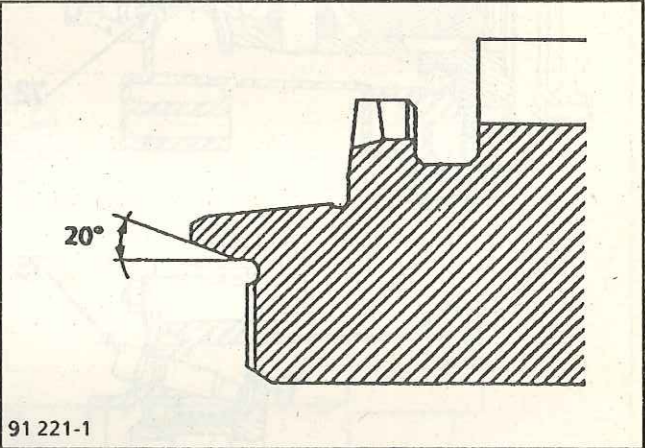
"Heart" springs may therefore only be used with modified idle gears.



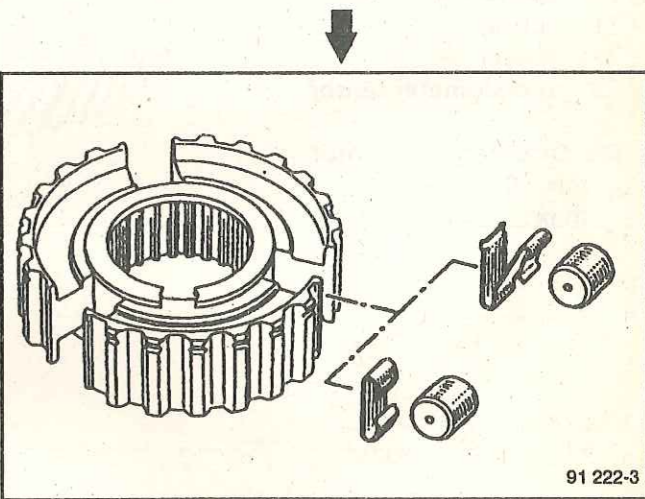
The opening chamfer (E) at 45° for the groove and tongue joint under the synchronising cone only accepts the "Z" spring.



2nd FITTING



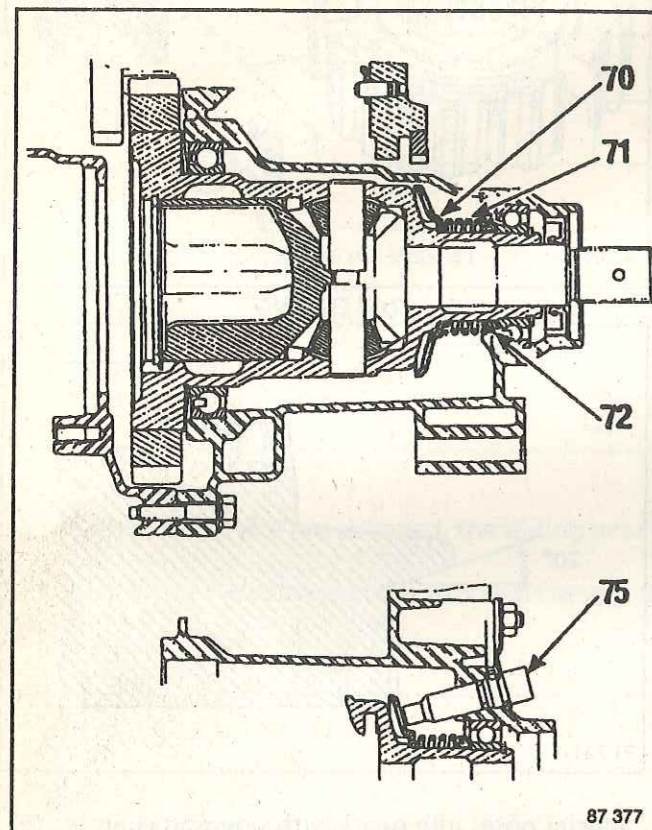
Special note: idle gears with opening chamfer (E) at 20° will take both "heart" and "Z" springs. however, do not mix spring types on the same synchronising assembly.



Ensure "heart" springs are fitted correctly: flat section fitted on synchroniser hub side.

Sensor gear mounting (Gear boxes fitted with electronic speedometer) :

1st fitting

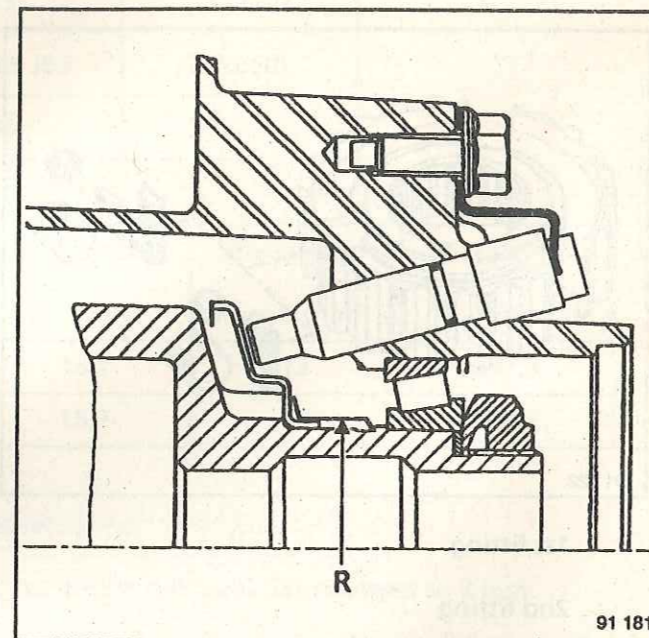


The speedometer sensor air gap cannot be adjusted.

- 70 speedometer target
- 71 spring
- 72 spacer
- 75 speedometer sensor

Distance: target ↔ sensor
min : 0,5 mm
max : 2,1 mm

2nd fitting



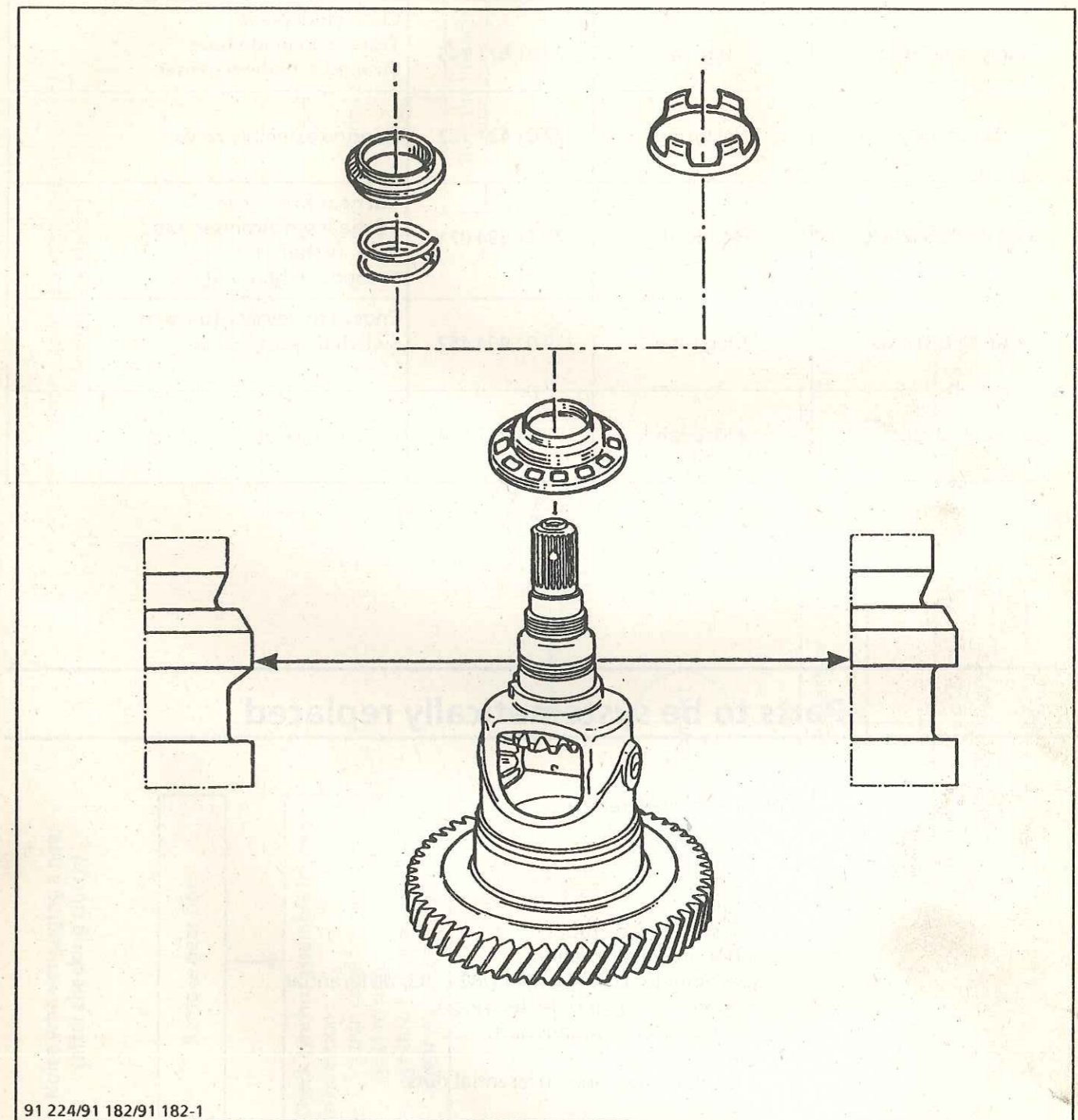
The spacer (72) and the spring (71) are replaced by a single spring (R) of a different type.

In order to fit the new spring, the profile of the spring mounting groove on the differential housing has been altered.

Consequently, the new spring cannot be fitted on an old differential housing (groove not altered). The first fitting assembly (spacer / old spring) may be fitted to a new, altered differential housing

1st fitting

2nd fitting



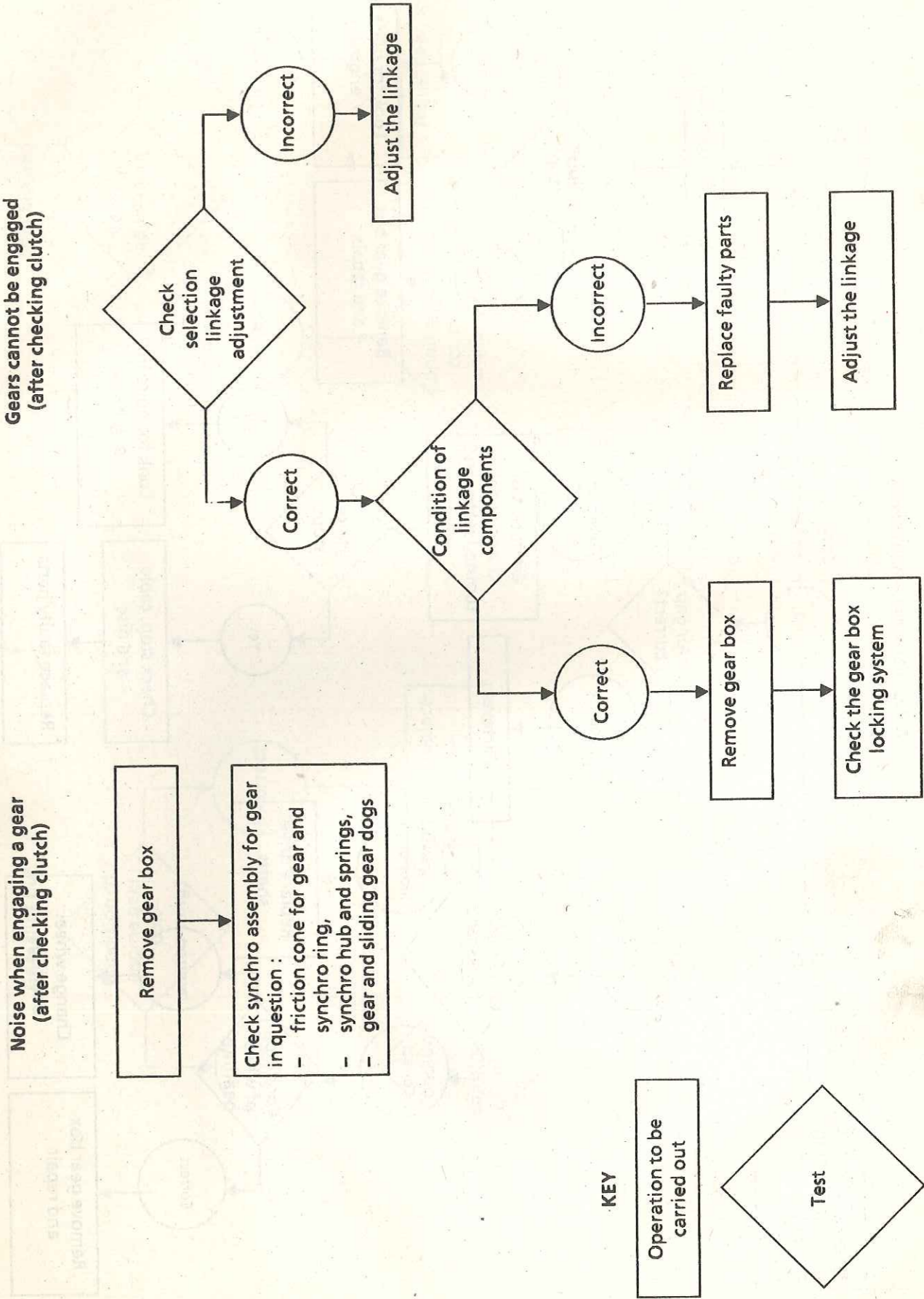
91 224/91 182/91 182-1

Type	Packing	Part number	Element
Molykote "BR2"	1kg tin	77 01 421 145	Clutch fork pivot. Thrust pad guide tube Straight sunwheel splines.
Loctite 518	24ml syringe	77 01 421 162	Housing assembly faces.
Loctite FRENBLOC	24cc bottle	77 01 394 071	5th gear fixed gear . 5th gear synchroniser hub . Primary shaft nut. Secondary shaft bolt.
CAF 4/60 THIXO	100g tube	77 01 404 452	Ends of driveshaft roll pins Switch threads
Ravitol plus	2 litre can	77 01 417 424	Cleaning parts

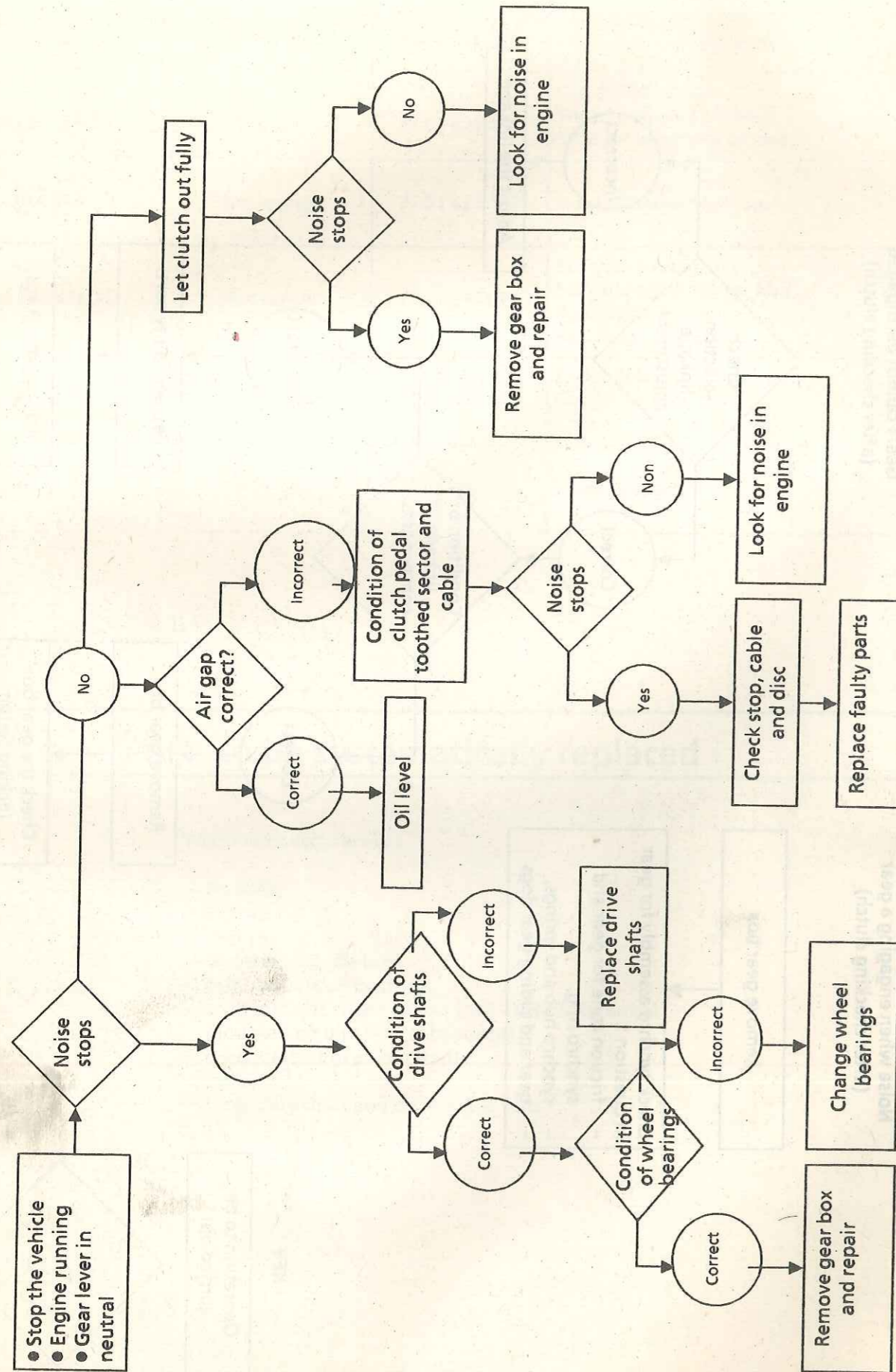
Parts to be systematically replaced

When removed, renew :

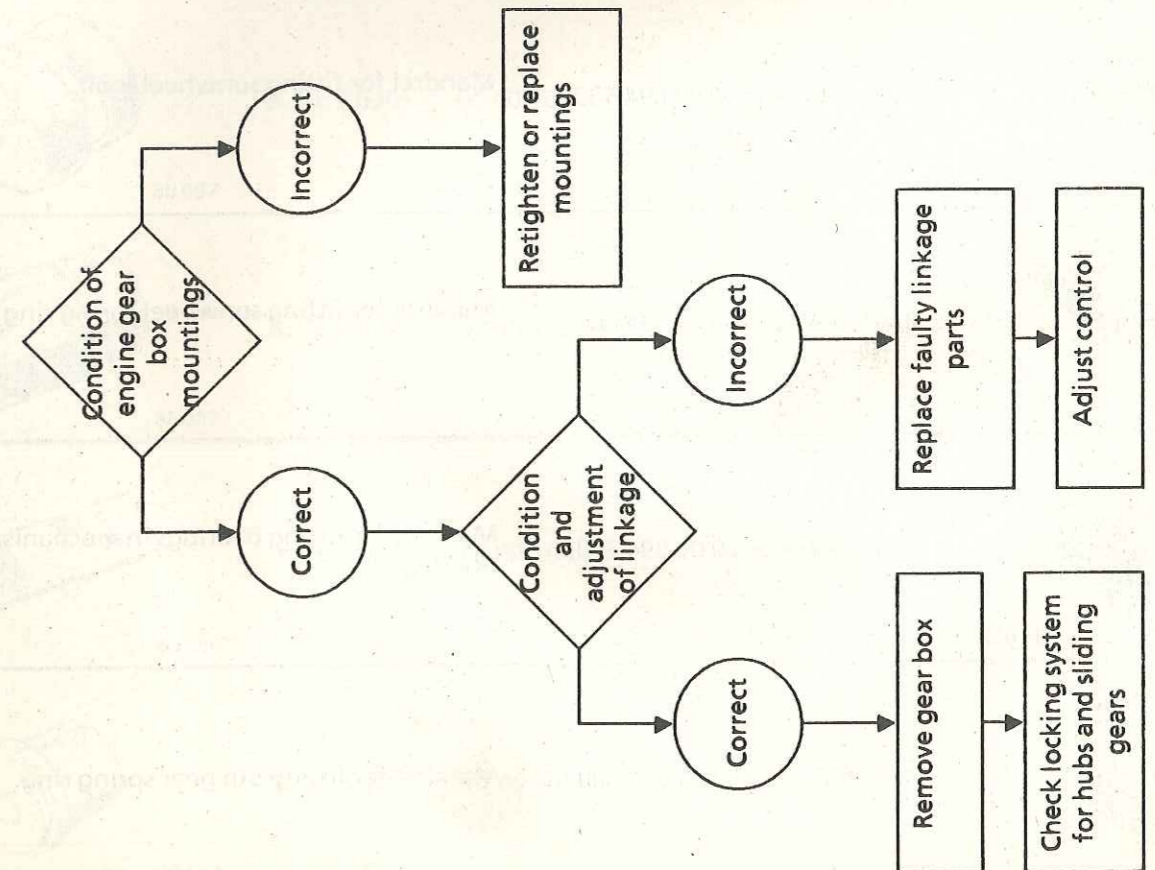
- lip seals,
- O rings,
- circlips,
- thrust pad guide tube,
- differential ball bearings,
- speedometer crown wheel (JB2 - JB3, differential mounted on taper roller bearings),
- speedometer gear and shaft,
- roll pins,
- secondary shaft and differential nuts.



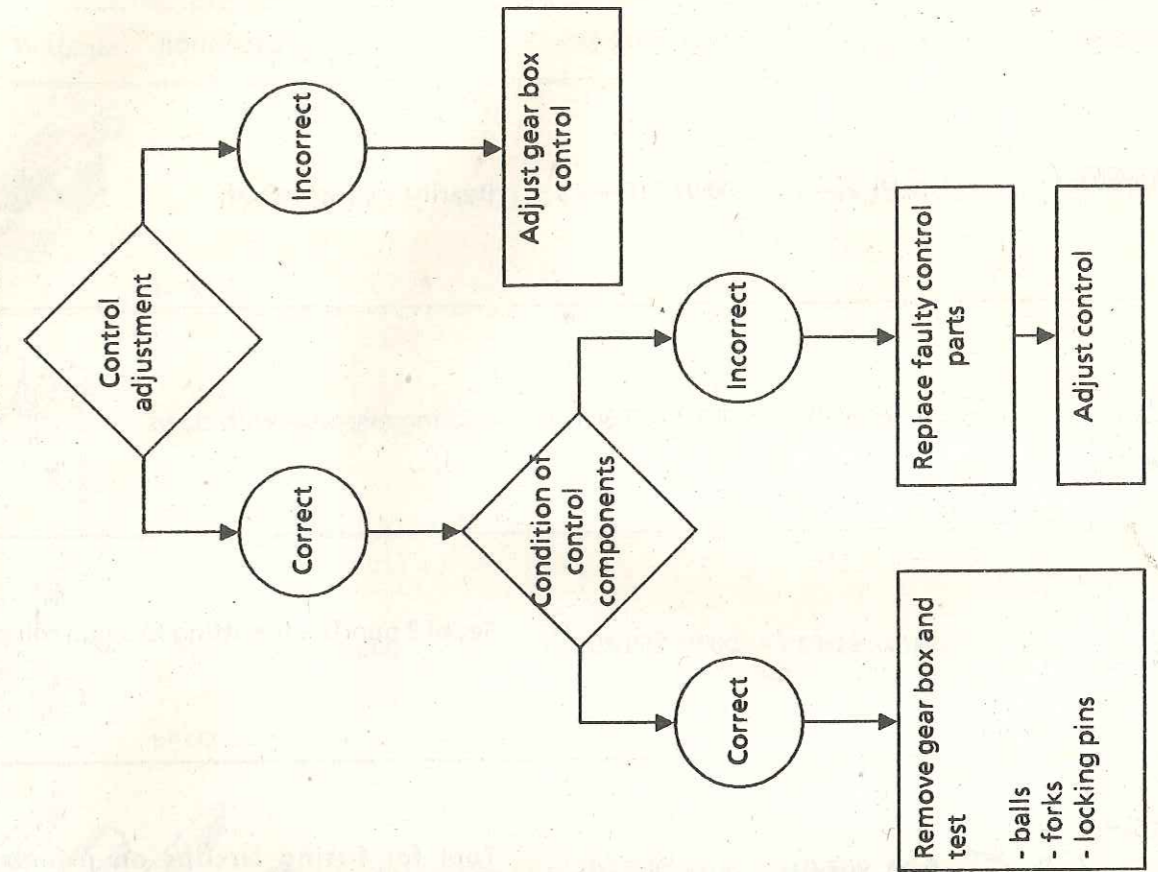
Abnormal noise when driving



Gear slips out


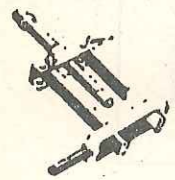

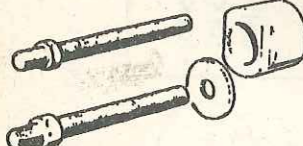
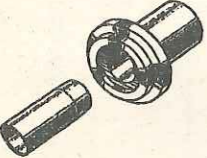
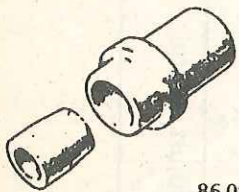
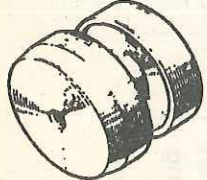
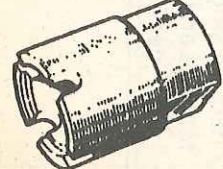


Gear blocked



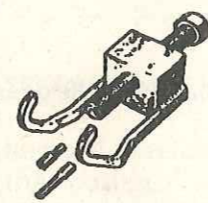
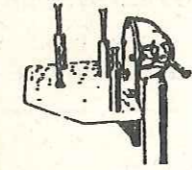
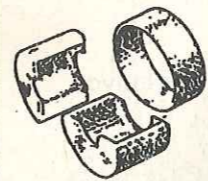
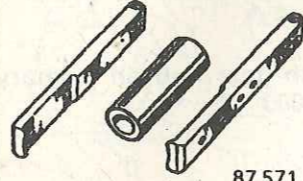
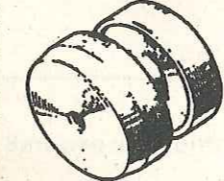
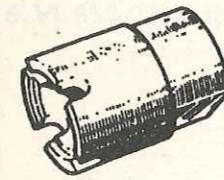
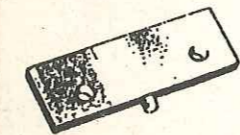

MANUAL GEAR BOX Special tooling

21

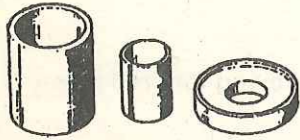

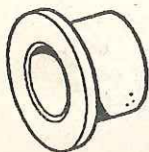
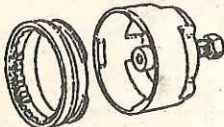

Diagram	Method reference	Part number	Description
 90 723	B. Vi. 22-01	00 01 216 401	Bearing extractor body
 90 722	B. Vi. 28-01	00 01 227 301	Bearing extractor with claws.
 77 743	B. Vi. 31-01	00 01 259 401	Set of 3 punches for fitting Ø 5 mm roll pins.
 84 519-1	B. Vi. 902-01	00 00 090 201	Tool for fitting circlips on primary and secondary shafts.
 86 095	B. Vi. 945	00 00 094 500	Mandrel for fitting sunwheel seal.
 86 096-1	B. Vi. 946	00 00 094 600	Mandrel for fitting sunwheel spring ring.
 86 097	B. Vi. 947	00 00 094 700	Mandrel for fitting bearings in mechanism housing
 86 062	B. Vi. 948	00 00 094 800	Mandrel for fitting 5th gear spring ring.

MANUAL GEAR BOX Special tooling

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Diagram	Method reference	Part number	Description
 86 098	B. Vi. 949	00 00 094 900	Tool for fitting and removing fork roll pins
 90 664	B. Vi. 950-02	00 00 095 002	Gear box support adaptable for Desvil stand
 87 213	B. Vi. 1 000	00 00 100 000	Tool for extracting fixed 5th gear on secondary shaft, use with B.Vi. 22-01.
 87 571	B. Vi. 1 007	00 00 100 700	Claws for B.Vi. 28-01.
 86 097	B. Vi. 1 030	00 00 103 000	Mandrel for fitting bearings in mechanism housing
 86 062	B. Vi. 1 031	00 00 103 100	Tool for fitting circlips on primary and secondary shafts
 90 594	B. Vi. 1 057	00 00 105 700	Differential locking tool, JB gear box.
 90 592	B. Vi. 1 058	00 00 105 800	Mandrel for fitting JB gear box output seal, differential side.

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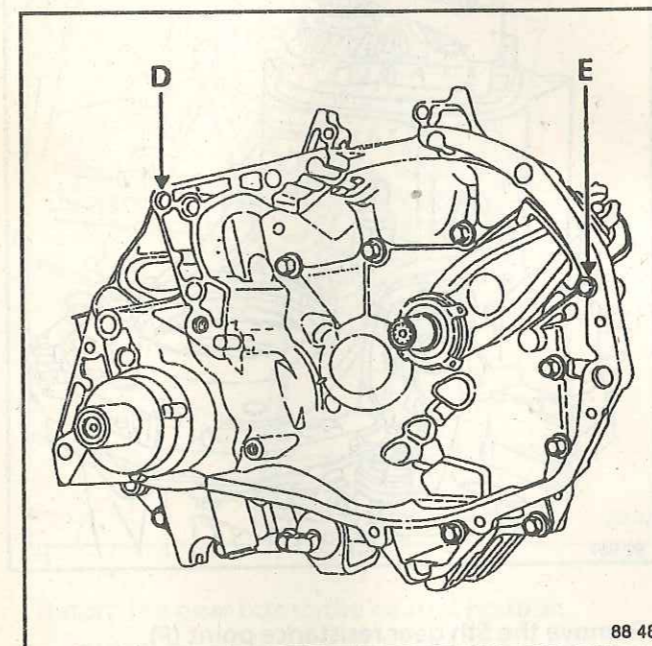
Diagram	Method reference	Part number	Description
 90 588	B. Vi. 1 059	00 00 105 900	Rings for fitting differential bearings, JB gear box.
 91 218-1	B. Vi. 1 078	00 00 107 800	Tool for fitting sensor crown wheel mounting spring on JB 3 gear box.
 93 229	B. Vi. 1 162	00 00 116 200	Mandrel for replacing control shaft pivot rings.
 93 190	B. Vi. 1 170	00 00 117 000	Tool for extracting 5th gear hub on primary shaft. Replaces B. Vi. 1003.
 93 461	B. Vi. 1 175	00 00 117 500	Bolting for fitting fixed 5th gear .

When gear box parts are removed and handled, a workbench with a protective cover should be used (rubber or thick plastic).

SEPARATING THE HOUSINGS

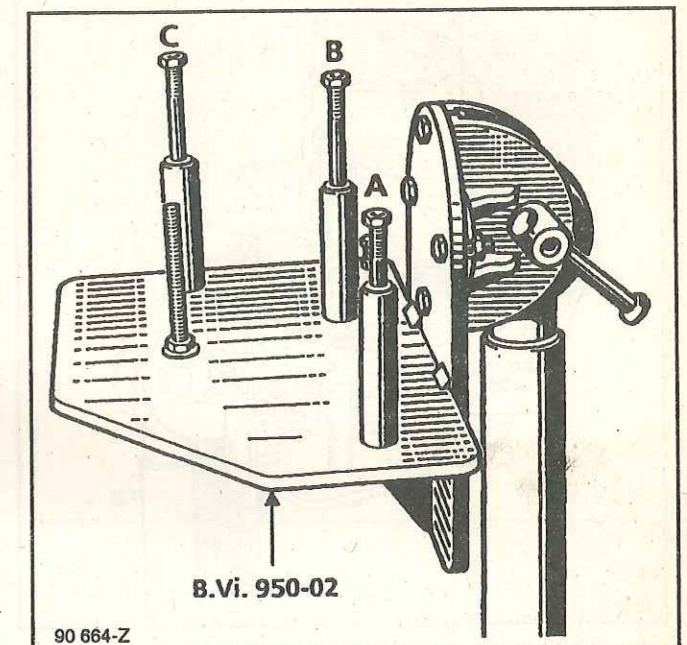
Remove the clutch fork and thrust pad from inside the housing.

Remove the bolts inside the clutch bellhousing.



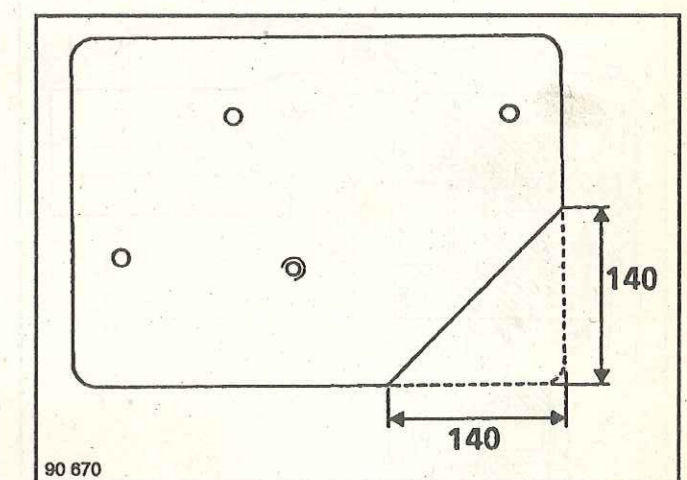
Remove any centring dowels fitted at (D) and (E).

Fit the gear box on support B. Vi. 950-02 on the DESVIL base.

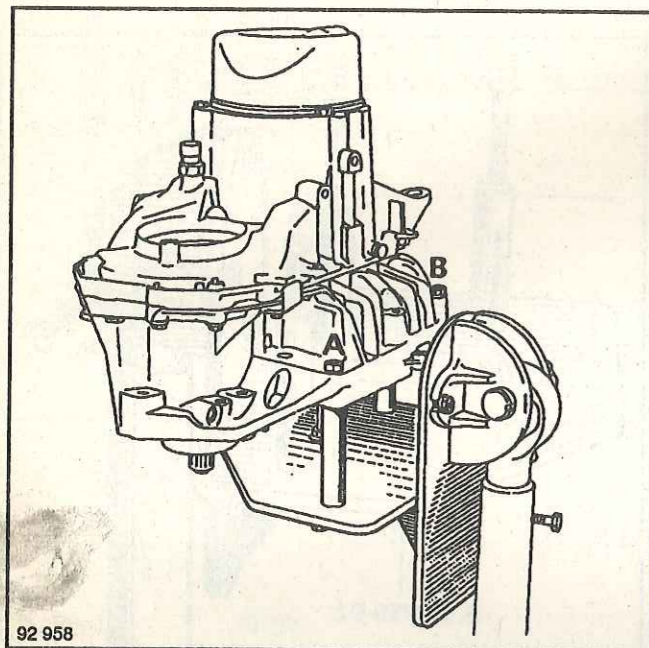


NOTE :
In order to remove a differential mounted on taper roller bearings (JB2 - JB3), use support B. Vi. 950-02 or modify support B. Vi. 950-01.

Cut the support plate B Vi. 950 as shown below.

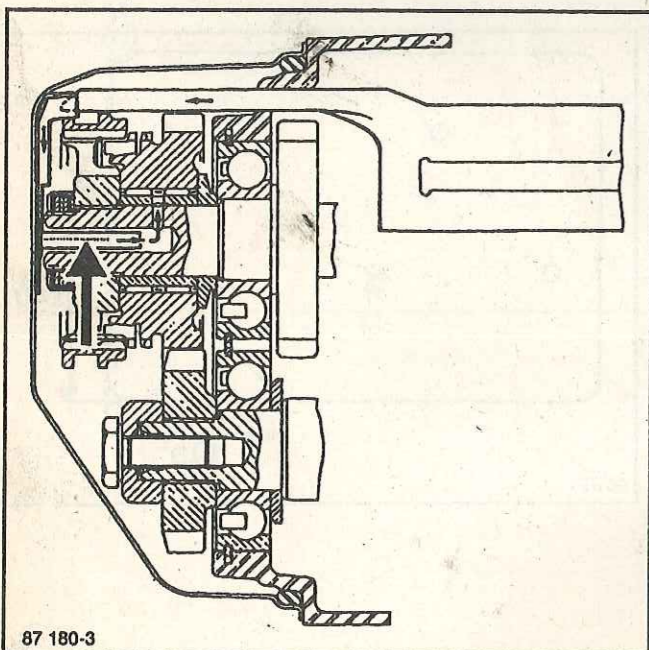


SEPARATING THE HOUSINGS (cont)



Remove the rear housing

The cover must be removed horizontally from the gear box as in certain cases there is a lubrication nozzle which enters the primary shaft.

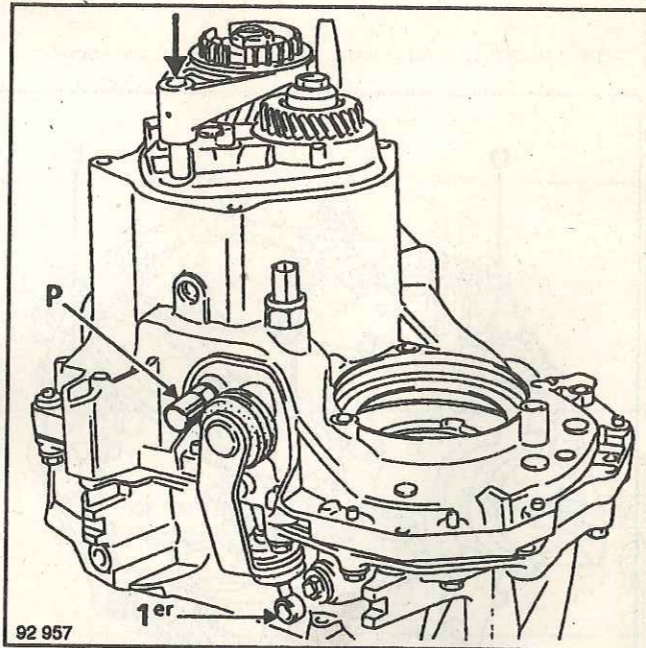


4 speed gear box

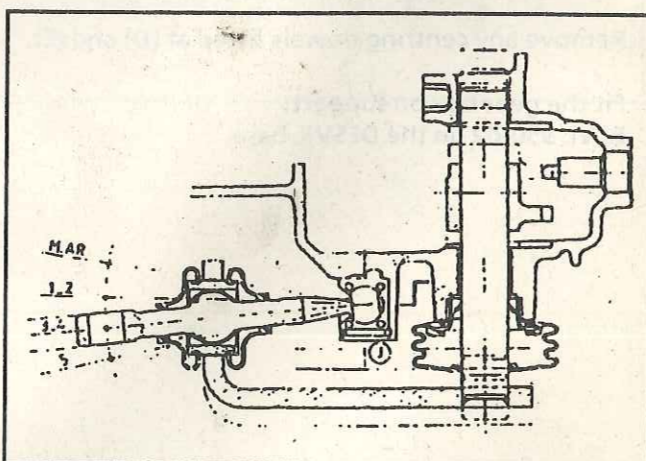
The two circlips for the primary and secondary shafts and their washers.

5 speed gear box

Select 1st gear at the gear lever and 5th gear on the gear box by sliding the 5th gear fork on its shaft.



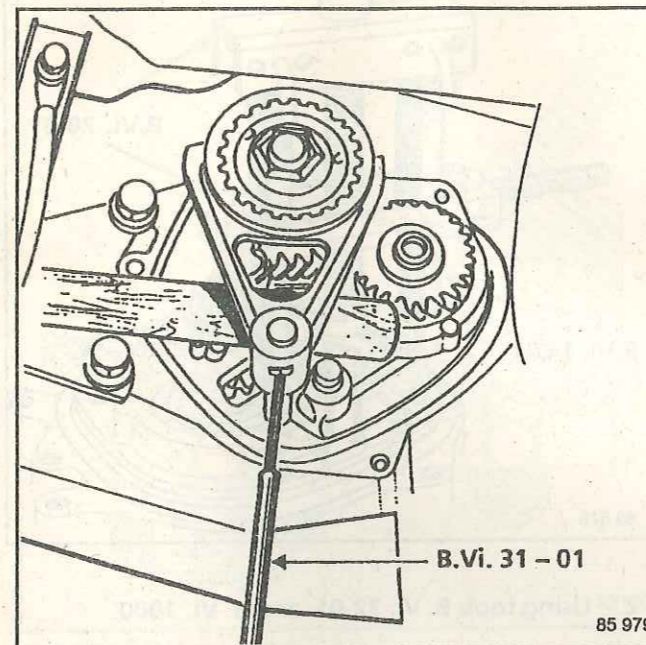
Remove the 5th gear resistance point (P).



SEPARATING THE HOUSINGS (cont)

Remove the primary shaft nut (dowel 27) and the secondary shaft bolt.

Using tool B. Vi. 31-01 remove the roll pin from the 5th gear fork placing a block of wood behind the shaft to support it.

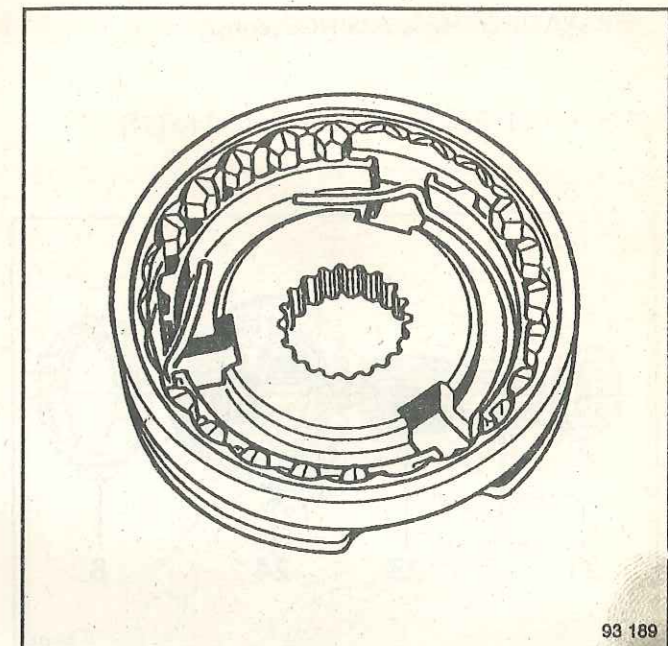


Return the gear box to the neutral position.

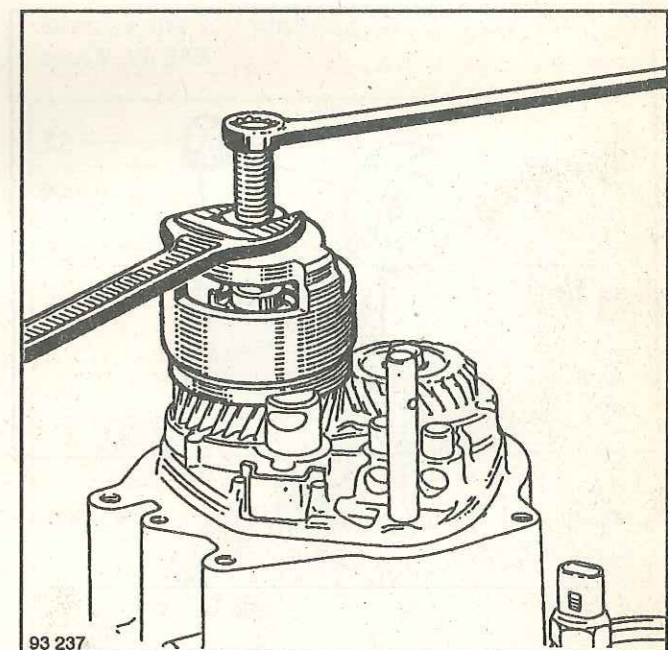
Remove the 5th gear fork and sliding gear.

Extract the 5th gear synchroniser hub using tool B. Vi. 1170 as follows :

Place the sliding gear of tool B. Vi. 1170 as if selecting 5th gear and rotate it to align the sliding gear splines and the hub.

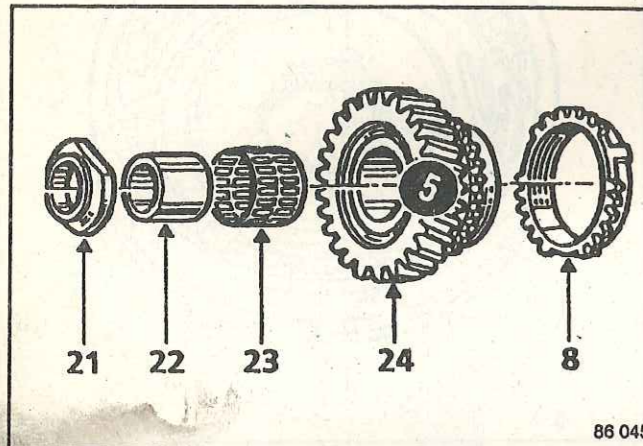


Place the bell section of the tool over the sliding gear and turn it until it reaches the stop to extract the synchroniser hub.



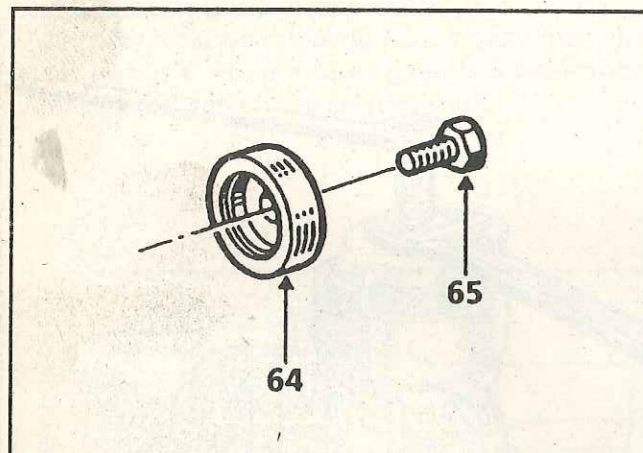
SEPARATING THE HOUSINGS (cont)

Remove (8) first and then from (24) to (21).



On the secondary shaft

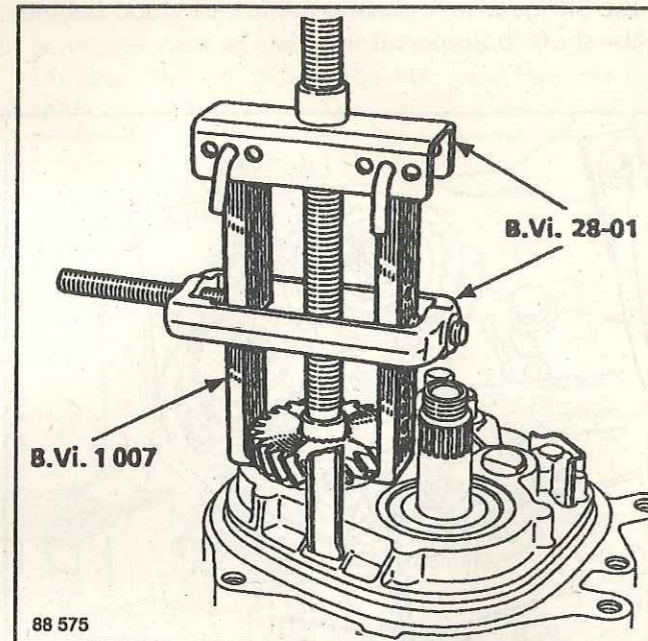
Remove the shoulder washer (64).



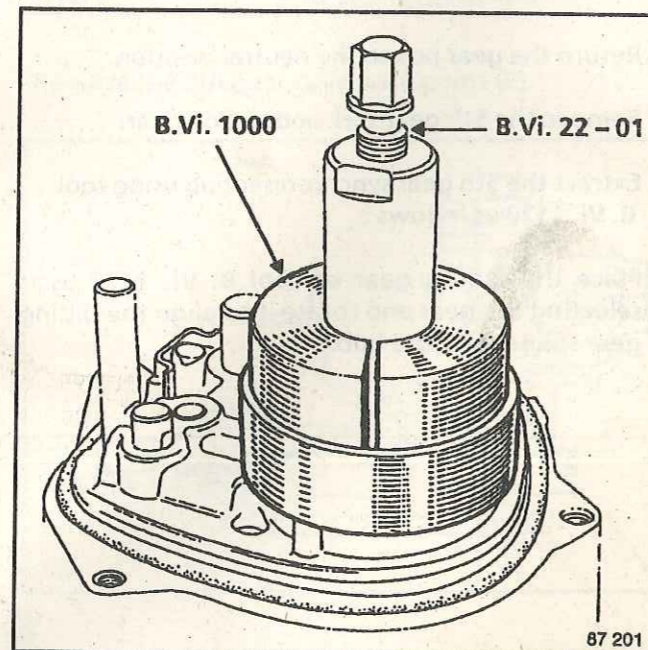
Extract the fixed 5th gear.

Two possibilities :

1. Using tool B. Vi. 28-01 with claws B. Vi. 1007 while fitting the protector tool Rou 15-01.



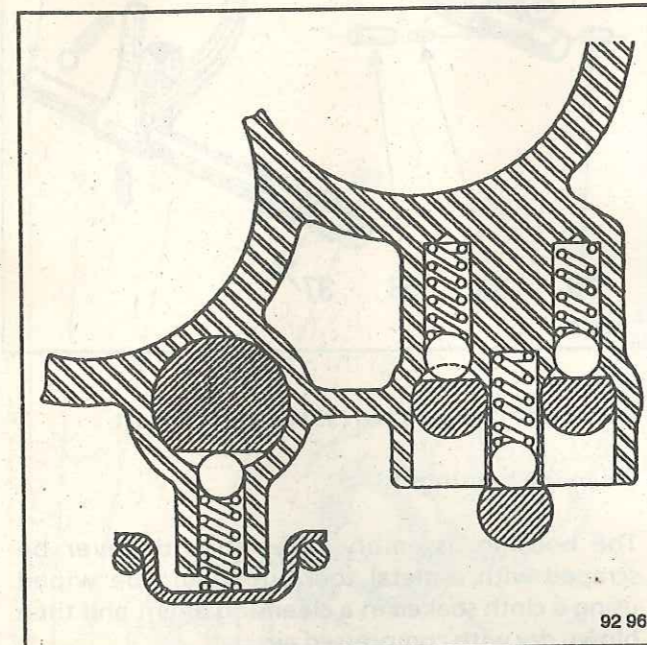
2. Using tools B. Vi. 22-01 and B. Vi. 1000.



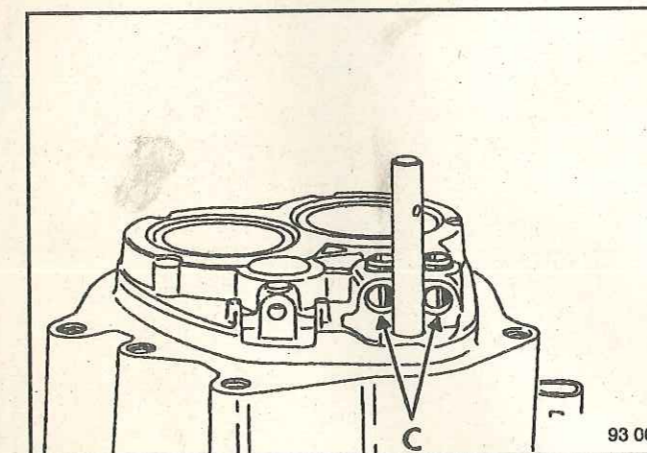
SEPARATING THE HOUSINGS (cont)

Remove the mechanism housing mounting bolts.

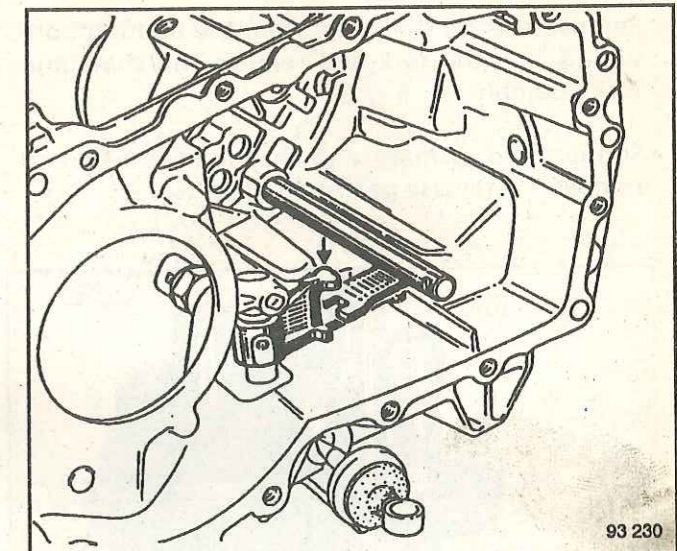
Remove the reverse gear ball boss, retaining the spring and the ball.



It is recommended that you fit two magnets or block holes (C) and to retain the balls and locking springs for the 1/2 and 3/4 shafts.

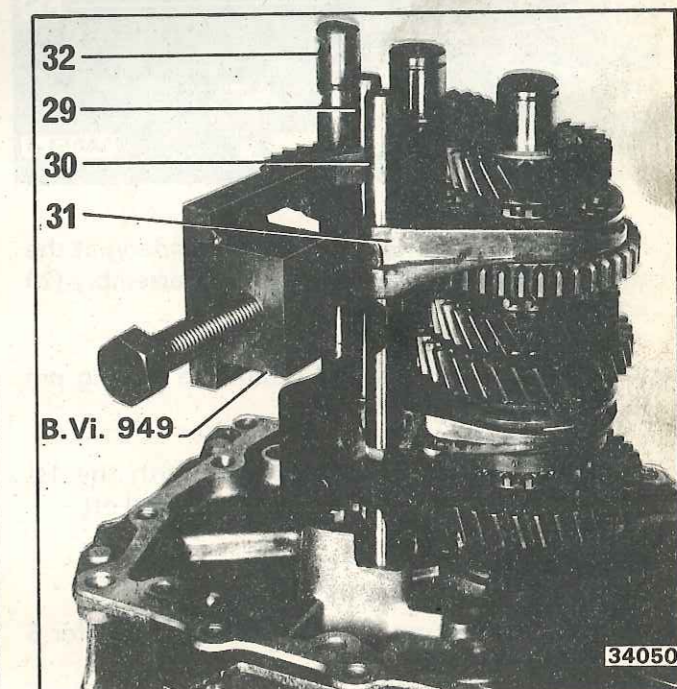


Pull the control shaft outwards ; the selection finger is now placed in the 5th gear dog.



Release and support the mechanism housing and the 5th gear shaft.

Remove the roll pin from the 3/4 fork (31) using tool B. Vi. 949.

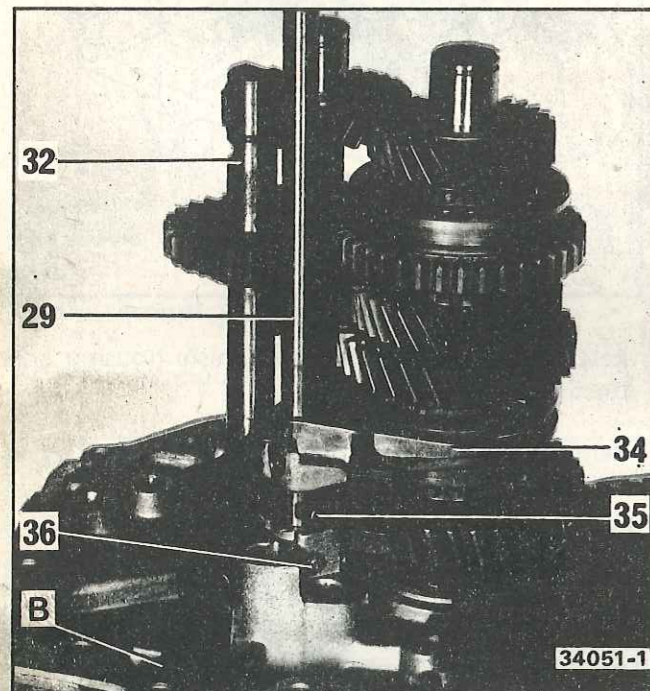


SEPARATING THE HOUSINGS (cont)

Put the 1/2 shaft (29) and the reverse gear shaft (32) in the neutral position.

Remove the 3/4 shaft (30) from the housing bore sliding it in the fork and remove the shaft and fork assembly.

Support the primary and secondary shafts and remove the reverse gear shaft (32).



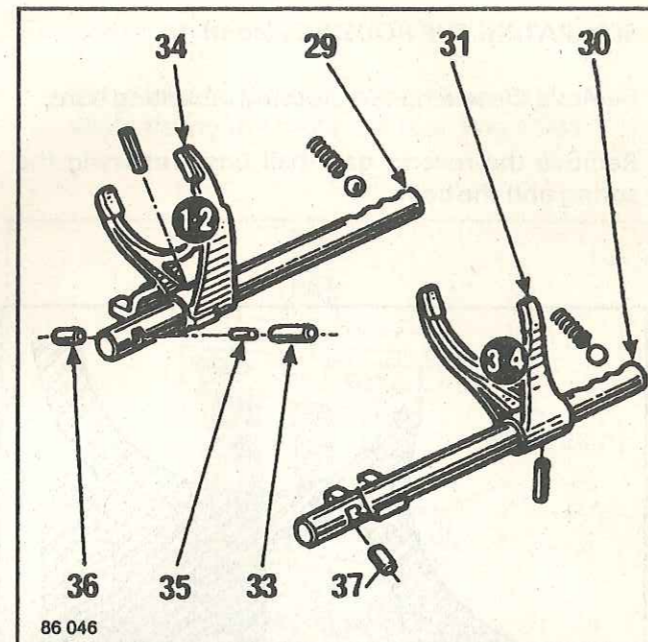
Pull the two shafts (primary and secondary) at the same time as the 1/2 shaft and fork assembly (29 and 34).

Remove the assembly and retain the locking pin (35) in the 1/2 shaft (29).

Hold the secondary shaft vertical, with the 1st gear at the bottom, so the gears do not fall off.

In the housing :

- retain the locking pins (33), (36) and (37) for 5 speed gear box,
- remove the magnet (B) and clean it.



Retain the blocking pin (35) in the 1/2 shaft.

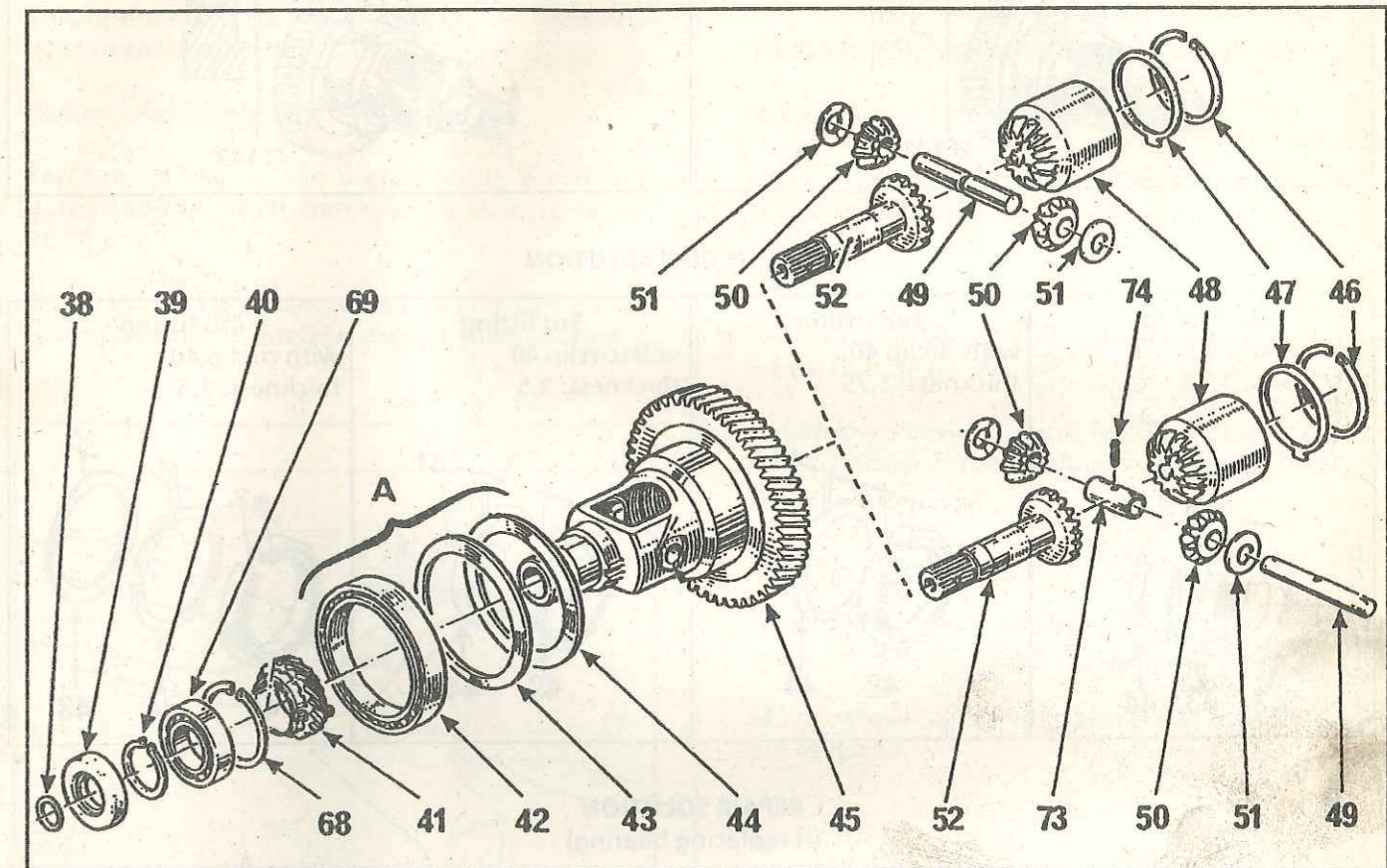
Clean the housings :

The housing assembly faces should never be scraped with a metal tool but should be wiped using a cloth soaked in a cleansing agent and then blown dry with compressed air.

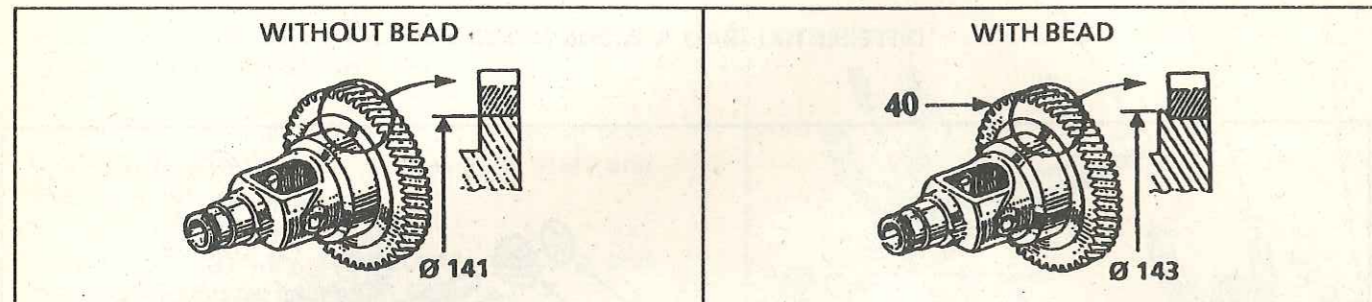
If this is not possible, hone the burrs.

B.V. JB0 - JB1 - JB4 - JB5

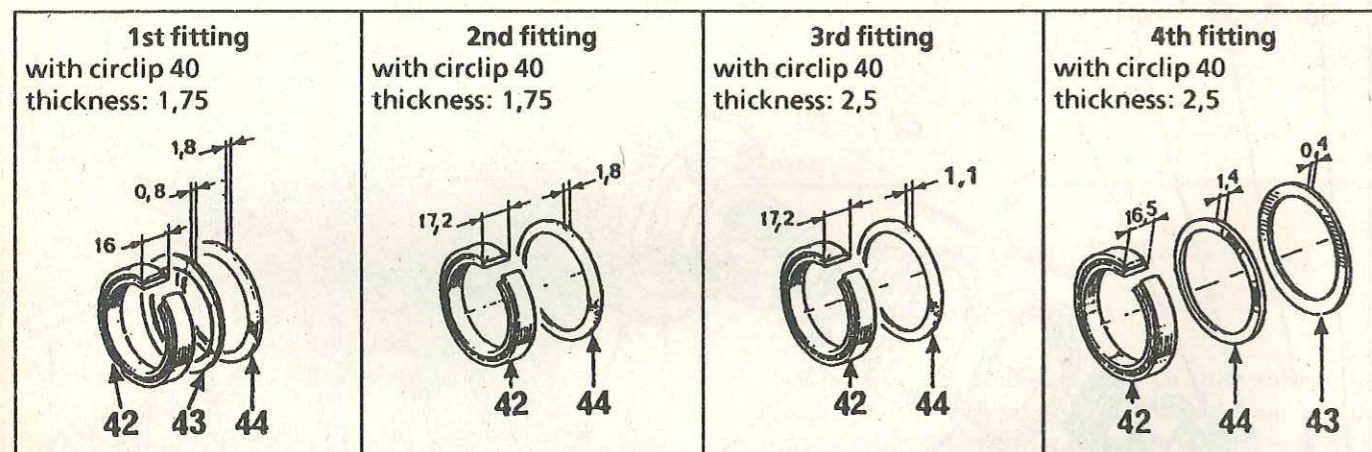
DIFFERENTIAL (BALL BEARING FITTING)



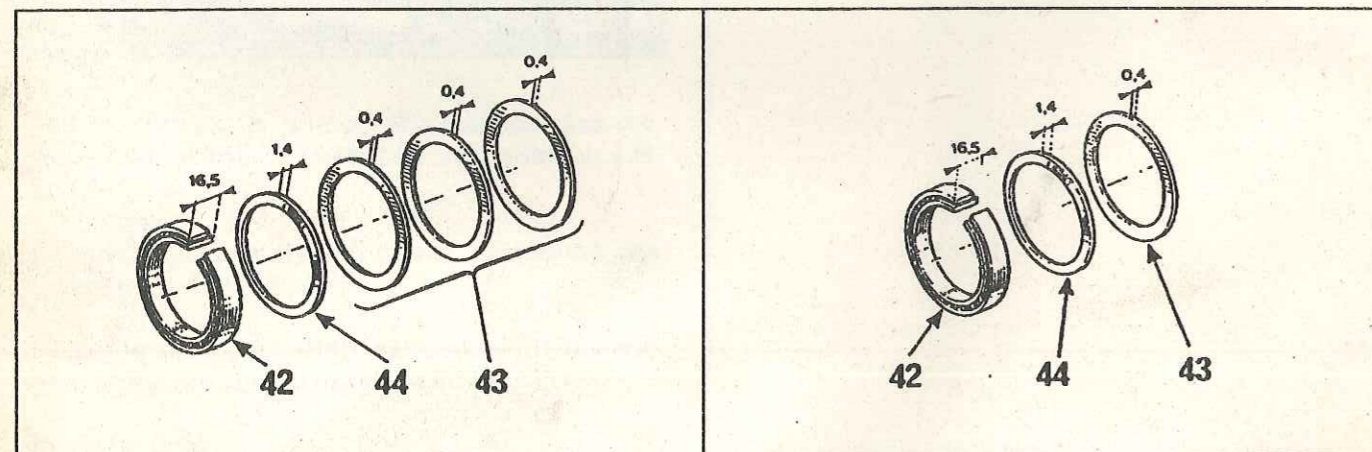
DIFFERENTIAL (DIFFERENT FITTINGS)



IN PRODUCTION SOLUTION



REPAIR SOLUTION (if replacing bearing)



DIFFERENTIAL (BALL BEARING MOUNTING ASSEMBLY)

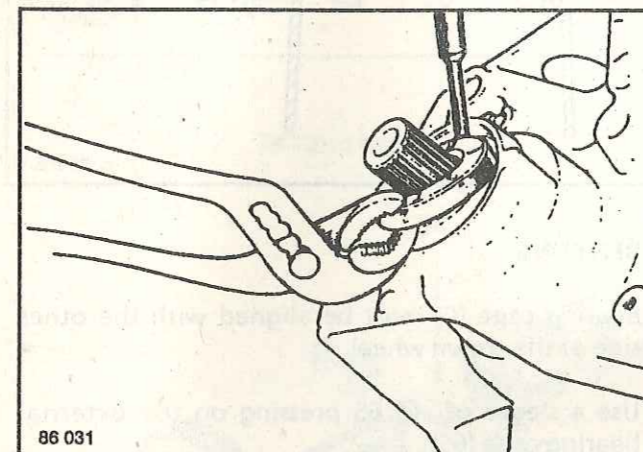
REMOVAL

This operation is carried out after the housings have been separated.

Remove the O ring (38).

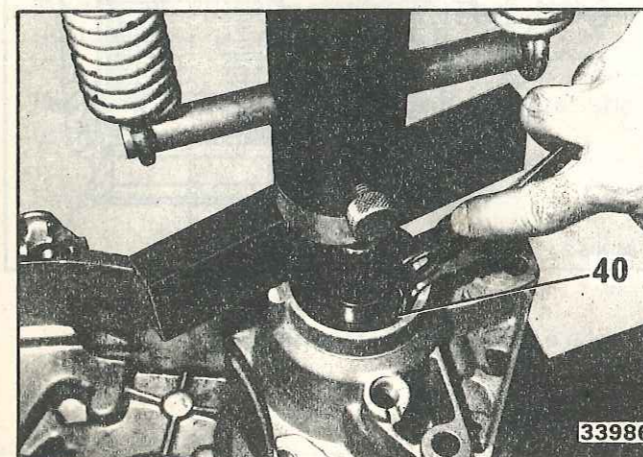
Tap the lip seal on the bottom using a roll pin punch and a small hammer to turn it in its position.

When the seal is displaced, remove it using pliers, taking care not to damage the sunwheel splines.



Using a press :

- fit a small piece of wood over the crown wheel to rest on,
- push the clutch bellhousing and differential housing to free the circlip (40) and remove it.



The differential is removed by pushing on the sunwheel (52) on the press. Remove (43) if fitted on the gear box, then remove (44).

Turn the assembly over.

Tighten the unit (45) in a vice with soft jaws.

Remove the spring ring (46) and the shim (47).

Extract the sunwheel spider (48) and remove the planet wheel shaft (49).

JB4-JB5

Remove the roll pin (74) and remove the planet wheel shaft (49).

Retain the sleeve (73) and remove it (50 and 51) while attaching the washers to their respective planet wheels.

Remove the sunwheel with the stem.

If necessary remove the speedometer crown wheel, the speedometer shaft and the gear.

NOTE : these parts should be renewed when they are removed.

CHECKING THE PARTS:

Check the condition of:

- teeth,
- bearing surfaces,
- washers (for planet wheels),
- splines,
- housing.