

Automatic Transmission



Troubleshooting

Rabbit/Scirocco
Dasher/AUDI FOX
AUDI 100 LS
VW Transporter

General information	
Troubleshooting pre-checks	2,3
ATF level checking	4

Adjustments	
Accelerator cable adjustment (Rabbit, Scirocco, Dasher, Audi Fox)	5
Pedal cable, adjustment (Rabbit, Scirocco, Dasher, Audi Fox)	5
Accelerator linkage cable adjustment (Audi 100 LS)	6
Accelerator cable/linkage adjustment (VW Transporter)	7

Troubleshooting guide	
No drive in different gears	8
No upshift	9
No downshift	9
Downshift delayed and bumpy	9
Kickdown does not work	9
Gear engagement faulty	10
Shift does not take place as specified	10
Parking lock does not work	10
Wheels locked	10
Poor acceleration, top speed not reached	11
ATF loss	11

Part failure diagnosis	
Clutches	12
Brake bands	12
Torque converter	12

Operating check	
Shift points	13
Stall speeds	14
Main pressure	15

Transmission components	
Shift components	18
Clutch/brake band operation	17
Transmission components	18
Transmission valve assembly	19

More Troubleshooting help

		Order No.
Engine	MPC fuel injection	
	Type 3 all	
	Type 4 autom. transm. up to Oct. '73	
	Type 4 man. transm.	42-00-4950-1
	AFC fuel injection	
	Type 4 autom. transm. from Nov. '73	42-00-4946-1
	AFC fuel injection	
Types 1 and 2 up to model year '75	42-00-4952-1	
AFC fuel injection		
Type 1 model year 1976	42-00-5954-1	
AFC fuel injection		
Type 2 model year 1976	42-00-5955-1	
Automatic Transmission	Automatic transmission 003 troubleshooting	
	Types 2, 3, 4 and Dasher	42-00-3945-1
	Automatic transmission 010 troubleshooting	
Rabbit/Scirocco, Dasher, Audi Fox, Audi 100 LS, VW Transporter	42-00-5953-1	
Heater	Heater Type 4 1971/72	42-00-2940-1
	Heater Type 4 1973/74	42-00-3940-1
Air Conditioner	Air conditioner, factory installed	
	Rabbit/Scirocco	42-00-4122-1
	Air conditioner, factory installed	
	Dasher	42-03-5146-1
Air conditioner, factory installed		
Audi Fox, Audi 100 LS	42-55-5146-1	

Contents

General information	
Troubleshooting pre-checks	2,3
ATF level checking	4
Adjustments	
Accelerator cable adjustment (Rabbit, Scirocco, Dasher, Audi Fox)	5
Pedal cable, adjustment (Rabbit, Scirocco, Dasher, Audi Fox)	5
Accelerator linkage/cable adjustment (Audi 100 LS)	6
Accelerator cable/linkage adjustment (VW Transporter)	7
Troubleshooting guide	
No drive in different gears	8
No upshift	9
No downshift	9
Downshift delayed and bumpy	9
Kickdown does not work	9
Gear engagement faulty	10
Shift does not take place as specified	10
Parking lock does not work	10
Wheels locked	10
Poor acceleration, top speed not reached	11
ATF loss	11
Part failure diagnosis	
Clutches	12
Brake bands	12
Torque converter	12
Operating checks	
Shift points	13
Stall speeds	14
Main pressure	15
Transmission components	
Shift components	16
Clutch/brake band operation	17
Transmission components	18
Transmission valve assembly	19

It helps to know the basics!

Do you know the 010 Automatic Transmission yet?

You'll find more information on the 010 Automatic Transmission's construction and operation in the self-study booklet:

AUTOMATIC TRANSMISSION FOR VOLKSWAGEN

(order No. 400/280.815.20)

Automatic Transmission 010

installed in:

Rabbit	from Chassis No. 175 3 000 001
Scirocco	from Chassis No. 535 3 000 001
Dasher	from Chassis No. 326 2 000 001
Audi Fox	from Chassis No. 866 2 900 001
Audi 100 LS	from Chassis No. 806 1 000 001
VW Transporter	from Chassis No. 216 2 000 001

Troubleshooting begins

. with good information — understanding what the problem is and how it got started.

Road test the car. Or, better yet, have the customer drive you on the road test.
Verify what the customer describes.

Be careful though. Don't let the road test turn into an expensive one way trip!

Before road testing, take a few precautions:

- look for leaks (either ATF or hypoid oil) and check for external damage
- check fluid level — now is time to check fluid appearance and smell also (dark color? burnt smell?)
- does engine run well?
check idle speed and ignition timing (poor performance might not be the transmission's fault)
- don't forget to check adjustment and routing of accelerator and pedal cables.

When it's time for the road test, pick a route which will show all transmission operations:

- shifting at various speeds
- passing kickdown
- reverse operation, etc.

If the trouble still can't be pinned down, **systematically** check the following:

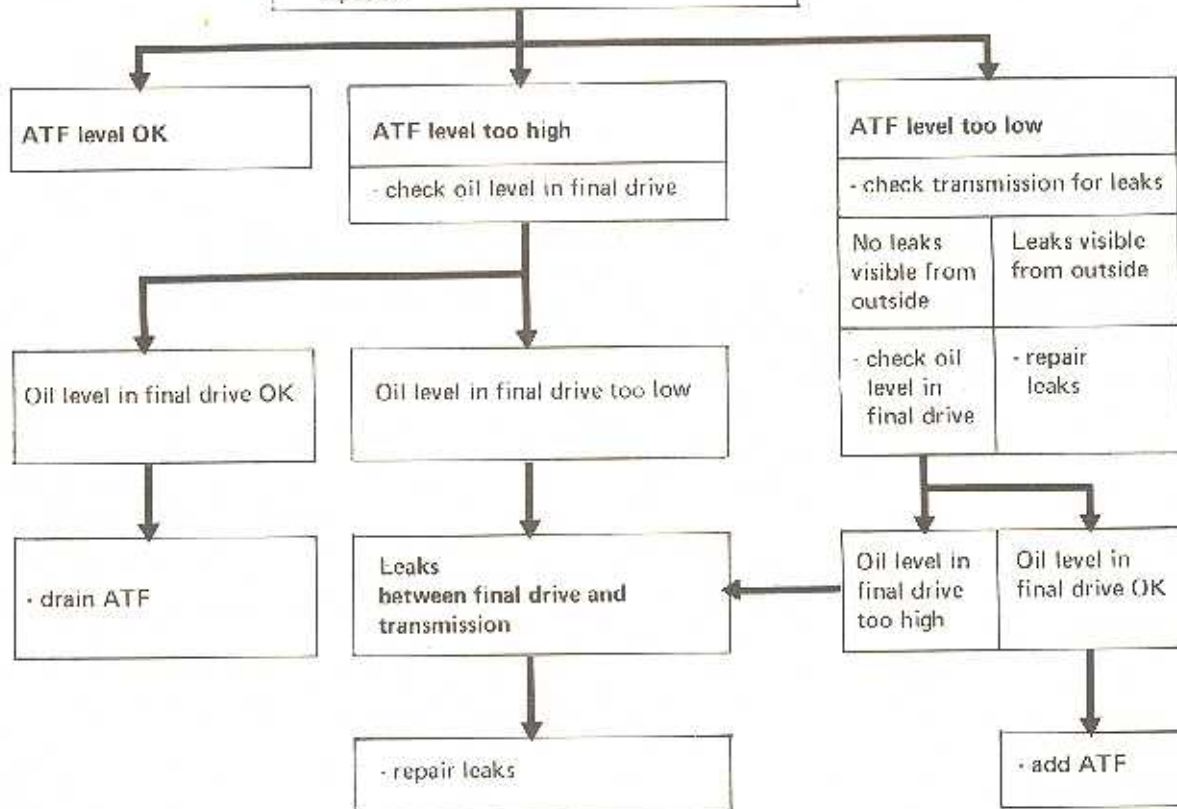
- shift points
- stall speed
- main pressure

(You 'll find these on pages 13, 14 and 15)

ATF level, checking

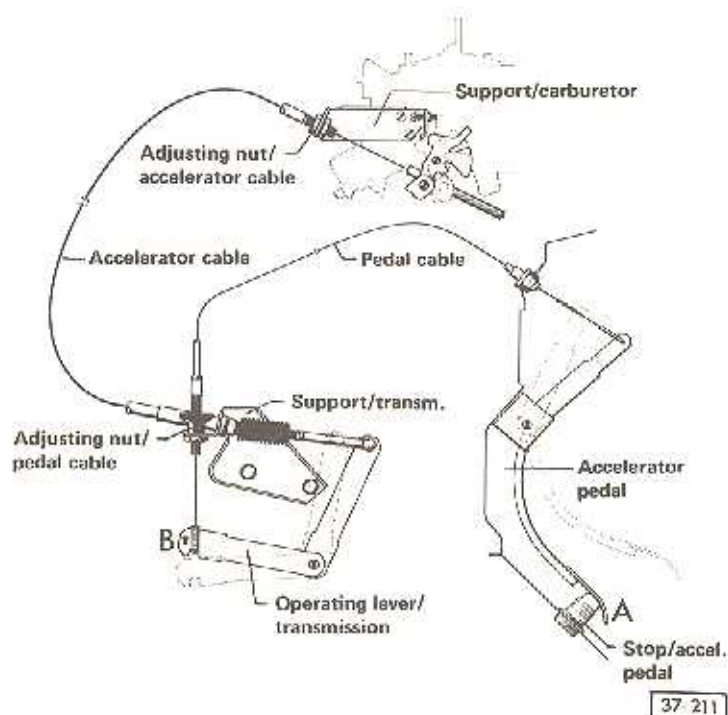
First check that:

- car is on level ground
- selector lever is in N
- engine is running at idle speed
- ATF is warm to touch ($105^{\circ} - 140^{\circ}$ F)
- under these conditions ATF level should be between upper and lower marks on dipstick



Accelerator cable adjustment

Rabbit, Scirocco, Dasher, Audi Fox



Test conditions:

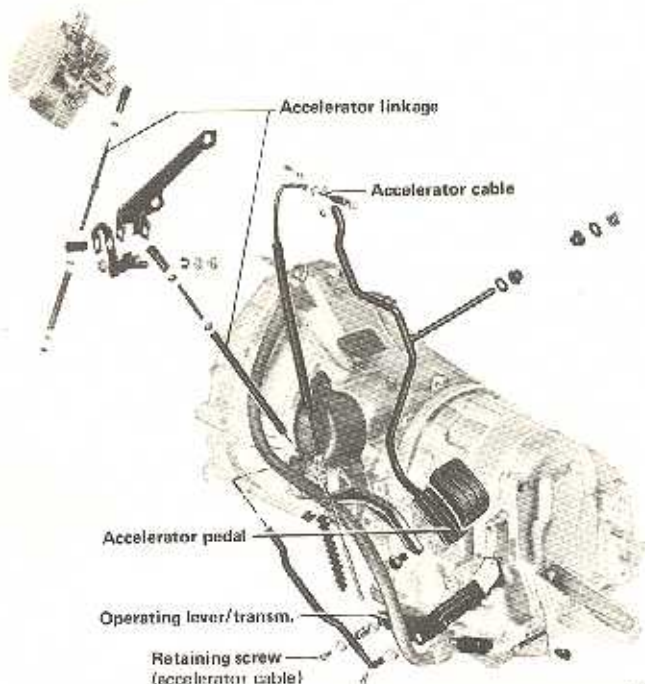
- close throttle
- open choke fully
- be sure cam is out of action
- be sure transmission lever is in end position (toward center of car)
- check that ball socket on end of cable can be installed without tension on ball stud of transmission lever. If so, accelerator cable is properly adjusted.

Pedal cable, adjusting

- press accelerator pedal into kickdown position (A)
- loosen adjusting nut on support/transmission
- eliminate play at operating lever (B) by turning adjusting nut
- recheck adjustment by pressing accelerator pedal several times
- hold accelerator pedal in kickdown position and check again for play
- readjust if necessary

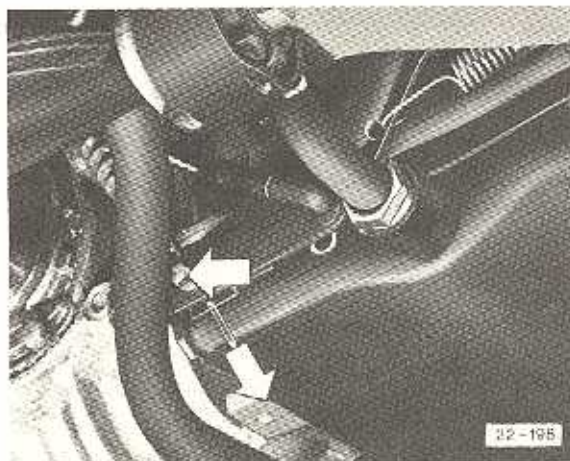
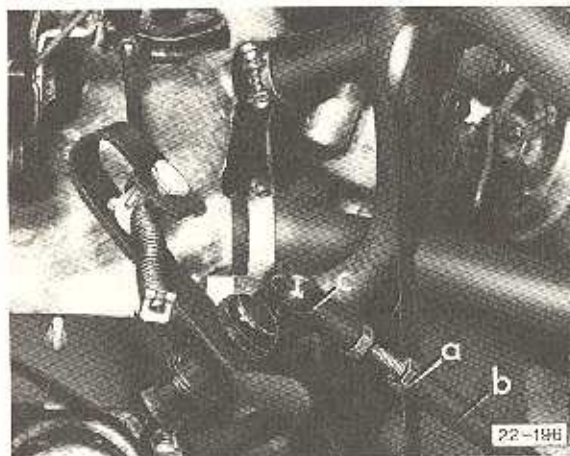
Accelerator linkage and cable adjustment

Audi 100 LS



Accelerator linkage, adjusting

- adjust linkage by turning until pin can be inserted into operating lever without tension, do not move ball joint (c in illustration 22-196)
- shift transmission operating lever to full throttle position which must be identical with kickdown stop position



Accelerator cable, adjusting

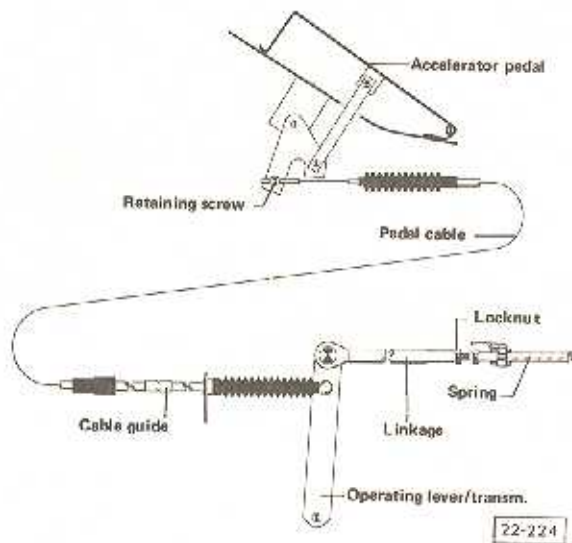
- loosen pedal cable on retaining screw
- bring accelerator pedal in idling position, distance between pedal lower edge and pedal stop must be 75 – 80 mm (2.9 to 3.1 in.)
- tension cable and tighten retaining screw
- recheck pedal distance again

Accelerator linkage, adjusting

- open choke fully
- loosen lock nut (a)
- throttle valve in idling position
- detach linkage (b) from operating lever/transmission

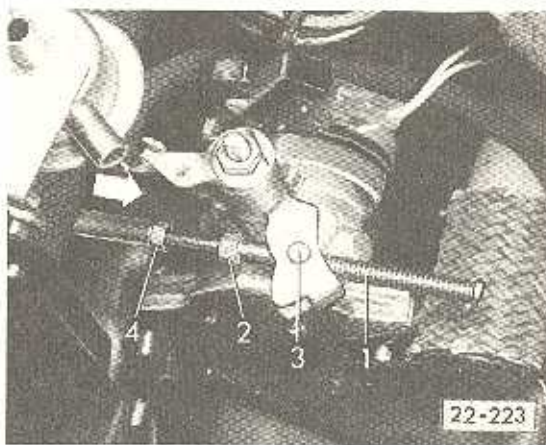
Accelerator cable and linkage adjustment

VW – Transporter



Accelerator cable, adjusting

- press pedal fully down (kickdown position)
- in this position play at operating lever (transmission) must be 1 – 2 mm
- if necessary adjust with retaining screw on accelerator pedal



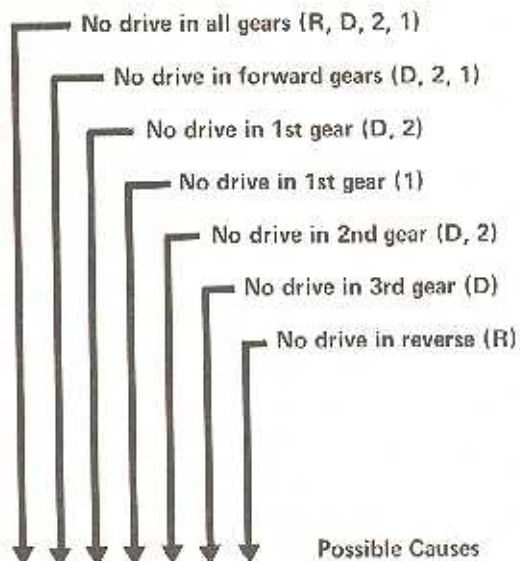
Accelerator linkage, adjusting

Note

Accelerator linkage must be in idling position (throttle valve closed) but engine not running.

- remove spring (1) and press linkage in direction of arrow so that lever on transmission touches stop
- adjust end piece by turning nut (2) until flat surface on operating shaft pin (3) touches without tension
- install spring
- start engine and check if idling speed is correct
- If necessary regulate with adjusting screw.
- secure end piece with locknut (4)

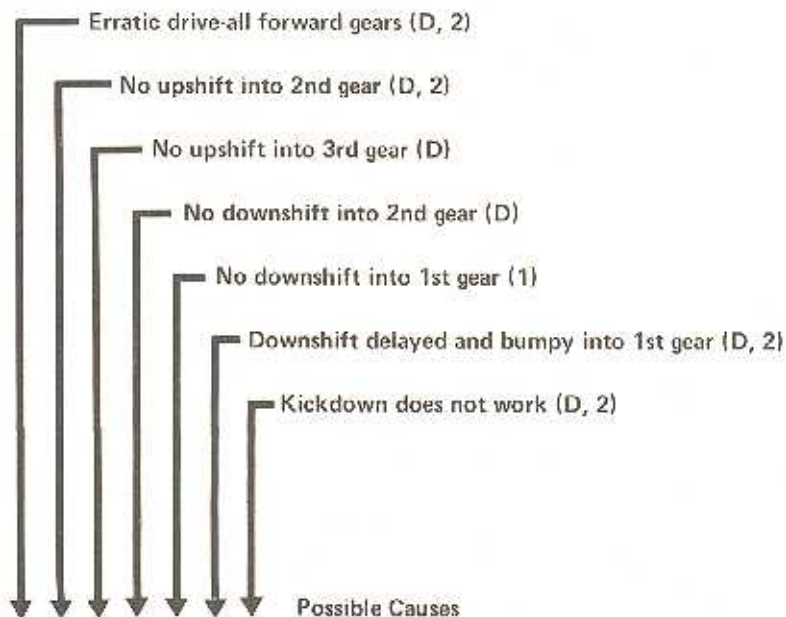
Trouble:



- Adjust – Transmission installed
- Repair – Transmission installed
- ▲ Repair – Transmission removed
- () Gear lever position

Possible Causes						
●						ATF level too low
■						No connection between manual valve and selector lever
▲						No connection between drive plate and torque converter
▲						Main pressure valve sticking
			▲		▲	1st and R gear brake plates burnt or worn
		▲				1st gear one-way clutch not holding
▲						Pump drive defective (shaft/drive plate)
				▲	▲	D + R clutch plates burnt or worn
	▲	▲				Forward clutch plates burnt or worn
					▲	Forward clutch seized
	▲	▲				Forward clutch – diaphragm spring broken
			▲			2nd gear brake band burnt
			▲			2nd gear brake band out of adjustment

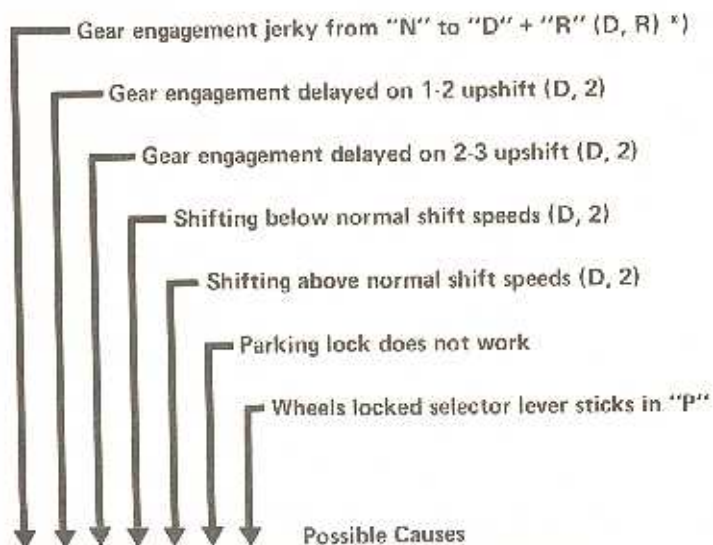
Trouble:



- Adjust – Transmission installed
- Repair – Transmission installed
- ▲ Repair – Transmission removed
- (.) Gear lever position

Possible Causes						
●						ATF level too low
					●	Wrong adjustment of accelerator cable
	■					Governor drive defective
	■	■	■	■		Governor dirty
	■					Governor improperly assembled
	■					Accumulator cover plate loose
	■	■				Valve body dirty
		▲				Direct + Reverse clutch valve ball of transfer plate missing
	▲			▲		1 – 2 shift valve sticking
		▲	▲			2 – 3 shift valve sticking
	▲					2nd gear brake band burnt or worn
					▲	1st gear one-way clutch defective

Trouble:



● Adjust – Transmission installed

■ Repair – Transmission installed

▲ Repair – Transmission removed

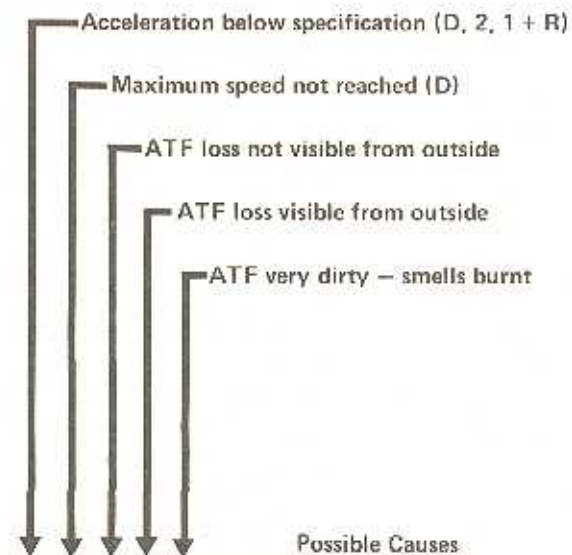
() Gear lever position

*) If selector lever is moved from "N" + "P" to "R" several times at intervals of less than 2 – 2.5 secs., a hard bump will be heard. This is due to transmission design and does not indicate a defect.

Possible Causes

●									Idle speed too fast
●	●	●							ATF level too low
							■		Parking lock blocked
							■		Parking lock-pawl damaged
							■		Parking lock-operating lever broken
			■	■					Governor dirty
	■	■	■	■					Valve body dirty
	▲	▲							2nd gear brake band out of adjustment
	▲	▲							2nd gear brake band burnt or worn
	▲	▲							2nd gear brake band – wrong servo piston
					▲				Gasket/O-ring between final drive and transmission leaking
		▲							Gears damaged – D + R clutch plates burnt or worn
		▲							Wrong D + R clutch installed

Trouble:



- Adjust – Transmission installed
- Repair – Transmission installed
- ▲ Repair – Transmission removed
- () Gear lever position

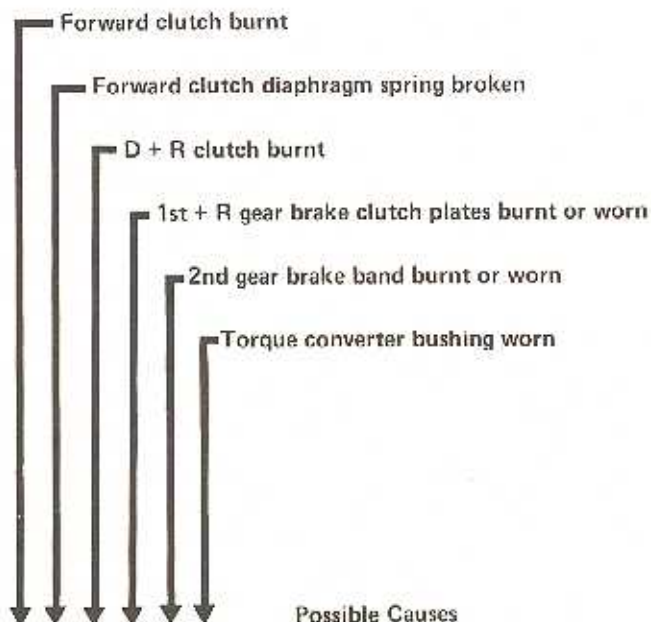
Possible Causes

●	●					Poor engine performance (ignition, fuel, compression)
●	●					Pedal cable out of adjustment
●	●					Accelerator cable out of adjustment
			■			Filler tube O-ring leaking (engine not running)
			■			Governor cover O-ring leaking
			■			Torque converter seal leaking
			■			Torque converter bushing worn
				▲		1st + R gear brake plates burnt or worn
				▲		2nd gear brake band burnt or worn
		▲	▲			O-ring and gasket between final drive and transmission damaged
		▲				Drive pinion seal leaking
			▲			Nuts loose on final drive and transmission
				▲		D + R clutch plates burnt or worn
				▲		Forward clutch plates burnt or worn

Trouble:

Part failure diagnosis

Whenever parts below are found to be bad cause of failure must be determined before replacing any parts.



▲ Repair – Transmission removed

Possible Causes

▲	▲					Wrong ATF in transmission
▲	▲					Operation incorrect – see OWNER'S MANUAL
					▲	Drive plate distorted
▲	▲	▲				Valve body dirty
			▲	▲		Servo piston seals leaking
▲	▲					Piston ring on ATF pump neck broken
	▲					D + R clutch – servo piston seals leaking
▲						Forward clutch – servo piston seals leaking

Shift points, checking

Rabbit/Scirocco

Upshift speeds (mph)		
	full throttle	kickdown
1st - 2nd gear	20 - 23	36 - 39
2nd - 3rd gear	51 - 54	68 - 69

Downshift speeds (mph)		
	full throttle	kickdown
3rd - 2nd gear	31 - 36	64 - 65
2nd - 1st gear	15 - 17	32 - 35

Audi 100 LS

Upshift speeds (mph)		
	full throttle	kickdown
1st - 2nd gear	20 - 25	36 - 39
2nd - 3rd gear	50 - 54	66 - 68

Downshift speeds (mph)		
	full throttle	kickdown
3rd - 2nd gear	31 - 36	63 - 64
2nd - 1st gear	15 - 17	32 - 35

Dasher and Audi Fox

Upshift speeds (mph)		
	full throttle	kickdown
1st - 2nd gear	19 - 24	35 - 39
2nd - 3rd gear	49 - 53	65 - 66

Downshift speeds (mph)		
	full throttle	kickdown
3rd - 2nd gear	30 - 35	62 - 63
2nd - 1st gear	15 - 17	32 - 34

VW Transporter

Upshift speeds (mph)		
	full throttle	kickdown
1st - 2nd gear	16 - 21	30 - 32
2nd - 3rd gear	42 - 45	55 - 57

Downshift speeds (mph)		
	full throttle	kickdown
3rd - 2nd gear	26 - 30	52 - 53
2nd - 1st gear	12 - 14	27 - 29

Stall speed, checking

Note

Stall speed test checks torque converter, forward clutch, one way clutch for first gear. Test should only be performed if acceleration is poor or top speed cannot be reached.

- be sure engine is warm. Connect tachometer.
- hold car firmly with parking brake and foot brake. Start engine and place selector lever in D.
- depress accelerator briefly to full throttle and check that engine now runs between 1950 and 2250 rpm (stall speed).

CAUTION

Do not continue stall speed test longer than time required to read tachometer.
Maximum stall speed test time 20 seconds.

Note

Normal stall speed will drop 125 rpm per 3200 ft altitude. Stall speed will also drop slightly at high ambient air temperature.

- if stall speed is not as specified, following items are faulty:

Trouble	Causes
Stall speed too high	Forward clutch or one way clutch for 1st gear slipping Note If stall speed rpm in range D is too high, repeat test in range 1. If rpm is within specifications one-way clutch for 1st gear is bad.
Stall speed too low	
a - if about 200 rpm below specified figure	Poor engine performance, ignition timing, carburation, compression
b - if about 400 rpm below specified figure	Stator one-way clutch bad

Main pressure, checking



Pressure gauge connection
(arrow)

Pressure range for gauge:

0 — 10 kg/cm²

(0 — 142 psi)

Selector lever position	Accelerator pedal position	Main pressure	Test conditions
D	idle	3.2 kg/cm ² (45.5 psi)	vehicle stationary
	full throttle	6.5 kg/cm ² (92.0 psi)	speed above 25 mph
R	idle	8.0 ± 0.3 kg/cm ² (114.0 ± 4.2 psi)	vehicle stationary

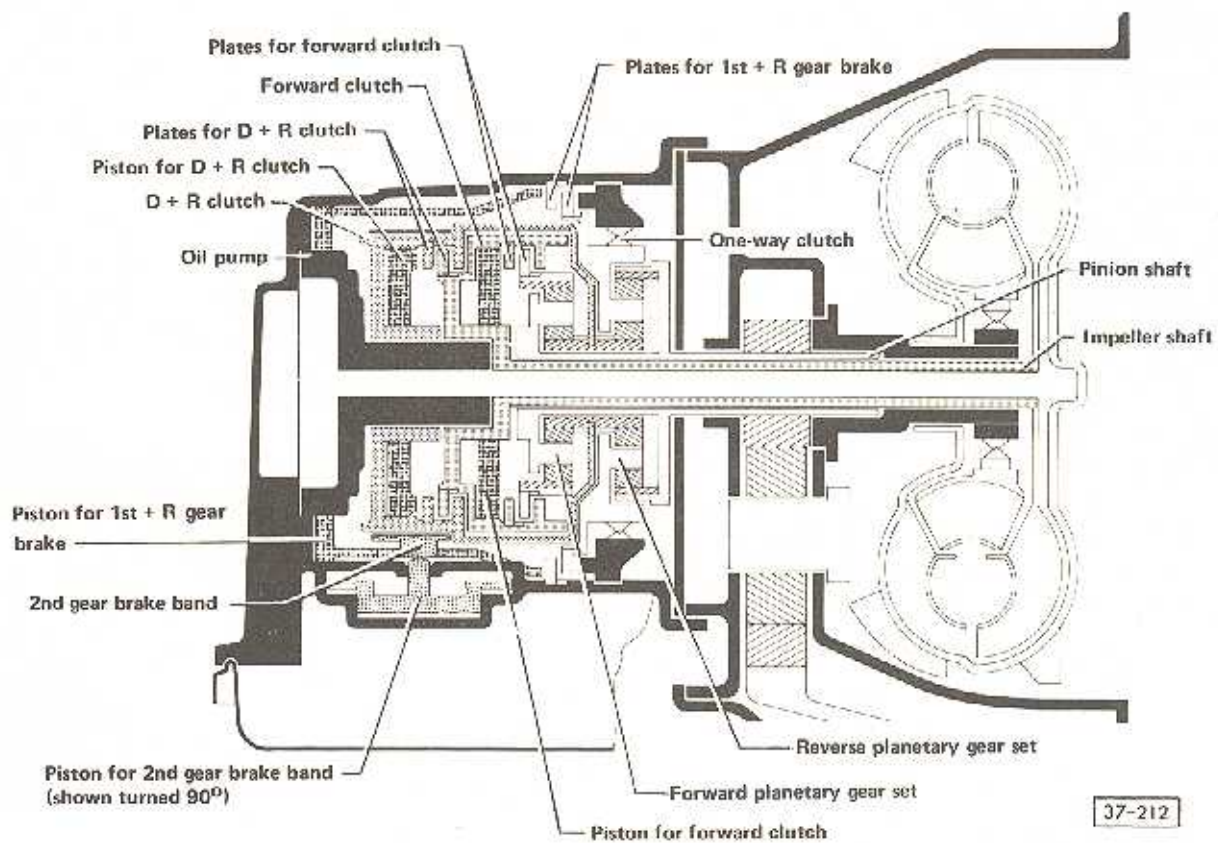
Main pressure too high or too low:

Valve body dirty

Valves sticking

— clean or replace valve body

Automatic transmission shift components



Clutch and brake band operation

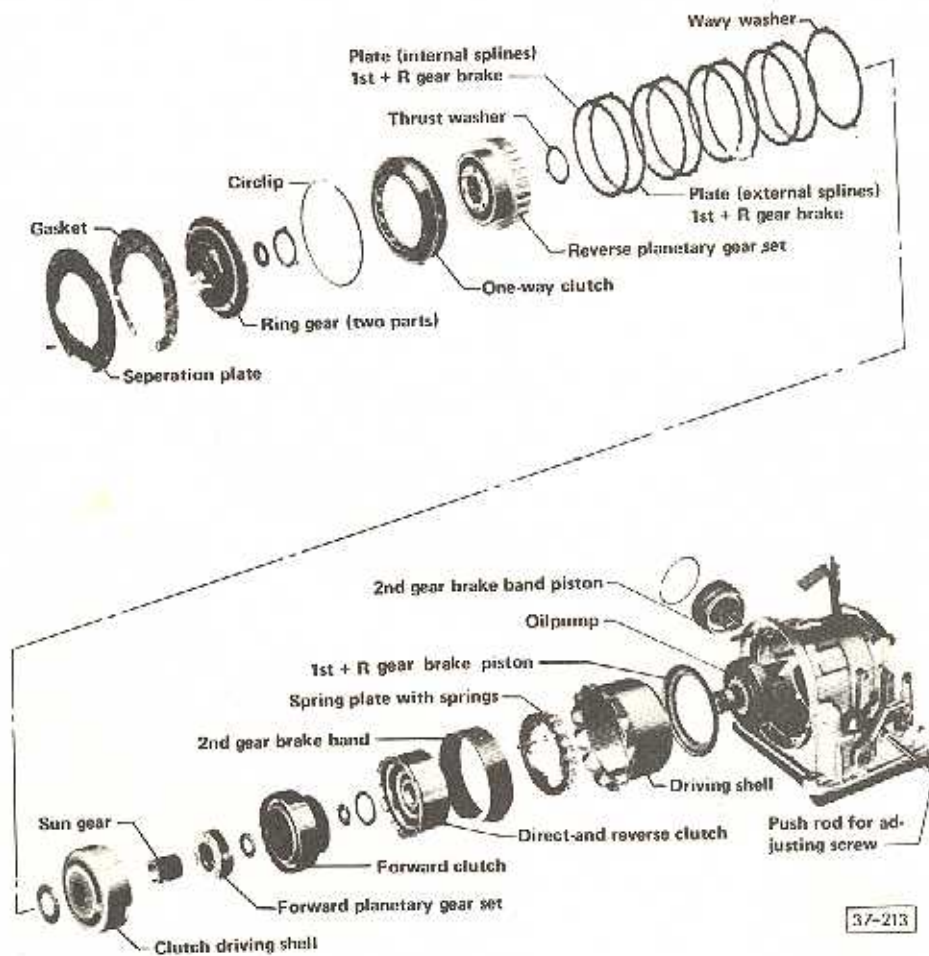
This table shows which shift components are in operation in various gears.

It provides a basis to determine which shift components are not working properly when complaints are made of poor acceleration, faulty shifting or general transmission defects.

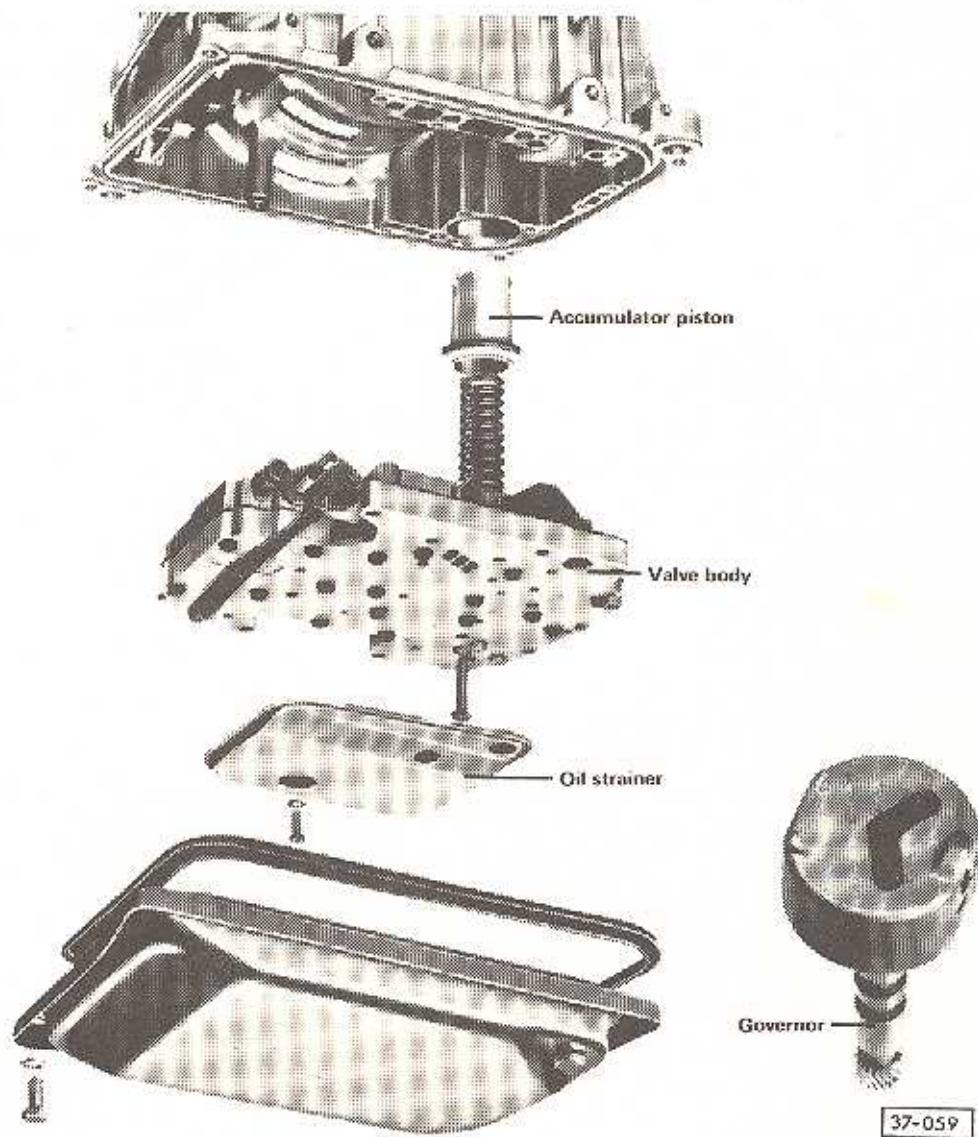
Example: Inactive in 3rd and R gear.
Possible cause: D + R clutch do not work (must be applied)

Selector lever position	1	2 or D	2 or D	D	R
Gears	1st	1st	2nd	3rd	Reverse
Forward clutch	applied	applied	applied	applied	released
D + R clutch	released	released	released	applied	applied
1st + R gear brake plates	applied	released	released	released	applied
2nd gear brake band	released	released	applied	released	released
One-way clutch	inactive	holding	overrun	overrun	inactive

Transmission components



Transmission valve assembly



First edition

© 1975 Volkswagen Aktiengesellschaft

All rights reserved.

May not be reproduced or translated in whole or part without the written consent of Volkswagenwerk AG.

Specification subject to alteration without notice.

Printed in Germany 12. 75 - 0.00.530.411.23

US 42-00-5953-1