



WESTER VOLKSWAGEN, INC.

Contents	
Checks and Test Drive	2
Troubleshooting Guide (Sections 1-6)	3-15
Checks and Adjustments (Section 7)	16-21
Technical Information	
- Automatic Transmission Components	22-25
- Clutch and Brake Band Application	26-27
- Pressures	28-29
- Gearshift Speeds	30

WESTER VOLKSWAGEN, INC.

1

Check and Test Drive

Before starting any repairs on automatic transmission, check the following :

- 1 - Outside damage and leaks (ATF, hypoid oil, vacuum)
- 2 - ATF level, condition, odor
- 3 - Engine adjustments : ignition, idle
- 4 - Kickdown switch
- 5 - Selector lever cable
- 6 - Test drive. If possible, let customer drive.

See also Section 7 - Checks and Adjustments

No drive in different gears.

Irregular drive in different gears.
No upshift.

Gear engagement faulty.
Shift does not take place within specifications.

Continuous shifting between gears.
Kickdown does not work.
Parking lock does not work.

No downshift.
Downshift delayed and bumpy.

Acceleration below standard.
Maximum speeds not achieved.
Excessive creep in gear at idle.

Squealing noise at take-off.
Wheels locked.
ATF loss - dirty - burnt odor.

Defective parts : Clutch - brake band.
Torque converter.
Vacuum unit.

Checks and adjustments.

- Adjust - transm. installed
- Repair - transm. installed
- ▲ Repair - transm. removed

FD 2.1	D 2.1	D 2	T 1	all gears				R 2.1	R 2	R 1.1	R 1	R reverse	No drive	Labor Code
				D 2.1	D 2	T 1	D 2							
●													ATF level too low	02 00 00 0
■													No connection between drive plate and torque converter	10 01 11 0 13 63 11 0
■													No connection between manual valve and selector lever	—
	▲												1 + R brake band out of adjustment	—
	▲												1 + R brake band burned or worn. See Section 6. (stall test 32 01 71 0)	37 35 11 0 38 18 11 0
		▲											1st gear one-way clutch not holding	37 35 11 0 38 15 11 0
			▲										Pump drive defective (shaft/ drive plate)	37 35 11 0 38 58 11 0
				▲									D + R clutch plates burned or worn. See Section 6. (stall test 32 01 71 0)	37 35 11 0 38 44 21 0
					▲								Forward clutch plates burned or worn. See Section 6. (stall test 32 01 71 0)	37 35 11 0 38 25 21 0
													Forward clutch seized	37 35 11 0 38 35 21 0
													Forward clutch - diaphragm spring broken. See Section 6.	37 35 11 0 38 35 21 0
													2 brake band burned	37 35 11 0 38 53 11 0
													2 brake band out of adjustment	—

- Adjust - transmission installed
- Repair - transmission installed
- ▲ Repair - transmission removed
- Repair - engine removed
- Correct

Front clutch burned - diaphragm spring broken
 D + R clutch - diaphragm spring broken
 1 + R clutch - diaphragm spring broken
 2 brake band burned or worn
 3 brake band burned or worn
 Torque converter bushing worn
 Diaphragm leaking

Labor Code →

▲	▲	Wrong ATF in transmission (stall test 32 01 71 0)	37 35 11 0 38 35 21 0 38 77 91 0
●	●	Selector lever cable out of adjustment (leads to slipping or burned clutch and brake bands)	37 15 61 0
□	□	Improper operation - see Owner's Manual	—
○	○	Drive plate distorted	10 01 11 0 13 63 11 0 32 51 21 0
■	■	Vacuum unit damaged outside	38 80 21 0
■	■	Primary throttle pressure valve sticking (pressure test)	38 77 91 0
■	■	Valve body dirty (pressure test)	38 77 91 0
▲	▲	Servo piston seals leaking	37 35 11 0 38 18 11 0 38 62 11 0
▲	▲	Piston ring on ATF pump neck broken	37 35 11 0 38 56 11 0 38 56 41 0
▲	▲	D + R clutch - piston O-rings leaking	37 35 11 0 38 44 21 0
▲	▲	Forward clutch - piston O-rings leaking	37 35 11 0 38 35 21 0
■	■	Diaphragm in vacuum unit damaged or worn (blue smoke from exhaust)	38 80 21 0

Checks and Adjustments

1 - **ATF level**: Check with engine running - selector lever in N (parking brake applied).
ATF temperature 105 - 140°F

ATF condition and odor: check

2 - **Transmission**: check for outer damage.
Noise: check for unusual noise during starting and when engine is running (accident)

3 - **Engine adjustment**: check ignition - idle - valve clearance - fuel injection

4 - **Kickdown switch**: check

Correct ATF level: should be between upper and lower marks on dipstick.

Change fluid if burned or wrong type. Refill with ATF labeled Dextron® with a 5-digit number preceded by letter B.
burnt odor indicates burned clutch plates or burned brake bands.

Damage to transmission case, drive plate, gears, shafts.

Correct to factory specifications.

Working kickdown solenoid can be heard clicking with ignition on - engine not running.
Check kickdown switch adjustment. Where applicable make sure that protective cap is well seated.

5 - **Selector lever** : check cable.

Engage lever in following order. Observe engine and vehicle behavior.

R - Noticeable power transfer to wheels - rpm down.

P - rpm up. Push lever toward R - rpm should **not** go down.

R - Noticeable power transfer to wheels - rpm down.

N - rpm up.

D - Noticeable power transfer to wheels - rpm down.

1 - Lever should engage freely.

(Where applicable squeeze trigger in handle to overcome lockout mechanism).

If results are different, adjust selector lever to specifications.

(Workshop Manual, H 4.2 / 1)

6 - **Vacuum unit** : check for damage and operation.

Vacuum hose : check for restrictions or leaks.

7 - **Pressure test** : Check main pressure and primary throttle pressure - see pressure table on page 28.

Vacuum unit and primary throttle pressure valve : check by disconnecting and reconnecting the vacuum hose a few times. **Maintain engine rpm.** Pressure should go up or down - see pressure table on page 28.

8 - **Shift points** : Check during test drive or dynamometer test - see gearshift speed data on page 30.

9 - **Stall speeds** : check (**do not test longer than 20 seconds**).

Note

Stall speed goes down about 125 rpm for every 3280 feet above sea level.

Vacuum line should be free of oil.

If oil is in vacuum line, replace vacuum unit (diaphragm broken).

Connect hose properly or replace. Check mounting on engine.

Main pressure too high or too low :

Valve body dirty, valve sticking - clean or replace valve body.

Primary throttle pressure too high or too low :

Adjust or replace vacuum unit.

If pressure cannot be corrected by adjusting vacuum unit, follow instructions in Workshop Manual H 4.2 / 1.

If shift points are not within specifications, see troubleshooting Section 3.

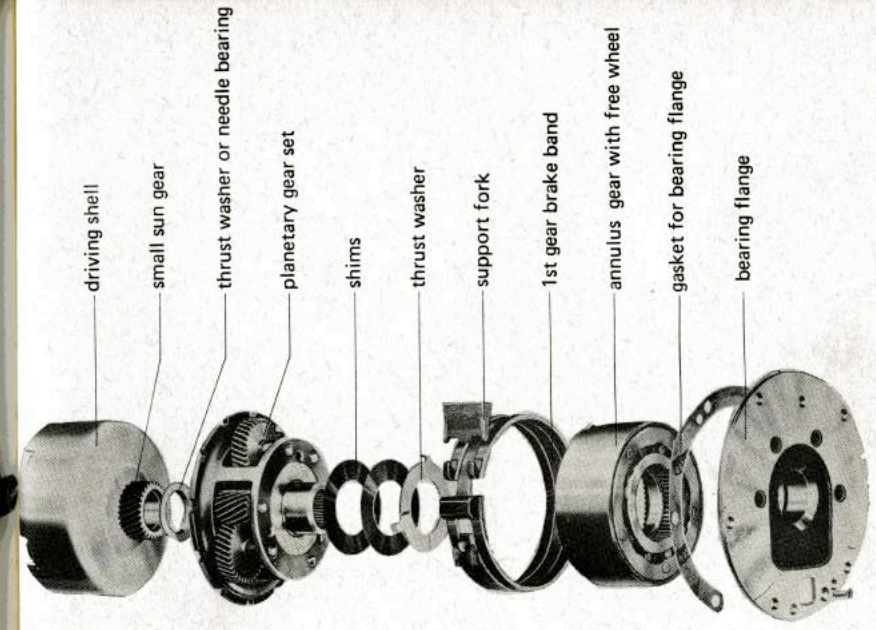
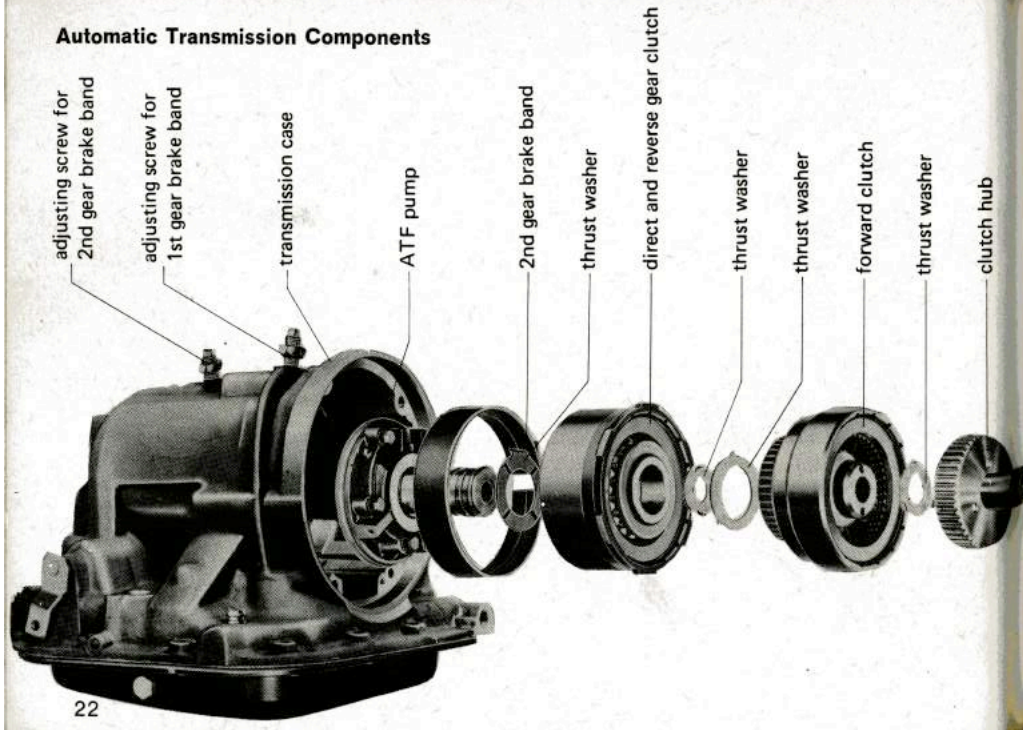
Stall speed too high

Forward clutch, 1st gear one-way clutch slipping.

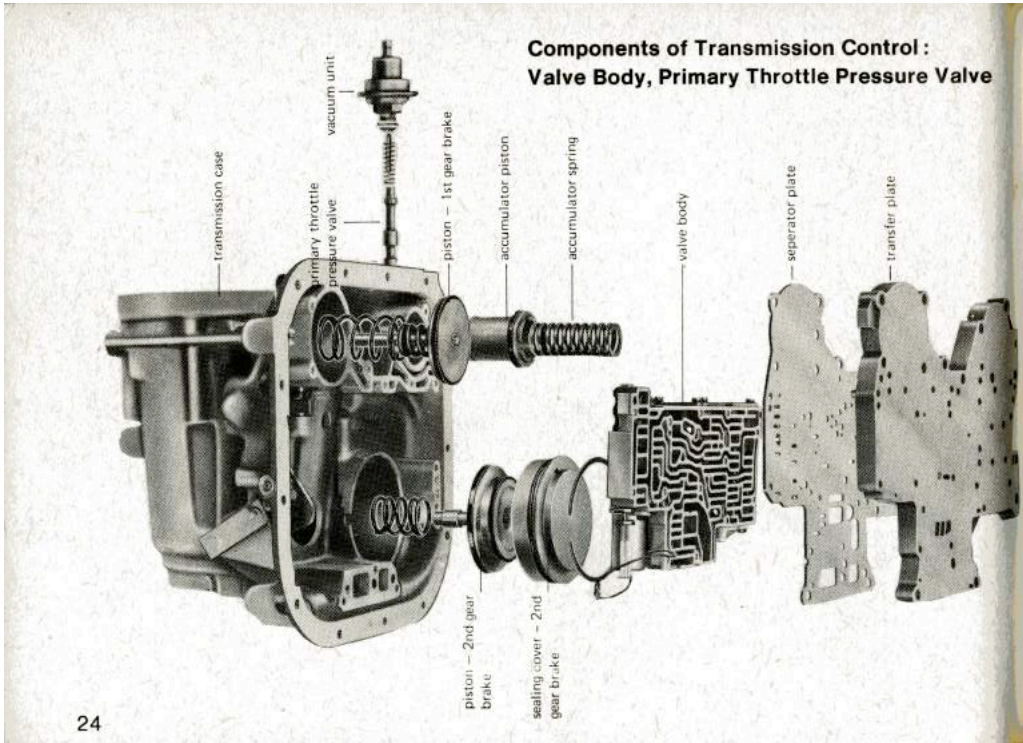
Stall speed too low

Poor engine performance.

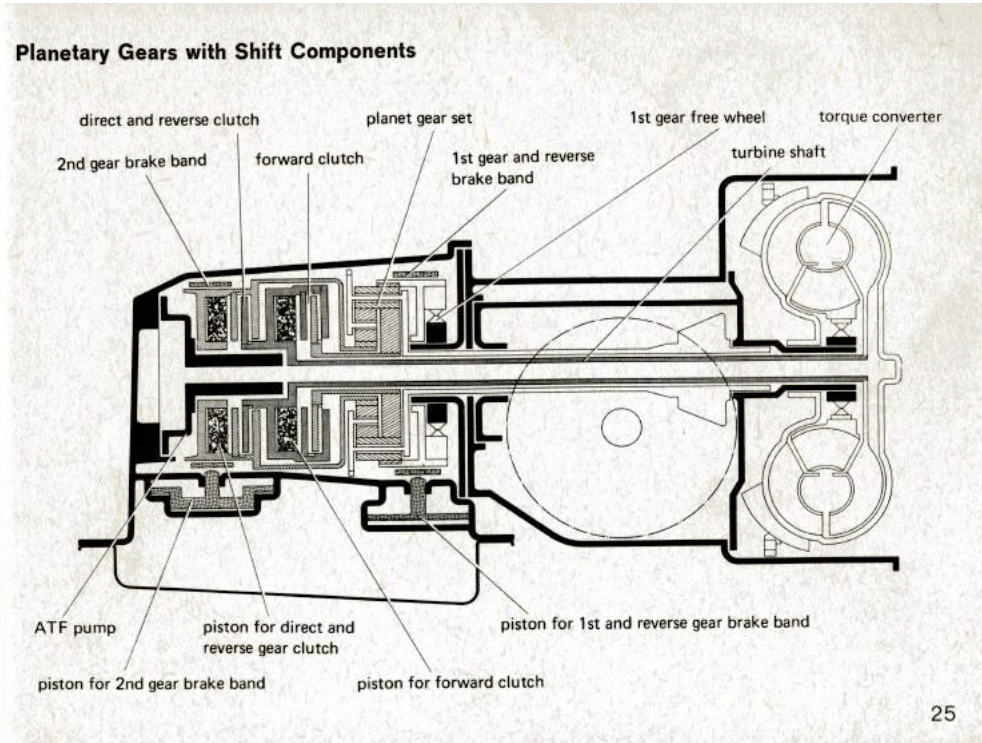
Automatic Transmission Components



Components of Transmission Control : Valve Body, Primary Throttle Pressure Valve



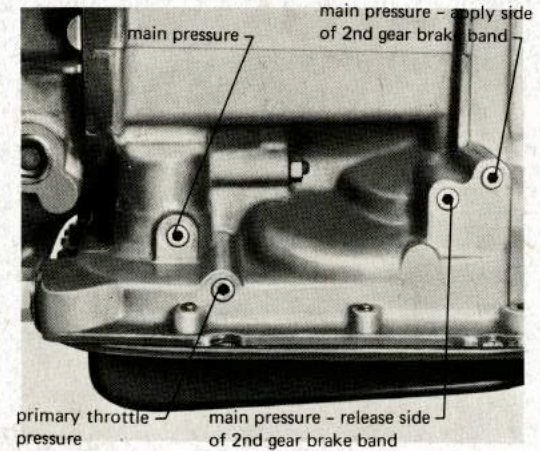
Planetary Gears with Shift Components



Clutch and Brake Band Application

Selector lever Gear	1 1 gear	2 or D 1 gear	2 or D 2 gear	D 3 gear	R
Forward clutch	applied	applied	applied	applied	released
D + R clutch	released	released	released	applied	applied
1 + R brake band	applied	released	released	released	applied
2 brake band	released	released	applied	released	released
One-way clutch	holding	holding	over-run	over-run	inactive

Pressure Checks



Automatic transmission test data

Stall torque speed for all Types and Models 1900-2000 rpm

Pressure table							
Selector lever position	Pressure	VW Type 2 kg/cm ² (psi)	VW Type 3 kg/cm ² (psi)	VW Type 4 (up to July 1973) kg/cm ² (psi)	VW Type 4 (from Aug. 1973) kg/cm ² (psi)	VW Dasher kg/cm ² (psi)	Remarks
N	Primary throttle pressure	3.2 (45.5)	3.0 (42) *	3.2 (45.5)	3.4 (48)	3.0 (42)	Increase idling speed to 1000 rpm Vacuum hose off
	Main pressure	6.5 (92)	8.2-8.5 (116-120)	8.4-8.7 (119-124)	6.0 (85)	6.0 (85)	
	Primary throttle pressure	0.35-0.45 (5-6)	0.35-0.45 (5-6)	0.35-0.45 (5-6)	0.35-0.45 (5-6)	0.35-0.45 (5-6)	Increase idling speed to 1000 rpm Vacuum hose on
	Main pressure	3.3-3.5 (47-50)	3.3-3.5 (47-50)	3.1-3.3 (44-47)	3.3-3.5 (47-50)	3.5-3.7 (50-53)	
R	Main pressure	10-11 (142-156)	6.7-7.7 (95-110)	6.5-7.5 (92-106)	10.5-11.5 (149-163)	10.7-11.7 (153-167)	at stall torque speed (full throttle) Vacuum hose on
D	Primary throttle pressure	2.2-3.1 (31-44)	2.8-3.0 (40-42)	3.0-3.2 (42-45)	3.1-3.3 (44-47)	2.7-3.0 (38-42)	
	Main pressure	6.5 (92)	8.0-8.4 (114-120)	8.2-8.6 (116-122)	6.0 (85)	6.0 (85)	at full throttle and a road speed of over 18 mph
R	Main pressure	18-23 (256-327)	15-20 (213-284)	15-20 (213-284)	16.5-21.5 (243-305)	16.5-21.5 (234-305)	
D	Main pressure	6.5 (92)	6.1-6.3 (87-90)	5.9-6.1 (84-87)	constant	constant	

*From August 1971 (with double vacuum connection) : 3.2 kg/cm² (45.5 psi).

Gearshift speeds mph

	Gear	VW Type 2	VW Type 3 (up to July 1972)	VW Type 3 (from Aug. 1972)	VW Type 4	VW Dasher
Full throttle	1 - 2	18 - 25	17 - 18	17 - 19	17 - 20	19 - 22
	2 - 3	41 - 46	45 - 49	43 - 50	48 - 55	53 - 61
	3 - 2	29 - 25	34 - 28	37 - 30	33 - 25	42 - 34
	2 - 1	16 - 14	15 - 13	15 - 11	14 - 11	16 - 13
Kickdown	1 - 2	27 - 33	30 - 39	31 - 40	30 - 40	31 - 40
	2 - 3	47 - 51	55 - 59	54 - 59	56 - 65	60 - 68
	3 - 2	48 - 44	55 - 52	55 - 50	60 - 53	64 - 58
	2 - 1	30 - 24	34 - 27	35 - 27	36 - 27	37 - 29