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# PRELIMINARY INFORMATION

This manual contains precise details of how to repair the complete transmission.

All dismantling and assembly work is described in the correct order.

The photographs have been selected to cover various types of transmission and may therefore differ from the vehicle on which you are working.

The component list precisely defines which version of the transmission you are working on, and this is also reflected in the parts list.

If any major modifications have to be taken into account when repairs are carried out, you will be notified by Technical Bulletin.

Depending on the nature of the fault, it may be possible to limit the repair to the actual components and areas of the transmission that have failed.

In this connection, please note:

- Always renew the pistons if there is a fault on clutch F or brake G. Never re-use seals, for example O-rings and shaft sealing rings.
- If the transmission has been run for a considerable distance (> 50.000 km), renew all lined and steel discs.
- If clutch damage has occurred the converter, oil cooler lines and the oil cooler itself must be thoroughly flushed out with a suitable cleaning agent.

The following conditions must be satisfied:

- The necessary special tools must be available  
The complete set is listed in Section 1.8 of this manual.
- A suitable transmission test rig should be available.  
Refer to the Technical Bulletins for the relevant test values.

## NOTE:

In this manual the control unit is treated as a single element; it should always be exchanged as a complete unit and not dismantled except by suitably trained personnel possessing full knowledge of its design.

## Warning:

The transmission should only be delivered with the oil content stated in the relevant component list (on microfiche).

## 1. General information

### 1.1 Drawing of transmission

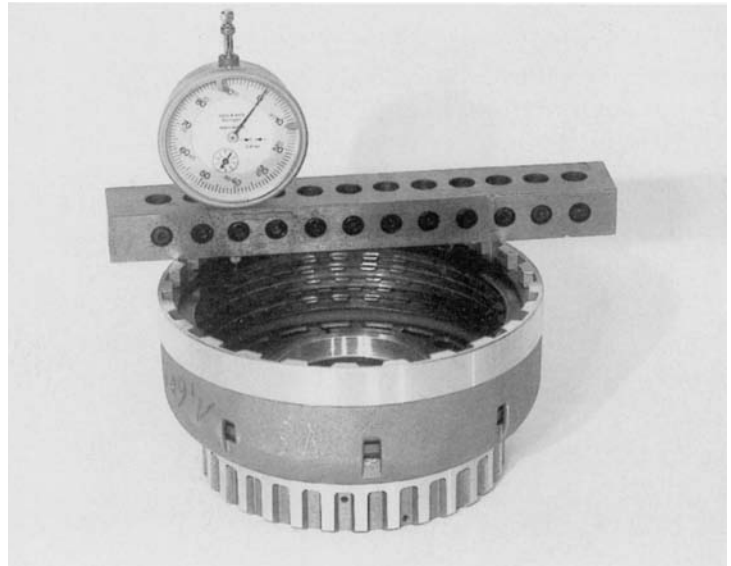


## 1.4 Adjustment work

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### 1.4.1 Release clearance at clutch F (snap ring)

Insert snap ring 77.010/180.  
(Selected thickness = 1.9 mm).  
Place dial gauge and bar in position.  
Extend dial gauge pointer until it touches the end disc, and set dial gauge to "0".  
Extend dial gauge pointer until it touches the end disc, and set dial gauge to "0".

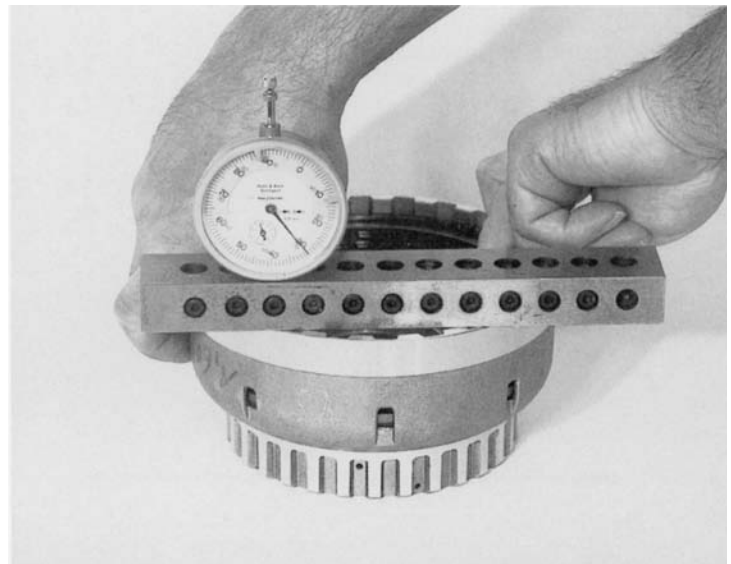


Raise the complete disc set and read off play at the dial gauge.

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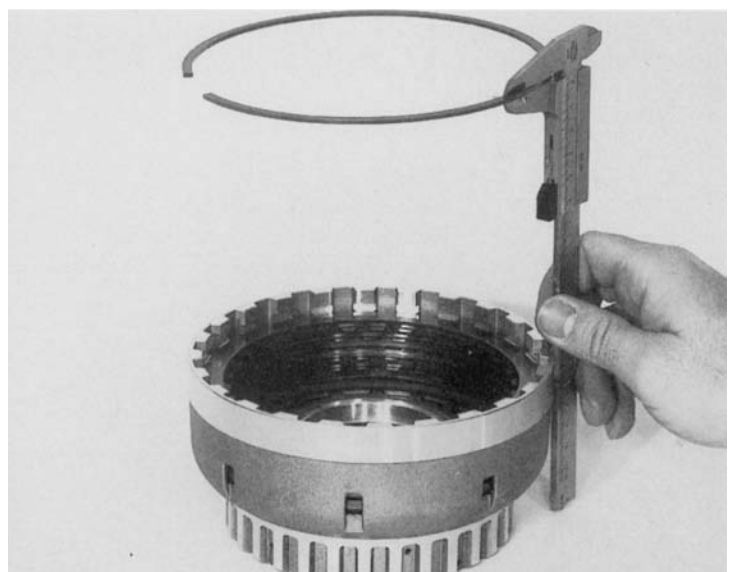
It should be:

- with 4 lined discs = 1,30 to 1,60 mm
- with 5 lined discs = 1,65 to 1,95 mm



If a different reading is obtained, select a thicker or thinner snap ring.

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### 1.4.5 Release clearance at clutch E (snap ring)

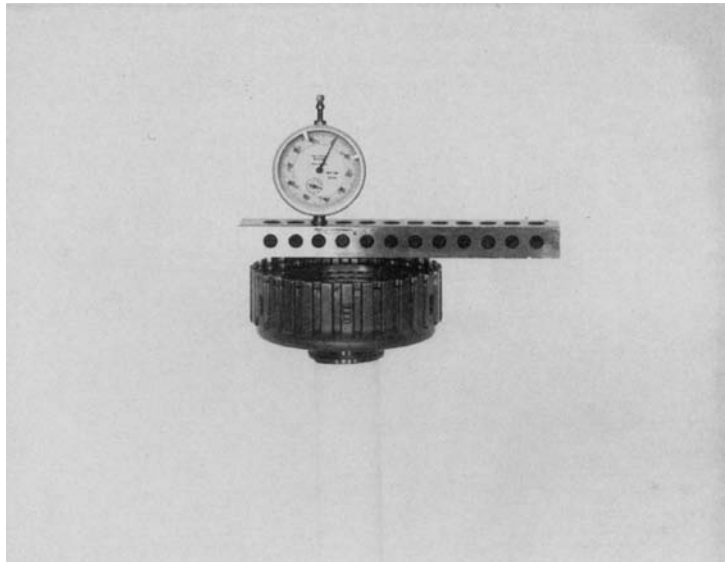
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Insert snap ring 71.130.

(Selected thickness = 1.5 mm).

Place dial gauge with bar in position.

Extend the dial gauge pointer as far as the final disc and set the dial gauge to "0".

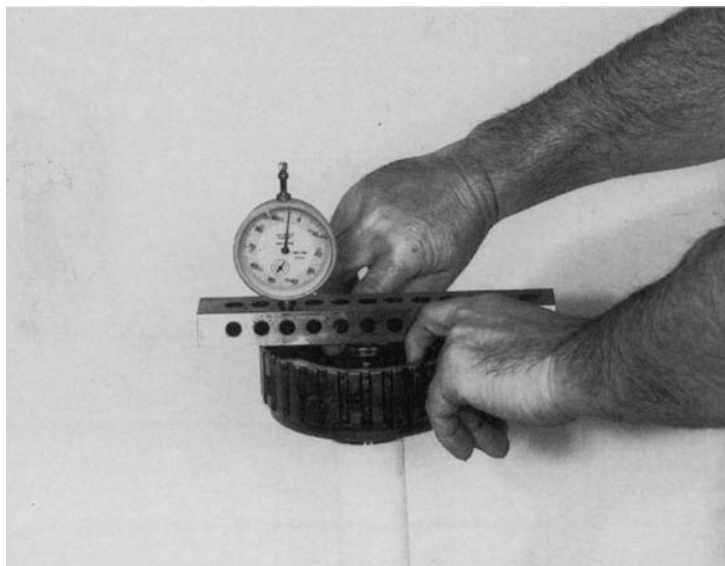


Raise the complete disc set and read off play at the dial gauge.

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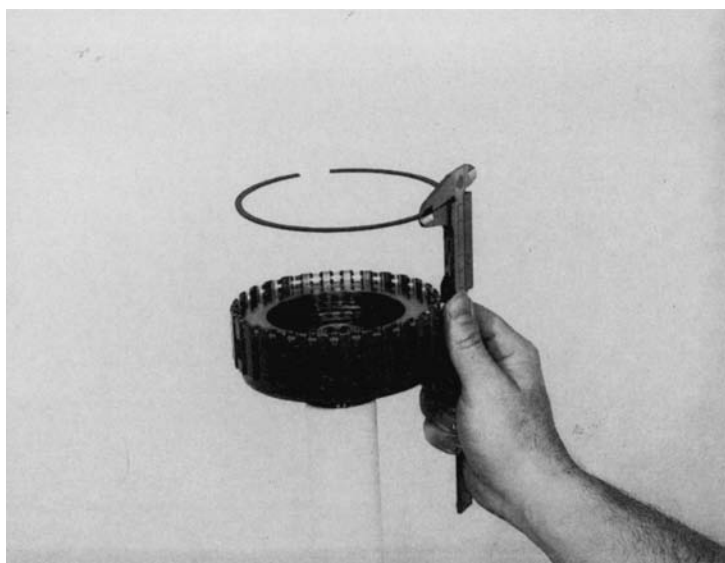
It should be:

- with 4 pairs of discs = 1.12 to 2.11 mm
- with 5 pairs of discs = 1.50 to 2.50 mm



If a different reading is obtained, select a thicker or thinner snap ring.

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## Troubleshooting – 5 HP 18 EH automatic transmission

Malfunction	Possible cause	Remedial action
<b>1. Position P</b> 1.1 Park position does not engage reliably	<ul style="list-style-type: none"> <li>– shift cable between selector lever and transmission is incorrectly adjusted</li> <li>– too much friction in parking interlock mechanism</li> </ul>	<ul style="list-style-type: none"> <li>– adjust correctly</li> <li>– renew parking interlock components (connecting rod, pawl)</li> </ul>
1.2 Park position does not stay engaged (slips out)	<ul style="list-style-type: none"> <li>– shift cable between selector lever and transmission is incorrectly adjusted,</li> </ul>	<ul style="list-style-type: none"> <li>– adjust correctly</li> </ul>
1.3 Engine cannot be started	<ul style="list-style-type: none"> <li>– position switch incorrectly adjusted</li> <li>– position switch defective</li> </ul>	<ul style="list-style-type: none"> <li>– adjust correctly</li> <li>– renew position switch</li> </ul>
1.4 Engine starts although lever is in park position	<ul style="list-style-type: none"> <li>– incorrect position switch</li> <li>– selector lever not correctly adjusted</li> <li>– position switch defective</li> </ul>	<ul style="list-style-type: none"> <li>– fit correct position switch</li> <li>– adjust correctly</li> <li>– renew position switch</li> </ul>
<b>2. Position R</b> 2.1 Reverse gear not available	<ul style="list-style-type: none"> <li>– shift cable between selector lever and transmission is incorrectly adjusted</li> <li>– clutch B damaged beyond repair</li> <li>– Brake D damaged beyond repair (in this case, no braking effect in position 2, 1st gear)</li> <li>– brake G damaged beyond repair</li> <li>– see troubleshooting on hydraulic selector unit, item 1.1</li> </ul>	<ul style="list-style-type: none"> <li>– adjust correctly</li> <li>– fit an exchange transmission</li> <li>– fit an exchange transmission</li> <li>– fit an exchange transmission</li> <li>– ←</li> </ul>
2.2 Violent jerk when shifting from P – R or N – R	<ul style="list-style-type: none"> <li>– engine idle speed &gt; 1500 min</li> <li>– see troubleshooting on hydraulic selector unit, item 1.2</li> </ul>	<ul style="list-style-type: none"> <li>– adjust to correct idle speed</li> <li>– ←</li> </ul>

## Troubleshooting – 5 HP 18 E 11 electronic-hydraulic selector unit

Malfunction	Possible cause	Remedial action
<p><b>1. Position R</b></p> <p>1.1 No drive in reverse</p>	<ul style="list-style-type: none"> <li>– signal line from MV3 short to earth (ground)</li> <li>– piston in reverse gear interlock valve not in rest position</li> </ul>	<ul style="list-style-type: none"> <li>– eliminate fault; if necessary renew wiring harness</li> <li>– eliminate fault; if necessary fit an exchange hydraulic selector unit</li> </ul>
<p>1.2 Violent jerk when selecting position R</p>	<ul style="list-style-type: none"> <li>– damping function of brake D not working correctly</li> <li>– modulation pressure too high</li> <li>– break in electric line to pressure regulator</li> <li>– defective pressure regulator</li> <li>– see notes on troubleshooting for peripherals, items 3 and 4</li> </ul>	<ul style="list-style-type: none"> <li>– check damping function</li> <li>– check function of modulation valve; if necessary renew housing</li> <li>– eliminate fault; if necessary renew wiring harness</li> <li>– fit an exchange pressure regulator (complete housing)</li> <li>– ←</li> </ul>
<p><b>2. Position D</b></p> <p>2.1 No forward drive</p>	<ul style="list-style-type: none"> <li>– damper A blocked</li> <li>– solenoid valve 5 signal line: short to earth (ground)</li> </ul>	<ul style="list-style-type: none"> <li>– check function of damper A</li> <li>– eliminate fault; if necessary, renew wiring harness</li> </ul>
<p>2.2 Violent jerk when position D is selected</p>	<ul style="list-style-type: none"> <li>– damping function of clutch A not working correctly</li> <li>– break in electric line to pressure regulator</li> </ul>	<ul style="list-style-type: none"> <li>– check damping function</li> <li>– eliminate fault; if necessary renew wiring harness</li> </ul>

## 1.8 Special tools 5 HP 18

No.	Item	Order No. / purpose	Remarks
19	<p><b>91 199</b></p> 	<p>5 X 46 000 763                      – Workbench holder for assembly clamp</p>	
20	<p><b>84 260</b></p> 	<p>5 X 46 000 863                      – Assembly device for diaphragm spring, clutch E</p>	
21	<p><b>84 258</b></p> 	<p>5 X 56 000 021                      – Pump testing sleeve</p>	<p>identical with                      3 HP 22                      4 HP 22</p>

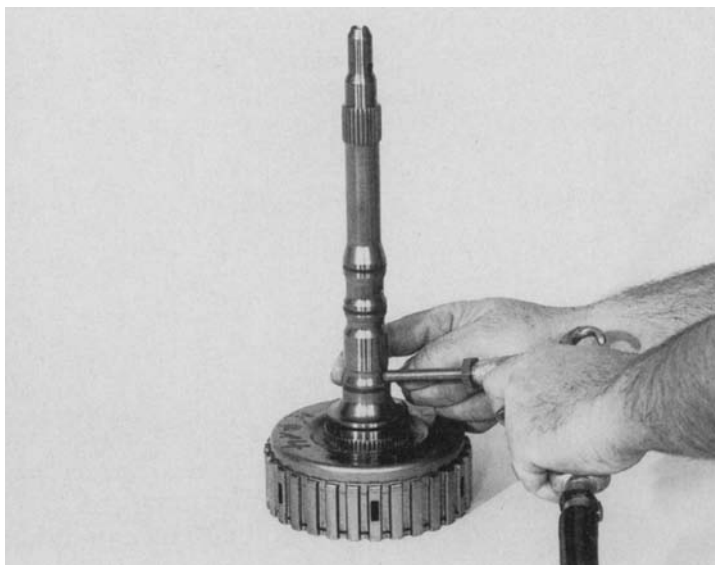


Use compressed air to force out piston E, by applying a compressed air jet to the oil feed bore.

Remove the O-ring; the rectangular-section rings normally remain on the input shaft.

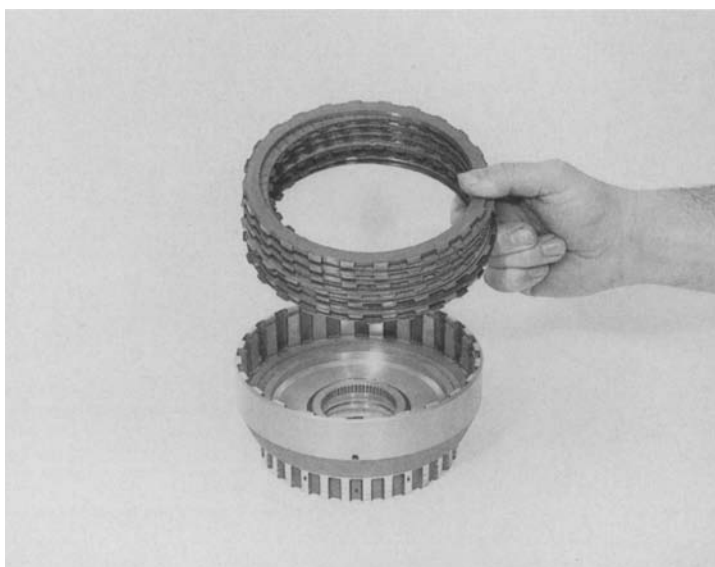
**Note:**

The plastic rings have chamfered butt ends.

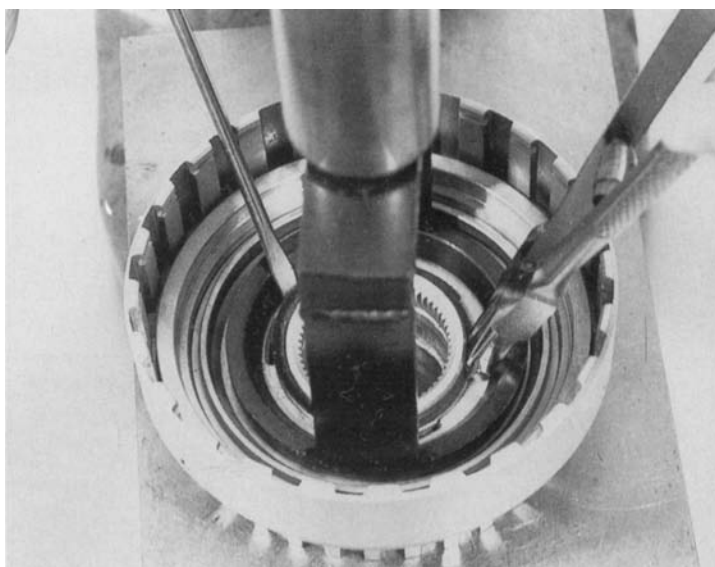


**2.4.2 Clutch A**

Remove the snap ring from cylinder A and take out the complete disc cluster including the spring disc.

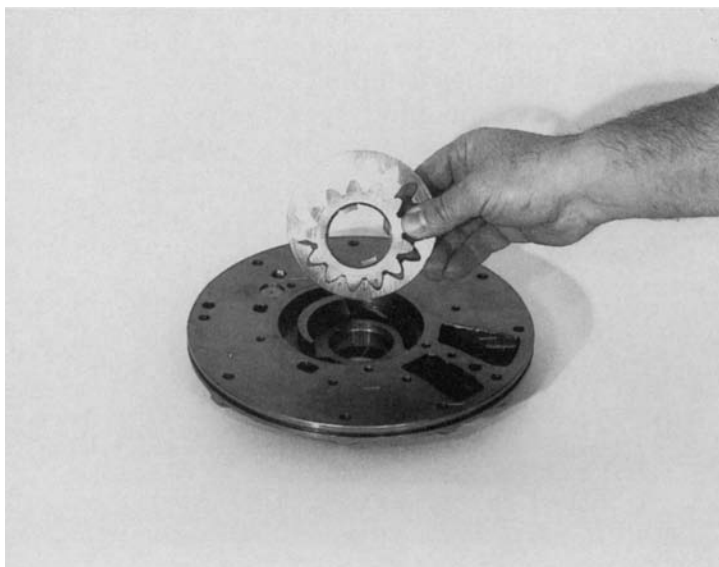


Using the hoop from special tool 5 X 46 000 167, press down the retaining disc in the mandrel press and lever out the snap ring with suitable pliers and with the aid of a screwdriver.



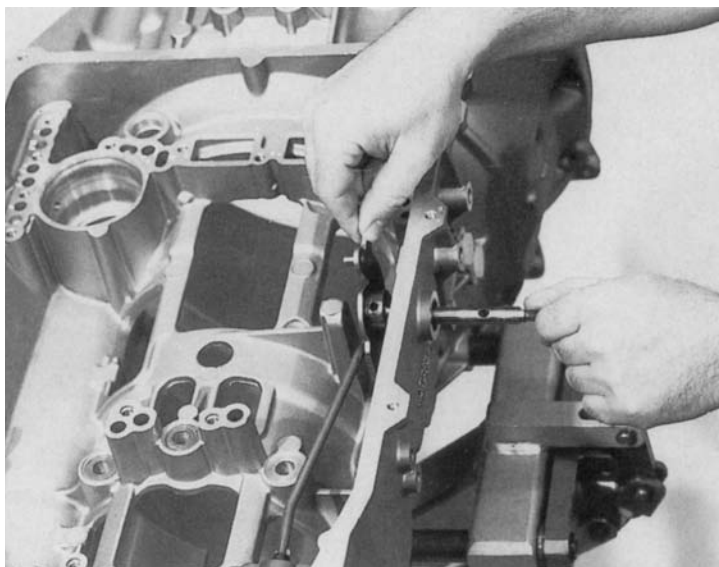
Pull off the O-ring. The pump can be stripped down by taking out the pump gear and pump hollow gear.

Lever out the shaft sealing ring with a suitable screwdriver blade; there is a corrugated washer under this ring.

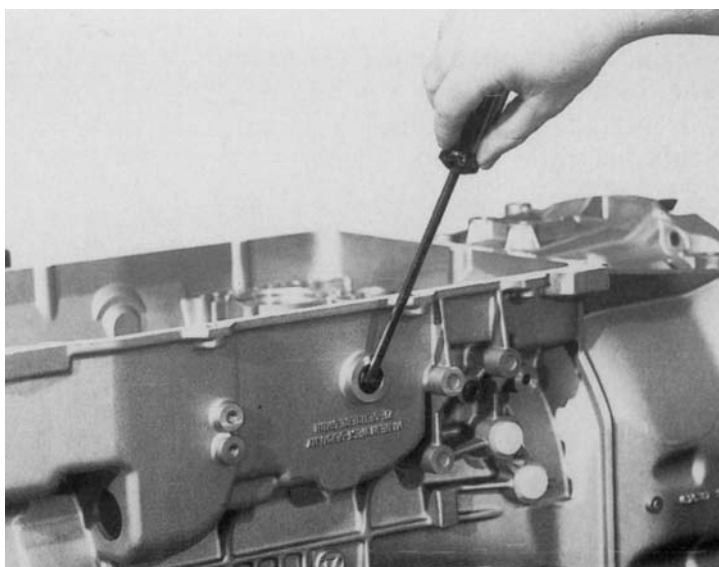


### **2.6 Housing with shift and parking interlock**

Using a suitable mandrel, drive the clamping sleeve out of the detent disc and pull out the selector shaft.



The detent disc with connecting rod can now be removed. Lever out the shaft sealing ring with a screwdriver.

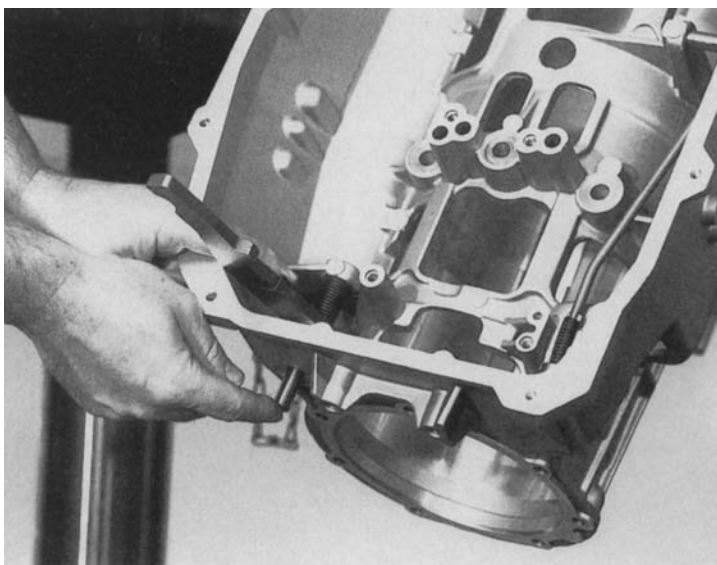


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Place pawl 24.020 with torsion spring 24.030 in the transmission housing and secure it by pressing in pin 24.010. After this, seal the hole with screw plug 24.070, with a new sealing ring.

(Allen key size = 6 mm)

(Tightening torque = 32 Nm)

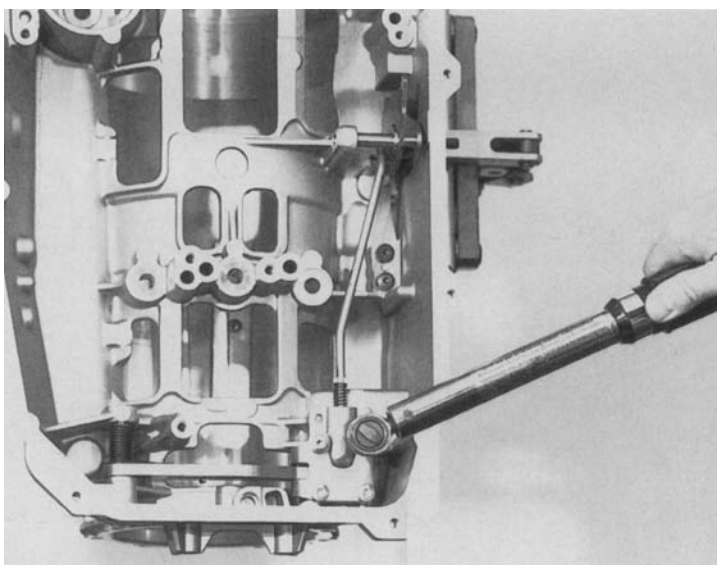


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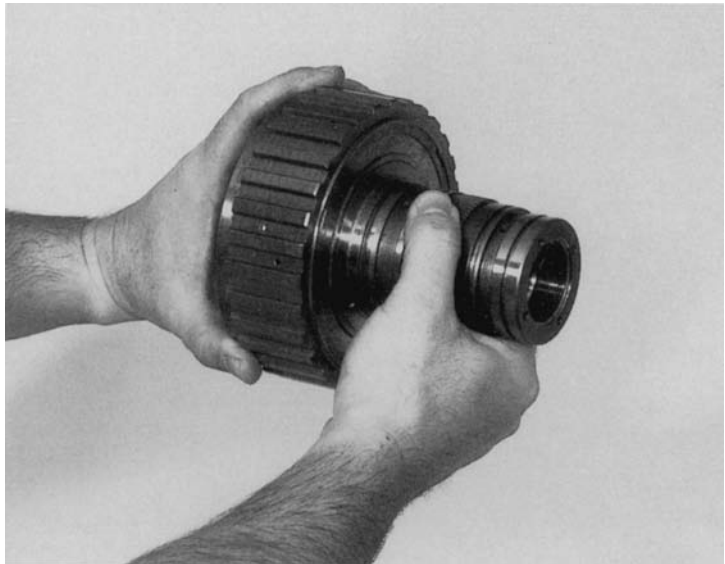
Press down the pawl. The connecting rod must be pressed to the rear by turning the detent disc. Secure guide plate 24.040 with 4 machine screws 24.050.

(Wrench size = Torx TX 27)

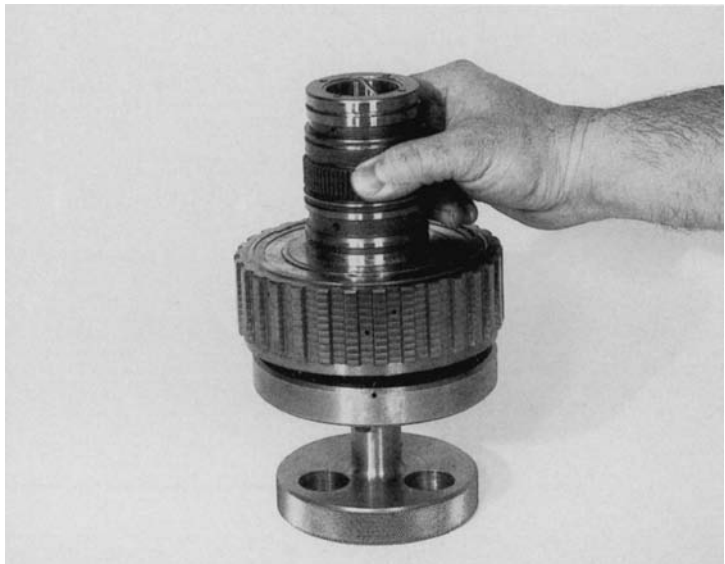
(Tightening torque = 10 Nm)



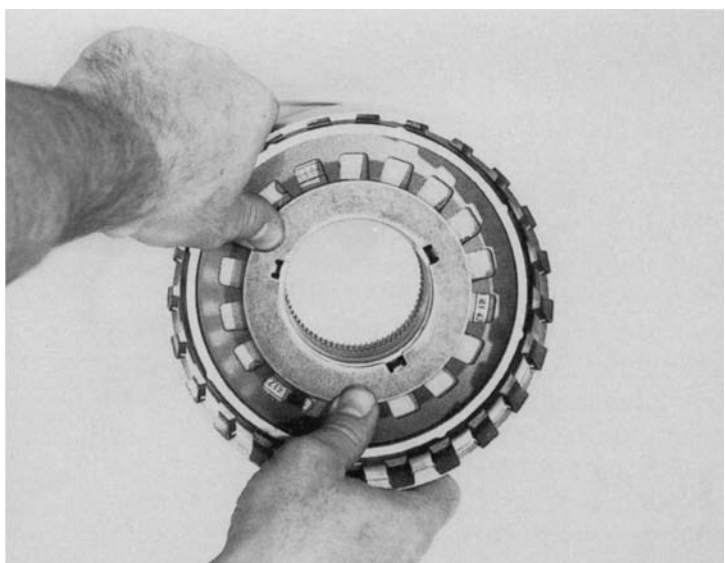
Press carrier (inner race of freewheel) 73.100/110 into freewheel 73.100. To do this, prevent the freewheel from moving and turn the carrier clockwise.



Place the complete unit on counter-holder 5 X 46 000 577 and turn until the 3 pins of the special tool engage with the freewheel. Pull on the two O-rings 73.100/140 and apply a light coat of grease (Vaseline) to them.



Place diaphragm spring D 73.010/150 in cylinder DG and press in retaining washer 73.090.



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Place washer 14.050 on the parking interlock gear in the transmission housing.

**Important: adjusting work is needed (see item 1.4.4, Page 5.4)**

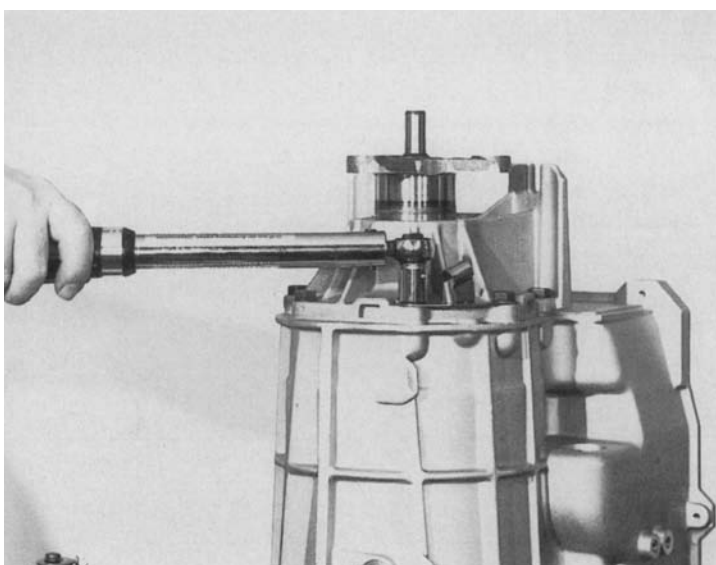


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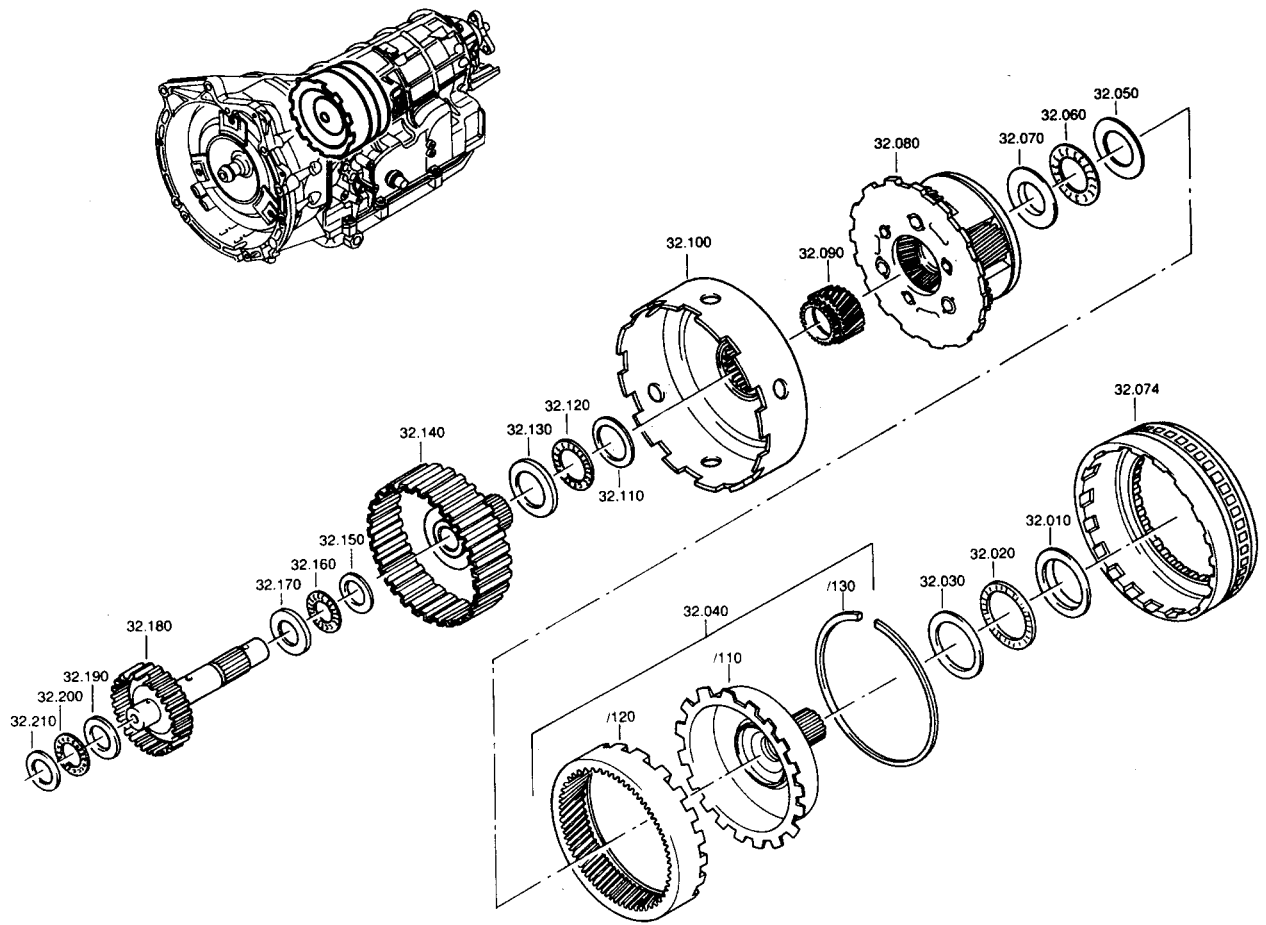
Install the output side assembly and tighten down with 7 hex bolts 14.110. At the same time, secure retaining plate 14.120 in the position illustrated

(Wrench size = 13 mm)

(Tightening torque = 23 Nm)

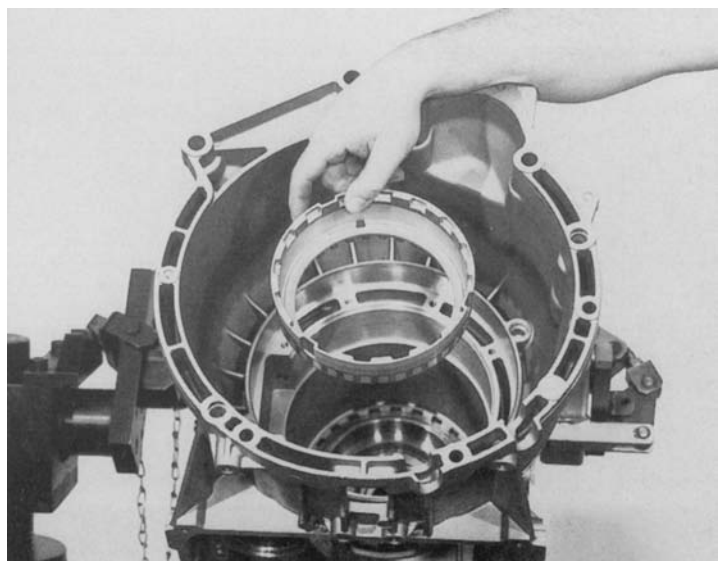


### 3.4 Planetary gear sets I and II

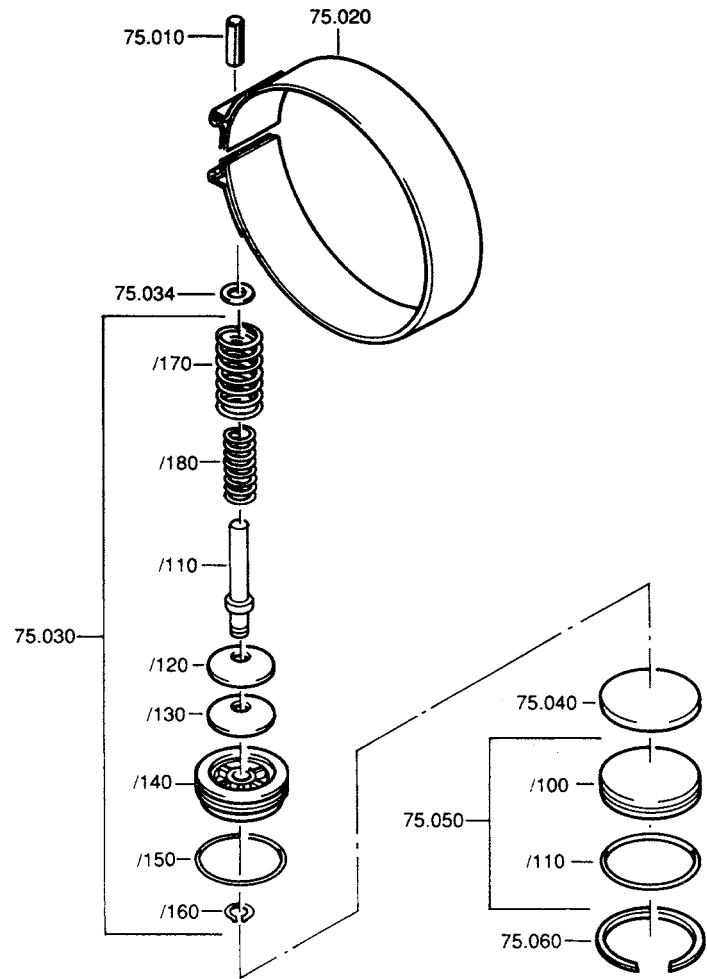
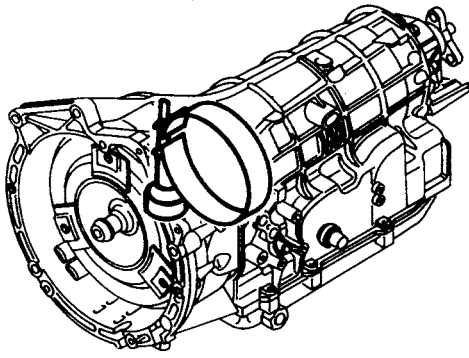


Turn the transmission through 180 degrees and pull out lifter 5 X 46 000 545 at the centre handle.  
Install case 32.074 on freewheel.

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### 3.5.4 Brake C<sup>2</sup>



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Press pin 75.010 into the transmission housing and insert brake band 75.020 using the retaining clip. Remove the clip after insertion of the brake band.

