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097 4-speed Automatic

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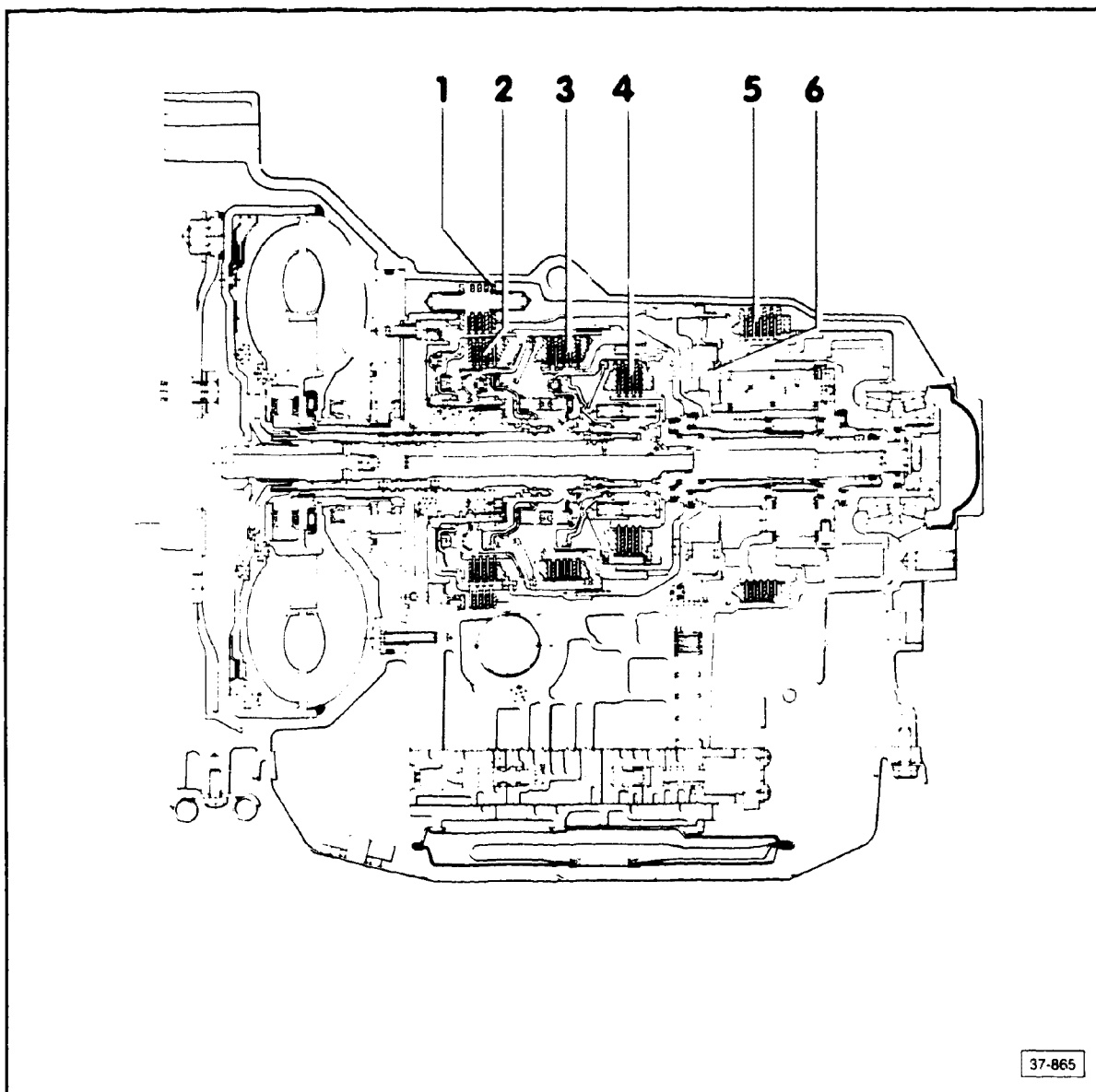
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Automatic Transmission — Case, Gears, Shaft



Note

The above illustration identifies transmission clutches and brakes in their installed positions. Refer also to clutch brake engagement chart, page 38.38.

- 1 — 2nd and 4th gear brake (B2)
- 2 — Reverse clutch (K2)
- 3 — 1st to 3rd gear clutch (K1)
- 4 — 3rd and 4th gear clutch (K3)
- 5 — Reverse brake (B1)
- 6 — One-way clutch (F)

Automatic Transmission — Case, Gears, Shaft

Selector lever positions and corresponding clutch/brake/gear engagement

Note

The following chart can help isolate transmission shift components which are causing performance problems. Consult the chart to identify the clutches/brakes/gears which engage during the various selector lever positions. These clutches and brakes are shown in their installed positions on the previous page.

Selector lever position	Gear ^a	Brakes		Clutches			
		Reverse (B1)	2nd/4th (B2)	1st to 3rd (K1)	Reverse (K2)	3rd/4th (K3)	One-Way (F)
R	R	X			X		
D	1H			X			X
1	1H	X		X			
D,2	2H		X	X			
D,3	3H			X	X		
D	3M			X	X	X	
D	3LT2				X	X	
D	4M		X			X	

^aH = hydraulic

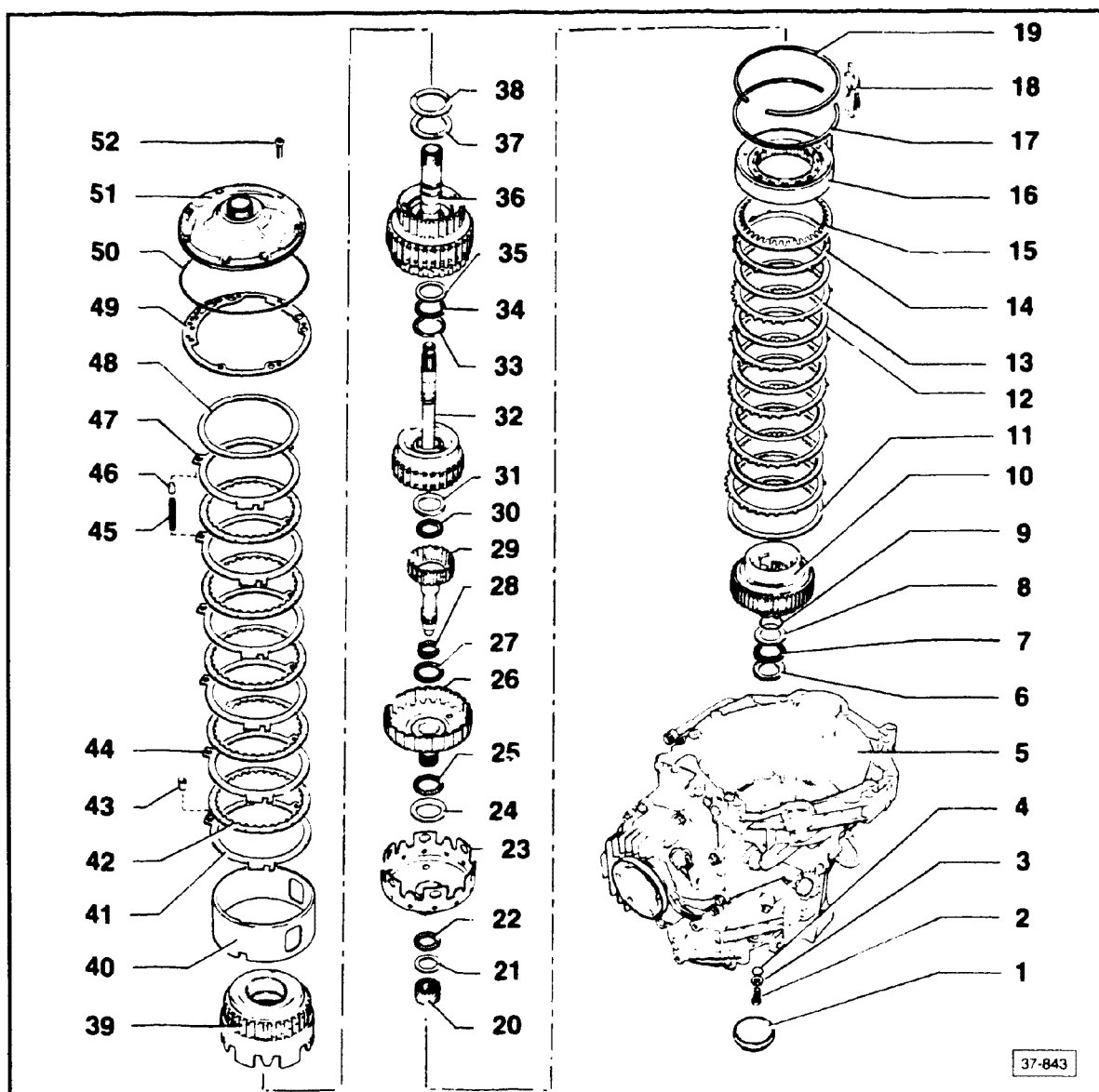
LT2 = transitional stage between hydraulic and mechanical operation

M = mechanical

Note

Transmission troubleshooting should also include self-diagnosis using testers **VAG 1551** and **VAG 1598**.

Automatic Transmission – Case, Gears, Shaft



CAUTION

Before disassembling planetary gear set, remove valve body.

1 — End cover

- pry out with screwdriver
- drive in with sleeve 40-20

2 — Bolt — 30 Nm (22 ft lb) for small driveshaft

3 — Washer

4 — Shim

- for planet carrier
- determining thickness, page 38.45
- adjusting planet carrier: remove drive gear, Repair Group 39

5 — Transmission housing

- valve body assembly, page 38.68
- disassembling assembling pinion, Repair Group 39
- mounting in repair stand, page 38.42

6 — Washer

- lugs toward axial needle bearing

7 — Axial needle bearing

- install in planet carrier with washers

Automatic Transmission — Case, Gears, Shaft

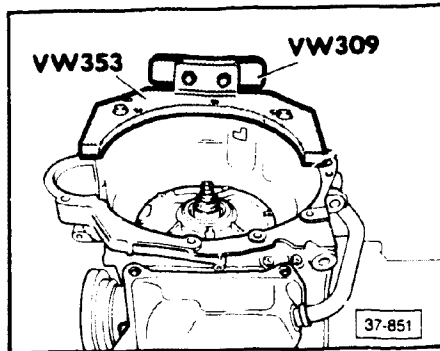
- 8 — **Washer**
- 9 — **O-ring**
 - always replace
 - install in planet carrier
- 10 — **Planet carrier**
 - lightly grease washers and needle bearing
 - place washers and needle bearing on planet carrier, then install planet carrier plates
- 11 — **Shim**
 - for reverse gear brake (B1)
 - determining thickness, page 38.47
- 12 — **Inner splined plate**
 - number of plates, see Technical data, Repair Group 37
 - before installing new plates, soak in ATF for 15 minutes
- 13 — **Outer splined plate**
 - number of plates, see Technical data, Repair Group 37
- 14 — **Pressure plate**
 - flat side toward plates
- 15 — **Plate spring**
 - curved side toward one-way clutch
- 16 — **One-way clutch**
 - with B1 piston
 - assembly, page 38.55
 - installing, page 38.43
- 17 — **Circlip**
 - for one-way clutch
 - after installing circlip, install oil deflector
 - installed position, page 38.43
- 18 — **Oil deflector**
 - seat in transmission housing groove (near ATF vent hole)
 - install deflector **after** installing circlip for one-way clutch and **before** installing circlip for support tube
- 19 — **Circlip**
 - for support tube
 - before installing circlip, be sure one-way clutch and oil deflector are in place
 - installed position, page 38.43
- 20 — **Sun gear, small**
 - install in planet carrier
- 21 — **Washer**
 - install with rounded side toward small sun gear
- 22 — **Axial needle bearing**
- 23 — **Sun gear, large**
 - install in planet carrier
- 24 — **Washer**
 - install with chamfered side in large sun gear
- 25 — **Axial needle bearing**
- 26 — **Driveshaft, large**
 - install in planet carrier
- 27 — **Axial needle bearing**
- 28 — **Needle bearing**
- 29 — **Driveshaft, small**
 - install in planet carrier
- 30 — **Axial needle bearing**
 - washer may be integral with needle bearing
 - bearing faces small driveshaft
- 31 — **Washer**
 - lugs toward axial needle bearing
 - washer may be integral with needle bearing
- 32 — **3rd/4th gear clutch (K3)**
 - with pump shaft
 - removing installing, page 38.43
 - assembly, page 38.64
- 33 — **Washer**
 - lugs toward axial needle bearing
- 34 — **Axial needle bearing**
- 35 — **Washer**
- 36 — **1st to 3rd gear clutch (K1)**
 - with turbine shaft
 - assembly, page 38.53
- 37 — **Shim**
 - for K1/K2 freeplay adjustment
 - determining thickness, page 38.50
- 38 — **Shim**
 - for K1/K2 freeplay adjustment (if second shim is needed)
 - determining thickness, page 38.50
- 39 — **Reverse clutch (K2)**
 - installing, page 38.43
 - assembly, page 38.62
- 40 — **Support tube**
 - installing, page 38.43
 - install so that groove engages in wedge of one-way clutch
- 41 — **Outer splined plate**
 - number of plates, see Technical data, Repair Group 37
 - always install 3 mm thick outer plate, page 38.42
- 42 — **Inner splined plate**
 - number of plates, see Technical data, Repair Group 37
 - before installing new plates, soak in ATF for 15 minutes
 - installing, page 38.42
- 43 — **Spring cap**
 - remove all three
 - insert, after installing 1st outer splined plate
- 44 — **Outer splined plate**
 - number of outer plates, see Technical data, Repair Group 37
 - always install 2 mm thick outer plate, page 38.42
- 45 — **Spring**
 - remove all three
 - insert, before installing the last outer splined plate
- 46 — **Spring cap**
 - remove all three
 - insert, before installing the last outer splined plate

Automatic Transmission — Case, Gears, Shaft

- 47 — **Outer splined plate**
 - number of outer plates, see Technical data, Repair Group 37
 - determining thickness of outer plates, page 38.52
 - installing, page 38.42
- 48 — **Spring washer, wavy**
- 49 — **Gasket**
 - always replace
- 50 — **O-ring**
 - always replace
 - place on ATF pump
- 51 — **ATF pump**
 - assembly, page 38.54
 - removing installing, page 38.42
- 52 — **10 Nm (7 ft lb)**

Transmission, disassembling/ assembling

Mounting transmission in repair stand

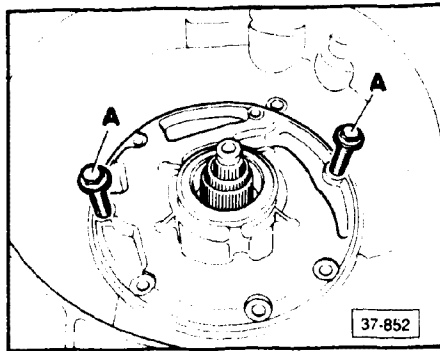


ATF pump, replacing

- extract pump from transmission housing by turning bolts A

Note

When installing pump, ensure that gasket is seated.

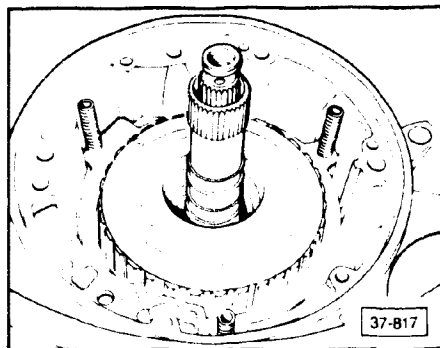


2nd/4th gear brake (B2) plates, replacing

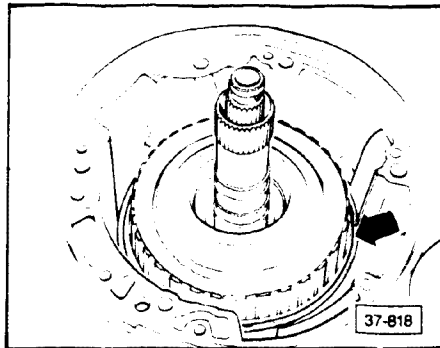
- remove all plates, springs, caps, together with clutches
- install 3 mm outer plate
- install spring caps/springs (three each)
- install all inner plates and 2 mm outer plates (see illustration 37-843 for installation sequence)

Note

Before installing the last measured outer plate, place a spring cap over each of the three springs.

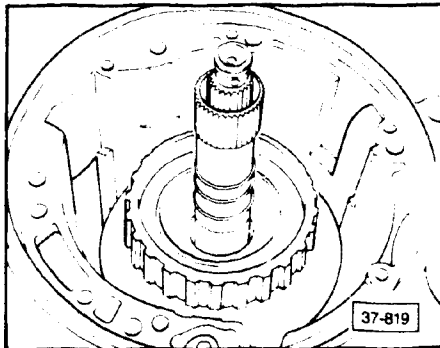


Automatic Transmission — Case, Gears, Shaft



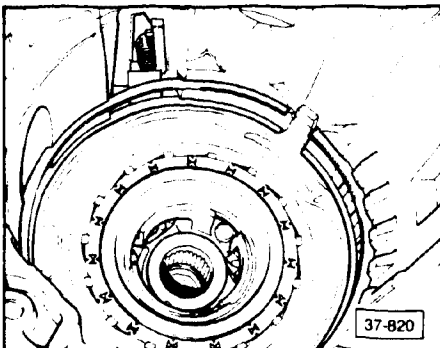
Reverse clutch (K2) and support tube, installing

- install reverse clutch on shims
- install support tube (**arrow**) so that groove engages in wedge of one-way clutch



3rd/4th gear clutch (K3), installing

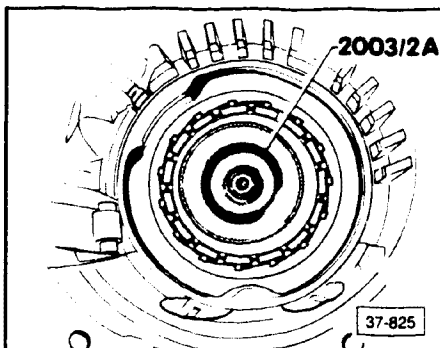
- assemble 1st to 3rd gear clutch (K1) and 3rd/4th gear clutch (K3) with washers and axial needle bearing (see illustration 37-843 for installation sequence)
- install assembly, altogether



Circlip for one-way clutch (F) and circlip for support tube, installed position

Note

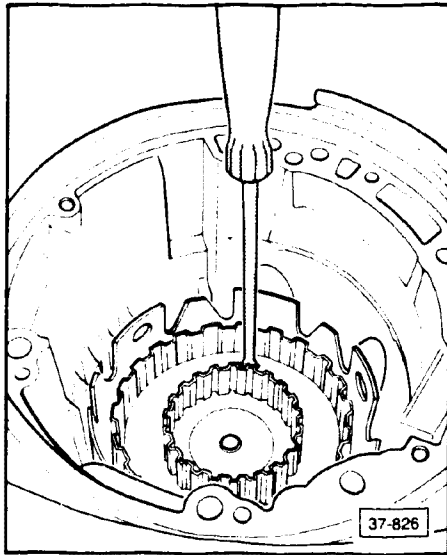
Install oil deflector **after** installing circlip for one-way clutch and **before** installing circlip for support tube



One-way clutch, installing

- position arbor **2003/2A** on planet carrier as shown
- press one-way clutch over arbor, onto planet carrier

Automatic Transmission — Case, Gears, Shaft



Bolt for small driveshaft, replacing

- bolt located in bore of driveshaft and large sun gear

Planet carrier, adjusting/checking

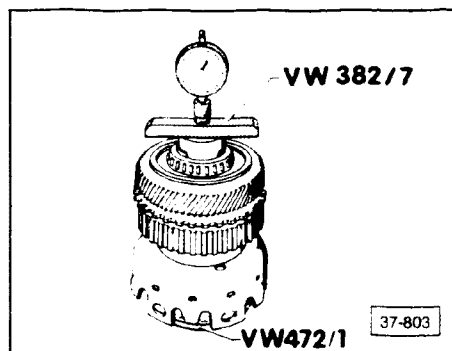
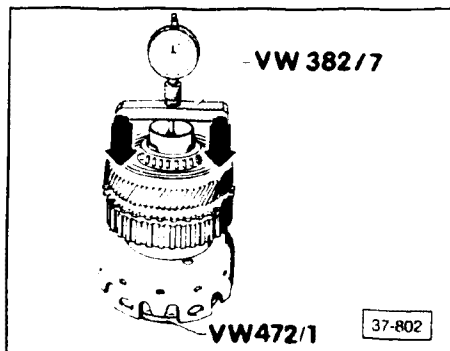
Note

The following components should already be assembled to the small driveshaft:

- planet carrier
- small sun gear
- washers
- axial needle bearing

Shim thickness, determining

- set up measuring equipment as shown
 - dial indicator sensor must contact small driveshaft
- "zero" dial indicator, with 3 mm preload



- reposition dial indicator sensor onto axial needle bearing
- record measurement
 - example: 2.00 mm
- use recorded measurement to select appropriate shim thickness from chart which follows:

Automatic Transmission — Case, Gears, Shaft

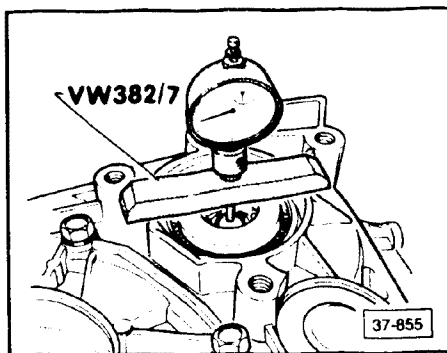
Dial Gauge Measurement	Thickness Shim (mm)
1.26 ... 1.35	1.0
1.36 ... 1.45	1.1
1.46 ... 1.55	1.2
1.56 ... 1.65	1.3
1.66 ... 1.75	1.4
1.76 ... 1.85	1.5
1.86 ... 1.95	1.6
1.96 ... 2.05	1.7
2.06 ... 2.15	1.8
2.16 ... 2.25	1.9
2.26 ... 2.35	2.0
2.36 ... 2.45	2.1
2.46 ... 2.55	2.2
2.56 ... 2.65	2.3
2.66 ... 2.75	2.4
2.76 ... 2.85	2.5
2.86 ... 2.95	2.6
2.96 ... 3.05	2.7
3.06 ... 3.15	2.8
3.16 ... 3.25	2.9

Example

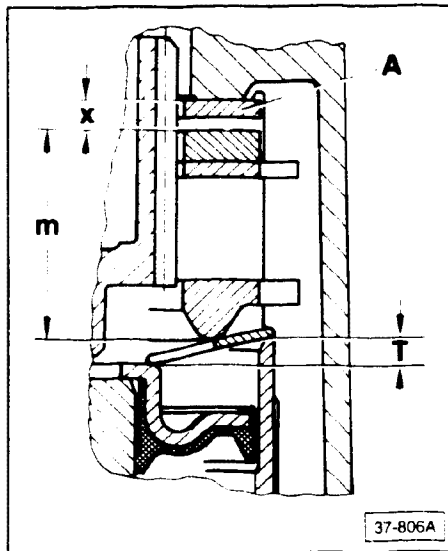
For a measurement of 2.00 mm, select a 1.7 mm shim.

Adjustment, checking

- set up measuring equipment, with dial indicator contacting small driveshaft bolt head
- move small shaft to upper/lower limits of travel
- measure freeplay
 - freeplay minimum: 0.23 mm
 - freeplay maximum: 0.37 mm



Reverse brake (B1), adjusting/ checking



Shim thickness, determining

Note

A shim selection chart appears in this section. Thickness values in the chart are determined by the value of Gap x , which must be calculated in the following equation:

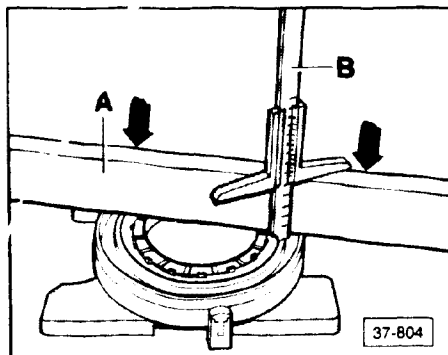
$$\text{Gap } x = k + \frac{T}{2} - m$$

k = constant value in mm

K is determined per transmission housing and number of plates:

$k =$	No. of plates	
	inner	outer
26.8	5	5
30.5	6	6

The remaining variables (T , m) in the equation are measured as follows:



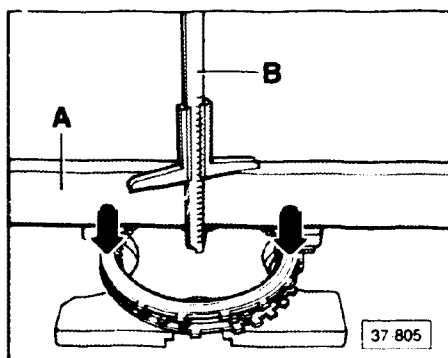
Variable T, determining

- place straightedge **A** on outer race of one-way clutch
- press piston in, to stop, in direction of **arrows**
- measure inner edge of piston with depth gauge **B**

Example

depth gauge reading	51.8 mm
straightedge thickness	48.2 mm

$$T = 3.6 \text{ mm}$$



Variable m, determining

- place straightedge **A** on thrust plate
- press plates together in direction of **arrows**
- measure thickness of plate set using depth gauge **B**

Example

depth gauge reading	73.5 mm
straightedge thickness	48.2 mm

$$m = 25.3 \text{ mm}$$

Automatic Transmission — Case, Gears, Shaft

Value of Gap x, calculating

Example

$$\begin{aligned}\text{Gap } x &= k + \frac{T}{2} - m \\ &= 26.8 + \frac{3.6}{2} - 25.3 \\ &= 3.3 \text{ mm}\end{aligned}$$

Note

Use calculated value for Gap x (derived from actual measurements) to select appropriate shim thickness(es):

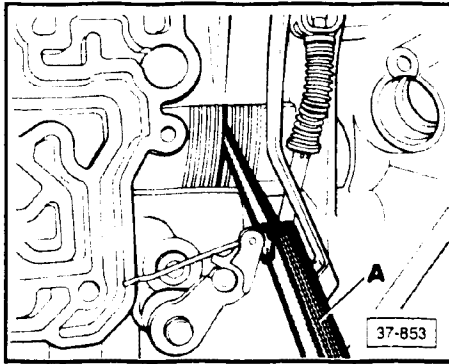
Gap x (mm)	Shim (mm)
2.36 ... 2.45	1.0
2.46 ... 2.55	1.1
2.56 ... 2.65	1.2
2.66 ... 2.75	1.3
2.76 ... 2.85	1.4
2.86 ... 2.95	1.5
2.96 ... 3.05	1.6
3.06 ... 3.15	1.7
3.16 ... 3.25	1.8
3.26 ... 3.35	1.9
3.36 ... 3.45	1 + 1
3.46 ... 3.55	1 + 1.1
3.56 ... 3.65	1.1 + 1.1
3.66 ... 3.75	1.1 + 1.2
3.76 ... 3.85	1.2 + 1.2
3.86 ... 3.95	1.2 + 1.3
3.96 ... 4.05	1.3 + 1.3
4.06 ... 4.15	1.3 + 1.4
4.16 ... 4.25	1.4 + 1.4

Adjustment, checking

Note

Ensure that components up to one-way clutch are properly assembled and secured with circlip.

Automatic Transmission — Case, Gears, Shaft



- measure freeplay between plates with feeler gauge **A**
 - freeplay minimum 1.20 mm
 - freeplay maximum 1.80 mm

Clutches K1 and K2, adjusting/checking freeplay

Note

K1 1st to 3rd gear clutch

K2 reverse gear clutch

Shim thickness, determining

Note

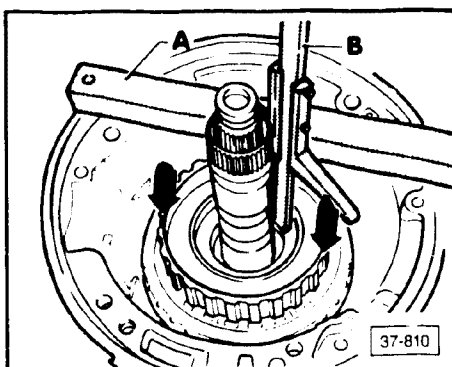
A shim selection chart appears in this section. Thickness values in the chart are determined by the value of Gap **x**, which must be calculated in the following equation:

$$\text{Gap } x = y - z$$

Variables **y** and **z** in the equation are measured as follows:

Variable y, determining

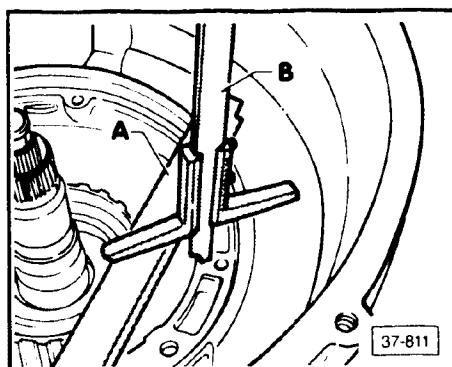
- place straightedge **A** on transmission housing
- press **K1** down, in direction of **arrows**
- measure into **K1** with depth gauge **B**



Example

depth measurement 1 = 88.5 mm

Record value, and take depth measurement 2:



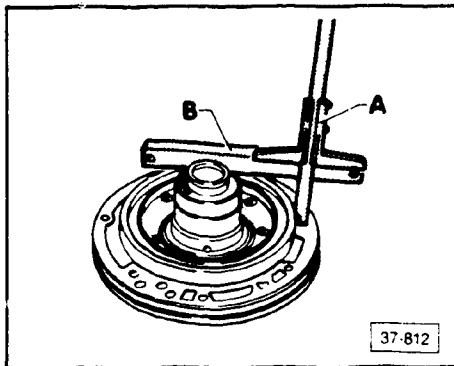
- place straightedge **A** on transmission housing
- position depth gauge **B** on straightedge **A** and measure to ATF pump flange

Example

depth measurement 2 = 34.3 mm

$$\begin{aligned} Y &= \text{measurement 1} - \text{measurement 2} \\ &= 88.5 \text{ mm} - 34.3 \text{ mm} \\ &= 54.2 \text{ mm} \end{aligned}$$

measurement from pump flange into **K1**



Variable z, determining

- place straightedge **B** on stator support as shown
- measure to pump flange gasket with depth gauge **A**

Example

$$\begin{array}{rcl}
 \text{depth gauge reading} & & 70.5 \text{ mm} \\
 - \text{straightedge thickness} & & 19.5 \text{ mm} \\
 \hline
 z & = & 51.0 \text{ mm}
 \end{array}$$

Value of Gap x, calculating

Example

$$\begin{array}{rcl}
 \text{Gap } x & = & y - z \\
 & = & 54.2 \text{ mm} - 51.0 \text{ mm} \\
 & = & 3.2 \text{ mm}
 \end{array}$$

Note

Use calculated value for Gap **x** (derived from actual measurements) to select appropriate shim thickness(es).

Gap x (mm)	Shims (mm)
..... 2.54	1.4
2.55 3.09	1 + 1
3.10 3.49	1.2 + 1.2
3.50 3.89	1.4 + 1.4
3.90 4.29	1.6 + 1.6
4.30 4.69	1.8 + 1.8
4.70 5.04	1.2 + 1.2 + 1.6
5.05 5.25	1.2 + 1.2 + 1.8

Adjustment, checking

See Clutch adjustment, checking (page 38.53).

Automatic Transmission – Case, Gears, Shaft

2nd/4th gear brake (B2), adjusting

Last outer splined plate, determining thickness

Note

A shim selection chart appears in this section. Thickness values in the chart are determined by the value of Gap **x**, which must be calculated in the following equation:

$$\text{Gap } x = y - z - k$$

k constant value 3.6

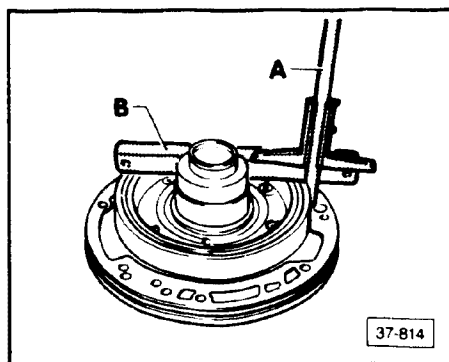
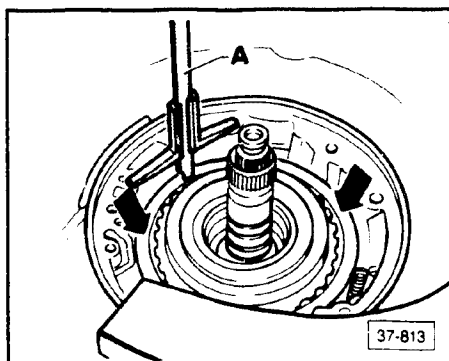
The remaining variables (**y**, **z**) in the equation are measured as follows:

Variable **y**, determining

- press inner splined plate (arrows) downward
- measure from pump flange **A** to last inner splined plate, using depth gauge **B**

Example

gauge reading variable **y** 30.2 mm



- place straightedge **A** on stator support as shown
- measure to pump flange gasket with depth gauge **B**

Example

depth gauge reading	40.1 mm
– straightedge thickness	19.5 mm
	z = 20.6 mm

Value of Gap **x**, calculating

Example

$$\begin{aligned}\text{Gap } x &= y - z - k \\ &= 30.2 - 20.6 - 3.6 \\ &= 6.0 \text{ mm}\end{aligned}$$

Automatic Transmission – Case, Gears, Shaft

Note

Use calculated value for Gap **x** (derived from actual measurements) to select appropriate plate thickness(es):

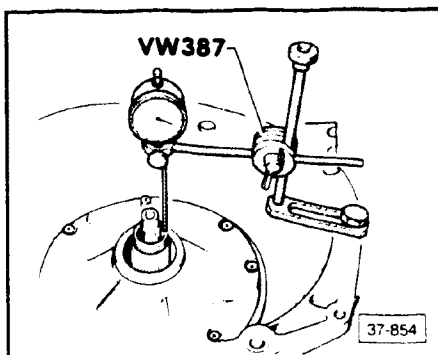
Gap x (mm)	Plate (mm)
4.25 4.49	2.75
4.50 4.74	3.00
4.75 4.99	3.25
5.00 5.24	3.50
5.25 5.49	3.75
5.50 5.74	2.00 + 2.00
5.75 5.99	2.00 + 2.25
6.00 6.24	2.25 + 2.25
6.25 6.49	2.25 + 2.50
6.50 6.74	2.50 + 2.50
6.75 7.00	2.50 + 2.75

Clutch adjustment, checking

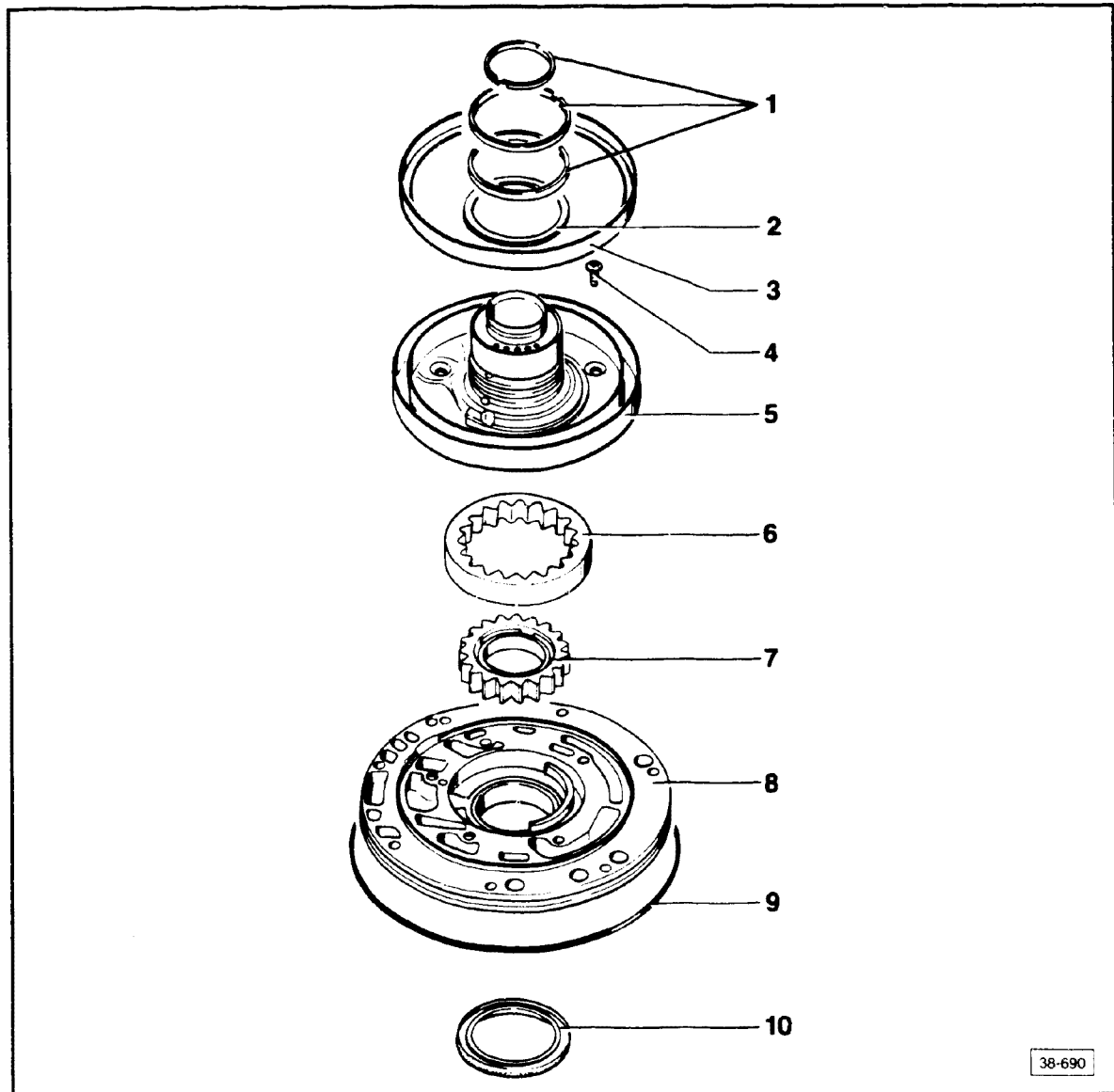
Note

Install ATF pump before measuring clutch freeplay.

- secure dial indicator holder **VW 387** to transmission housing
- position dial indicator sensor on turbine shaft, with 1 mm preload
- move turbine shaft to upper/lower limits of travel
 - freeplay minimum 0.5 mm
 - freeplay maximum 1.2 mm



Automatic Transmission—Case, Gears, Shaft



1 — Piston rings
check for proper seating

2 — Thrust washer

3 — Piston
• coat sealing lips with ATF before installing piston
• turn piston slightly while installing

4 — 10 Nm (7 ft lb)

5 — Stator support

6 — Outer gear
• coat with ATF before installing
• marked side must face stator support

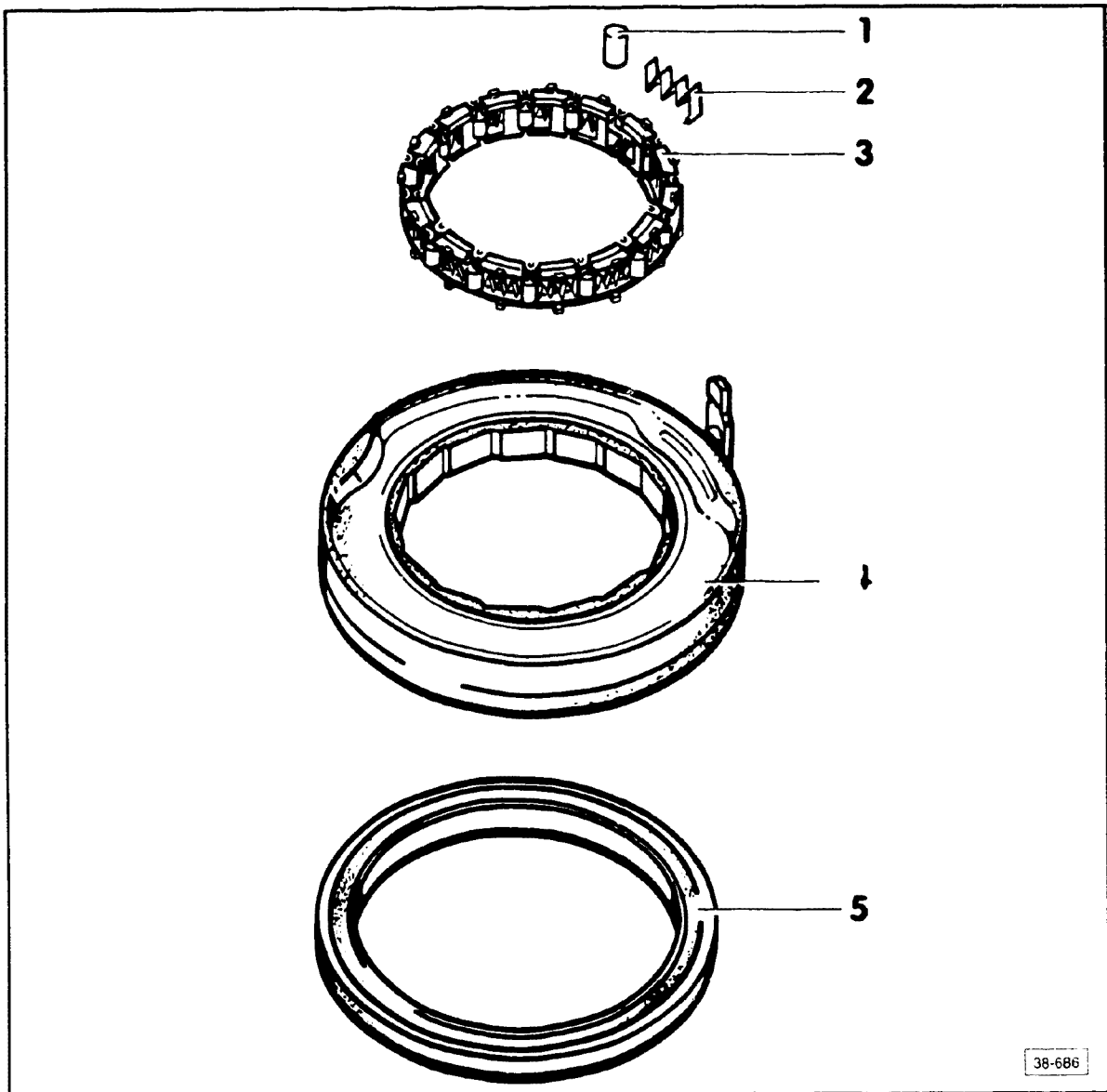
7 — Inner gear
coat with ATF before installing

8 — ATF pump housing

9 — O-ring
always replace

10 — Oil seal for torque converter
removing installing. see Repair Group 32

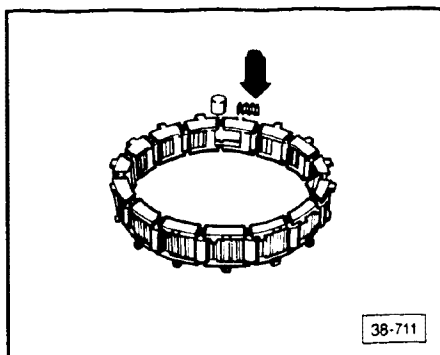
38-690



- 1 — Rollers**
installing, page 38.56
- 2 — Springs**
installing, page 38.56
- 3 — Cage**
installing securing, page 38.56

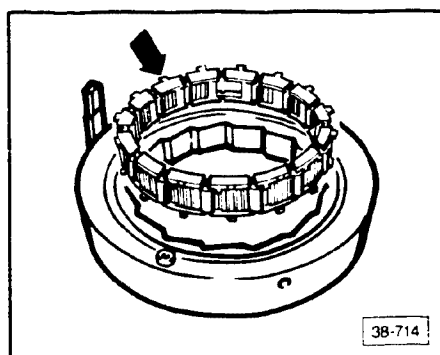
- 4 — Outer ring**
- 5 — Piston**
- coat sealing lips with ATF before installing piston
 - turn piston slightly while installing
 - installed position, page 38.57

One-way clutch with B1 piston, disassembling/assembling



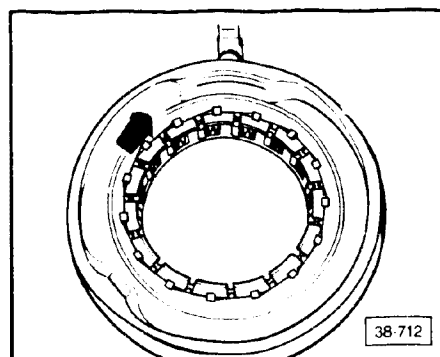
Springs/rollers, installing

- install rollers so that springs (**arrow**) can be pressed into cage



Spring/roller cage assembly, installing

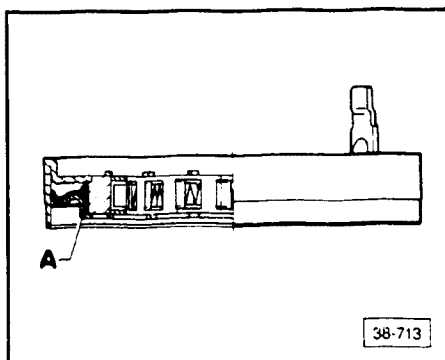
- install with large lugs (**arrow**) upward



Cage assembly, securing

- turn cage in direction of **arrow**. to stop

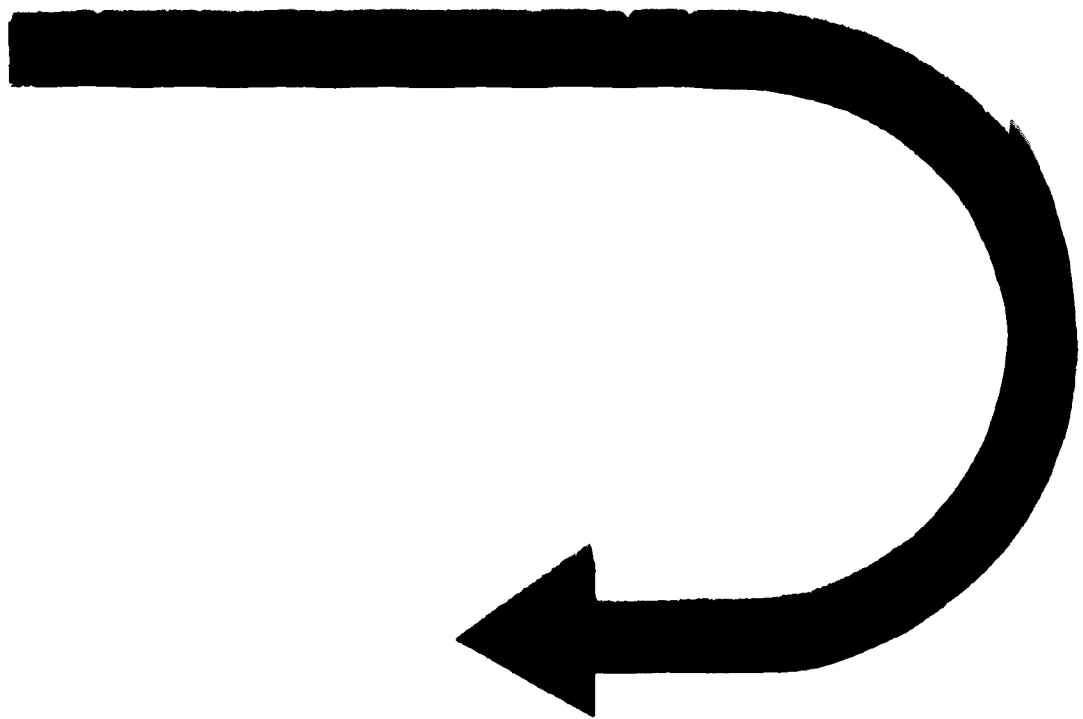
Automatic Transmission – Case, Gears, Shaft



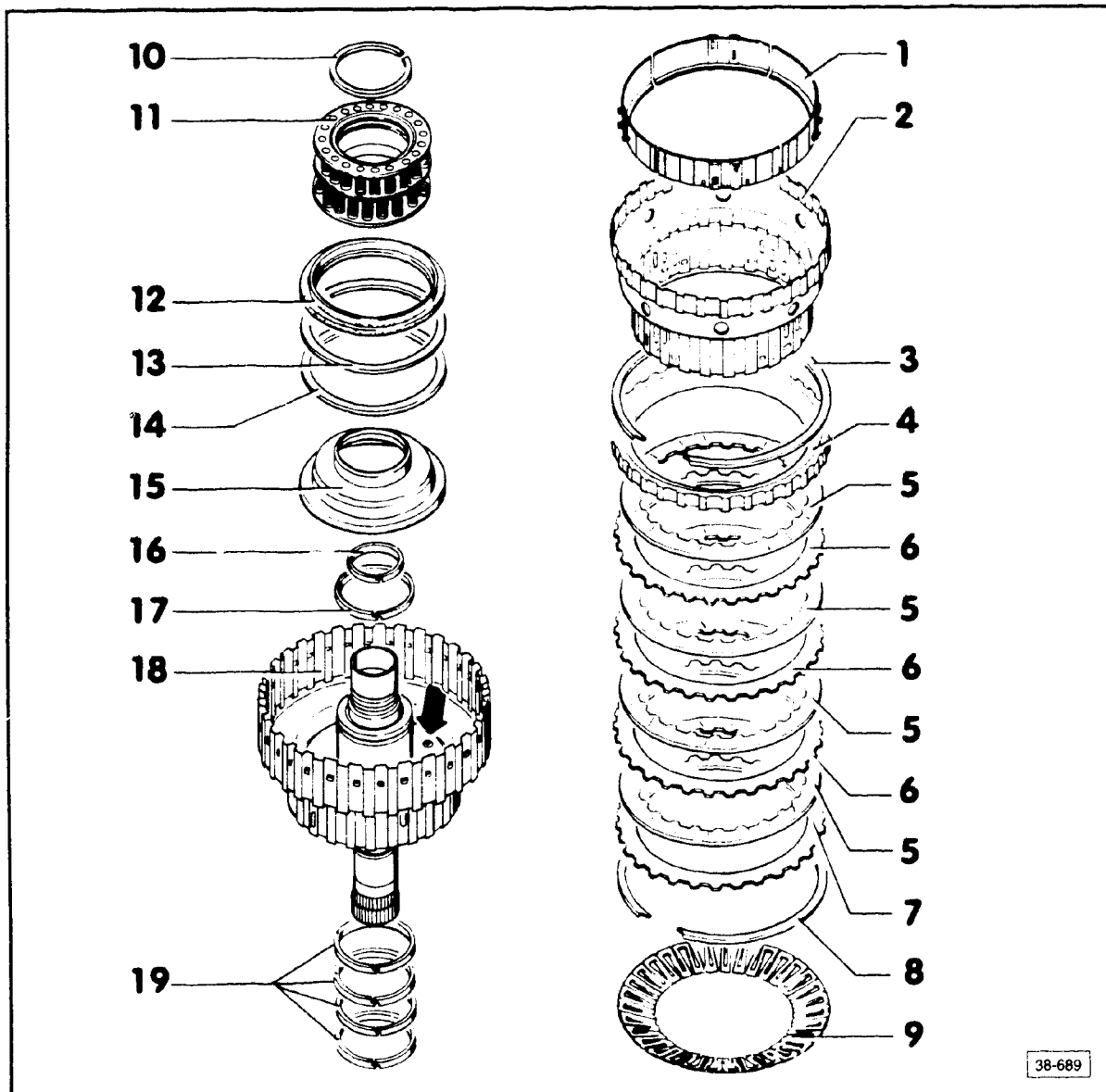
Piston, installed position

- install piston **A** as shown

CONTINUED IN THE
BEGINNING OF NEXT ROW



Automatic Transmission—Case, Gears, Shaft



CAUTION

During clutch repair, inspect ball valve (arrow) for damage.

1 — Support ring

- has four segments
- unclip from inner splined plate carrier
- installing, page 38.61

2 — Inner splined plate carrier

assembling, page 38.61

3 — Circlip

- mark after removal and install in same position
- different thicknesses available
- removing installing, page 38.61

4 — Thrust plate

- smooth side faces inner plates
- install together with inner plate carrier

5 — Inner splined plate

- number of plates, see Technical data, Repair Group 37
- installing, page 38.61

6 — Outer splined plate

- number of plates, see Technical data, Repair Group 37
- installing, page 38.61

Automatic Transmission—Case, Gears, Shaft

- 7 — **Thrust plate**
curved side faces diaphragm spring
- 8 — **Circlip**
removing installing, page 38.60
- 9 — **Diaphragm spring**
curved side faces piston
- 10 — **Circlip**
removing installing, page 38.60
- 11 — **Spring intermediate ring assembly**
with guide for compression springs
- 12 — **Operating ring**
rounded surface faces plate spring assembly
- 13 — **Plate spring**
 - curved side faces operating ring
 - installing, page 38.60
- 14 — **Plate spring**
 - curved side faces piston
 - installing, page 38.60
- 15 — **Piston**
 - coat sealing lips with ATF before installing piston
 - turn piston slightly while installing
- 16 — **Piston ring, smaller**
to remove, unhook ends
- 17 — **Piston ring, larger**
to remove, unhook ends
- 18 — **Clutch drum with turbine shaft**
 - replace drum if bushings are damaged
 - before installing inner plate carrier, place an inner and outer plate in clutch drum
 - assembling, page 38.61
- 19 — **Piston rings**
to remove, unhook ends

Automatic Transmission – Case, Gears, Shaft

1st to 3rd gear clutch (K1) with turbine shaft, disassembling/assembling

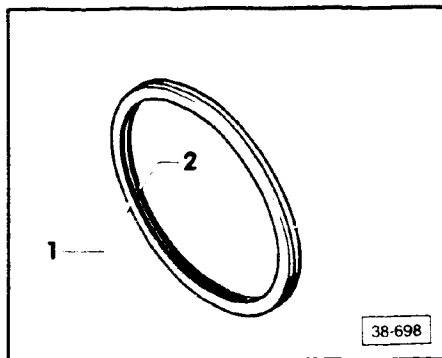
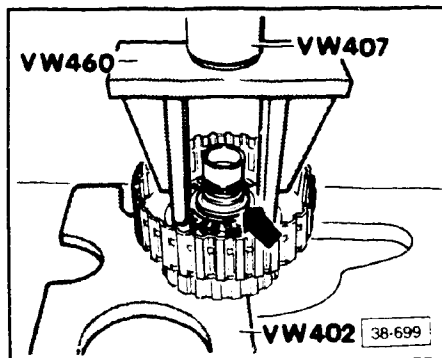


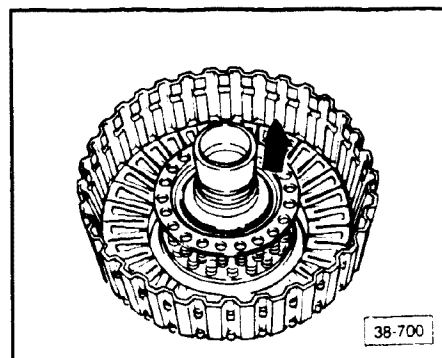
Plate springs, installing

- install plate springs 1 and 2 so that outer edges make contact
 - at inner diameter of plates there is clearance



Circlip at spring intermediate ring assembly, removing installing

- set up pressing equipment as shown
- push spring intermediate ring downward until circlip (**arrow**) can be seated/unseated at groove



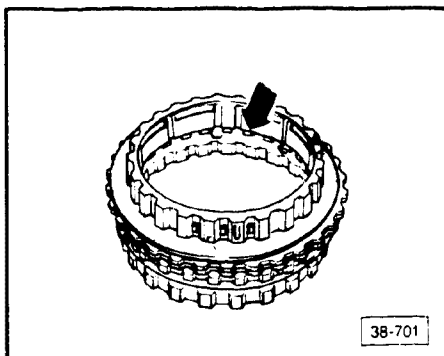
Circlip at diaphragm spring, removing installing

- seat/unseat circlip (**arrow**) at groove

Note

Diaphragm spring is slightly preloaded.

Automatic Transmission – Case, Gears, Shaft

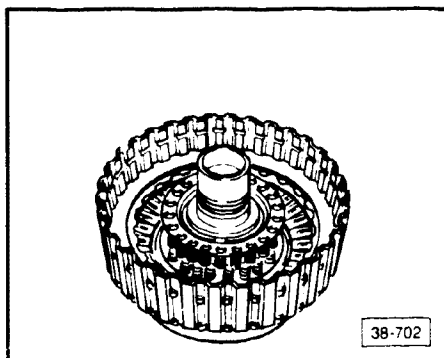


Inner splined plate carrier, assembling

- install thrust plate
- install inner and outer plates
- clip support ring to carrier

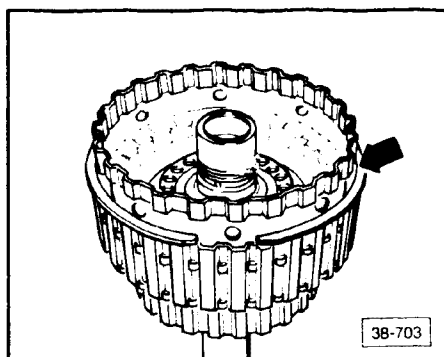
Note

One inner and one outer plate must be placed in clutch drum before inner splined plate carrier is installed (see below).



Clutch drum, assembling

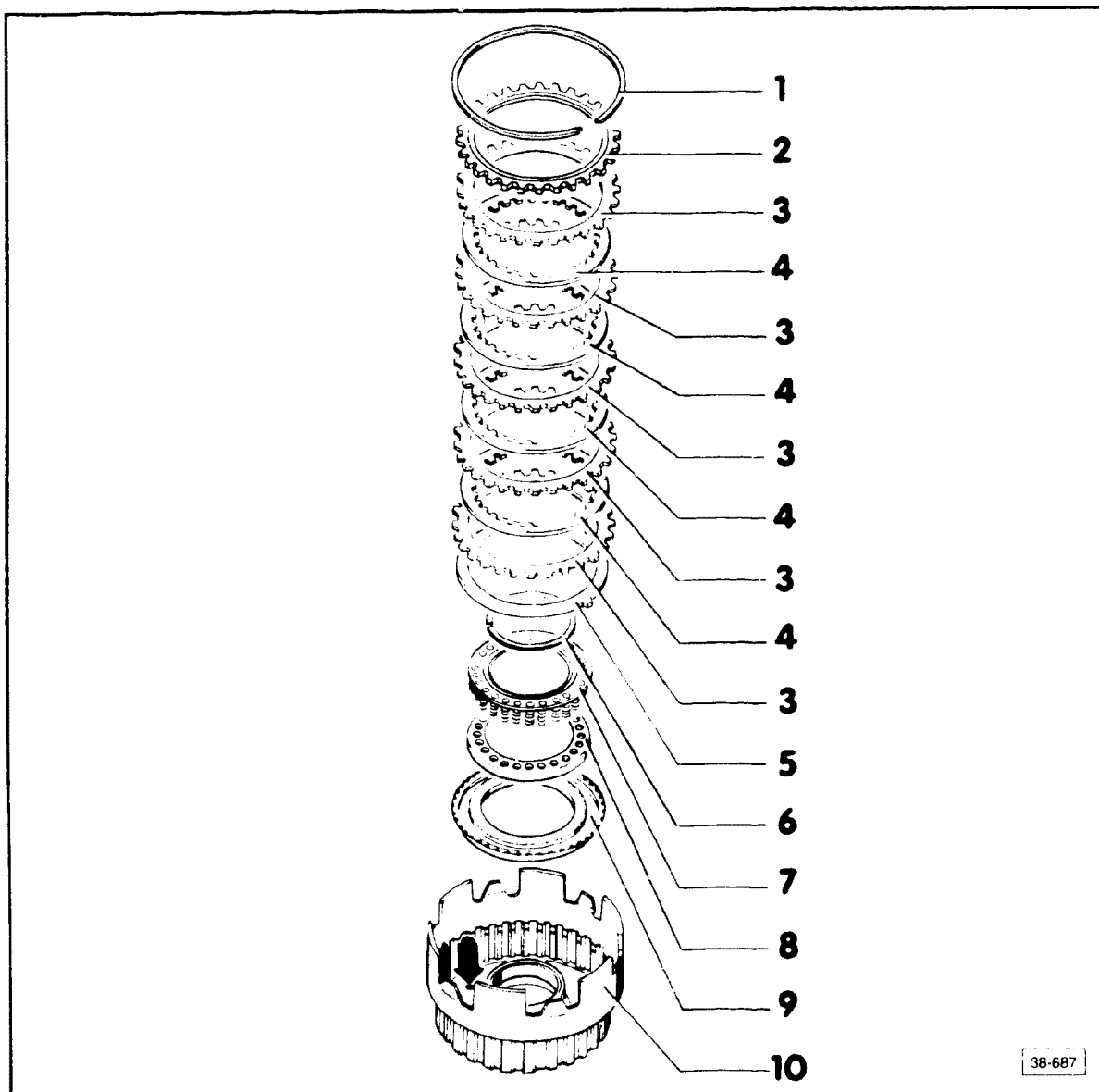
- install thrust plate
- install one inner plate
- install one outer plate



Circlip at inner splined plate carrier, removing/installing

- seat/unseat circlip (**arrow**) at groove

Automatic Transmission – Case, Gears, Shaft



CAUTION

During clutch repair, inspect ball valve (arrow) for damage.

- | | |
|--|---|
| <p>1 — Circlip</p> <ul style="list-style-type: none"> • mark after removal and install in same position • different thicknesses available <p>2 — Thrust plate</p> <p>shouldered side faces circlip</p> <p>3 — Outer plate</p> <p>number of plates, see Technical data, Repair Group 37</p> <p>4 — Inner plate</p> <p>number of plates, see Technical data, Repair Group 37</p> | <p>5 — Spring washer, wavy</p> <p>6 — Circlip</p> <p>removing installing, page 38.63</p> <p>7 — Spring support plate</p> <ul style="list-style-type: none"> • with springs • installed position, page 38.63 <p>8 — Spring support</p> <p>9 — Piston</p> <ul style="list-style-type: none"> • coat sealing lips with ATF before installing piston • turn piston slightly while installing <p>10 — Clutch drum with clutch tube</p> |
|--|---|

Circlip for reverse clutch (K2) spring support assembly, replacing

Removing

- set up pressing equipment as shown
- push spring support plate downward

CAUTION

Spring plate bends easily.

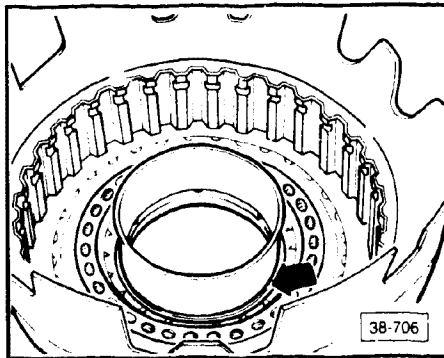
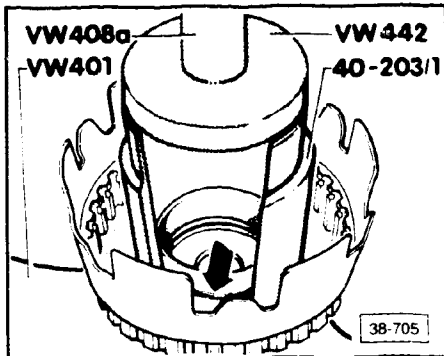
- spread remove circlip

Installing

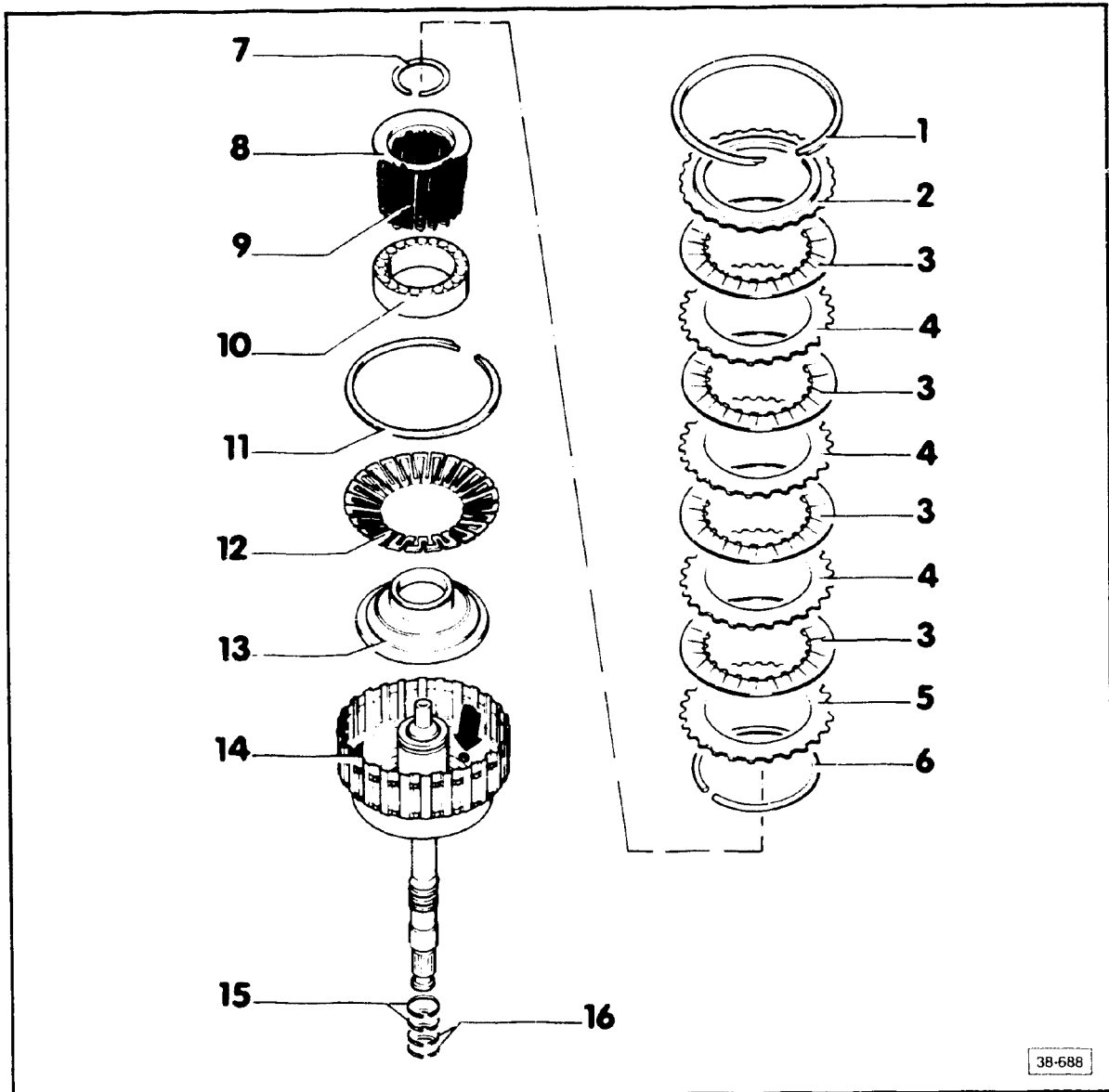
- position new circlip
- press new circlip down carefully with spring support plate, as in removal
- seat circlip in groove at clutch drum

Installed position, checking

- check that circlip (**arrow**) is fully seated at clutch drum
- check that spring support plate is concentric with hub
 - if not, plate will be bent



Automatic Transmission – Case, Gears, Shaft



CAUTION

During clutch repair, inspect ball valve (arrow) for damage.

1 — Circlip

- mark after removal and install in same position
- different thicknesses available

2 — Pressure plate

shouldered side faces circlip

3 — Inner plate

number of plates, see Technical data.
Repair Group 37

4 — Outer plate

number of plates, see Technical data.
Repair Group 37

5 — Thrust plate

rounded side faces ring

6 — Ring

install in rounded side of thrust plate

7 — Circlip

replacing, page 38 66

8 — Spring support ring

9 — Springs

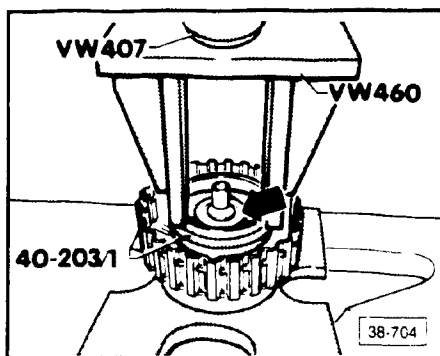
place on support ring

Automatic Transmission – Case, Gears, Shaft

- 10 — **Spring support plate**
- 11 — **Circlip**
seat in groove at clutch drum
- 12 — **Diaphragm spring**
curved side faces piston
- 13 — **Piston**
 - coat sealing lips with ATF before installing piston
 - turn piston slightly while installing
- 14 — **Clutch drum with pump shaft**
- 15 — **Piston rings**
 - remove replace only if defective
 - are destroyed during removal
- 16 — **Piston rings**
to remove, unhook ends

Automatic Transmission – Case, Gears, Shaft

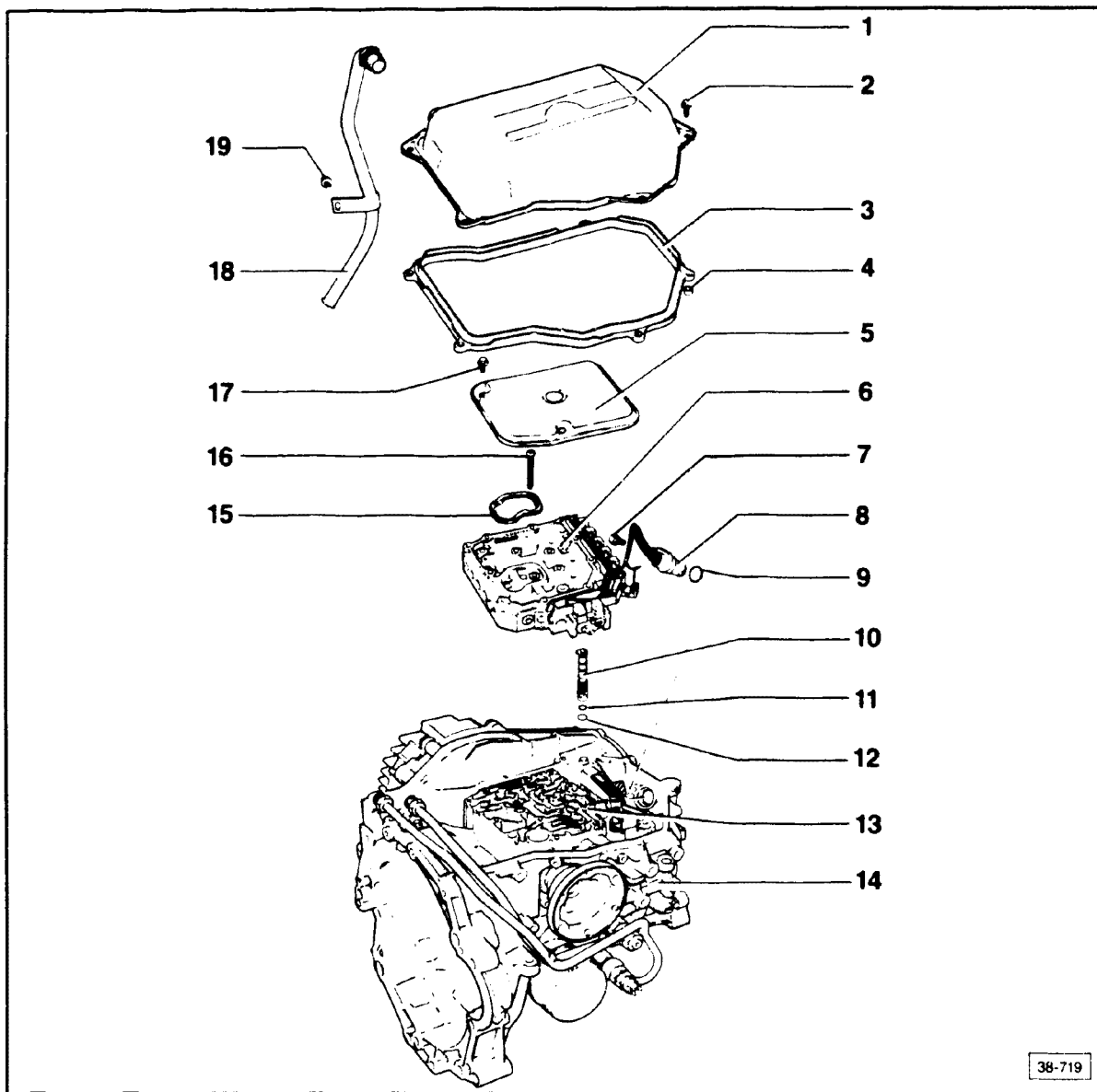
Circlip for 3rd/4th gear clutch (K3) spring support assembly, replacing



- set up pressing equipment as shown
- seat new circlip at spring support assembly (arrow)

intentionally
left blank

Automatic Transmission — Case, Gears, Shaft



Note

The valve body can be removed with transmission in vehicle.

After installing oil pan, refill with ATF to specifications.

CAUTION

Do not run engine or tow vehicle with oil pan removed, or without oil in transmission.

1 — Oil pan

remove ATF filler tube before removing oil pan

2 — 10 Nm (7 ft lb)

3 — Gasket

- always replace
- press spacer into gasket

4 — Spacer

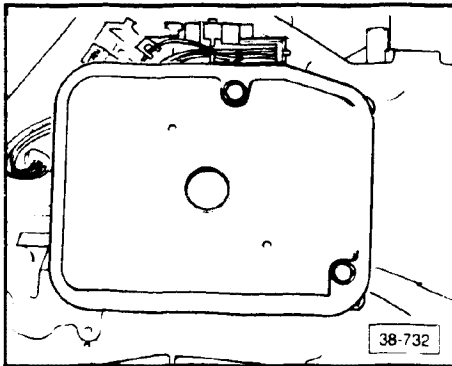
- press into gasket

5 — Oil strainer

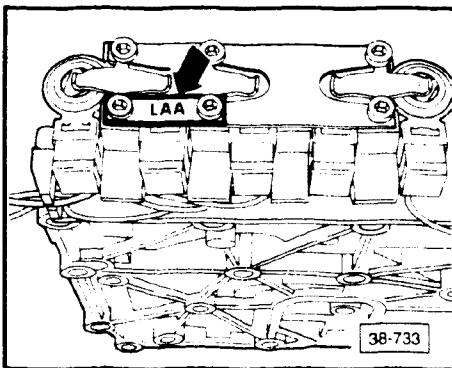
- seat seal
- installed position: 38.70

Automatic Transmission – Case, Gears, Shaft

- 6 — **Valve body**
 - installed position, page 38.71
 - identifying, page 38.70
- 7 — **10 Nm (7 ft lb)**
- 8 — **Wiring connector**
 - install with O-ring
- 9 — **O-ring**
 - always replace
- 10 — **Sealing plug**
 - remove plug before removing installing one-way clutch
 - installing, page 38.71
- 11 — **O-ring**
 - always replace
- 12 — **O-ring**
 - always replace
- 13 -- **Operating rod for manual valve**
 - positioning, page 38.71
 - shouldered side faces manual valve
- 14 — **Final drive housing**
- 15 — **Seal**
 - always replace
 - seat in oil strainer
- 16 — **5 Nm (44 in. lb or 51 cm kg)**
- 17 — **8 Nm (71 in. lb or 82 cm kg)**
- 18 — **ATF filler tube**
 - tightening torque at oil pan: **80 Nm (59 ft lb)**
- 19 — **10 Nm (7 ft lb)**



Oil strainer, installed position



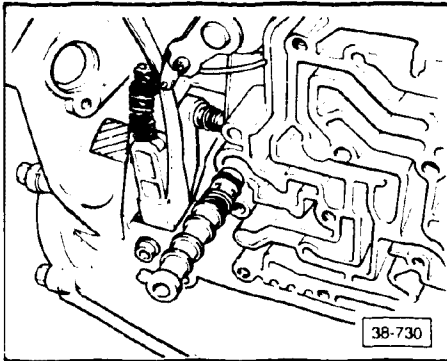
Valve body, identifying

Note

Code letters are stamped on a metal tag which must remain attached to the valve body.

For valve body application, see Technical data in Repair Group 37.

Valve body, disassembling/assembling

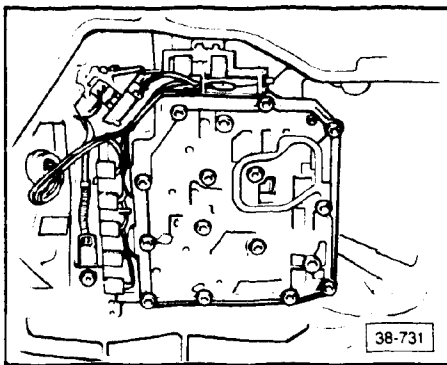


Sealing plug, installing

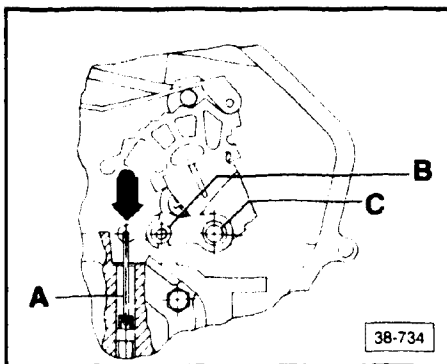
- install O-rings on plug
- install plug so that lug seats in groove on housing

CAUTION

Before removing/installing one-way clutch, remove sealing plug from housing to avoid damage to plug and O-ring.



Valve body, installed position



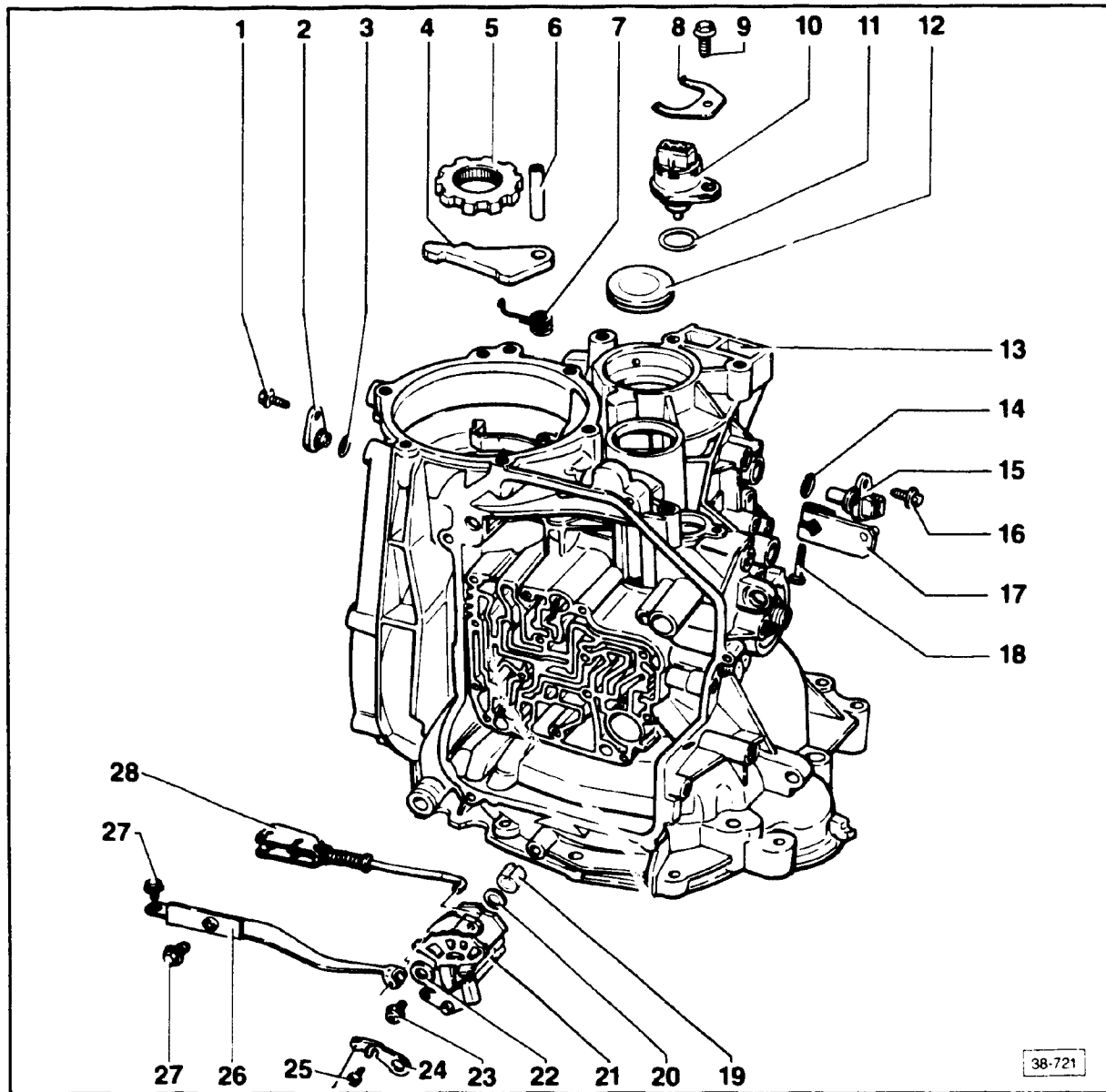
Manual valve assembly, installing

- move shaft to selector lever position **P**
- install manual valve assembly fully into valve body
 - operating rod **A** positioned in direction of **arrow**
- tighten stop screw **B** to 4 Nm (35 in. lb or 40 cm kg)

CAUTION

The manual valve lever **C** must remain against stop screw **B** during installation. When tightening screw **B** at manual valve lever **C**, counter-hold lever in direction of **arrow**.

Automatic Transmission – Case, Gears, Shaft



- | | |
|---------------------------------------|-----------------------------------|
| 1 — 10 Nm (7 ft lb) | 6 — Pin for parking pawl |
| 2 — Sealing plug | • removing, page 38.74 |
| installing, page 38.75 | • drive in with mandrel |
| 3 — O-ring | • staking, page 38.74 |
| always replace | 7 — Return spring |
| 4 — Parking pawl | 8 — Retainer |
| • install with return spring | for multi-function switch |
| • align with parking lock gear | 9 — 10 Nm (7 ft lb) |
| 5 — Parking lock gear | 10 — Multi-function switch (F125) |
| rounded side faces driveshaft splines | 11 — O-ring |
| | always replace |

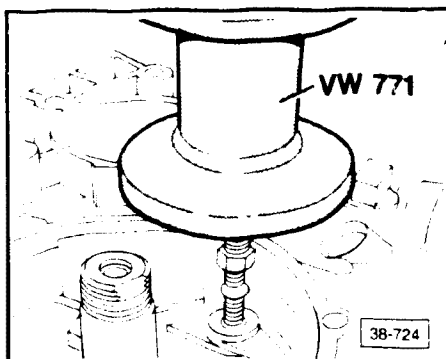
Automatic Transmission – Case, Gears, Shaft

- 12 — **Cap**
- 13 — **Final drive housing**
- 14 — **O-ring**
 - always replace
- 15 — **Speed sensor**
- 16 — **10 Nm (7 ft lb)**
- 17 — **Lever for gear change shaft**
- 18 — **10 Nm (7 ft lb)**
- 19 — **Bushing**
 - remove install with mandrel
- 20 — **O-ring**
 - always replace
 - seat in groove of gear change shaft
 - installed position, page 38.74
- 21 — **Gear change shaft assembly**
 - before withdrawing shaft, remove multi-function switch and lock spring
 - securing, page 38.74
 - always install with lever
- 22 — **Lock washer**
 - installed position, page 38.74
- 23 — **10 Nm (7 ft lb)**
- 24 — **Manual valve lever**
- 25 — **4 Nm (35 in. lb or 40 cm kg)**
- 26 — **Lock spring**
 - installation sequence for bolts, page 38.75
- 27 — **10 Nm (7 ft lb)**
 - installing, page 38.74
- 28 — **Lever**

Automatic Transmission — Case, Gears, Shaft

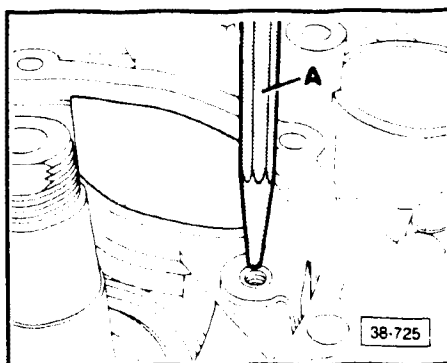
Parking lock, disassembling/assembling

Pin for parking pawl, removing



Pin for parking pawl, staking

- secure pin by staking with punch **A** at final drive housing

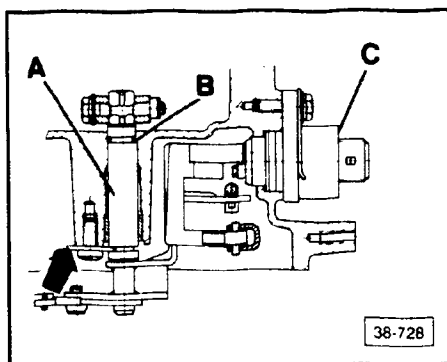


Gear change shaft assembly, installed position

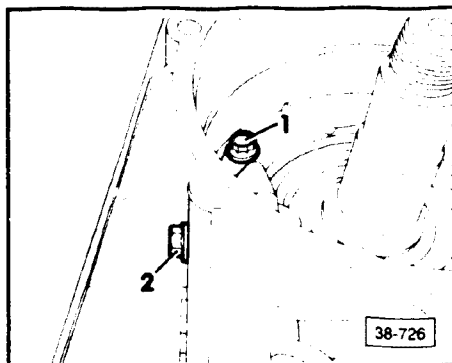
- A** gear change shaft
- B** O-ring
- C** multi-function switch (F125)

Note

Shaft is held stationary by lock washer (arrow).

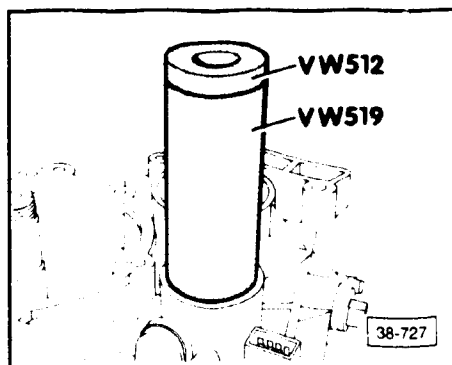


Automatic Transmission — Case, Gears, Shaft



Bolts for lock spring, installation sequence

- start both bolts into housing
 - approximately 3 threads
- tighten bolt 2 to 10 Nm (7 ft lb)
- tighten bolt 1 to 10 Nm (7 ft lb)



Sealing plug, installing