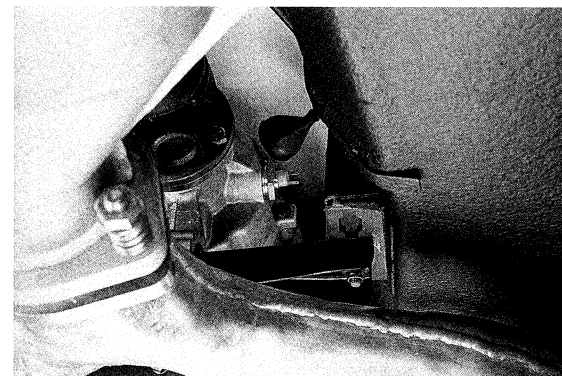


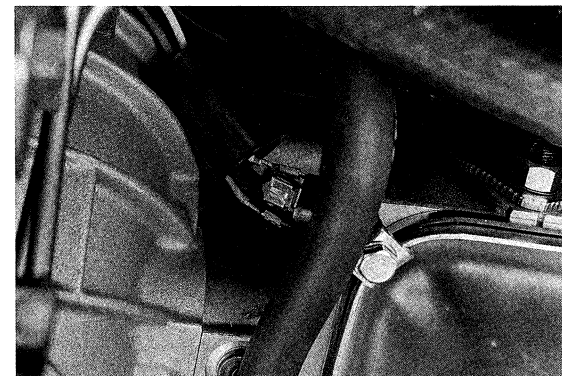
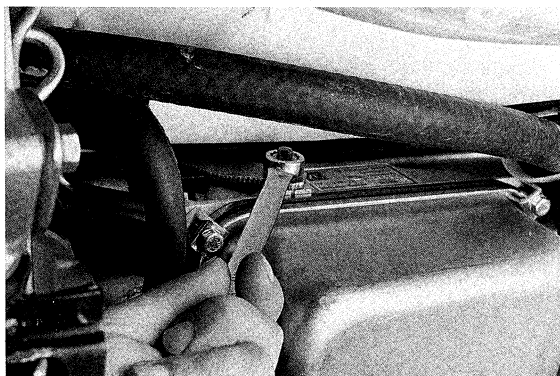
- Staccare la leva di comando cambio all'uscita del cambio stesso (Fig. 28) e nel punto di collegamento con l'asta di comando interno vettura (Fig. 29).
- Scollegare i fili del sensore contachilometri (Fig. 30) e quelli del bulbo luce RM e blocco avviamento (Fig. 31).
- Staccare le tubazioni (mandata e ritorno) dell'olio dal radiatore (Fig. 32).
- Eseguire lo stacco della scatola guida come descritto nella sezione 6.



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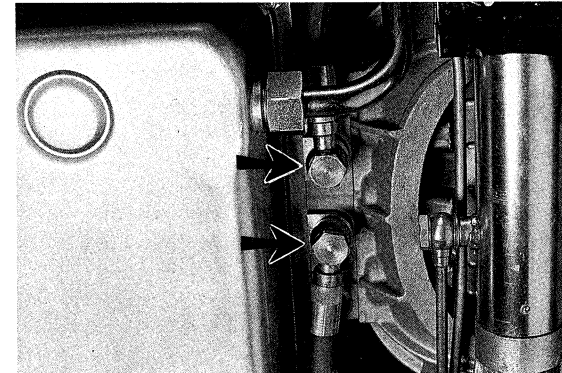
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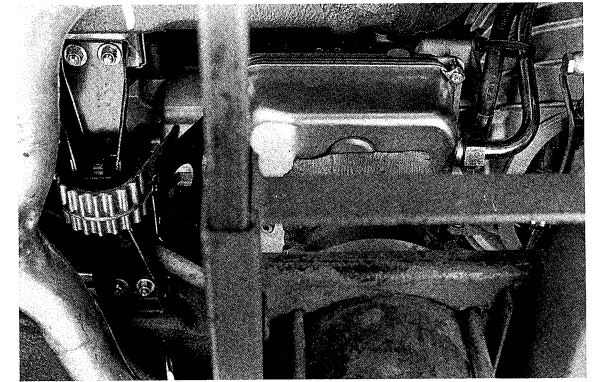
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- Detach the gearshift level where it exits from the gear box (Fig. 298) and at the point of connection with the shift lever inside the car (Fig. 29).
- Disconnect the leads of the odometer sensor (Fig. 30) and those of the reverse gear light bulb and starter lock (Fig. 31).
- Detach the tubing (delivery/return) of oil from the cooler (Fig. 32).
- Remove the steering box as described in section 6.

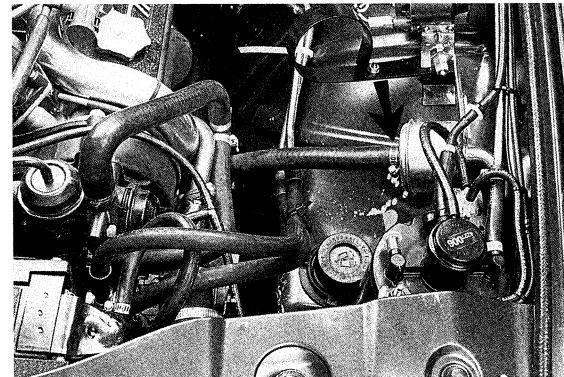


- Eseguire lo stacco del motore come indicato nella sezione 1; per le versioni con catalizzatore staccare inoltre il tubo d'aspirazione dal compressore d'aria per la marmitta catalitica (Fig. 33).
- Sistemare il martinetto sotto il cambio (Fig. 34) e staccare gli attacchi del cambio dalla scocca e dal cambio stesso (Fig. 35).
- Abbassare prima il ponte e poi il martinetto, arretrare quest'ultimo per permettere al gruppo motore cambio di assumere la giusta inclinazione per l'estrazione da effettuarsi con apposito paranco (vedere sezione 1).
- Sistemare l'intero gruppo su un'adeguato supporto.
- Staccare il filo del dispositivo king down dal corpo farfallato (Figg. 36 - 37).

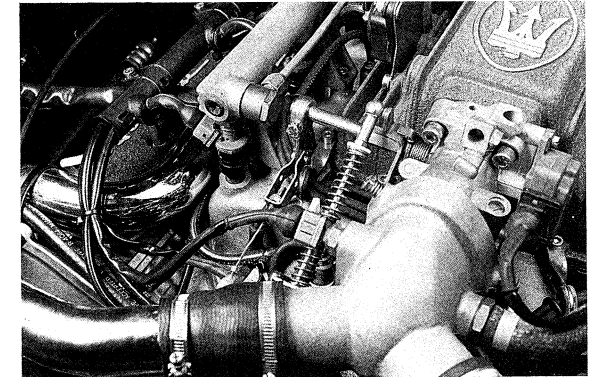


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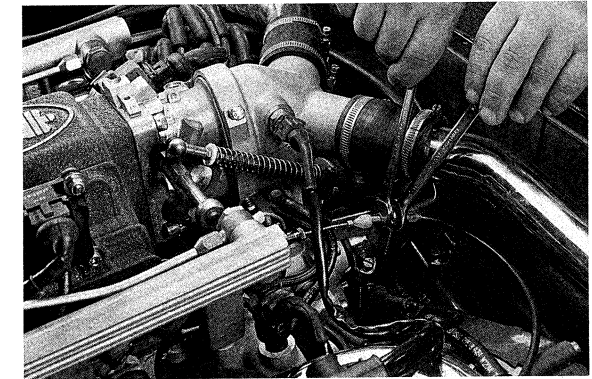
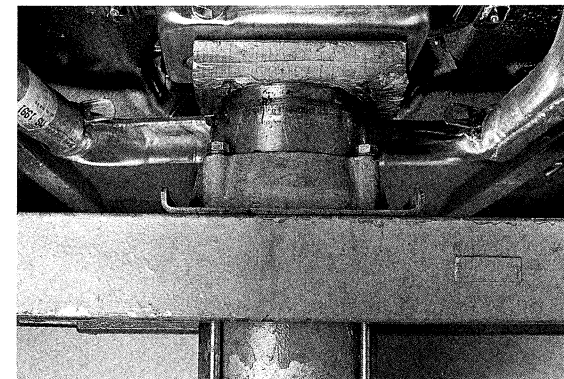


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- Detach from engine as indicated in section 1; for versions with catalytic converter, also detach the air intake tubing from the converter air compressor (Fig. 33).
- Arrange the jack under the transmission (Fig. 34) and free all the attachment to the body structure (Fig. 35).
- First lower the rack and then the jack, stopping the jack to let the engine-transmission assembly reach the proper inclination for removal, which is done with the appropriate hoist (see section 1).
- Position the entire assembly on a suitable support.
- Detach the wire of the king down device from the throttle body (Figs. 36-37).

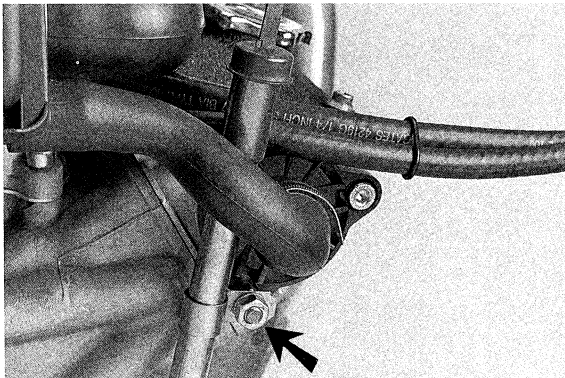


- Staccare la staffa di fissaggio del tubo immissione olio nel cambio dal coperchio valvole destro (Fig. 38).
- Svitare i quattro dadi di fissaggio del convertitore di coppia al volano; per effettuare tale operazione occorre ruotare l'albero motore inserendo una chiave nella vite centrale della puleggia dell'albero motore.
- Se necessario sostituire l'intero gruppo, rimontare seguendo l'ordine inverso delle operazioni e prima di collegare le tubazioni idrauliche al cambio sostituire le relative guarnizioni in rame.

Le versioni con cambio automatico hanno il radiatore per il raffreddamento dell'olio del cambio stesso; per una sua eventuale sostituzione procedere come segue:

- Con vettura sul ponte svitare la vite di fissaggio inferiore (Fig. 39).
 - Con vettura abbassata svitare le viti di fissaggio superiori (Fig. 40).
 - Nelle versioni con intercooler è necessario staccare il tubo di mandata aria intercooler - corpo farfallato per potere effettuare l'estrazione del radiatore.
 - Svitare i raccordi olio dal radiatore come mostrato in figura 41.
- N.B.** Svitando i raccordi olio dopo l'estrazione del radiatore si perde solo una piccola quantità di olio (non è quindi necessario estrarlo completamente) ripristinabile a rimontaggio avvenuto tramite apposito tubo d'immissione (Fig. 38).
- Rimontare il tutto seguendo l'ordine inverso delle operazioni e sostituendo le guarnizioni in rame dei raccordi idraulici.

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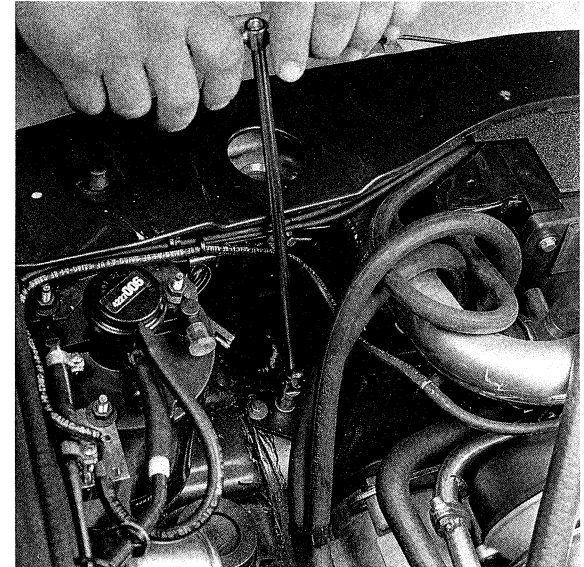
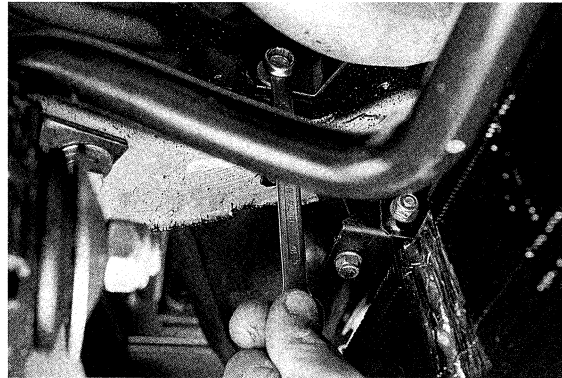


- Remove the mount bracket of the oil delivery pipe from the right valve cover to the transmission (Fig. 38).
- Loosen the four nuts securing the torque converter to the flywheel; to do this, you must rotate the crankshaft by inserting a tool into the central screw of the crankshaft pulley.
- If necessary, replace the entire group, reassemble following the reverse sequence of operations and, before connecting the hydraulic piping to the transmission, replace the copper gaskets.

Versions with automatic transmission have a radiator for cooling the transmission fluid; to replace it, proceed as follows:

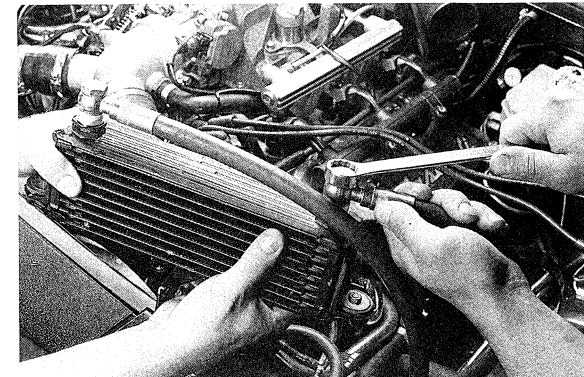
- With the car on the grease rack loosen the bottom mounting screws (Fig. 39).
 - With the car lowered, loosen the upper mounting screws (Fig. 40).
 - In the versions with intercooler, you must detach the intercooler-throttle body air delivery tube so the oil cooler can be removed.
 - Loosen the oil fittings from the cooler as shown in figure 41.
- NOTE.** Removing the oil fittings after extraction of the cooler, only a small quantity of oil is lost (so it is not necessary to extract it completely) and can be restored after installation through the inlet tubing (Fig. 38).
- Reassemble everything by performing the same operations in reverse order, replaces the copper gaskets of the hydraulic fittings.

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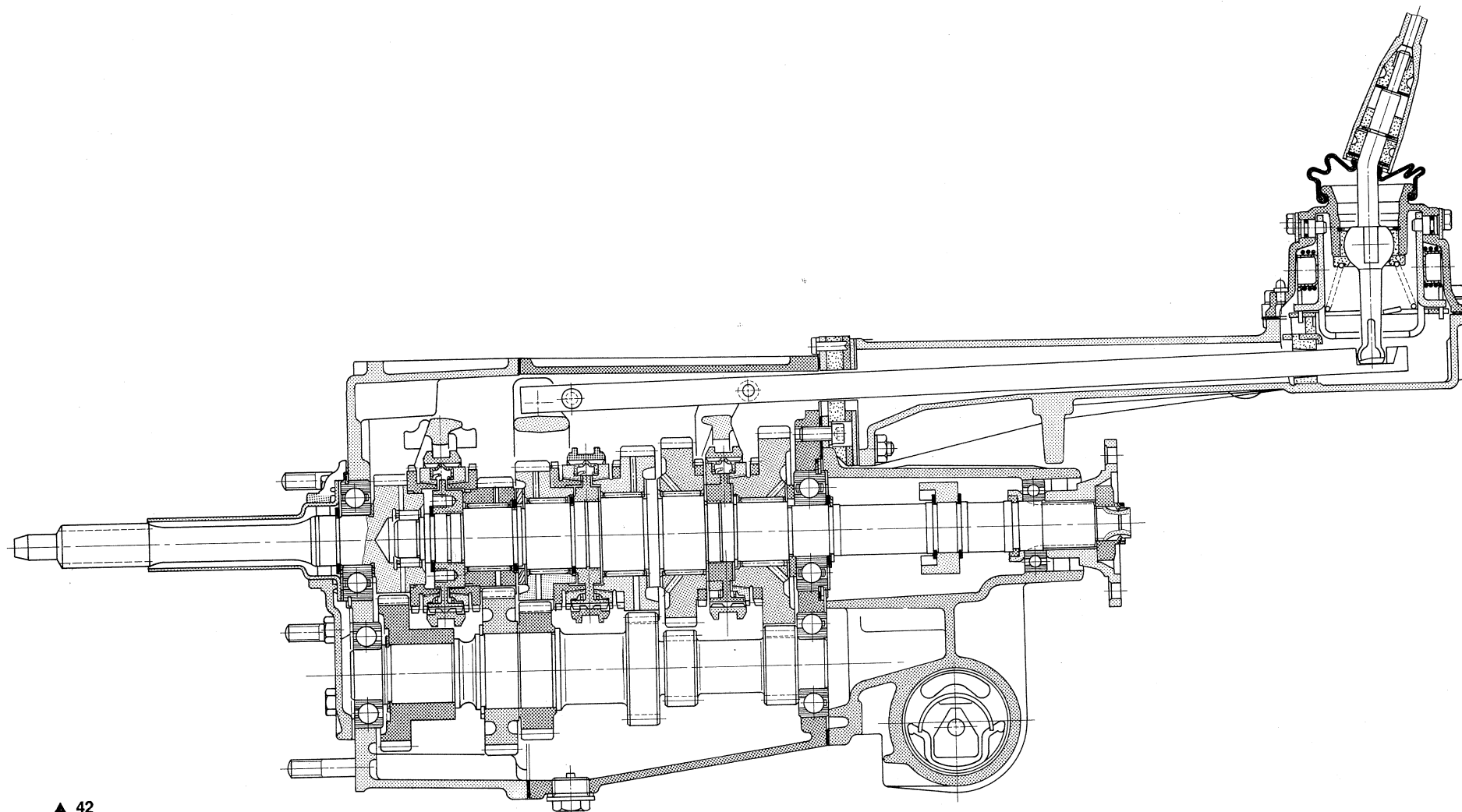


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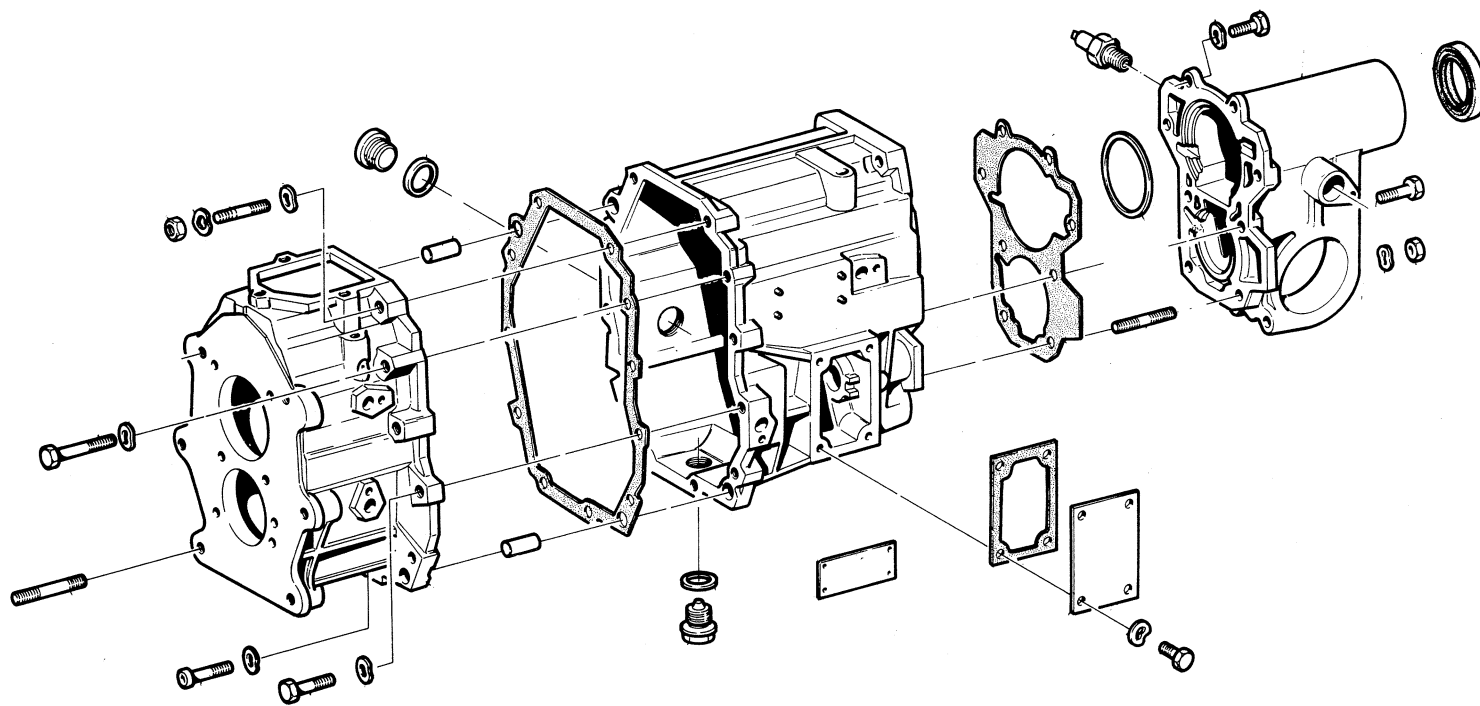


CAMBIO - TRANSMISSION



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SCATOLA CAMBIO – TRANSMISSION BOX



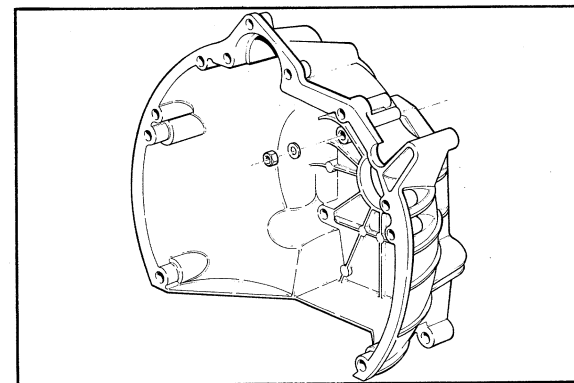
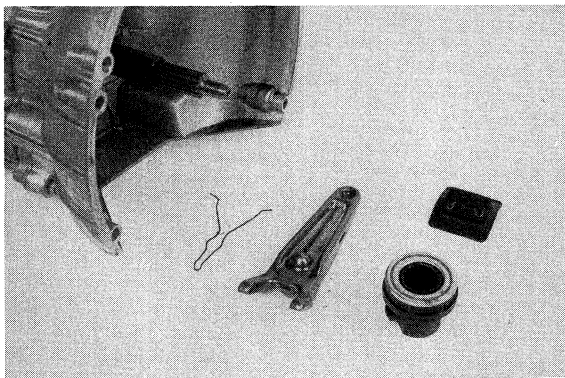
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REVISIONE CAMBIO

Dopo aver smontato il cambio dalla vettura, togliere il cuscinetto reggispinta e la leva di comando frizione completa di molla di fermo (Fig. 44).

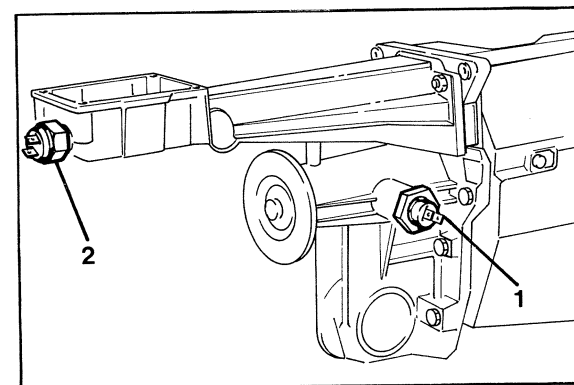
- Se non eseguito in precedenza, togliere il tappo scarico olio, scaricare l'olio ed applicare l'apposito attrezzo per il bloccaggio del gruppo cambio in morsa (Fig. 45).
- Smontare la campana frizione dopo aver svitato i 6 dadi di fissaggio (Fig. 46).
- Togliere il generatore di impulsi tachimetrico (1) e l'interruttore comando luci retromarcia (2) (Fig. 47).
- Utilizzando l'attrezzo di fermo bloccare la flangia e svitare il dado (Fig. 48).
- Estrarre la flangia stessa.

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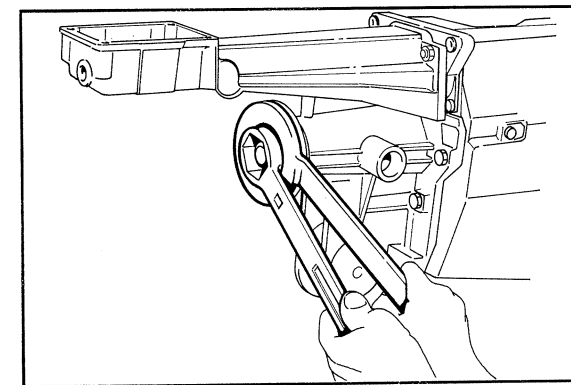


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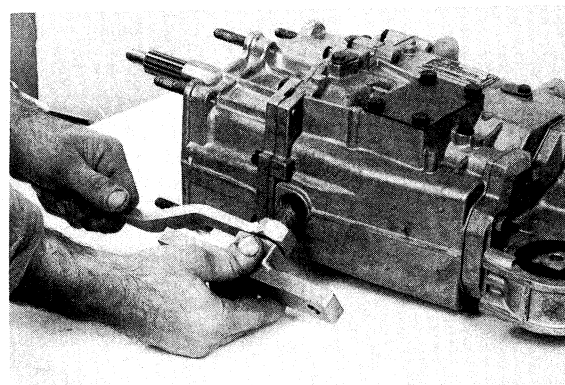


TRANSMISSION OVERHAULING

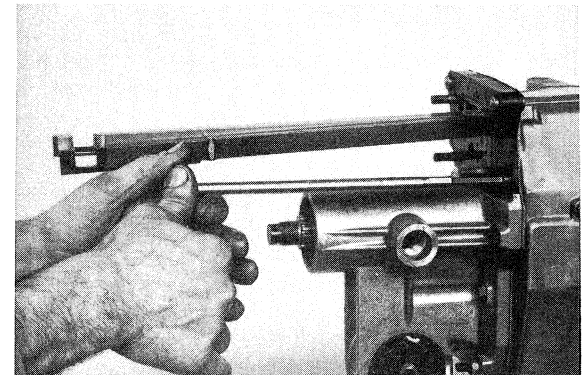
Following transmission removal, take off thrust bearing and clutch withdrawal lever with attached retaining spring (Fig. 44).

- If still in position, remove oil drain plug, drain oil and apply transmission holder for retention in vice (Fig. 45).
- Back off 6 retaining nuts and lift off clutch bell housing (Fig. 46).
- Remove speedometer tacho-generator (1) and back-up light switch (2) (Fig. 47).
- Using a retainer, hold flange and back off nut (Fig. 48).
- Withdraw flange.

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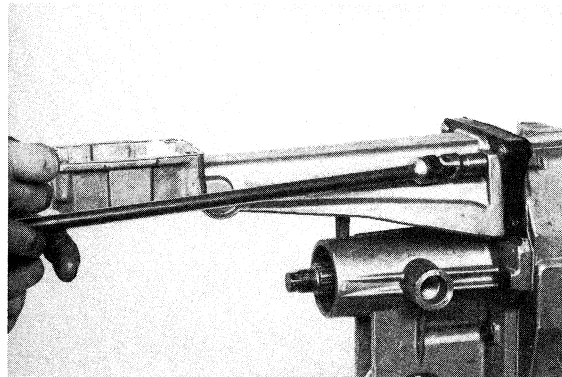


- Togliere i quattro dadi di fissaggio del tunnel di comando (Fig. 49).
- Sfilare il tunnel dalle aste (Fig. 50); togliere la piastra intermedia.
- Togliere le quattro viti di fissaggio e staccare lo smorzatore di oscillazioni (Fig. 51).
- Togliere le 6 viti ed i 2 dadi che fissano il coperchio posteriore (Fig. 52).
- Staccare il coperchio posteriore, utilizzando se necessario un martello di plastica per smuoverlo (Fig. 53).

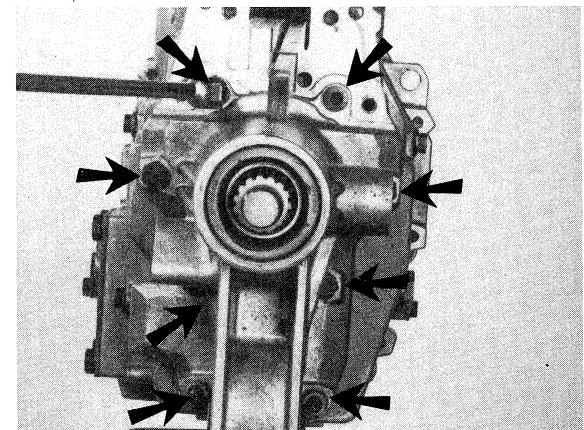


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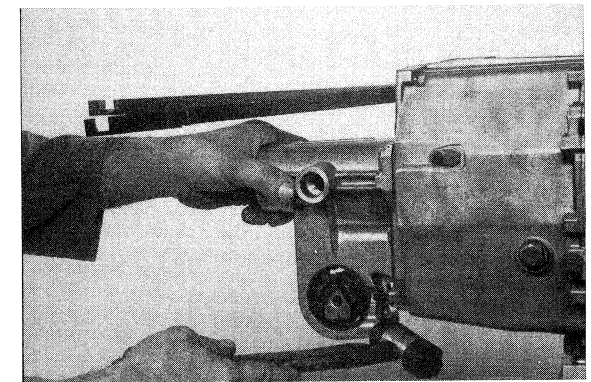
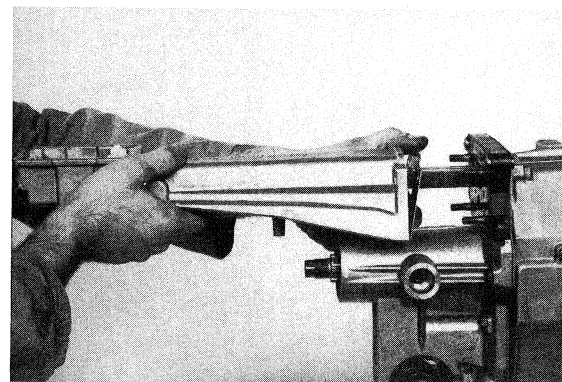
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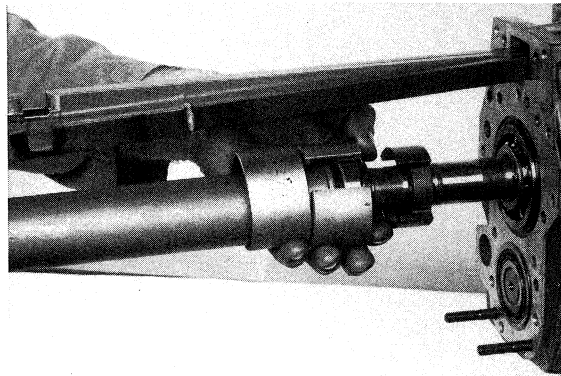
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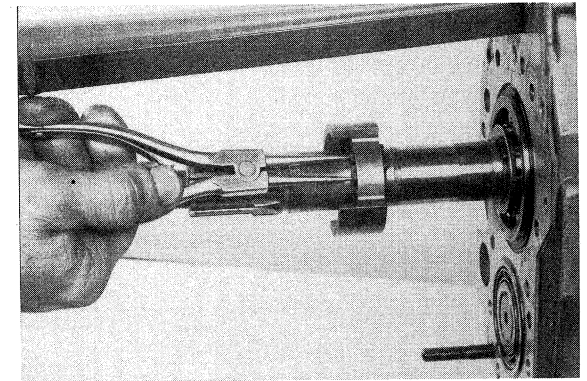
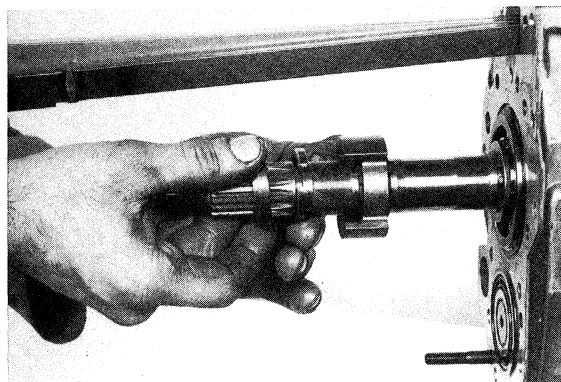
- Remove 4 tunnel retaining nuts (Fig. 49).
- Withdraw tunnel from rods (Fig. 50). Remove intermediate plate.
- Remove 4 capscrews and detach vibration damper (Fig. 51).
- Remove 6 capscrews and 2 nuts retaining rear cover (Fig. 52).
- Remove rear cover tapping with a plastic mallet as necessary (Fig. 53).

- Recuperare il rasamento.
- Estrarre il cuscinetto di supporto albero di uscita cambio, utilizzando l'apposito attrezzo montato come indicato nella **figura 54**.
- Togliere lo scodellino e i due semianelli di fermo del cuscinetto (**Fig. 55**).
- Togliere l'anello di fermo del manicotto tachimetrico (anello posteriore) (**Fig. 56**).
- Se necessario, utilizzare l'apposito attrezzo ed estrarre il manicotto tachimetrico; togliere anche l'anello di fermo anteriore (**Fig. 57 e 58**).

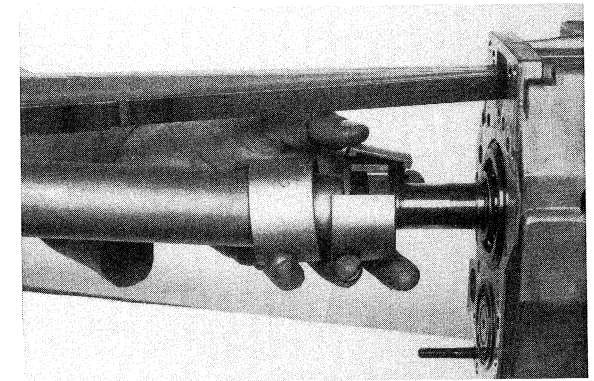
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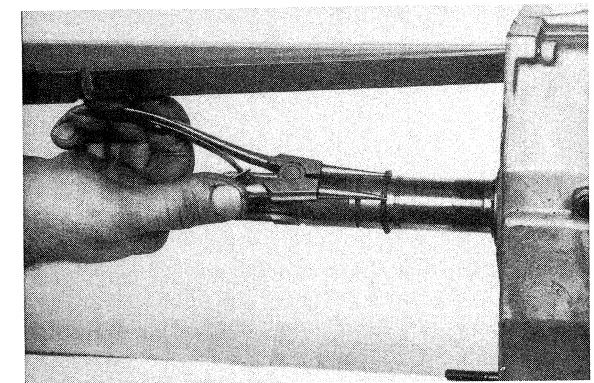


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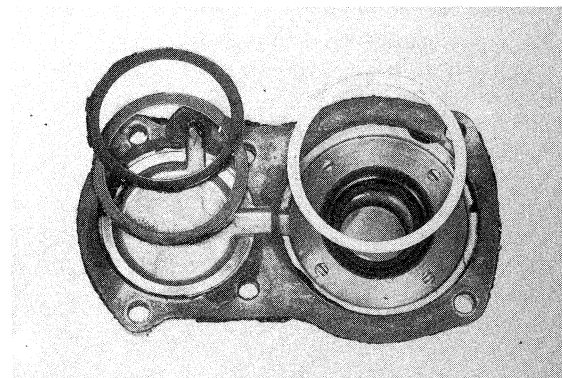
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- Retrieve abutment ring.
- Withdraw output bearing using a suitable puller installed as shown (**Fig. 54**).
- Remove cap and the two split bearing retaining rings (**Fig. 55**).
- Remove rear speedometer sleeve retaining ring (**Fig. 56**).
- If necessary, remove speedometer sleeve using a suitable tool. Also remove front retaining ring (**Figs. 57 and 58**).

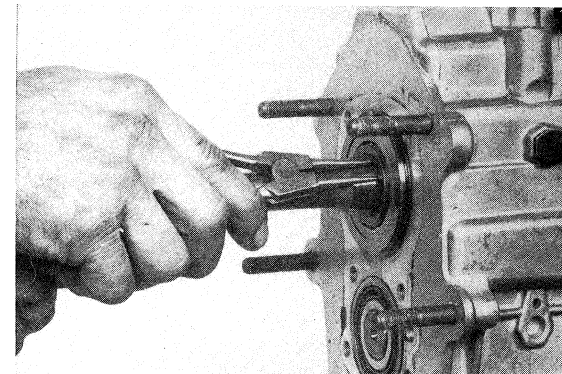
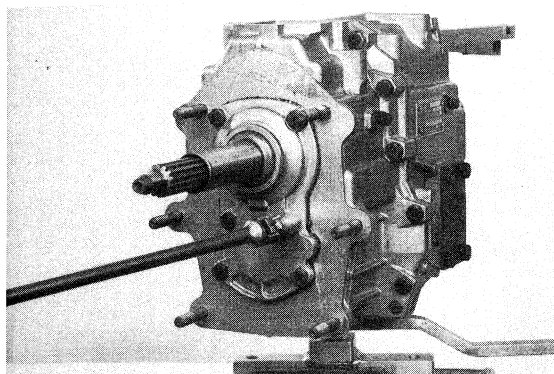
- Procedere allo stacco del coperchio anteriore, togliendo le sei viti di fissaggio e martellando leggermente la prolunga per smuoverlo (**Fig. 59 e 60**).
- Recuperare i rasamenti inferiori e quello superiore (**Fig. 61**).
- Togliere l'anello di fermo del cuscinetto anteriore sull'albero di entrata e recuperare la rondella di rasamento (**Fig. 62 e 63**).



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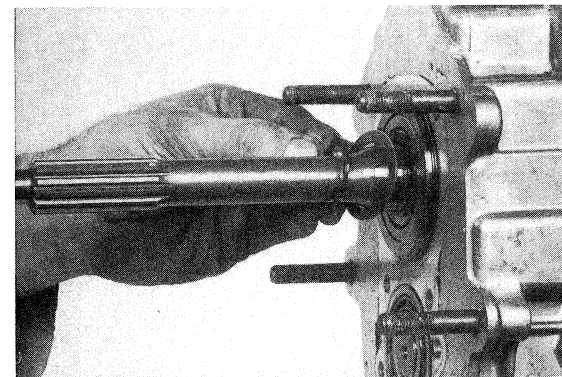
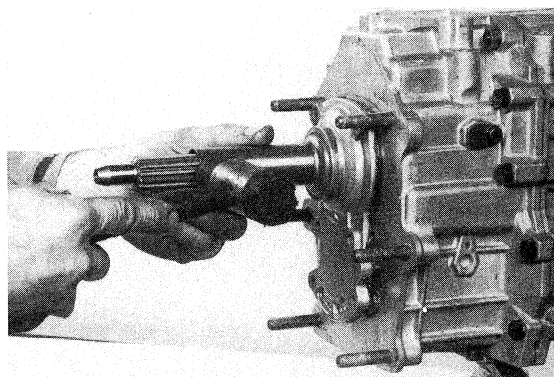
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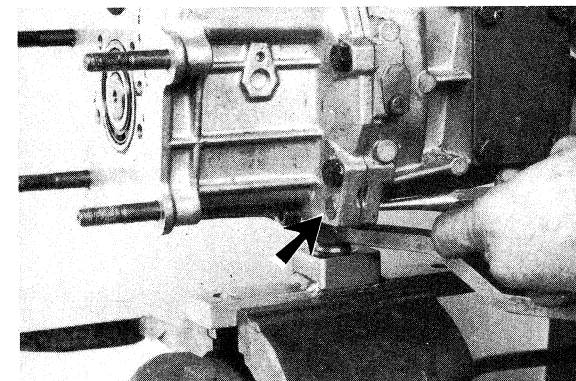
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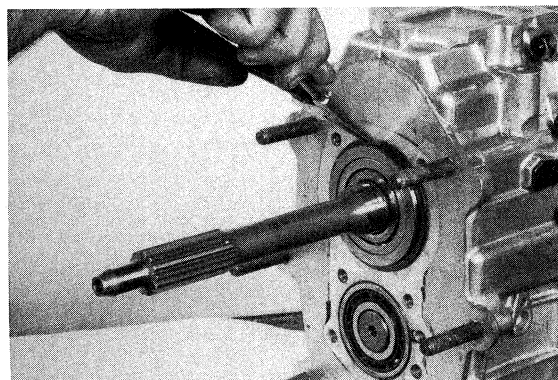
- Back off 6 front cover capscrews and slightly tap extension to remove cover (**Figs. 59 and 60**).
- Retrieve upper and lower abutment rings (**Fig. 61**).
- Remove front bearing retaining ring on input shaft and retrieve abutment ring (**Figs. 62 and 63**).

- Togliere l'anello di fermo del cuscinetto (Fig. 64).
- Montare sul cuscinetto le ganasce dell'estrattore e completare l'attrezzo; estrarre il cuscinetto a doppia pista di sfere (recuperare le sfere eventualmente cadute) (Fig. 65).
- Togliere le due spine laterali di centraggio (Fig. 66 e 67).
- Togliere la vite di fissaggio del perno forcelle (una per lato) (Fig. 68).

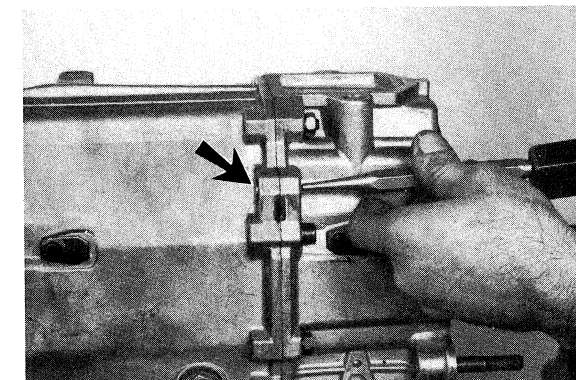


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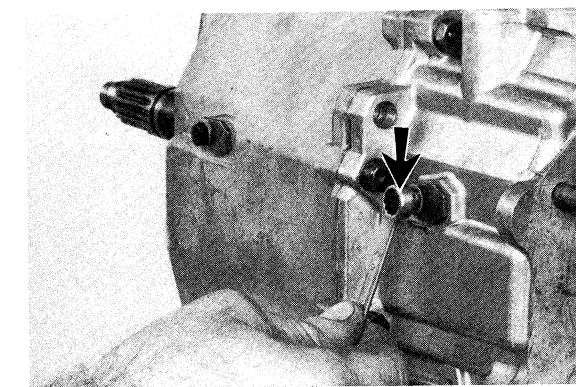
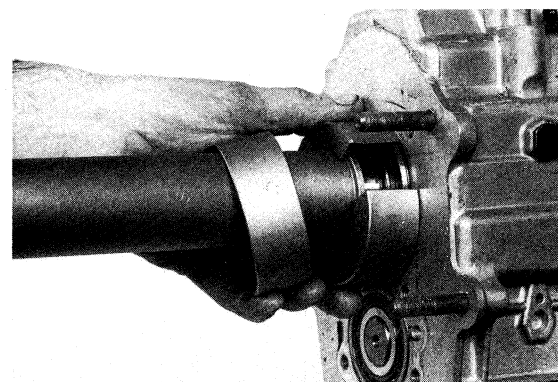


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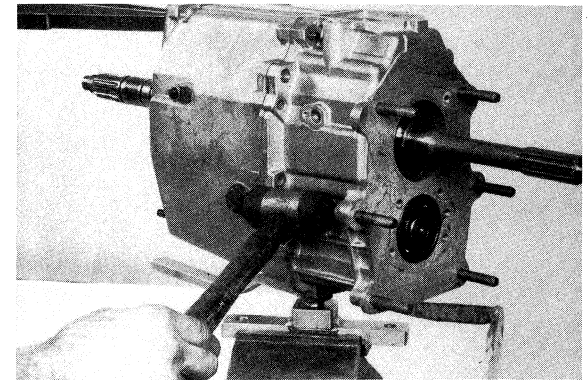


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- Remove bearing retaining ring (Fig. 64).
- Install puller jaws on bearing and assemble tool. Remove double row ball bearing, retrieving any balls that might have fallen out in the process (Fig. 65).
- Remove two side centralizing pins (Figs. 66 and 67).
- Remove fork pin retaining screw (one to each side) (Fig. 68).



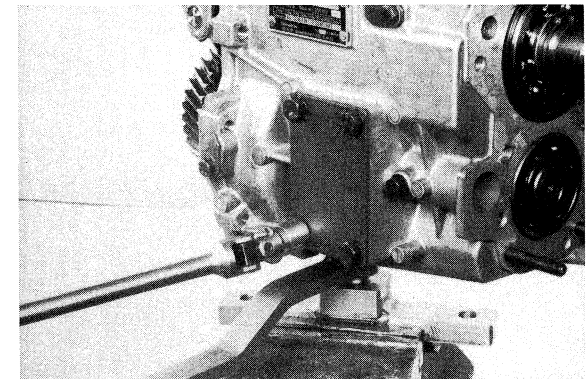
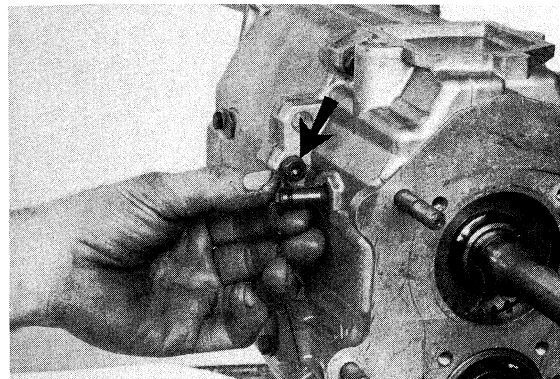
- Estrarre i perni di fulcro della forcella innesto 4a e 5a (Fig. 69).
- Allentare i due dadi superiori e le sei + tre viti di assemblaggio delle semiscatole; togliere dadi e viti (Fig. 70).
- Staccare le semiscatole; aiutandosi con leggeri colpi di martello (Fig. 71).
- Togliere le quattro viti di fissaggio del coperchio della RM (Fig. 72).
- Togliere coperchio e guarnizione.
- Togliere la vite di fermo del perno ingranaggio RM (Fig. 73).



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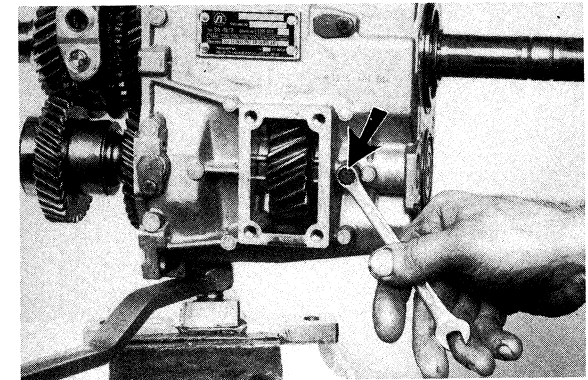
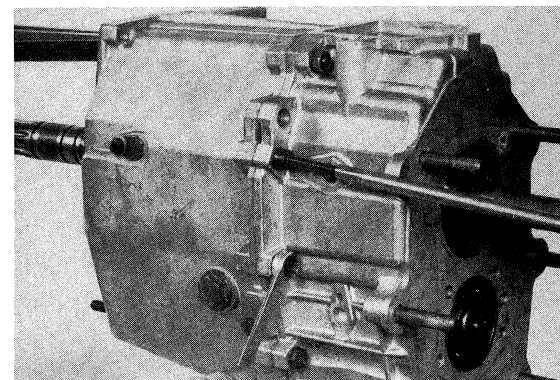
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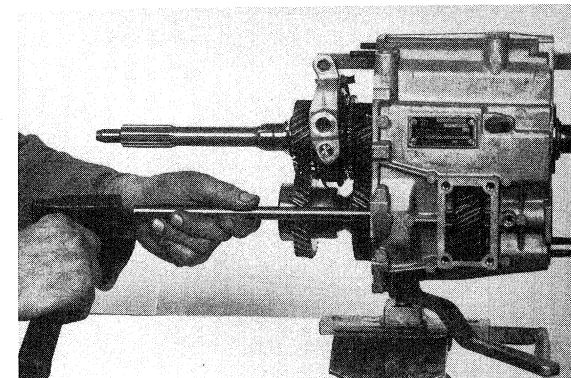
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- Withdraw 4th and 5th gear shifter fork pivot pins (Fig. 69).
- Slacken 2 upper nuts and 6 + 3 split housing cap-screws. Remove nuts and cap-screws (Fig. 70).
- Lift off half-housing tapping lightly with a hammer (Fig. 71).
- Remove 4 reverse cover cap-screws (Fig. 72).
- Remove cover and gasket.
- Remove reverse gear shaft cap-screw (Fig. 73).

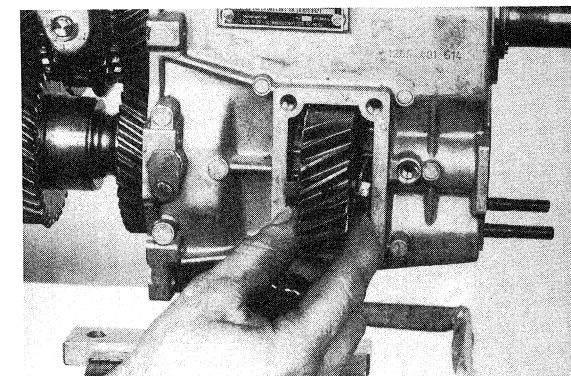


- Espellere il perno dell'ingranaggio RM (**Fig. 74 e 75**).
 - Togliere l'ingranaggio RM completo di gabbie a rullini (due) ed i due rasamenti (**Fig. 76**).
 - Togliere i perni di fulcro forcella innesto 2a - 3a e 1a-RM (due per lato) (**Fig. 77**).
- N.B.** I due perni lunghi sono relativi alla forcella 2a-3a.



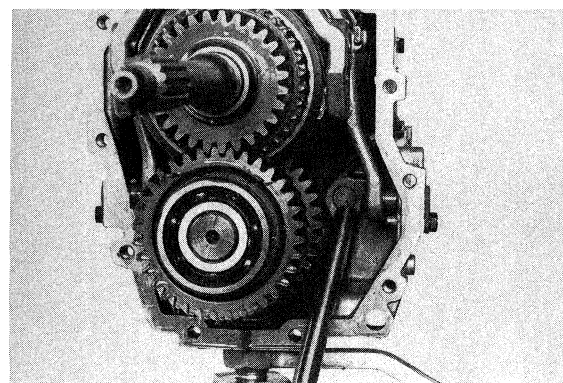
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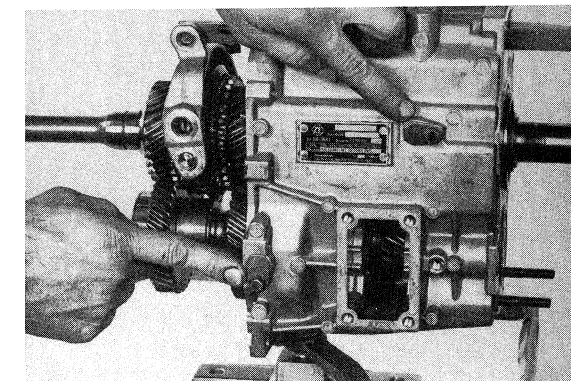


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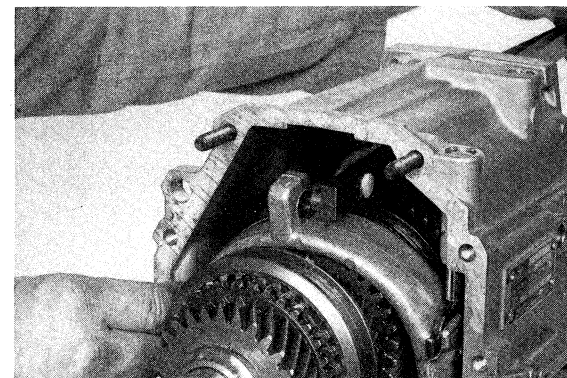
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- Drive out reverse gear shaft (**Figs. 74 and 75**).
 - Remove reverse gear with attached needle roller bearings (2 off) and two thrust washers (**Fig. 76**).
 - Remove 2nd, 3rd and 1st reverse gear shifter fork pivot pins (two per side) (**Fig. 77**).
- NOTE.** Two longer pins belong to 2nd - 3rd gear fork.



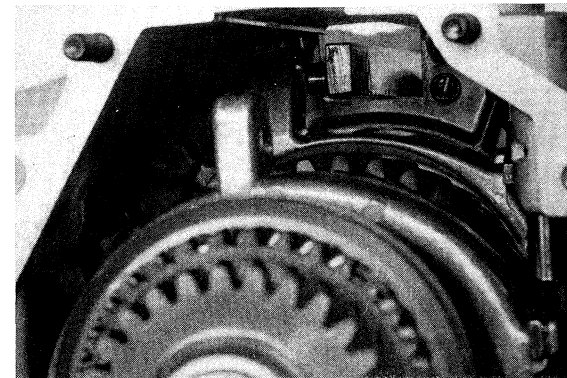
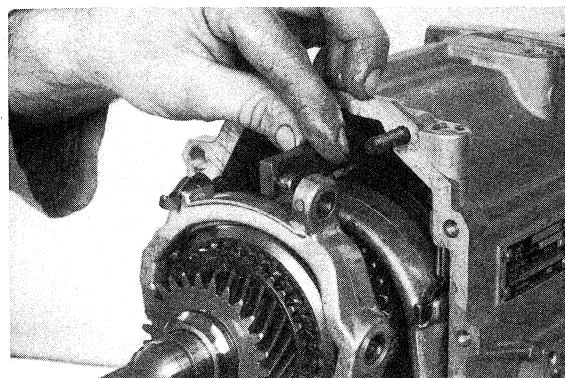
- Sfilare le aste di comando forcelle:
 - prima l'asta 4a - 5a e relativa forcella (**Fig. 78 e 79**)
 - poi l'asta 2a - 3a (**Fig. 80**)
 - poi l'asta RM - 1a (**Fig. 81**).
- Togliere l'anello di fermo del cuscinetto dell'albero primario (**Fig. 82**).



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▲ 80

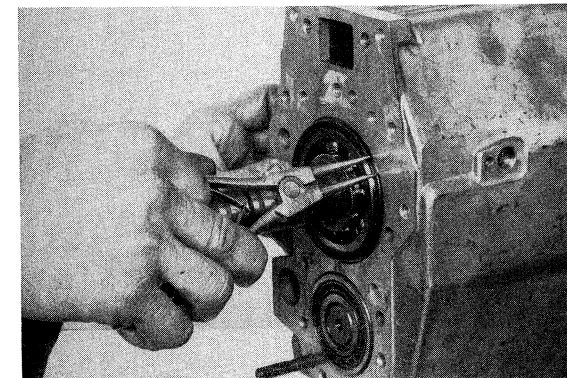
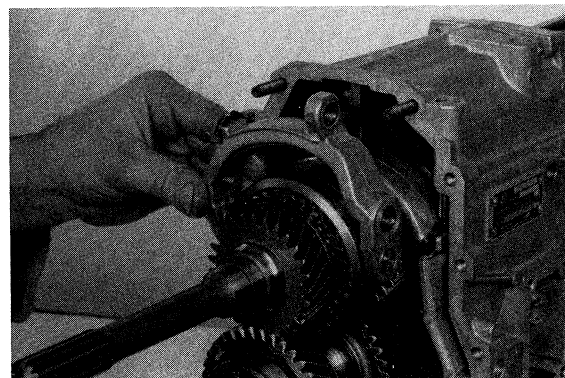
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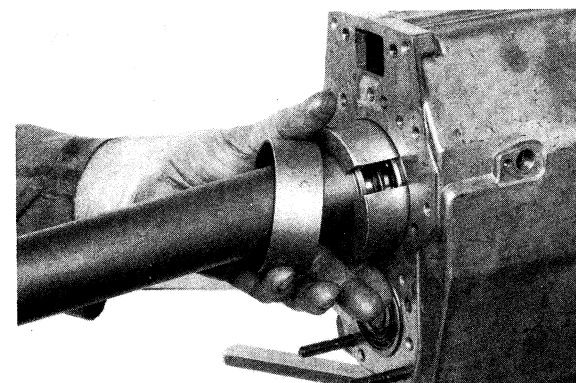
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- Withdraw shifter rods in the following order:
 - 4th/5th gear shifter rod with associated fork (**Figs. 78 and 79**)
 - 2nd/3rd gear shifter rod (**Fig. 80**)
 - reverse/1st gear shifter rod (**Fig. 81**).
- Remove input shaft bearing retaining ring (**Fig. 82**).

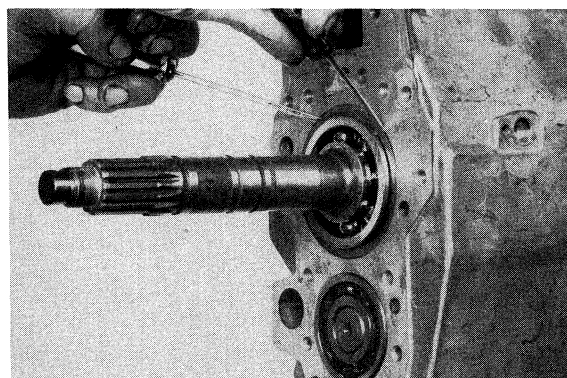


- Togliere il rasamento (Fig. 83).
- Togliere l'anello elastico di fermo e relativa rondella (Fig. 84).
- Utilizzando l'apposito attrezzo, togliere il cuscinetto (Fig. 85).
- Sfilare i due alberi (se necessario battere leggermente sull'albero secondario) (Fig. 86).
- Togliere dalla morsa l'attrezzo con la semiscatola posteriore.
- Montare in morsa l'attrezzo speciale porta alberi (Fig. 87).

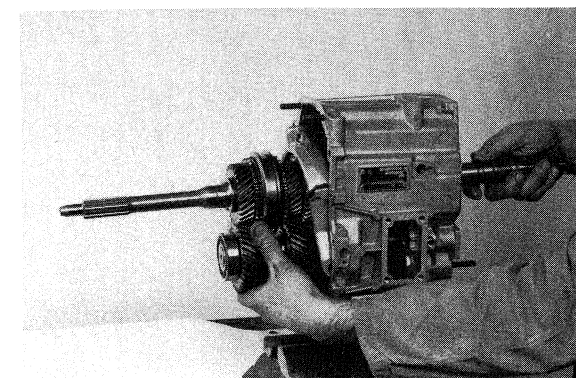


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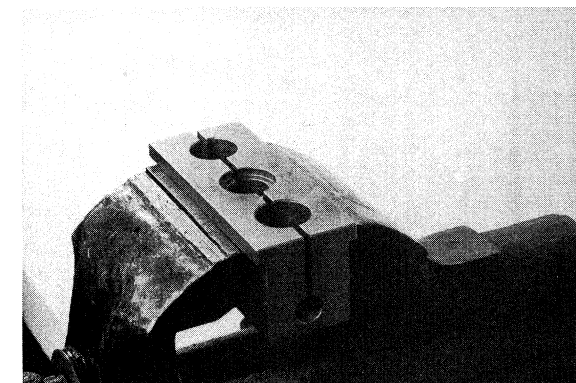
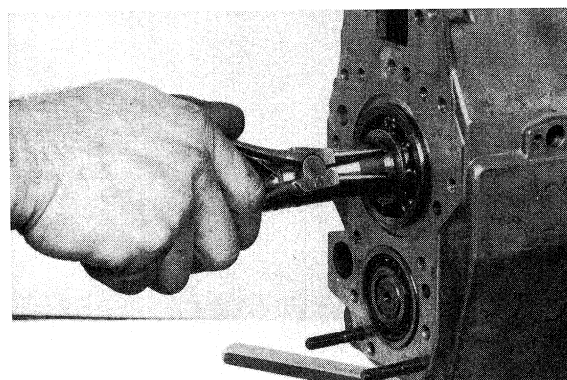
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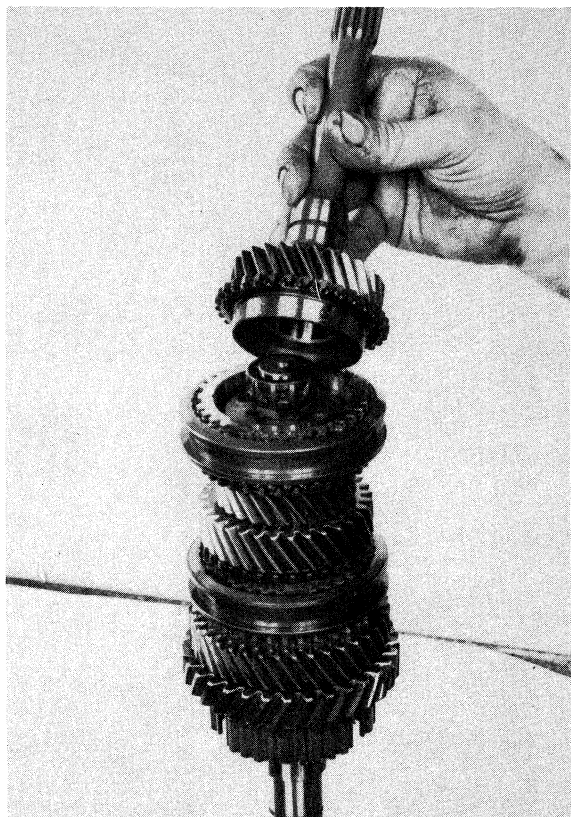


- Remove abutment ring (Fig. 83).
- Remove retaining ring and associated washer (Fig. 84).
- Remove bearing using a suitable tool (Fig. 85).
- Withdraw both shafts. If necessary lightly tap driven shaft with a hammer (Fig. 86).
- Remove fixture with rear half housing from vice.
- Clamp shaft carrier in vice (Fig. 87).

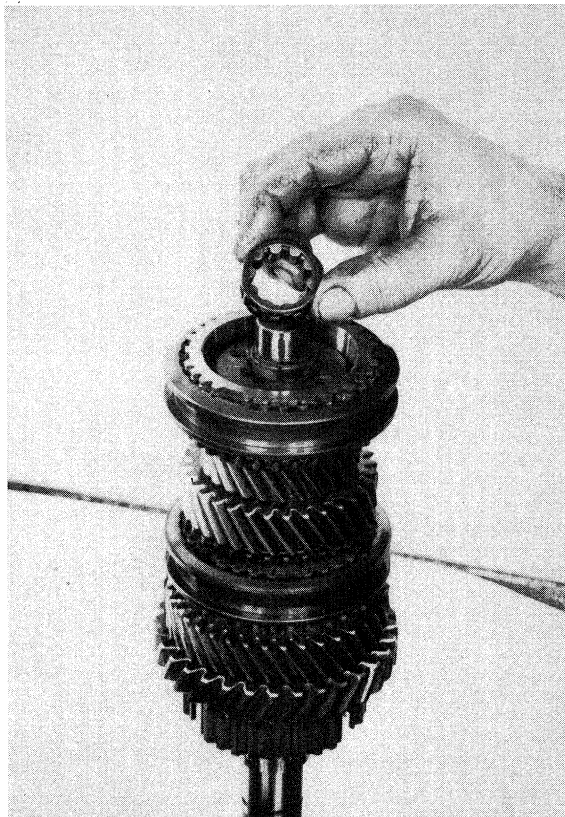
- Staccare l'albero sempre in presa dall'albero primario (**Fig. 88**); togliere il cuscinetto (**Fig. 89**).

- Separate input shaft from main shaft (**Fig. 88**) and remove bearing (**Fig. 89**).

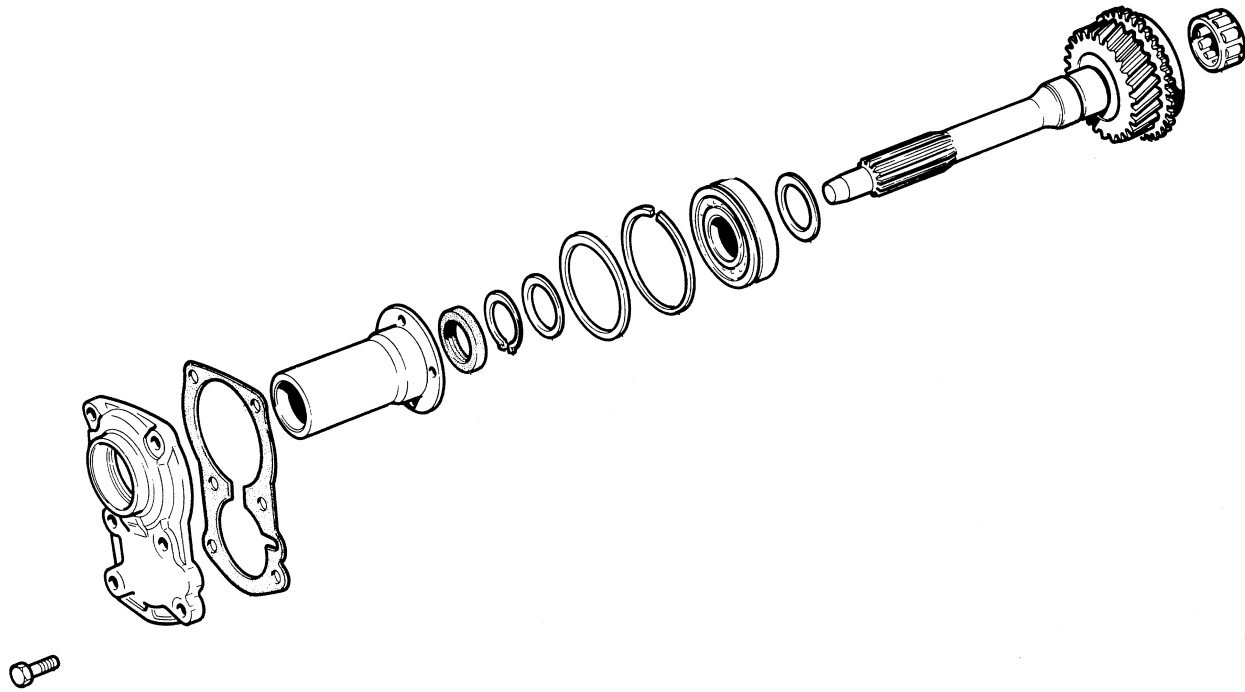
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ALBERO SEMPRE IN PRESA – INPUT SHAFT



▲ 90

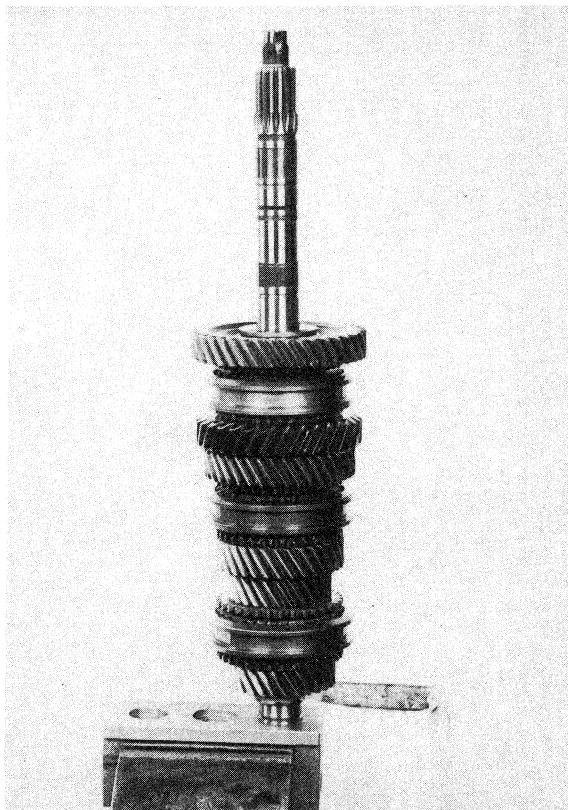
SMONTAGGIO ALBERO PRIMARIO

- Infilare l'albero nel foro appropriato e procedere al suo smontaggio (Fig. 92): sfilare nell'ordine:
 - rondella di rasamento (attenzione al verso di montaggio) (Fig. 93)
 - ingranaggio della 1a (Fig. 94)

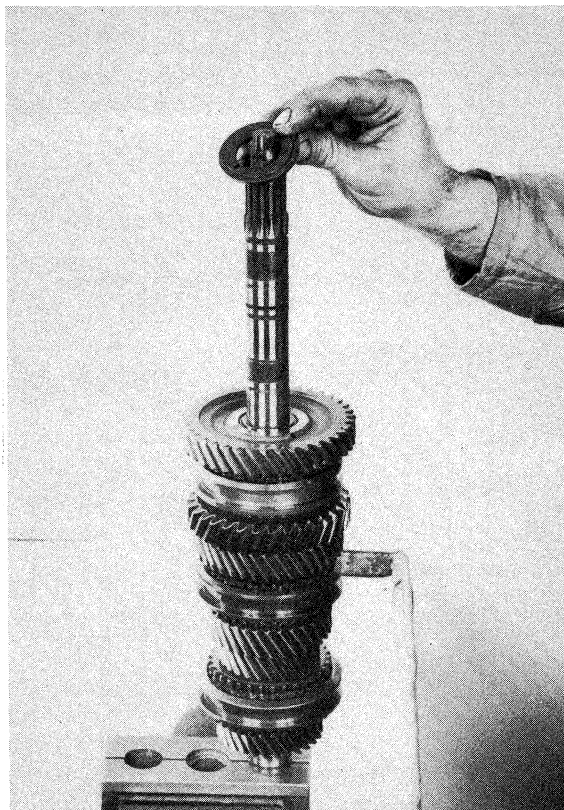
MAIN SHAFT DISASSEMBLY

- Insert shaft in the appropriate hole and disassemble (Fig. 92); withdraw in the following order:
 - abutment ring noting its assembly position (Fig. 93)
 - 1st speed gear (Fig. 94)

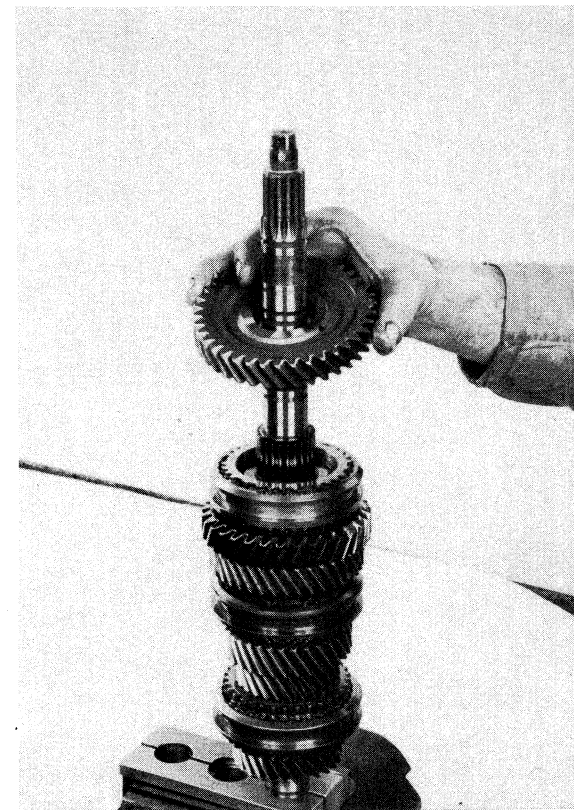
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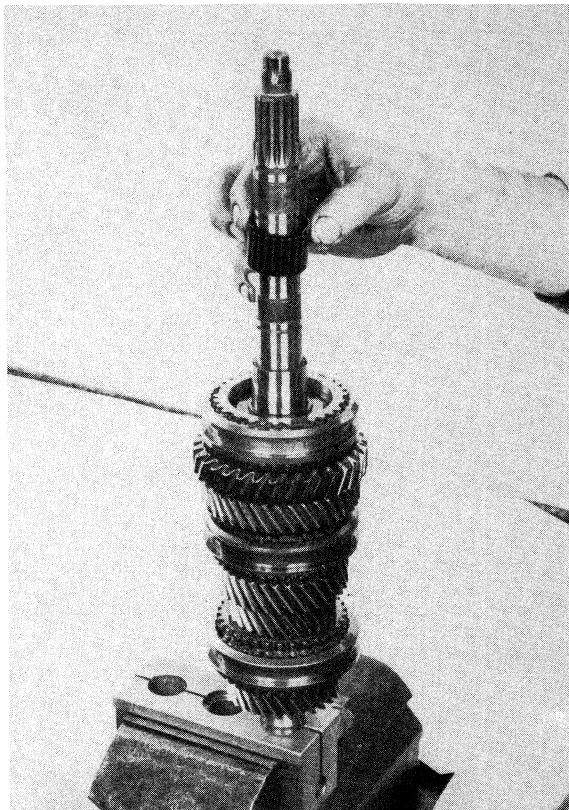
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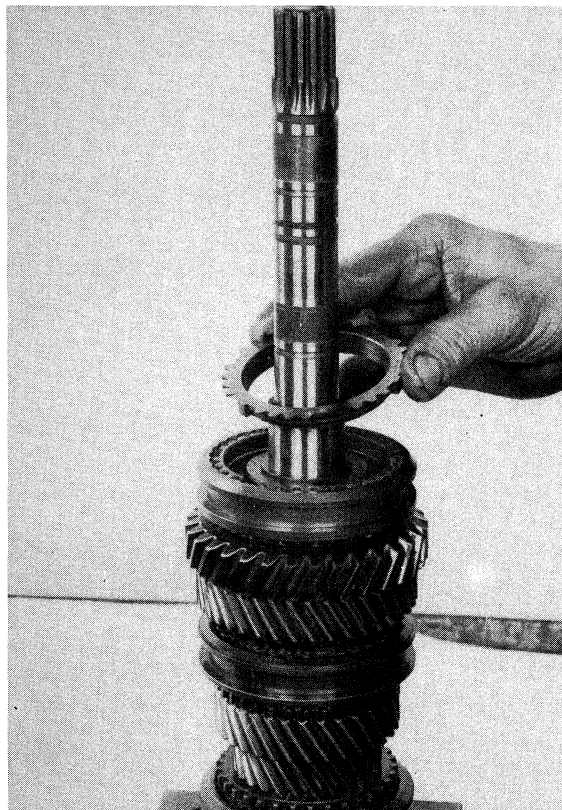
- gabbia a rullini ingranaggio 1a (Fig. 95)
- anello di sincronizzazione (Fig. 96)
- molla di ritegno naselli (Fig. 97) manicotto sincronizzatore e tre naselli

- 1st gear needle roller bearing (Fig. 95)
- synchro cone (Fig. 96)
- shifting plate retaining spring, synchro sleeve and 3 shifting plates (Fig. 97)

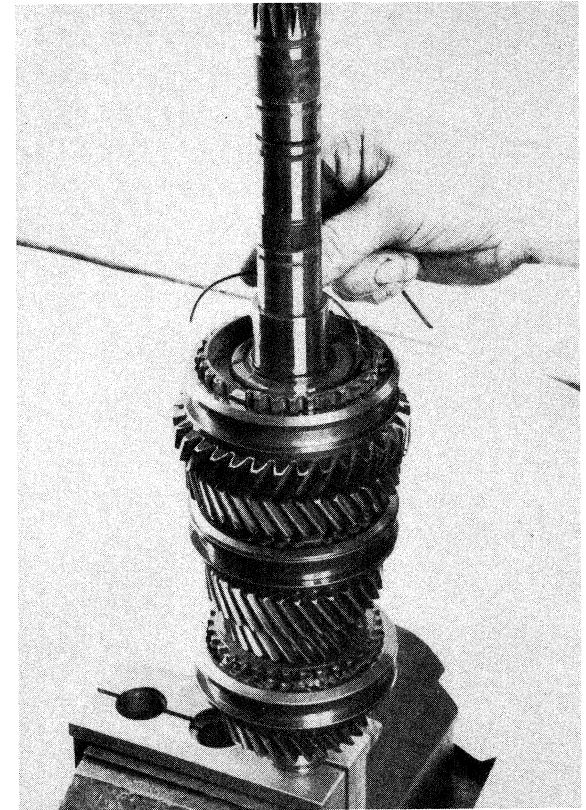
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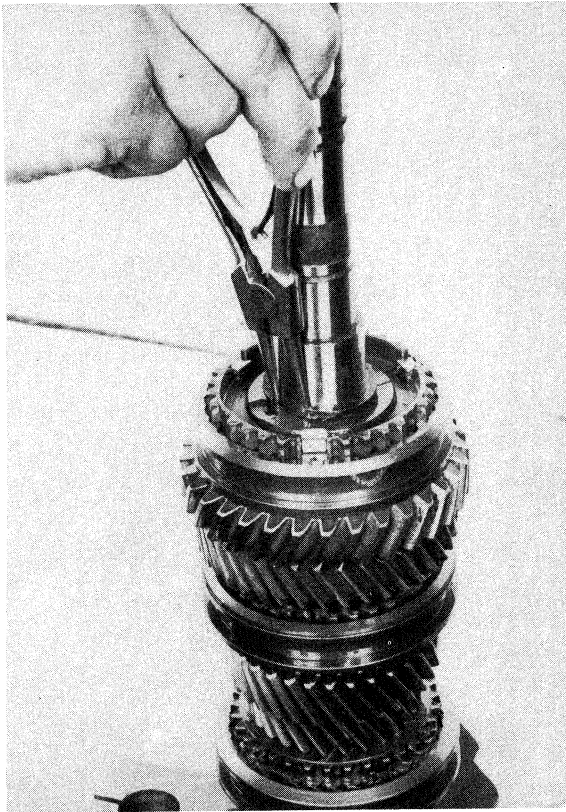
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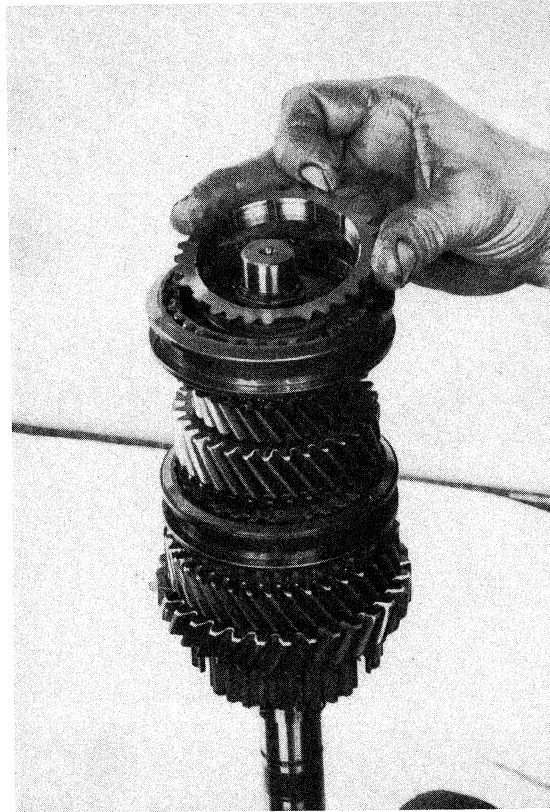
- l'anello di fermo del mozzo sincronizzatore 1a e RM (Fig. 98)
- rovesciare l'albero e infilarlo nell'attrezzo con il lato albero di uscita
- sfilare nell'ordine:
 - anello sincronizzatore (Fig. 99)
 - molla di ritegno naselli (Fig. 100)

- 1st/reverse gear synchro-hub retaining ring (Fig. 98)
- overturn shaft and insert output side in the tool
- withdraw in the following order:
 - synchrocone (Fig. 99)
 - shifting plate retaining spring (Fig. 100)

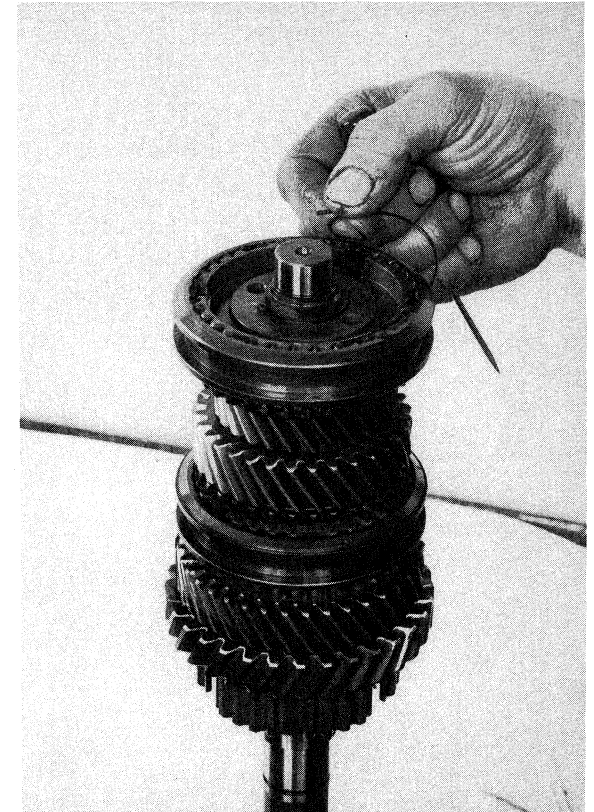
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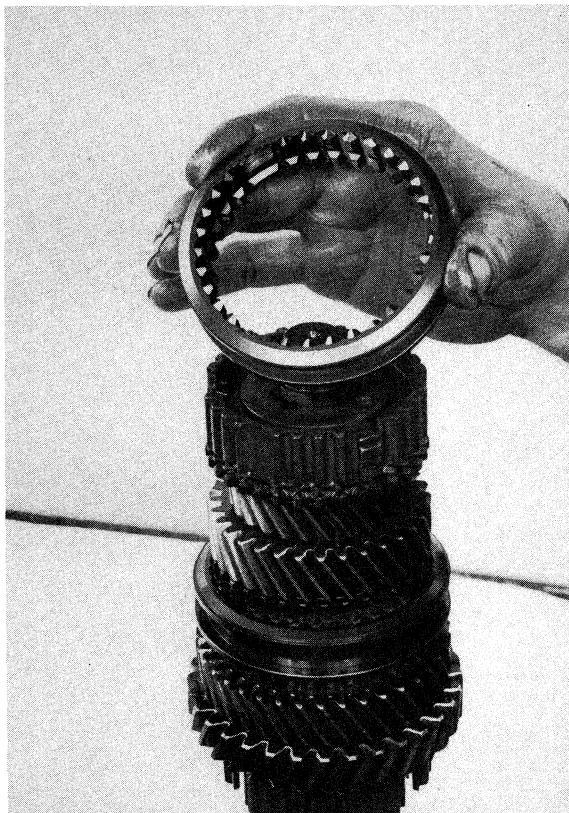
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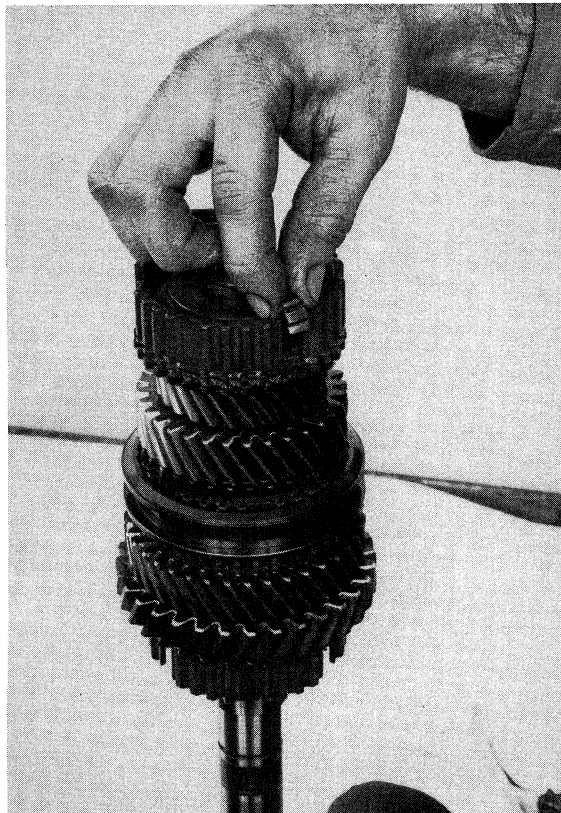
- manicotto sincronizzatore (Fig. 101)
- i tre naselli (Fig. 102)
- anello di fermo mozzo sincronizzatore (Fig. 103)

- sliding sleeve (Fig. 101)
- three shifting plates (Fig. 102)
- synchro-hub retaining ring (Fig. 103)

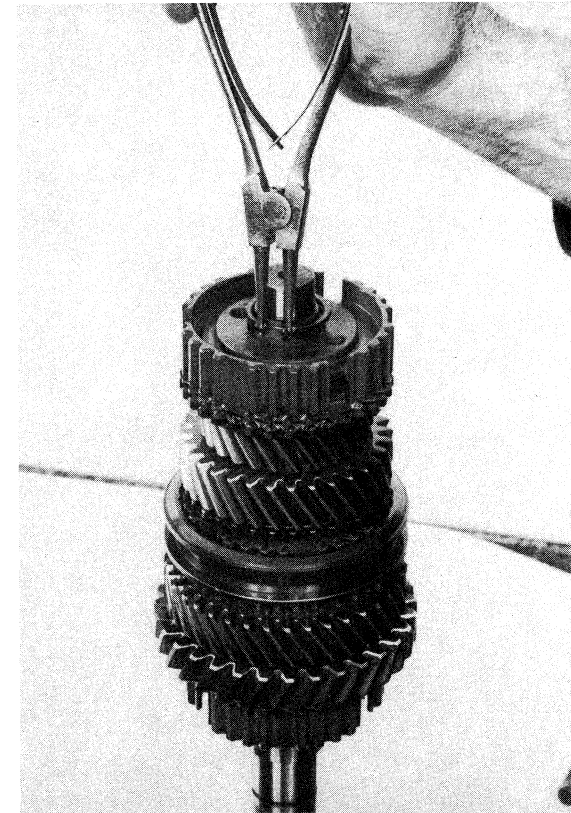
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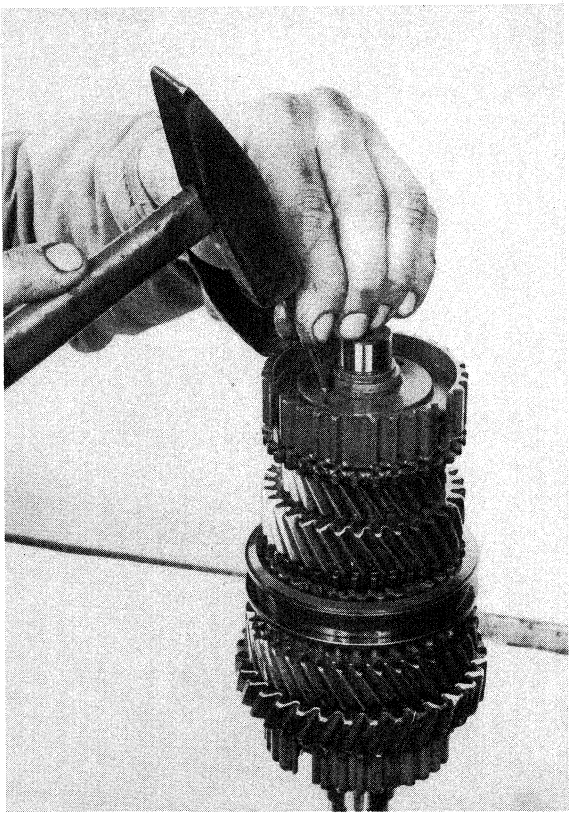
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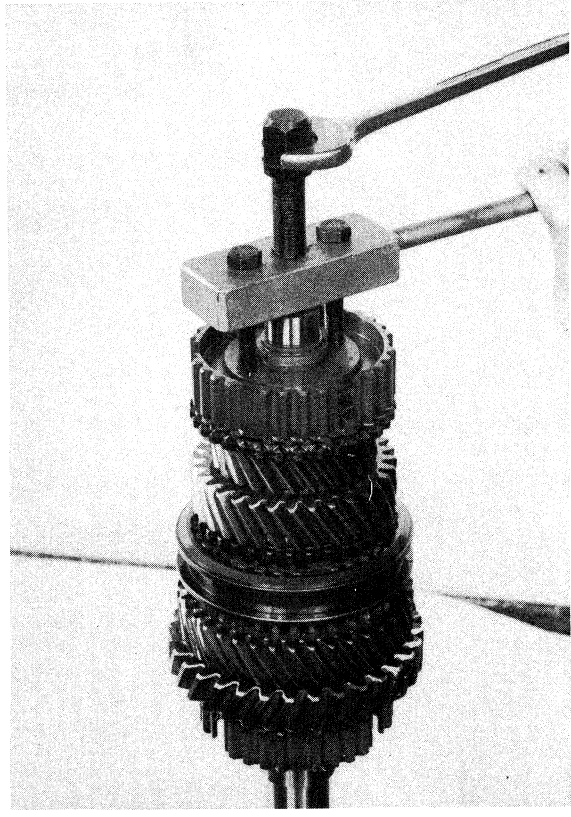
- contrassegnare (con bulino o penna elettrica) la posizione del mozzo sincronizzatore rispetto all'albero (Fig. 104)
- montare l'apposito estrattore e sfilare il mozzo sincronizzatore (Fig. 105 e 106)

- mark synchro-hub position relative to shaft using a punch or electric pen (Fig. 104)
- install a suitable puller and withdraw synchro-hub (Figs. 105 and 106)

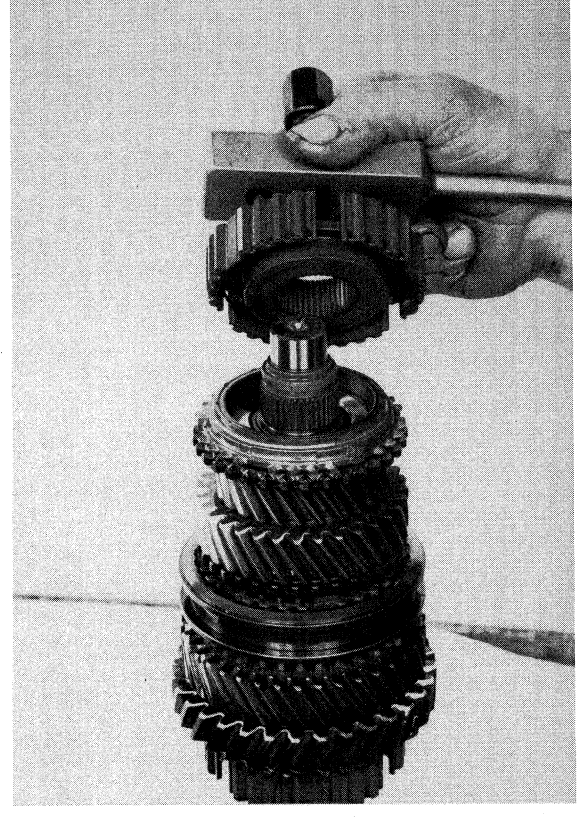
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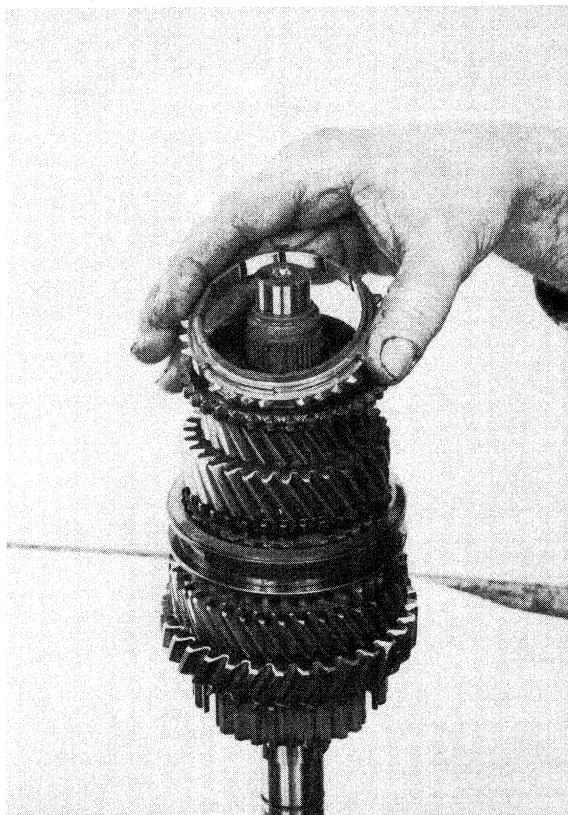
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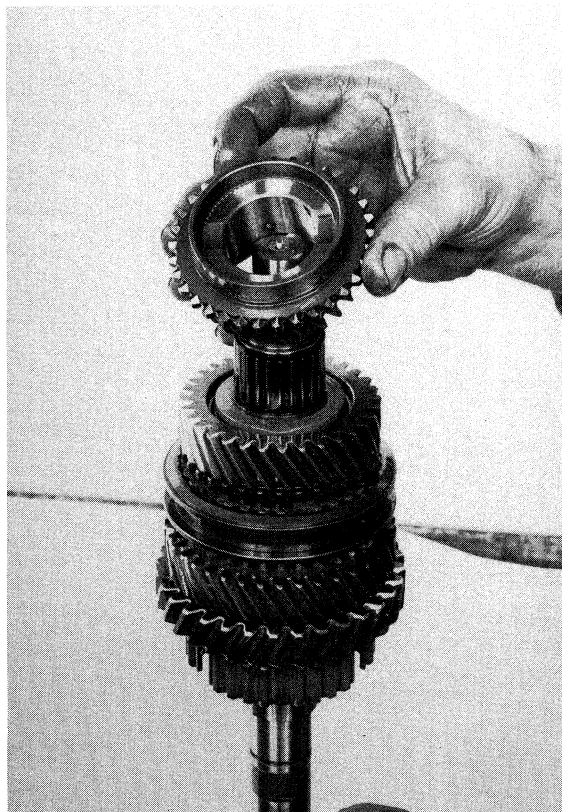
- anello sincronizzatore (Fig. 107)
- ingranaggio 5a (Fig. 108)
- gabbia a rullini (Fig. 109)

- synchrocone (Fig. 107)
- 5th gear (Fig. 108)
- needle roller bearing (Fig. 109)

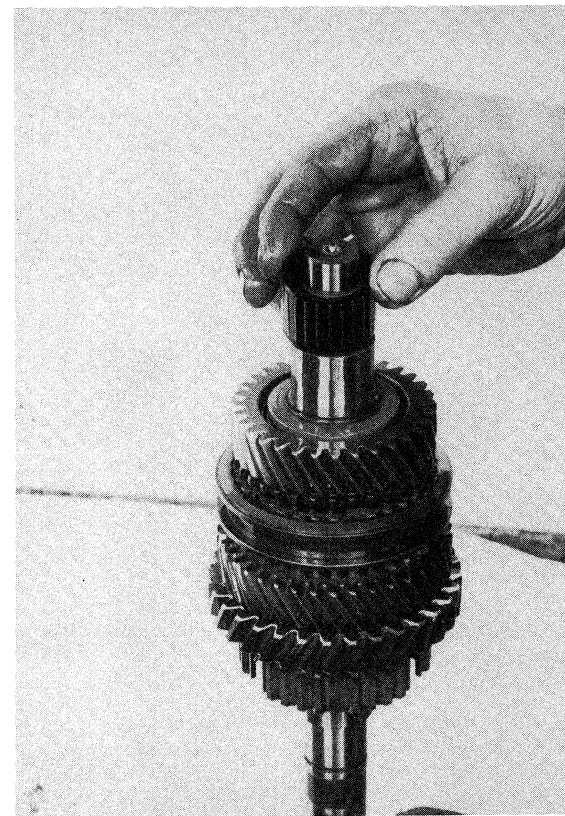
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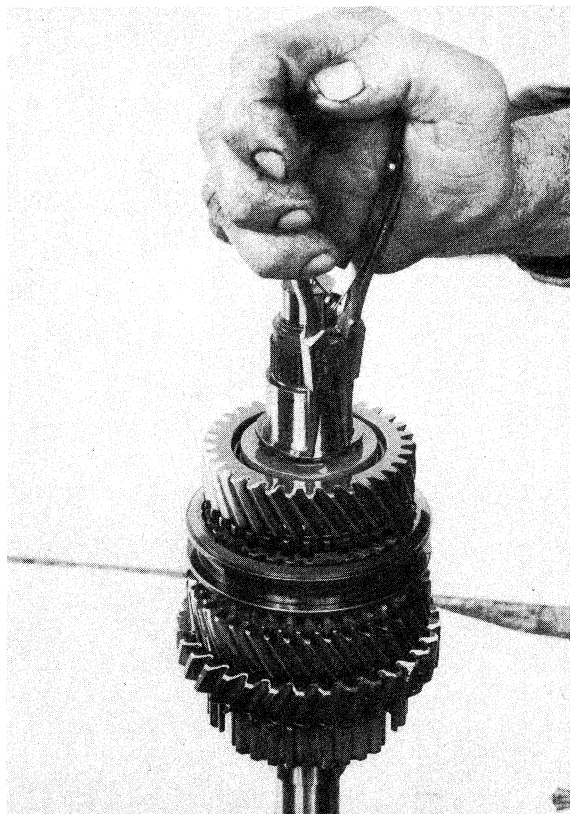
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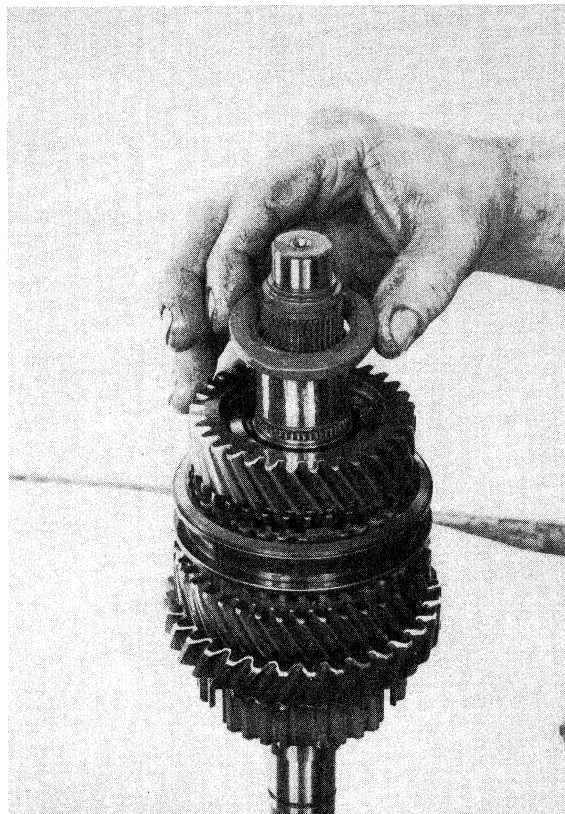
- anello di fermo (Fig. 110)
- rondella di rasamento (Fig. 111)
- ingranaggio 3a (Fig. 112)

- retaining ring (Fig. 110)
- abutment ring (Fig. 111)
- 3rd gear (Fig. 112)

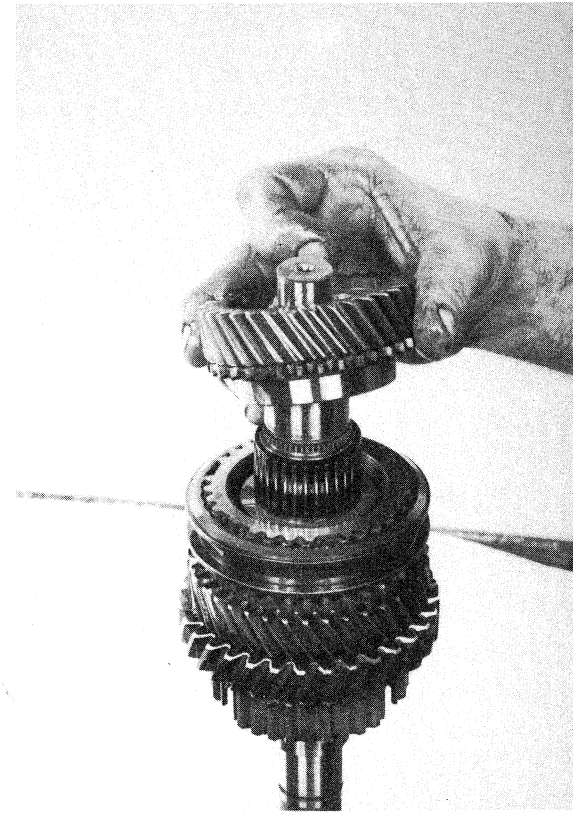
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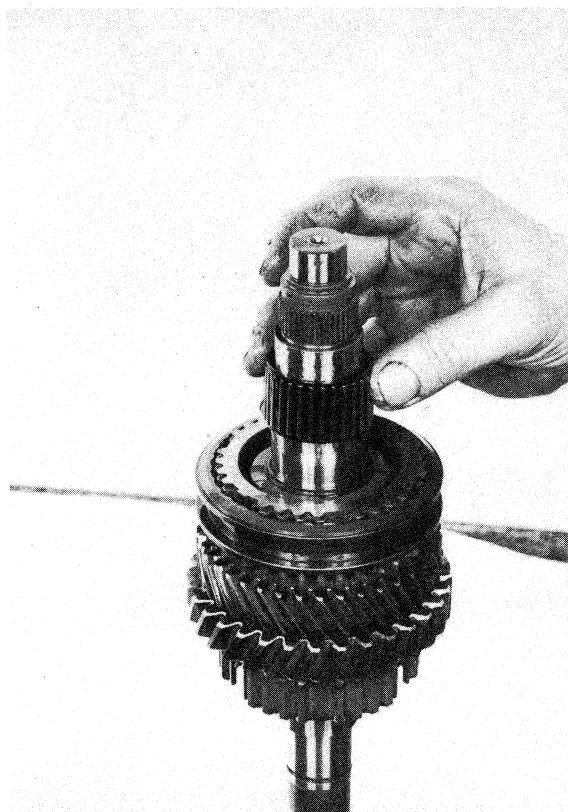
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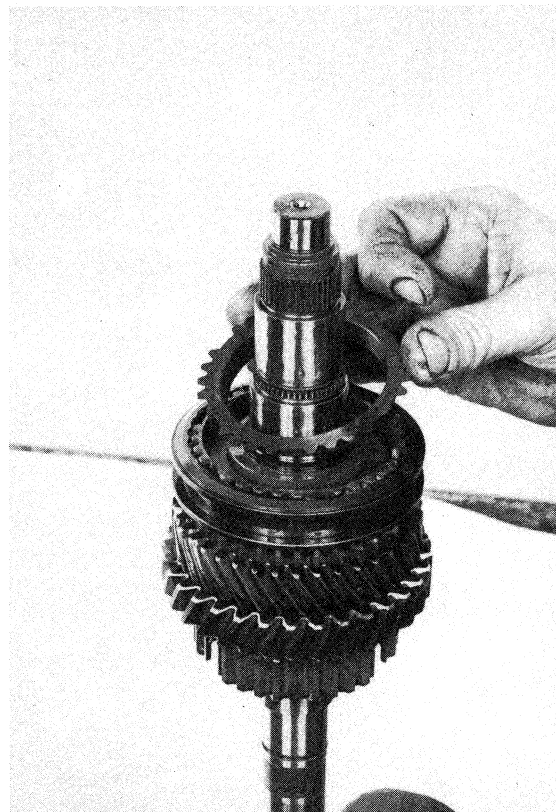
- gabbia a rullini (Fig. 113)
- anello sincronizzatore (Fig. 114)
- molla di ritegno
- manicotto scorrevole
- i tre naselli
- anello i fermo (Fig. 115).

- needle roller bearing (Fig. 113)
- synchrocone (Fig. 114)
- retaining spring
- sliding sleeve
- three shifting plates
- retaining ring (Fig. 115).

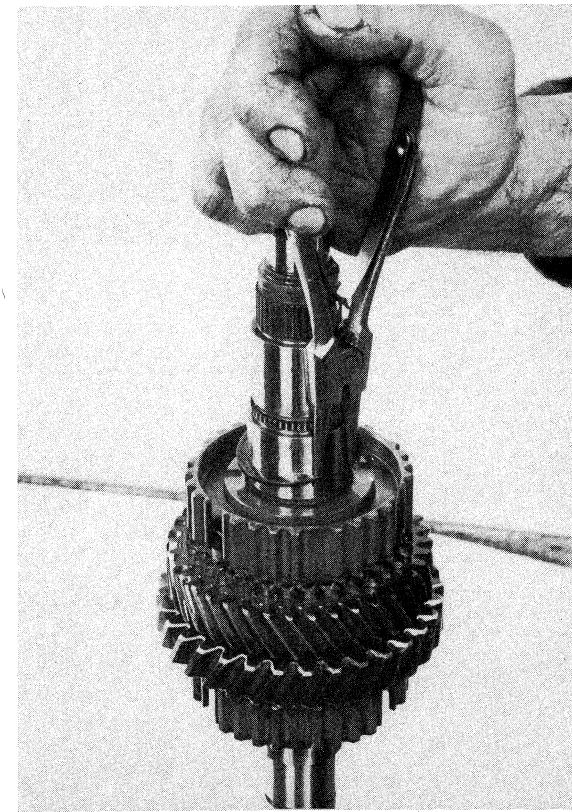
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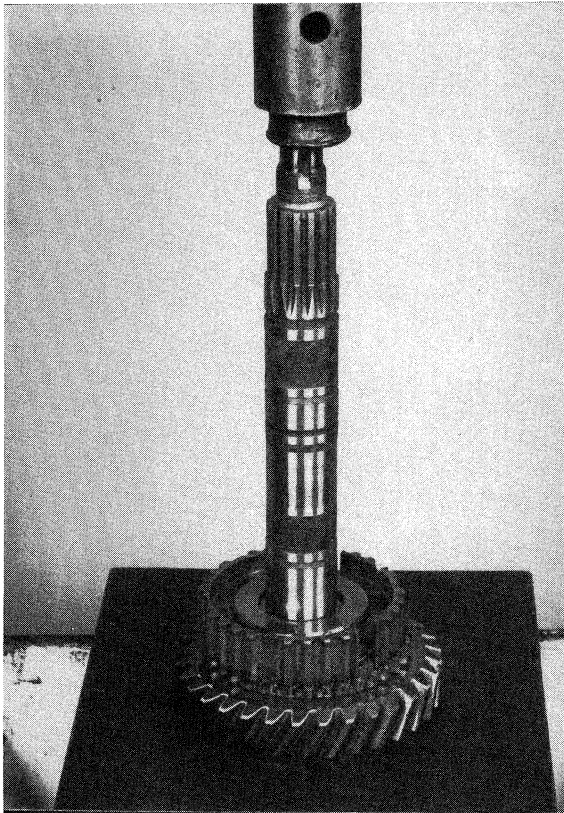
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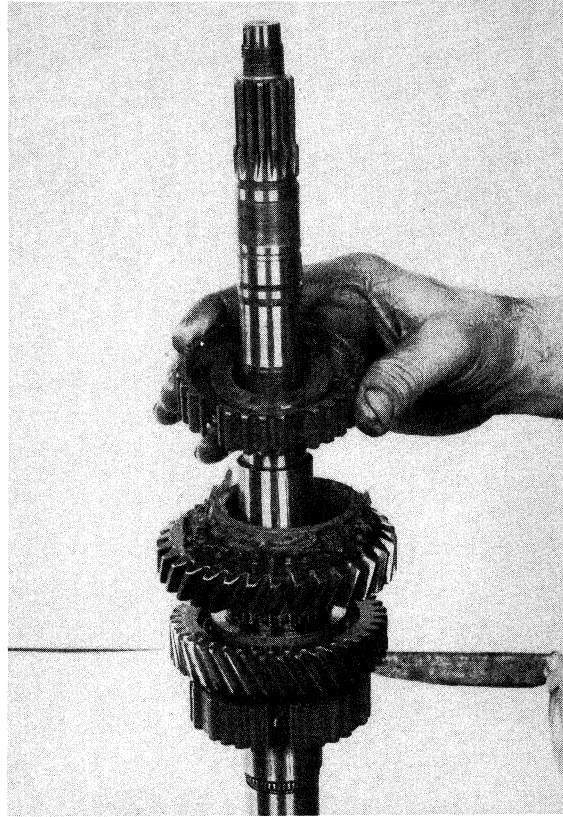
- Capovolgere l'albero ed alla pressa estrarre l'ingranaggio RM completo di mozzo sincronizzatore (Fig. 116-117).

- Overturn and using a press, remove reverse gear with synchro-hub (Figs. 116-117).

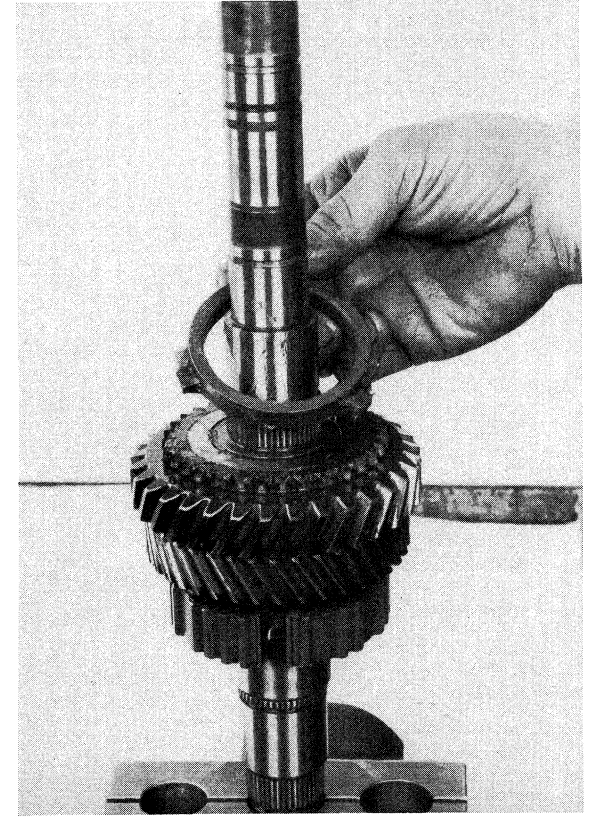
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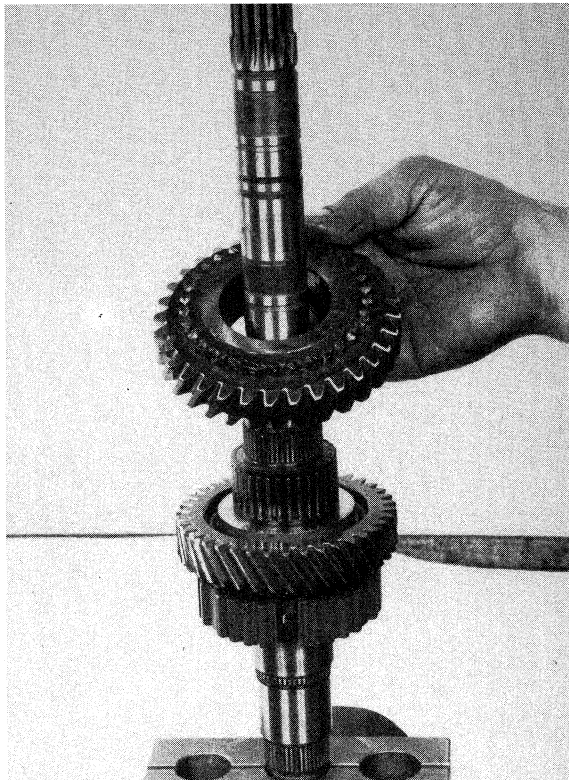
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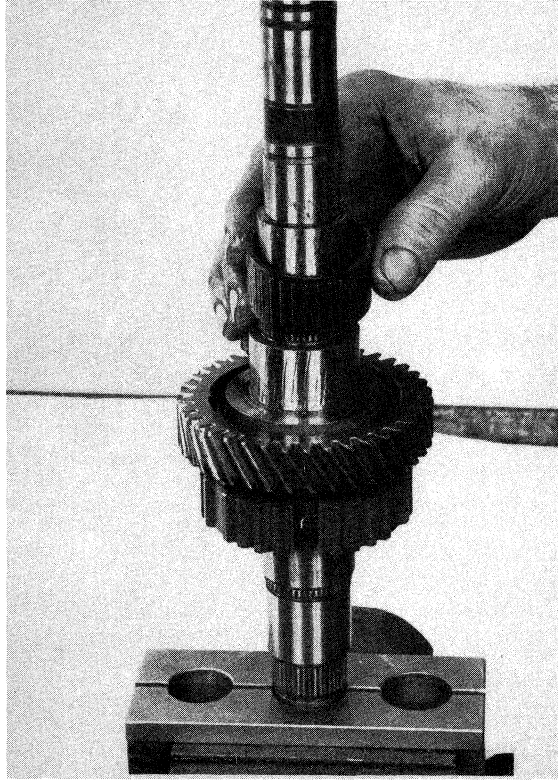
- Togliere l'anello di guida della RM, l'ingranaggio RM e relativa gabbia a rullini (**Figg. 118-119-120**).
- Alla pressa estrarre l'ingranaggio della 2a completo di mozzo sincronizzatore (**Fig. 122**), e sfilare mozzo, anello sincronizzatore, ingranaggio 2a e gabbia a rullini.
- Contrassegnare la posizione del mozzo sincronizzatore rispetto all'albero e sfilare mozzo e ingranaggio della 2a (**Figg. 121-122**).

- Remove reverse guide ring, reverse gear and associated needle roller bearing (**Figs. 118-119-120**).
- Using a press, remove 2nd gear with attached synchro-hub (**Fig. 122**). Remove hub, synchrocone, 2nd gear and needle roller bearing.
- Mark position of synchro-hub prior to withdrawing hub and 2nd gear (**Figs. 121-122**).

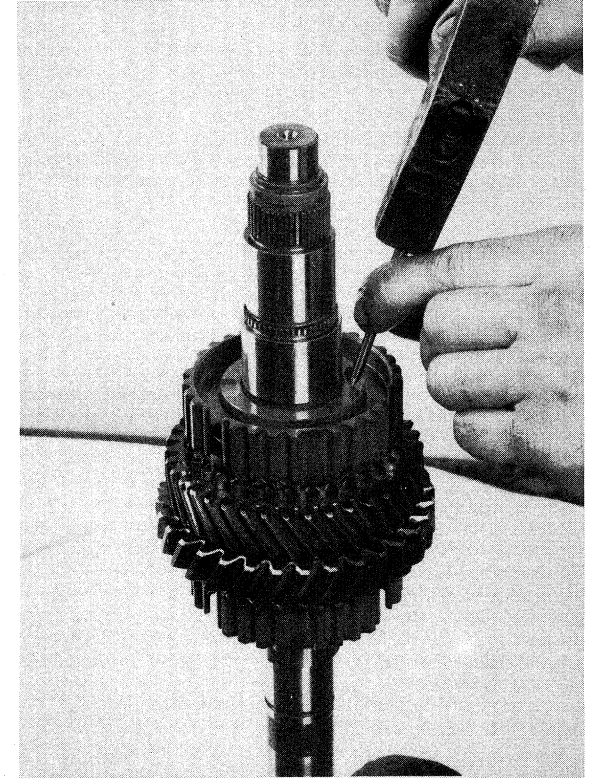
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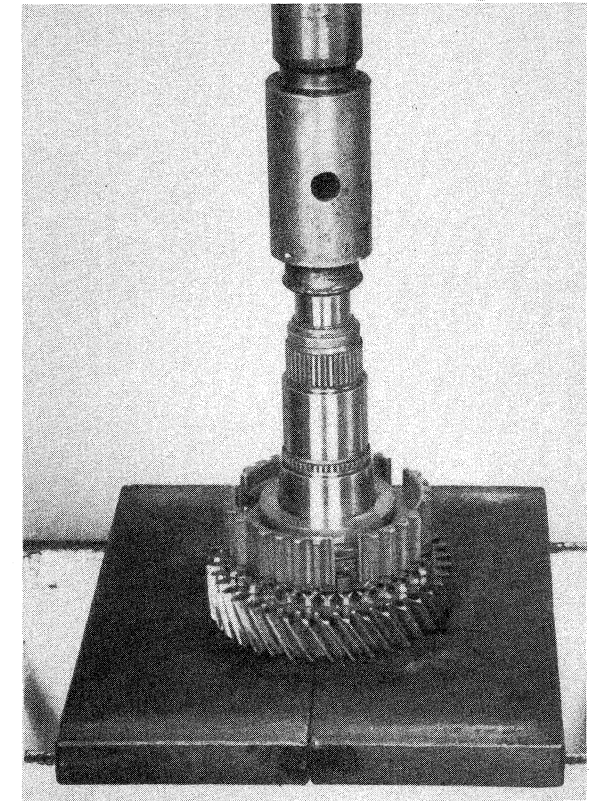
AVVERTENZE PER IL RIMONTAGGIO

- Prima di procedere al rimontaggio controllare che tutti i particolari siano ben puliti ed esenti da residui di sigillanti.
- Si raccomanda di sostituire le guarnizioni di tenuta, gli anelli paraolio, gli anelli di sicurezza e le rondelle elastiche.
- Per sbloccare o bloccare parti aderenti, usare martelli di alluminio o di resina sintetica.
- Dovendo sostituire delle viti prigioniere, si consiglia di avvitarle con del mastice di tenuta.
- Prima del rimontaggio lubrificare adeguatamente gli organi per evitare grippaggi nel periodo iniziale di funzionamento.
- Per il montaggio a caldo di particolari riscaldati ad una temperatura di 150° - 180 °C si raccomanda di non superare il suddetto limite massimo.
- Accertarsi che la superficie di rotolamento degli anelli paraolio sia esente da sporcizia e sia leggermente umettata con Molykote BR2 e che, durante il rimontaggio, il labbro interno del paraolio non venga rivoltato.
- Lavare ed asciugare accuratamente con aria compressa tutti i particolari, indi verificare:
 - il grado di usura degli anelli sincronizzatori, dei manicotti, della dentatura frontale degli ingranaggi, dei naselli di pressione, delle piastrine delle forcelle, dei perni scatto marce e delle scanalature delle aste di comando;
 - che i denti degli ingranaggi non presentino segni di intaccature: leggeri segni possono essere eliminati con pietra abrasiva; in caso contrario sostituire gli ingranaggi;
 - le superfici di rotolamento degli alberi e in special modo nelle prossimità degli alloggiamenti degli anelli conici;
 - le superfici filettate o scanalate degli alberi.

ASSEMBLY NOTES

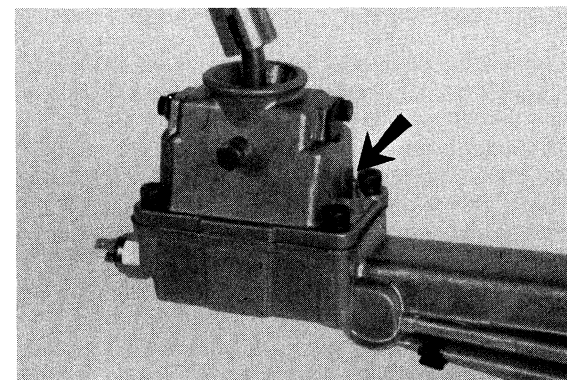
- Prior to reassembly check that all parts are clean and free from jointing compound residues.
- Replace seals, gaskets, retaining rings and lock-washers.
- To remove and install mating parts, use aluminium hammers or synthetic resin mallets.
- When replacing studs, apply jointing compound.
- Prior to assembly, lubricate all parts to prevent seizure on initial running using clean brush and oil.
- When shrinking parts heated to 150 - 180 °C, do not exceed this temperature.
- Ensure that journal surface in contact with oil seal lip is free from dirt and lightly coated with Molykote BR2. On assembly, ensure that oil seal inner lip is not bent over.
- Wash and dry all parts using compressed air and check:
 - synchrocone, sleeves, gear clutch teeth, shifting plates, shifter fork pads, gear detent plungers and shifter rod grooves for wear;
 - that gear teeth are free from pick-up; slight blemishes may be removed with a suitable abrasive file. In all other cases replace the affected gears without hesitation;
 - shaft journals and synchro-cone seats for wear or damage;
 - threaded or splined shaft surfaces for wear or damage.

▼ 122

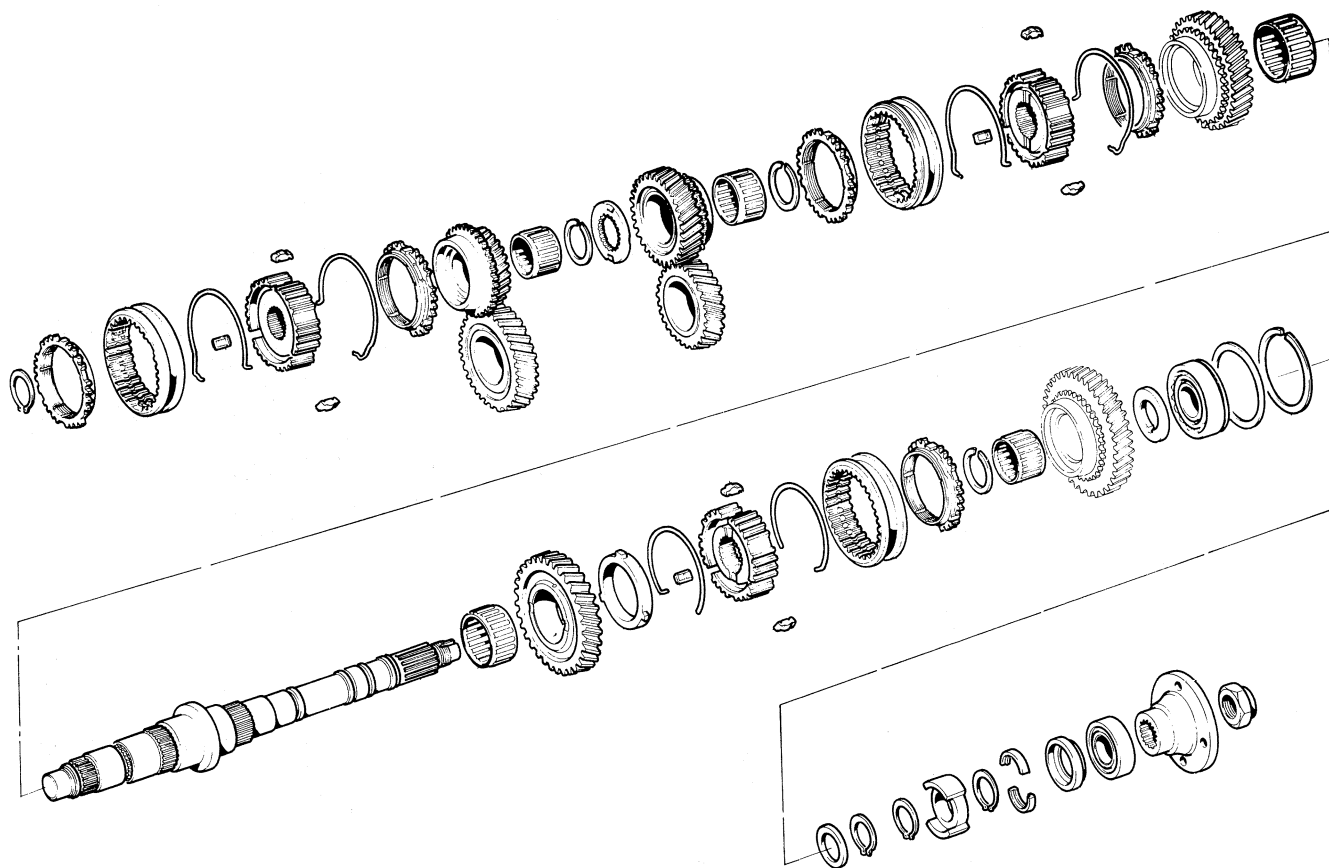


- Verificare accuratamente le sedi dei cuscinetti e le piste di rotolamento delle gabbie a rullini sugli alberi e sugli ingranaggi.
- Controllare che il foro di sfiato, situato sulla testa di comando, non sia ostruito (Fig. 123).

- Check bearing and needle roller journals on shafts and housings in gears for wear or damage.
- Check that vent hole in gear lever support is not obstructed (Fig. 123).



▼ 124

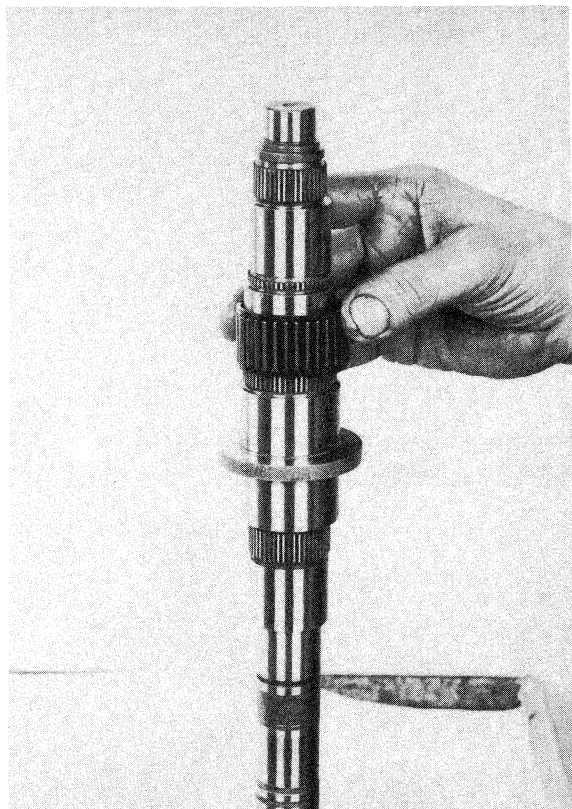


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RIMONTAGGIO ALBERO PRIMARIO

- Posizionare l'albero primario nell'attrezzo in morsa.
- Montare in sequenza:
 - gabbia a rullini (Fig. 125)
 - ingranaggio 2a (Fig. 126)
 - anello sincronizzatore (Fig. 127)

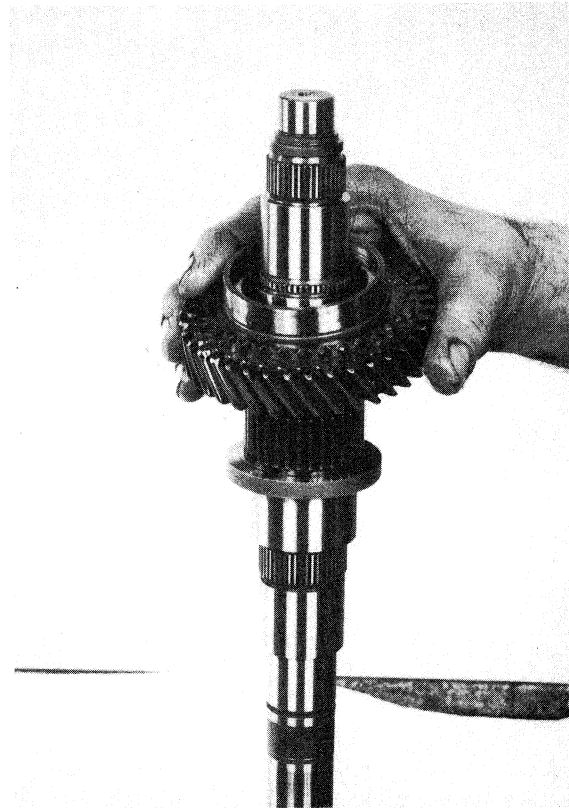
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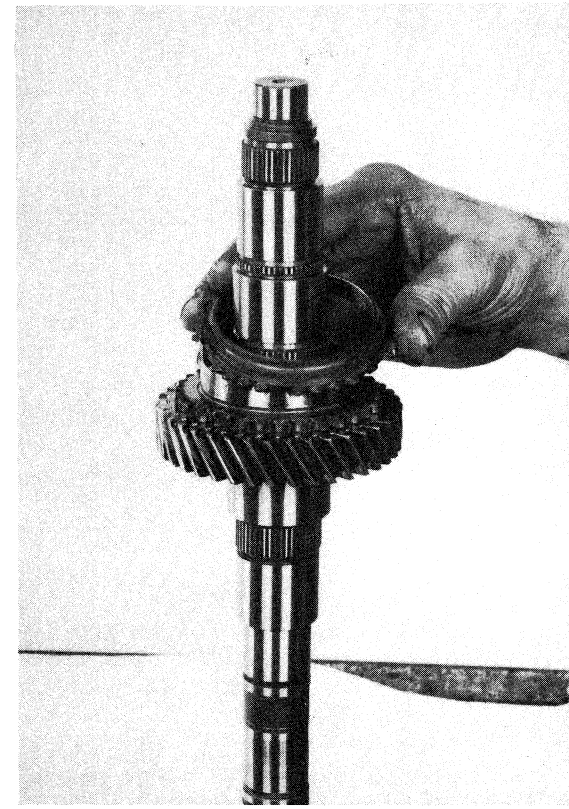
MAIN SHAFT ASSEMBLY

- Position main shaft in carrier on vice.
- Install in the following order:
 - needle roller bearing (Fig. 125)
 - 2nd speed gear (Fig. 126)
 - synchrocone (Fig. 127)

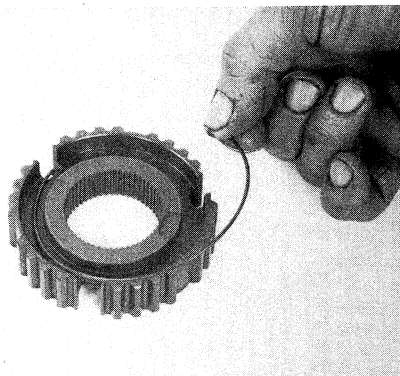
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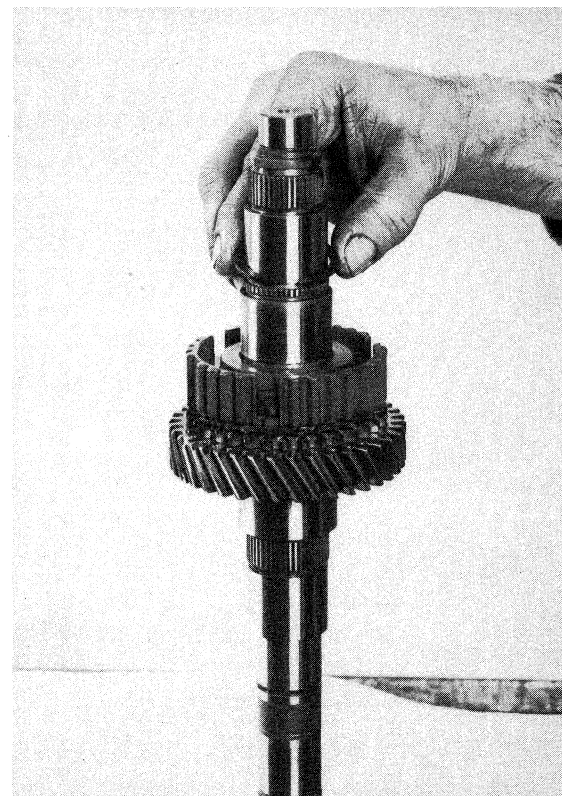
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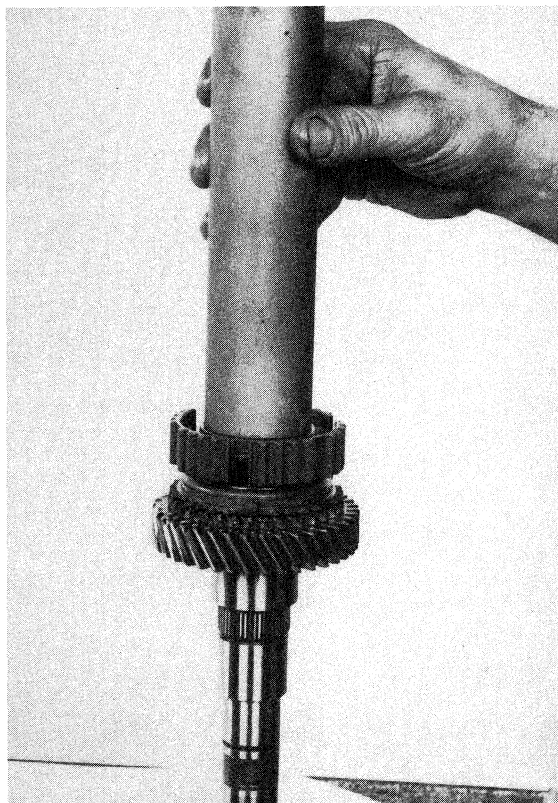
- molla nel mozzo sincronizzatore (Fig. 128).
- Montare il mozzo con la molla già montata rivolta verso l'ingranaggio della 2a sull'albero mediante l'apposito attrezzo, previo riscaldamento ad una temperatura di 80 °C circa e orientandolo ai riferimenti contrassegnati durante lo smontaggio (Fig. 129).
- Montare:
 - anello di fermo con l'apposito attrezzo (Fig. 130 e 131).



▲ 128

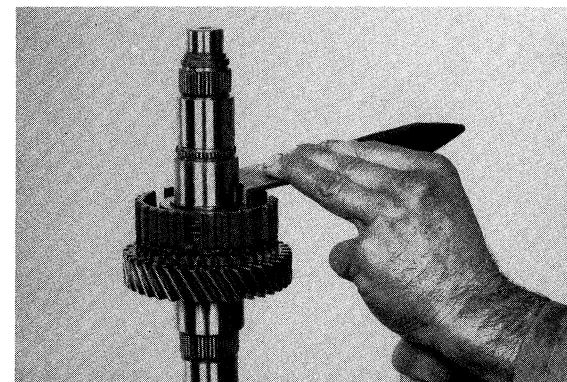


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▲ 130

- spring on synchro-hub (Fig. 128).
- Heat hub to 80 °C and install on shaft with spring in position facing toward 2nd gear, using a suitable tool, aligning the reference marks applied on disassembly (Fig. 129).
- Install the following:
 - retaining ring using a suitable tool (Figs. 130 and 131).

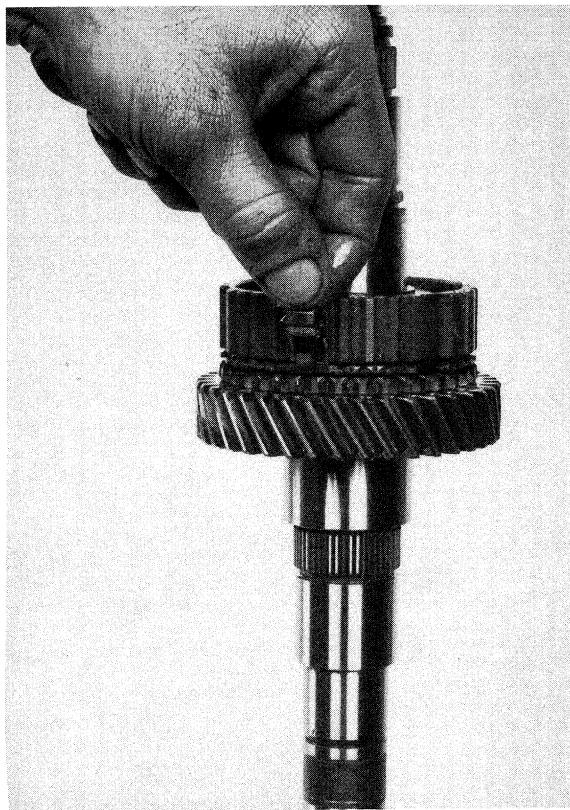


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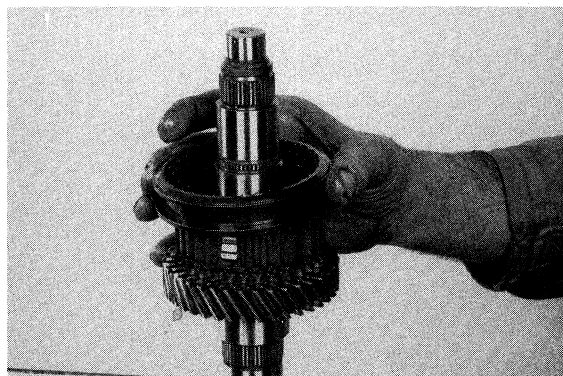
- i tre naselli spalmati di grasso (Fig. 132)
- manicotto sincronizzatore (Fig. 133)
- molla di ritegno (Fig. 134)
- anello sincronizzatore (Fig. 135)
- gabbia a rullini dell'ingranaggio 3a (Fig. 136)

- three shifting plates packed with grease (Fig. 132)
- sliding sleeve (Fig. 133)
- retaining spring (Fig. 134)
- synchrocone (Fig. 135)
- 3rd gear needle roller bearing (Fig. 136)

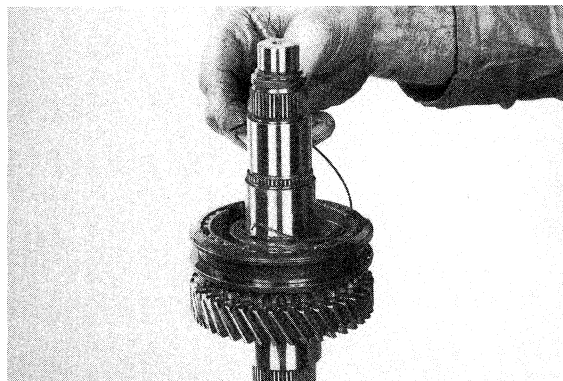
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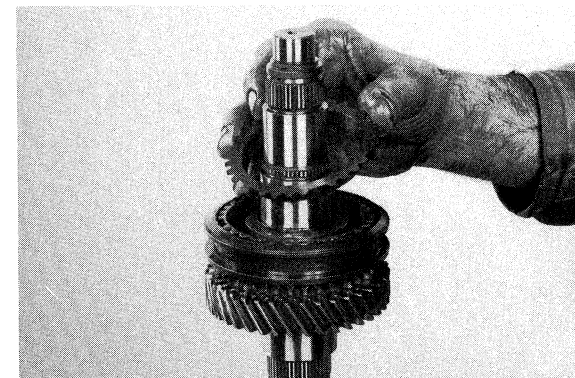
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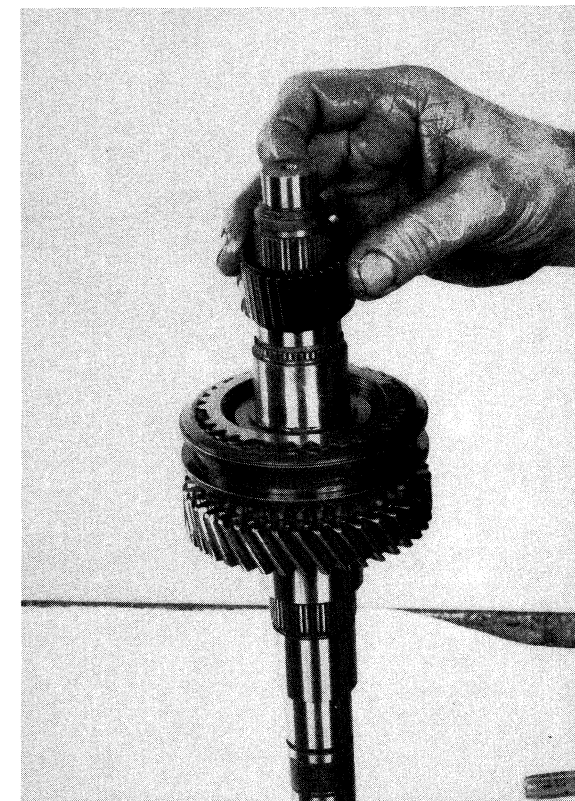
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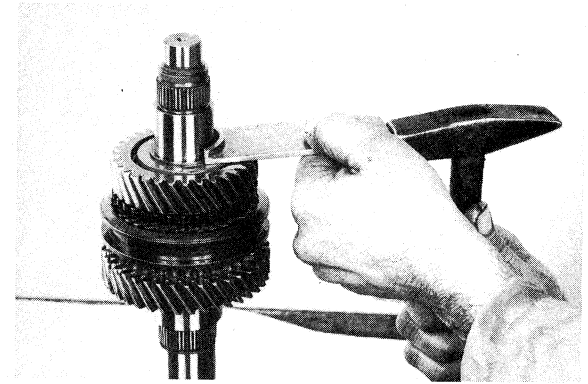


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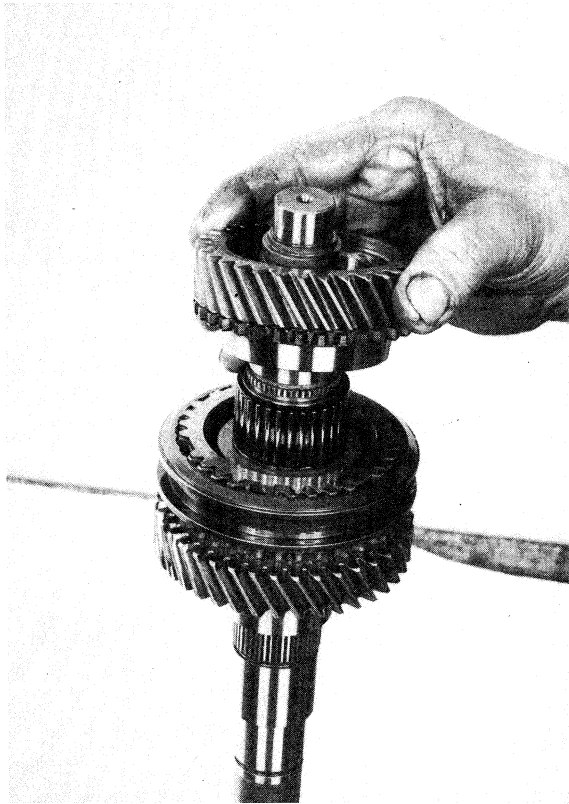
- ingranaggio 3a (Fig. 137)
- rondella di rasamento (Fig. 138)
- anello di fermo (Fig. 139)
- gabbia a rullini ingranaggio 5a (Fig. 140)

- 3rd speed gear (Fig. 137)
- abutment ring (Fig. 138)
- retaining ring (Fig. 139)
- 5th gear needle roller bearing (Fig. 140)

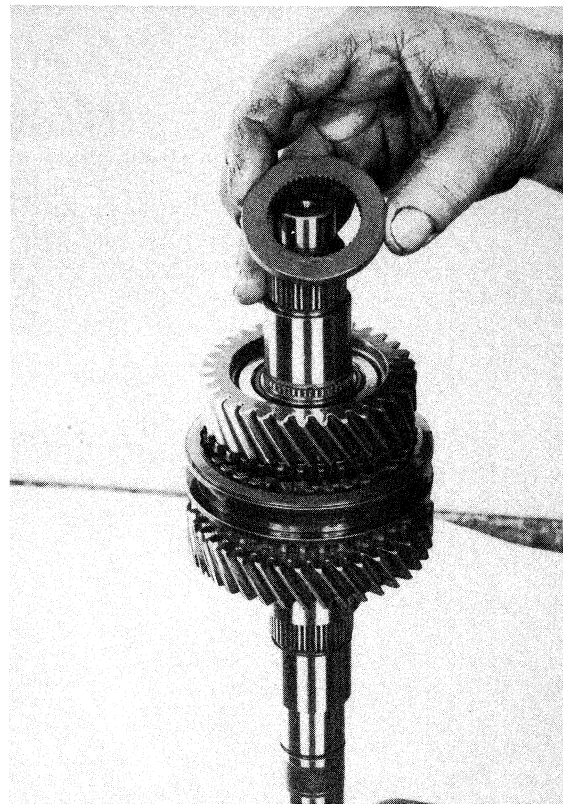


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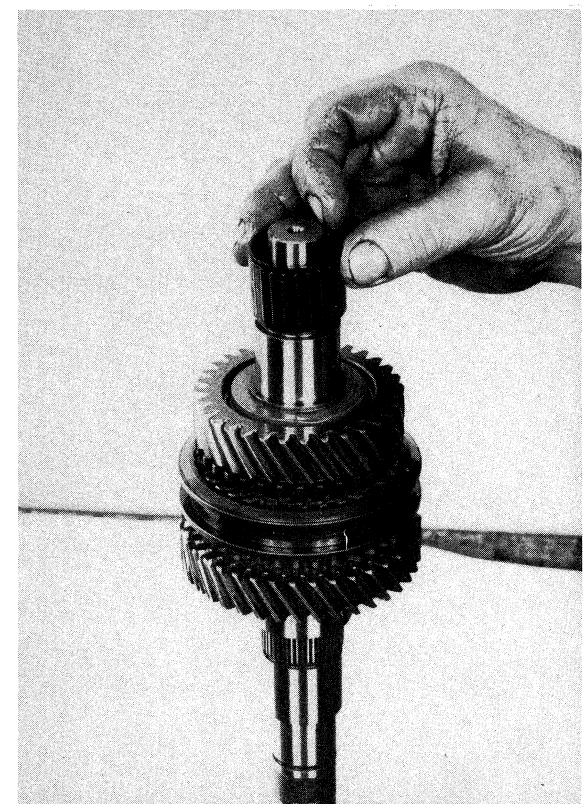
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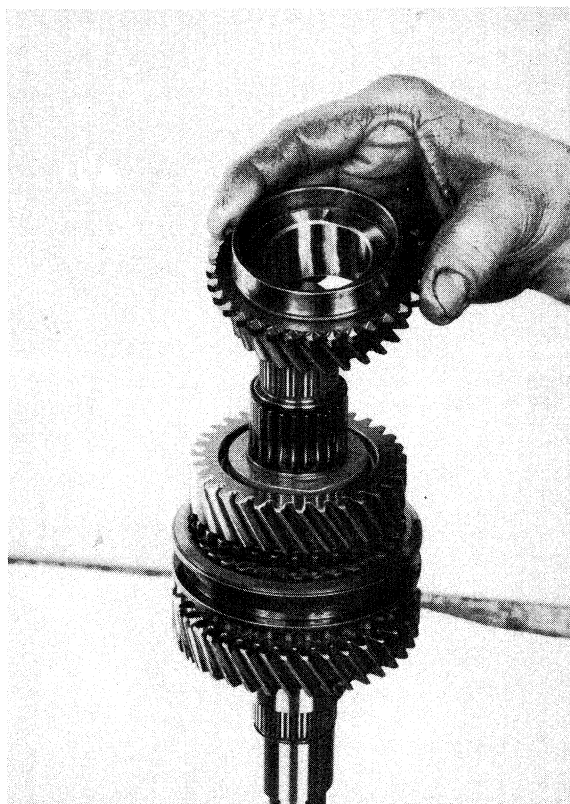
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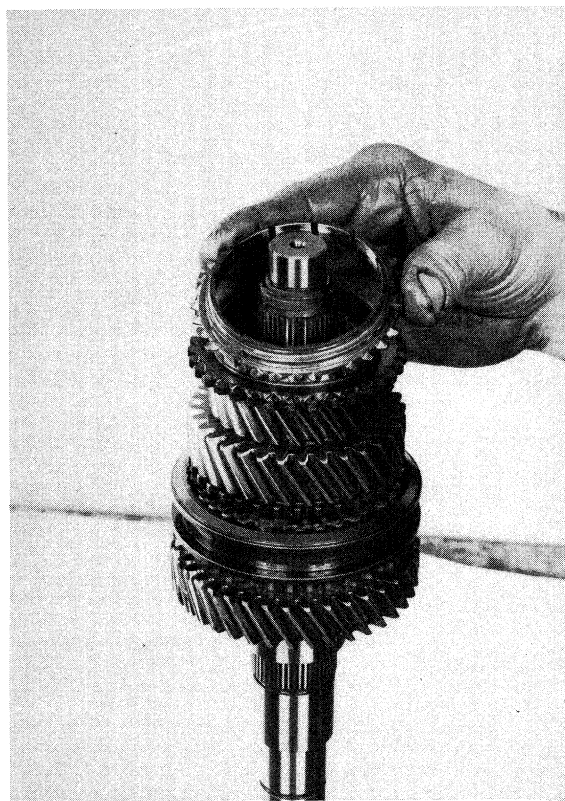
- ingranaggio 5a (Fig. 141)
- anello sincronizzatore (Fig. 142).
- Montare la molla di ritegno sul mozzo (lato ingranaggio 5a).
- Montare il mozzo sincronizzatore scaldato a 80 °C, orientando i riferimenti fatti allo smontaggio (Fig. 143).

- 5th speed gear (Fig. 141)
- synchrocone (Fig. 142).
- Install retaining spring on hub (on 5th gear side).
- Heat synchro-hub to 80 °C and install aligning reference marks applied on disassembly (Fig. 143).

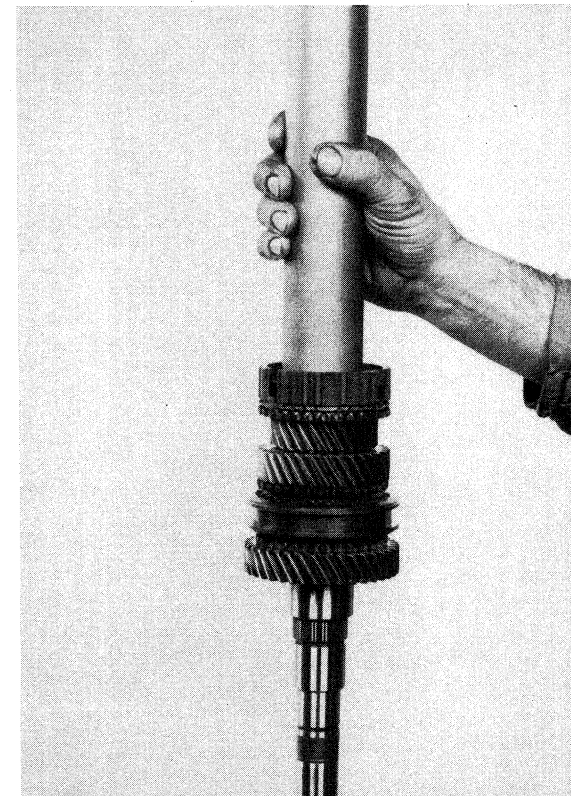
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▼ 142



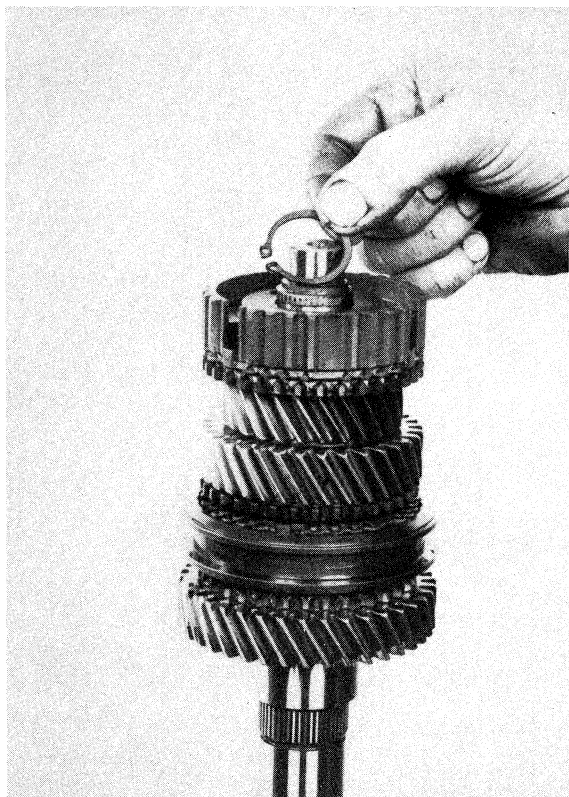
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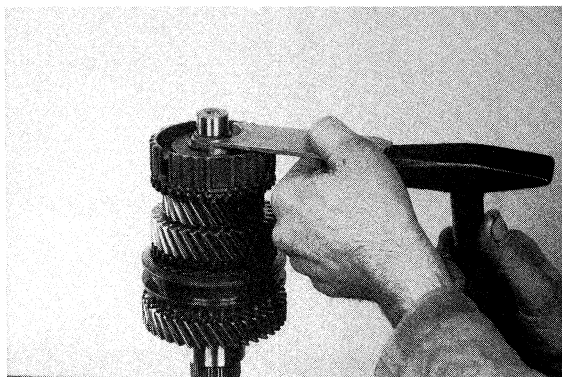
- Montare l'anello di fermo e posizionarlo con l'apposito attrezzo (Figg. 144 - 145).
- Montare:
 - i tre naselli spalmati di grasso (Fig. 146)
 - il manicotto scorrevole (Fig. 147)

- Install and position retaining ring using a suitable tool (Figs. 144 and 145).
- Install the following:
 - three shifting plates packed with grease (Fig. 146)
 - sliding sleeve (Fig. 147)

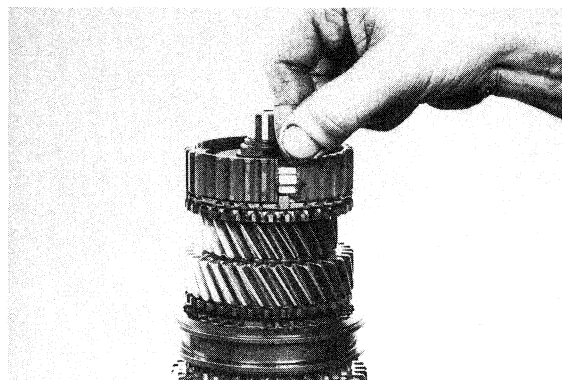
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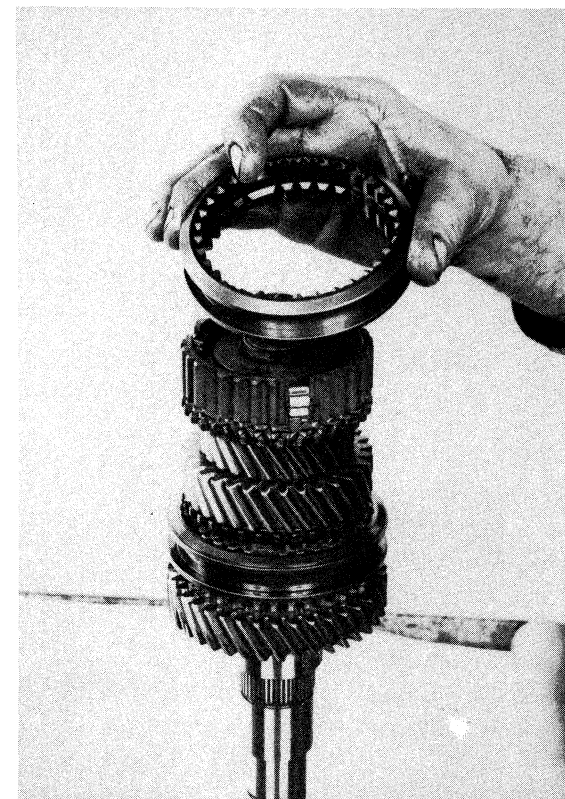
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▼ 146



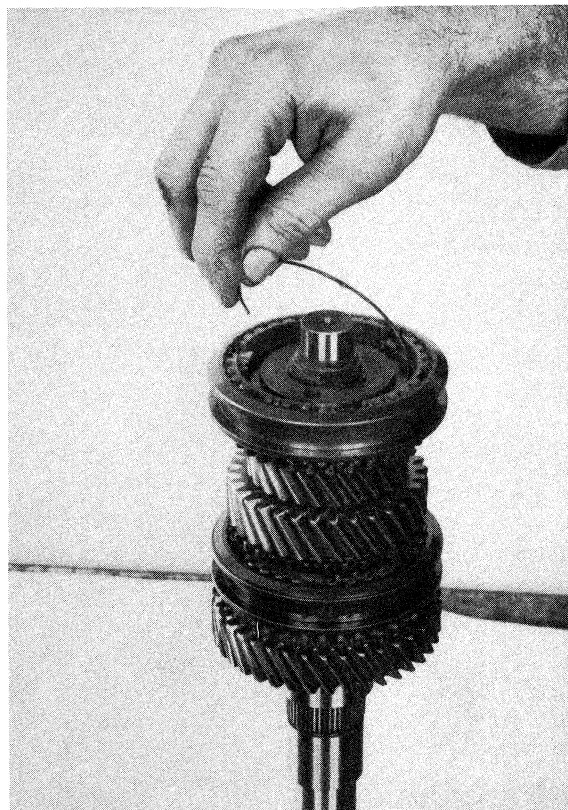
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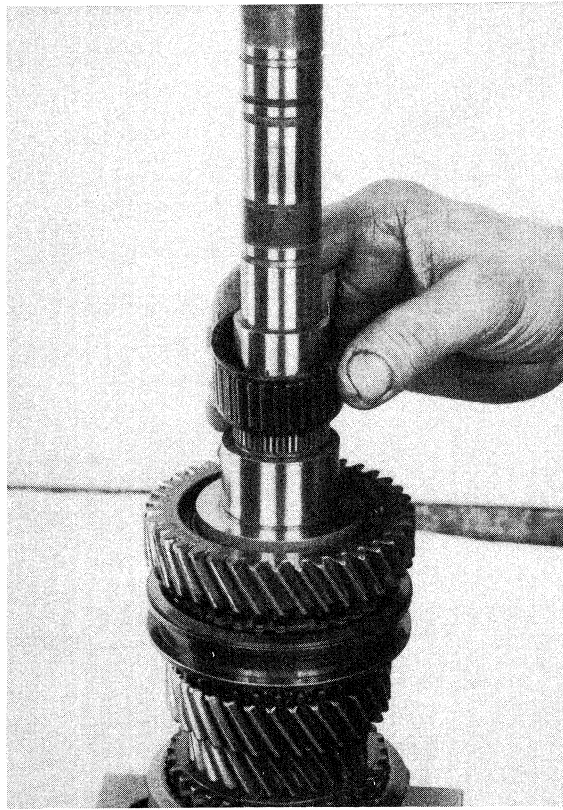
- la molla di ritegno (Fig. 148).
- Rovesciare l'albero nell'attrezzo, con l'albero di uscita rivolto in alto.
- Infilare nell'albero:
 - gabbia a rullini ingranaggio RM (Fig. 149)
 - ingranaggio RM (Fig. 150).

- retaining spring (Fig. 148).
- Overturn shaft on fixture positioning output end upmost.
- Install:
 - reverse gear needle roller bearing (Fig. 149)
 - reverse gear (Fig. 150).

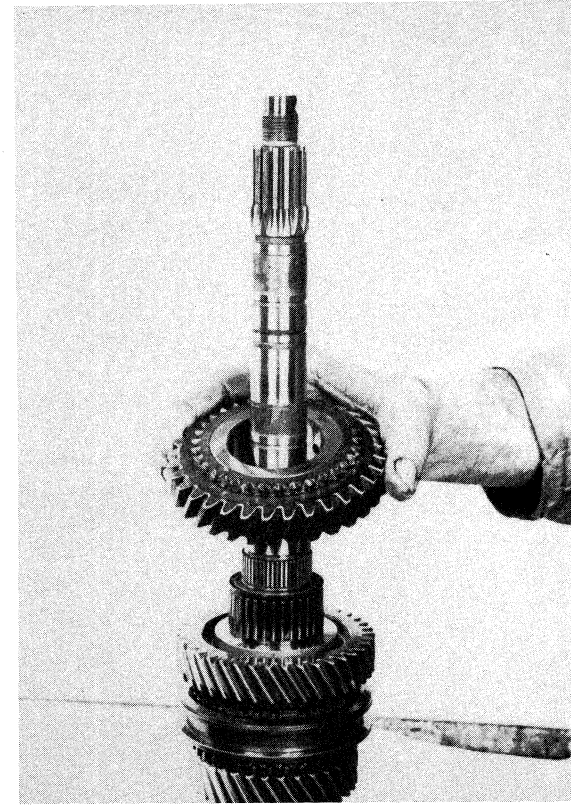
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▼ 149



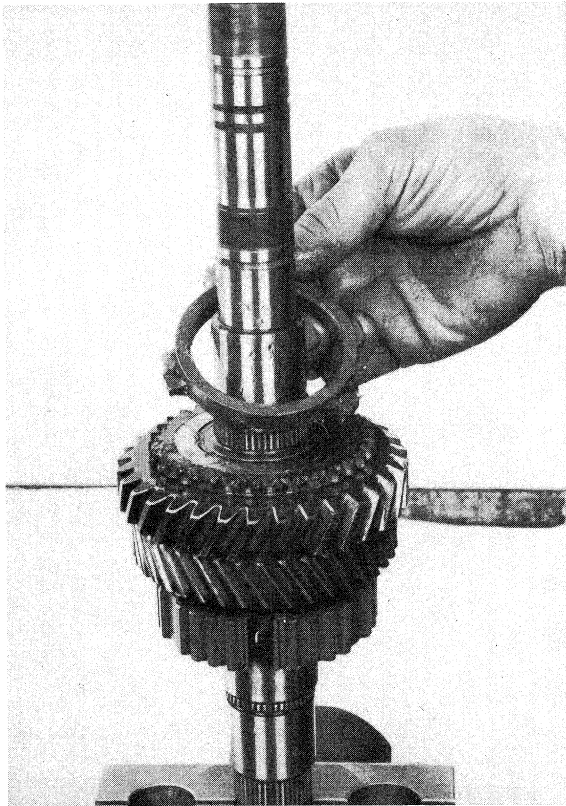
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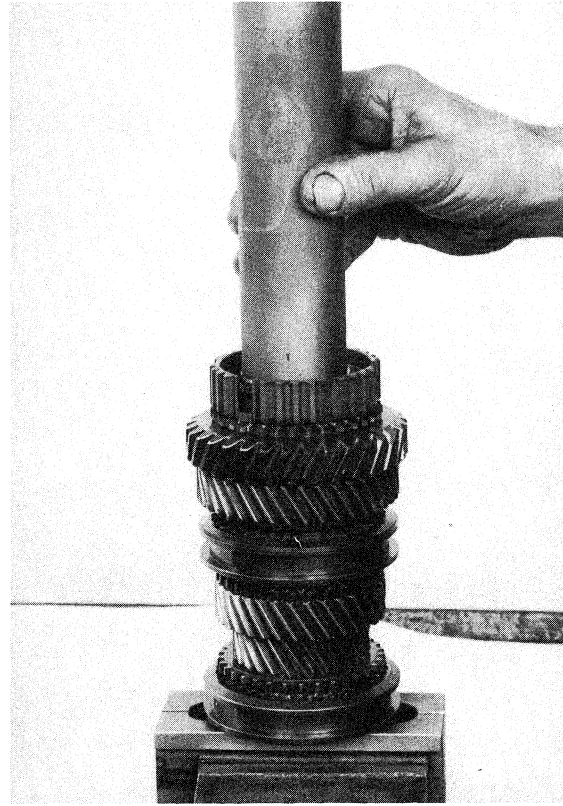
- Montare l'anello di guida (Fig. 151).
- Montare la molla di ritegno (lato ingranaggio RM).
- Montare il mozzo riscaldato a 80 °C, osservando i riferimenti originali (Fig. 152).
- Montare i tre naselli.
- Montare il manicotto scorrevole con la parte smusata verso l'alto ed i tre denti più bassi in corrispondenza dei tre naselli (Figg. 153-154 e 155).

- Install guide ring (Fig. 151).
- Install retaining spring on reverse gear side.
- Heat hub to 80 °C and install aligning reference marks applied on disassembly (Fig. 152).
- Install three shifting plates.
- Install sliding sleeve with chamfered side facing upward and the 3 lower tooth sections aligned to the 3 shifting plates (Figs. 153, 154 and 155).

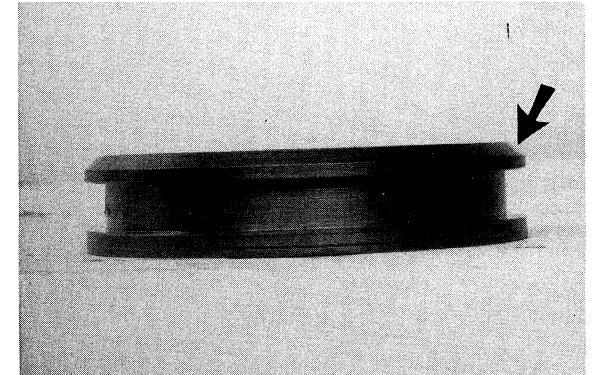
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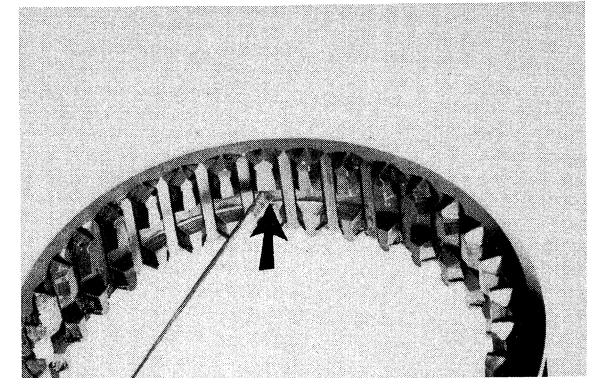
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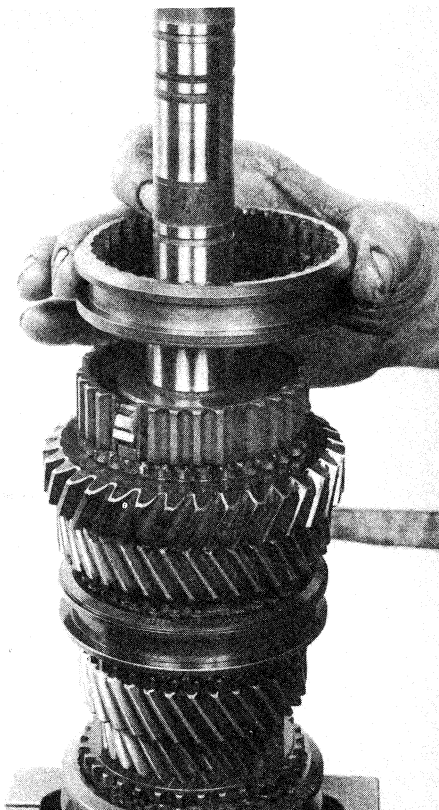
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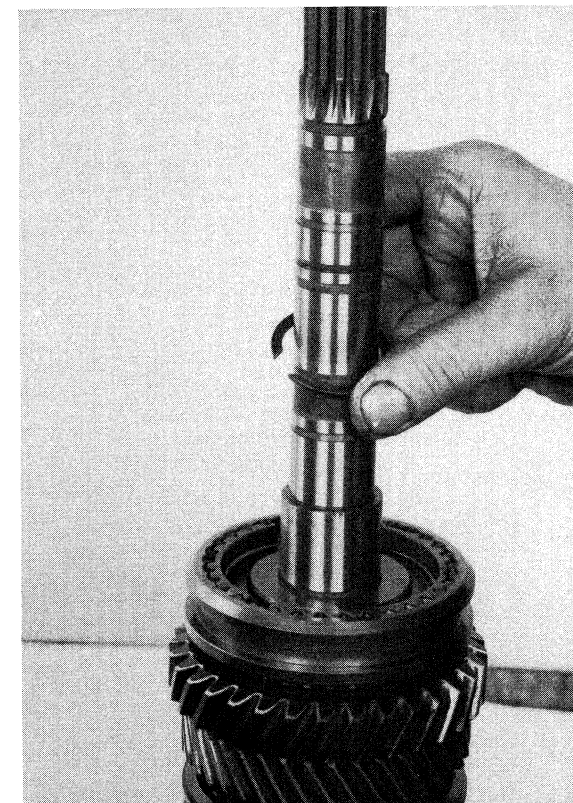
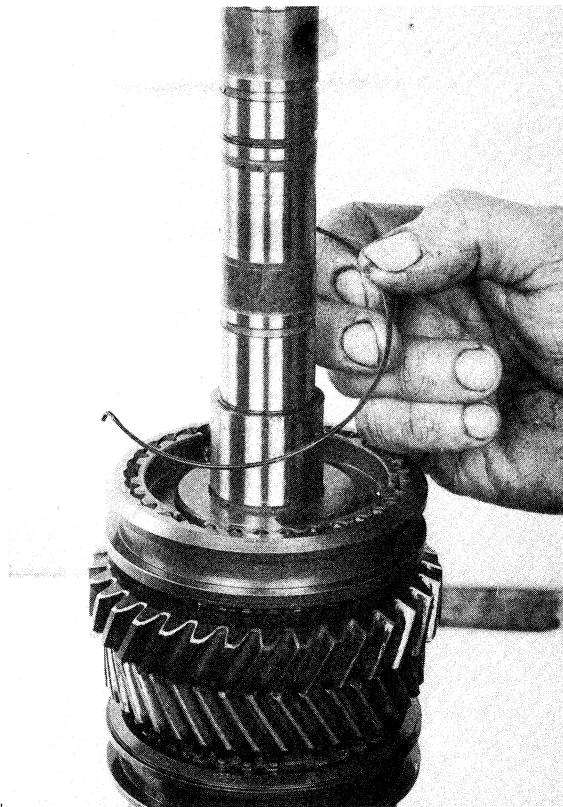
- La molla di ritegno (Fig. 156).
- Montare l'anello di fermo, posizionandolo con l'apposito attrezzo (Fig. 157 e 158).

- Retaining spring (Fig. 156).
- Install and position retaining ring using a suitable tool (Figs. 157 and 158).

▼ 155

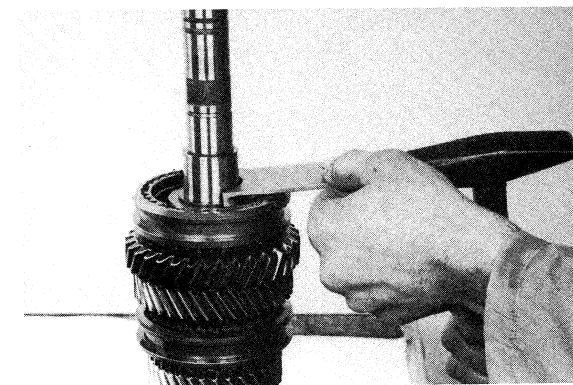


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▲ 157

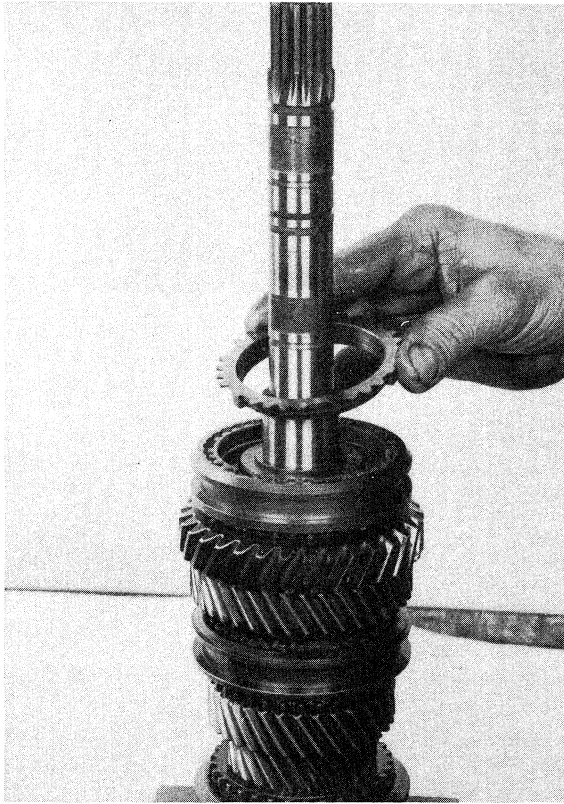
▼ 158



- Montare:
 - l'anello sincronizzatore (Fig. 159)
 - la gabbia a rullini dell'ingranaggio 1a (Fig. 160)
 - l'ingranaggio 1a (Fig. 161)

- Install the following:
 - synchrocone (Fig. 159)
 - 1st gear needle roller bearing (Fig. 160)
 - 1st speed gear (Fig. 161)

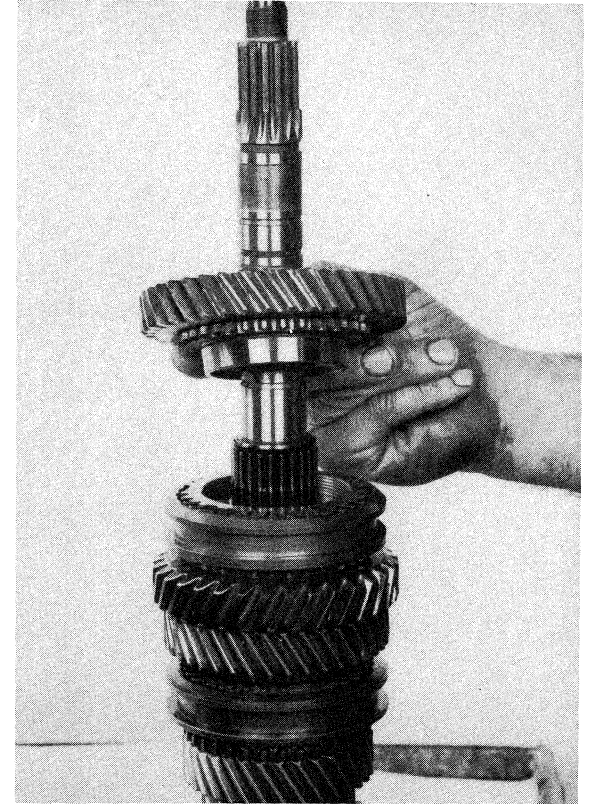
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▼ 160



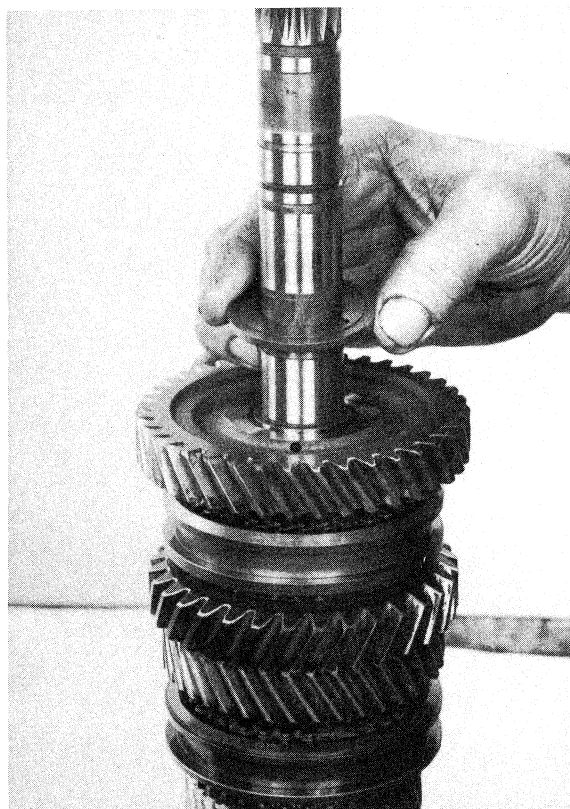
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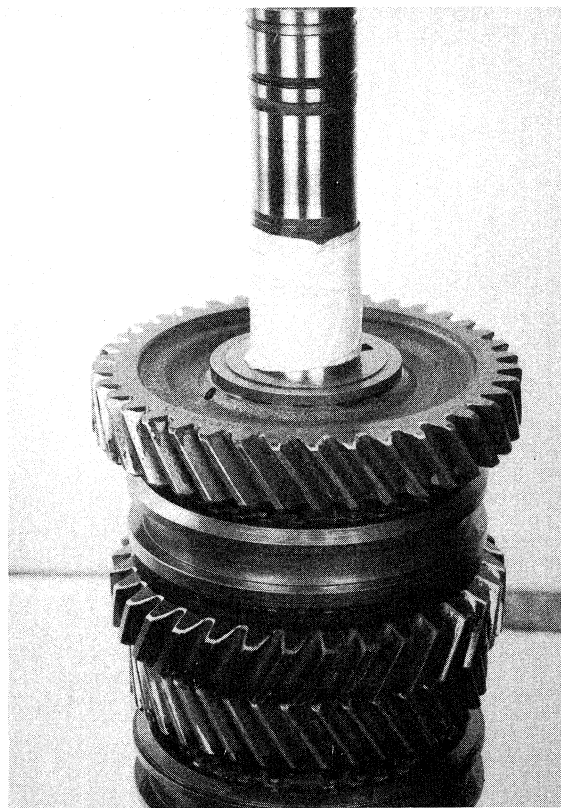
- la rondella di rasamento col gradino rivolto in alto (Fig. 162).
- Nastrare l'albero per fissare l'impilaggio (Fig. 163).
- Rovesciare l'albero nell'attrezzo (albero di uscita in basso).
- Montare:
 - la gabbia a rullini di guida albero presa diretta/ albero primario (Fig. 164).

- abutment ring with step uppermost (Fig. 162).
- Apply adhesive tape to secure all gears (Fig. 163).
- Overturn shaft in tool (output end down).
- Install the following:
 - input shaft/main shaft pilot bearing (Fig. 164).

▼ 162



▼ 163



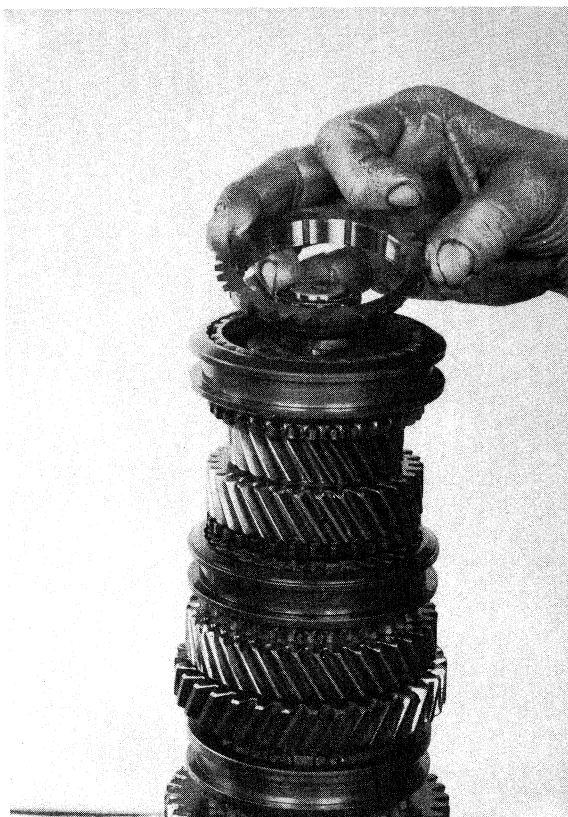
▼ 164



- l'anello sincronizzatore (Fig. 165)
- l'albero presa diretta (Fig. 166)
- Togliere l'albero dall'attrezzo.

- synchrocone (Fig. 165)
- input shaft (Fig. 166)
- Remove shaft from tool.

▼ 165

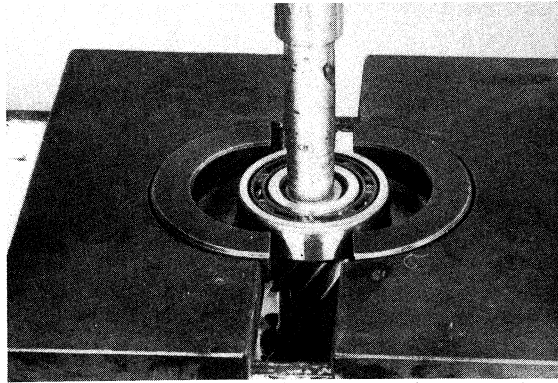


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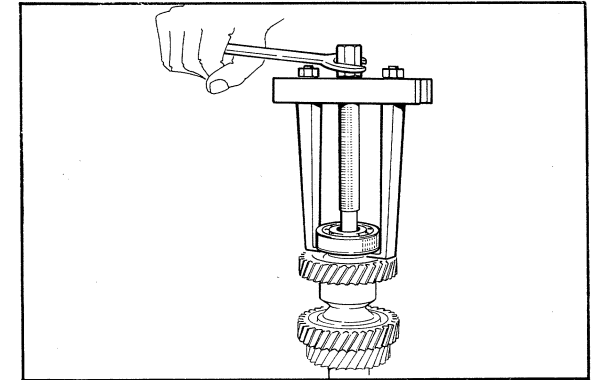


ALBERO SECONDARIO

- Estrarre alla pressa il cuscinetto posteriore (Fig. 167).
- Estrarre il cuscinetto anteriore (Fig. 168).

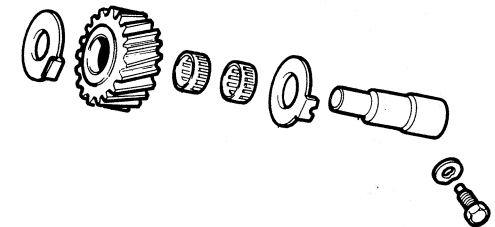
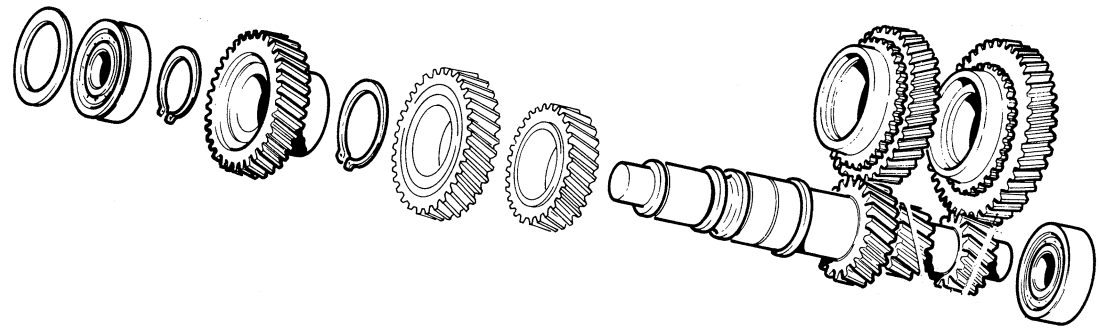


▲ 167



▲ 168

▼ 169



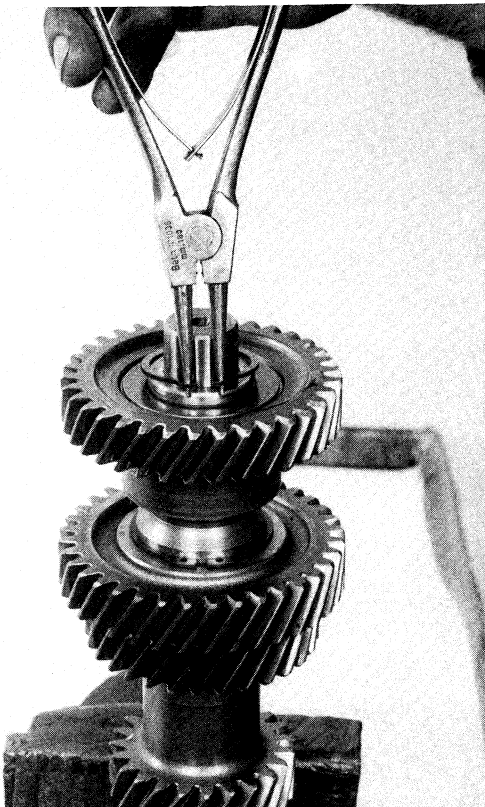
COUNTERSHAFT DISASSEMBLY

- Remove rear bearing using a press (Fig. 167).
- Withdraw front bearing (Fig. 168).

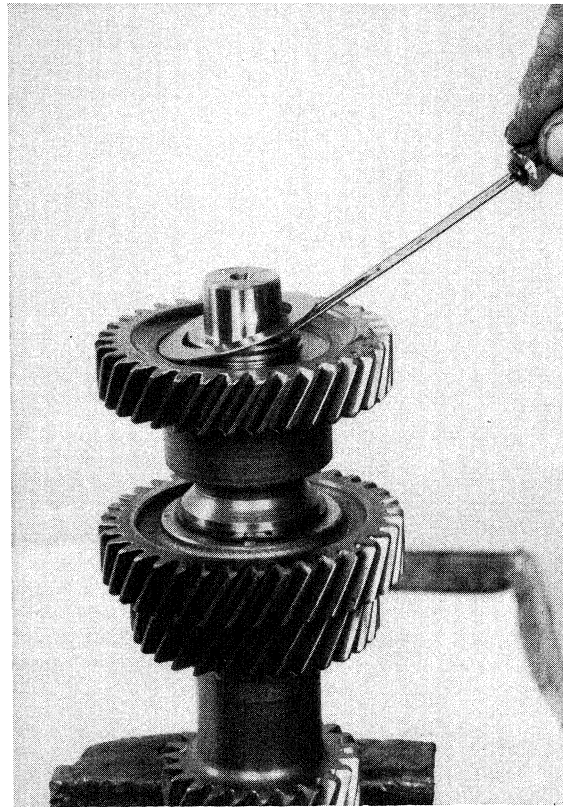
- Togliere l'anello di fermo dell'ingranaggio 4a (Fig. 170).
- Togliere il rasamento (Fig. 171).
- Alla pressa:
 - togliere l'ingranaggio 4a (Fig. 172).

- Remove 4th gear retaining ring (Fig. 170).
- Remove abutment ring (Fig. 171).
- Using a press:
 - remove 4th speed gear (Fig. 172).

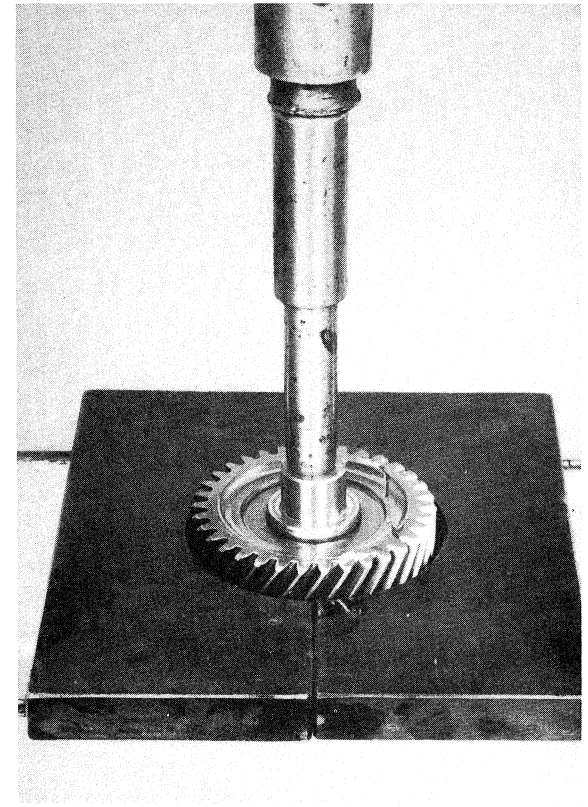
▼ 170



▼ 171



▼ 172



Al banco:

- Togliere l'anello di fermo dell'ingranaggio 5a (**Fig. 173**).

Alla pressa:

- Togliere l'ingranaggio 5a (**Fig. 174**).
- Togliere l'ingranaggio 3a (**Fig. 175**).

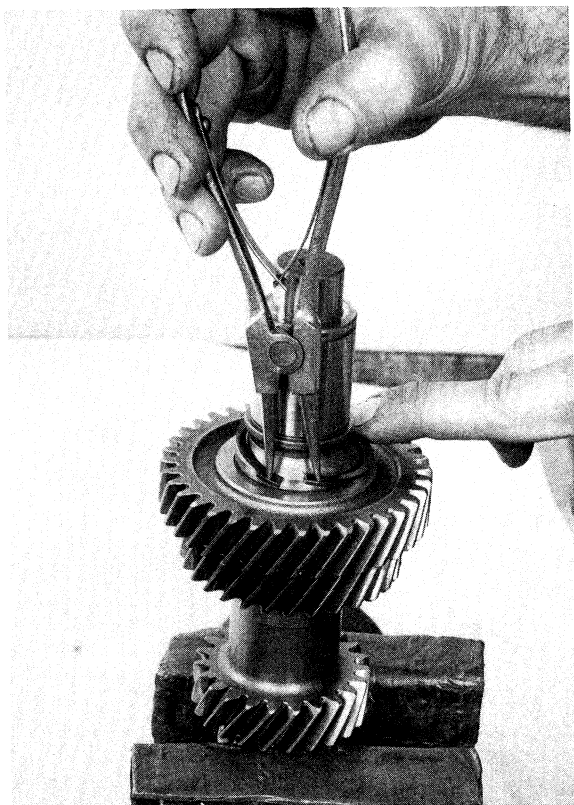
On bench:

- Remove 5th gear retaining ring (**Fig. 173**).

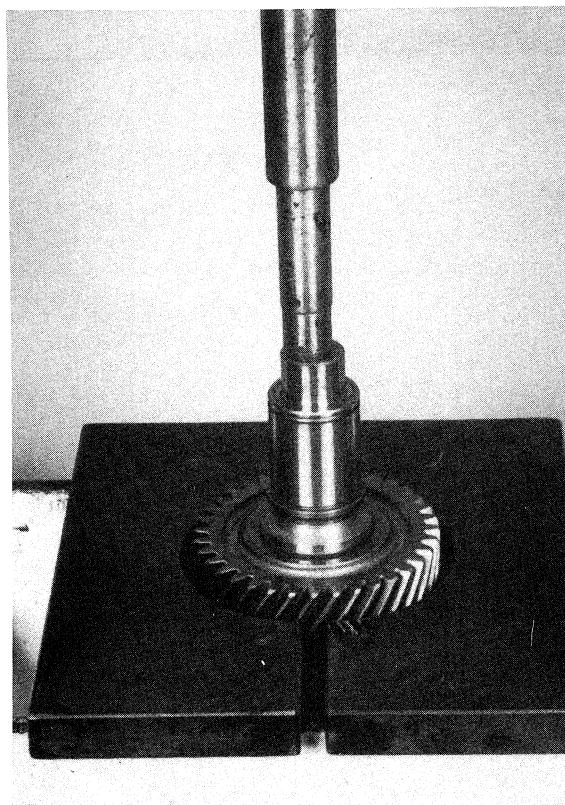
Using a press:

- Remove 5th speed gear (**Fig. 174**).
- Remove 3rd speed gear (**Fig. 175**).

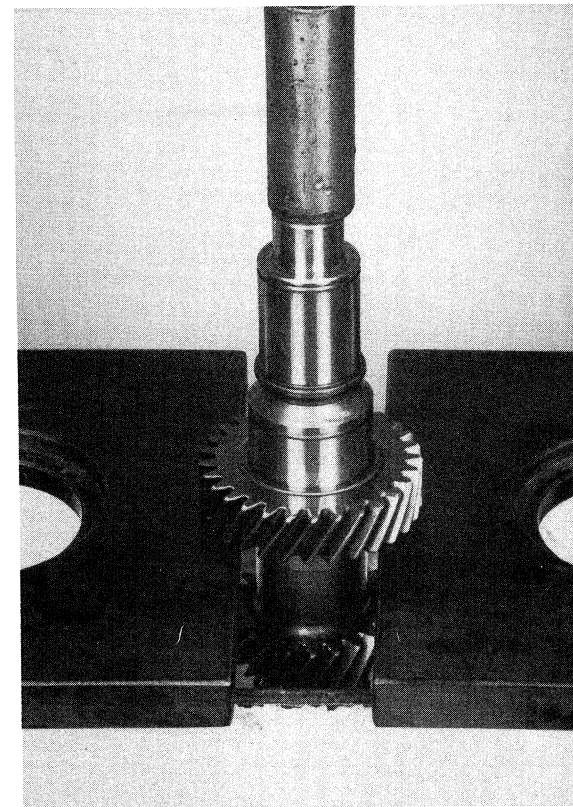
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▼ 174



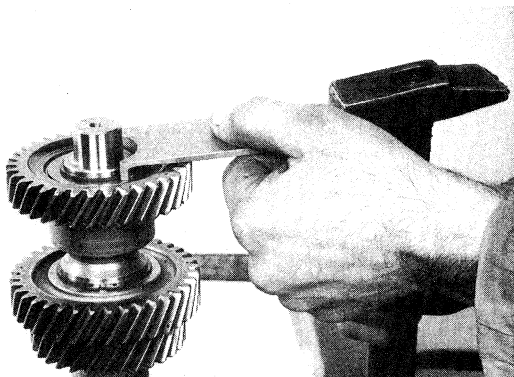
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RIMONTAGGIO ALBERO SECONDARIO

- Riscaldare a $150 \div 180$ °C l'ingranaggio 3a e montarlo, se necessario, alla pressa.
- Riscaldare a $150 \div 180$ °C l'ingranaggio 5a e montarlo, se necessario, alla pressa.
- Montare l'anello di fermo (**Fig. 176**).
- Riscaldare a $150 \div 180$ °C l'ingranaggio 4a e montarlo, se necessario, alla pressa.
- Montare l'anello di rasamento dell'ingranaggio 4a.
- Montare l'anello di fermo e posizionarlo con l'apposito attrezzo.
- Montare i due cuscinetti all'estremità dell'albero, con schermatura rivolta all'esterno per entrambi (**Figg. 177 - 178**).

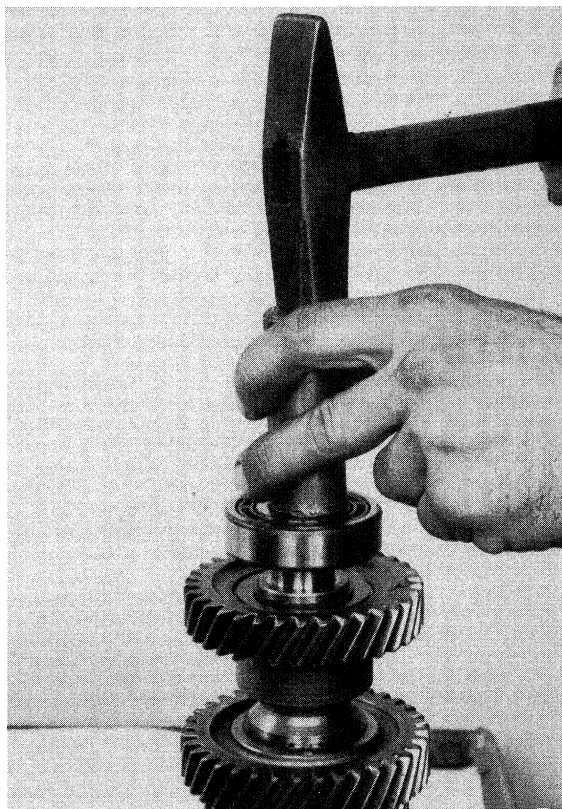
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COUNTERSHAFT ASSEMBLY

- Heat 3rd speed gear to 150 ± 180 °C and install, if necessary using a press.
- Heat 5th speed gear to 150 ± 180 °C and install, if necessary using a press.
- Install retaining ring (**Fig. 176**).
- Heat 4th speed gear to $150 \div 180$ °C and install, if necessary using a press.
- Install 4th gear abutment ring.
- Install and position retaining ring using a suitable tool.
- Install 2 bearings on shaft ends with sealed side facing outwards (**Figs. 177-178**).

▼ 177



▼ 178

