

2008 Audi A6 Quattro

SUSPENSION Suspension, Wheels, Steering

00 - GENERAL, TECHNICAL DATA

TECHNICAL DATA

Suspension

Front axle	Four link suspension - front axle, top and bottom transverse links, stabilizer bar, twin-tube gas-filled shock absorbers or suspension struts (air spring suspension) with variable height settings and damping characteristics
Rear axle	Self-tracking trapezoidal links-axle, stabilizer bar, individual wheel suspension, twin-tube gas-filled shock absorbers with coil springs or air springs with variable height settings and damping characteristics

	Front and All Wheel Drive								
	Standard suspension 1BA	Sport suspension 1BE	Rough terrain suspension 1BR	Urban suspension 1BB	Sport suspension quattro GmbH 1BV	Sport suspension S6 1BD	Air spring suspension 1BK	Air spring suspension allroad 1BY	
Wheelbase mm		approx. 2845 ¹	approx. 2850 ¹	approx. 2841 ¹ approx. 2945 ²	approx. 2845 ¹ approx. 2950 ²	approx. 2853 ¹	approx. 2848 ¹	approx. 2846 ¹ approx. 2950 ²	approx. 2846 ¹
Front track width mm		approx. 1613 ³	approx. 1616 ³	approx. 1610 ³	approx. 1613 ³	approx. 1616 ³	approx. 1630 ³	approx. 1614 ^{3,4}	approx. 1608 ^{4,5}
Rear track width mm		approx. 1621 ³	approx. 1625 ³	approx. 1617 ³	approx. 1621 ³	approx. 1627 ³	approx. 1612 ³	approx. 1622 ^{3,4}	approx. 1605 ^{4,5}
Max. steering angle at inside wheel Degrees		38 ° 12'	38 ° 18'	38 ° 30'	38 ° 12'	38 ° 18'	38 ° 18'	38 ° 18'	38 ° 18'

1 - Vehicles with "short" wheelbase.

2 - Vehicles with "long" wheelbase.

3 - Specifications correspond to a rim offset (ET) of 35 mm.

4 - Specified values correspond to the standard level on an air spring suspension.

5 - Specifications correspond to a rim offset (ET) of 38 mm.

- NOTE:**
- Specified values valid for all engine versions.
 - Track widths change when using wheels with different rim offset.

Steering

Steering gear	Maintenance-free rack-and-pinion steering with speed-dependent power assist
Turning circle diameter	Approx. 11.90 m * See note Approx. 12.30 m * See note

* Vehicles with "short" wheelbase.

* Vehicles with "short" wheelbase.

ENVIRONMENTALLY SAFE DISPOSAL OF OIL- AND GAS-FILLED COMPONENTS

Front gas-filled shock absorber, release gas and draining

A - Venting by drilling

- Secure gas-filled strut vertically in vise, with piston rod facing down.

CAUTION: Always wear eye protection when performing this procedure.

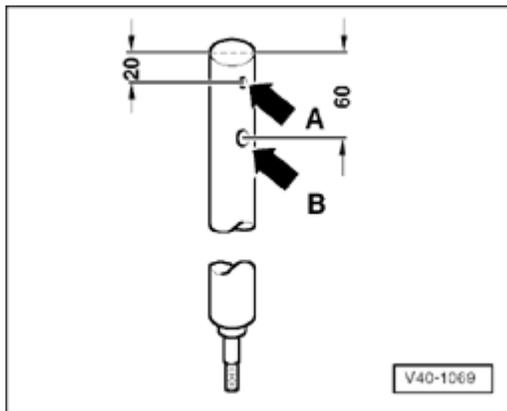


Fig. 1: Venting Through Drill Holes

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drill a 3 mm diameter hole - **arrow A** - through outer tube of strut.

NOTE:

- Gas will escape while drilling.

- Continue to drill through inner tube (approx. 25 mm deep).
- Drill a second hole 6 mm in diameter - **arrow B** - through outer and inner tubes of strut.

- Hold strut over an appropriate container for catching oil and move piston rod repeatedly through its entire stroke until no more oil flows out.

B - Opening with a pipe cutter

Special tools, testers and auxiliary items required

- Pipe cutter, commercially available

CAUTION: Always wear eye protection when performing this procedure.

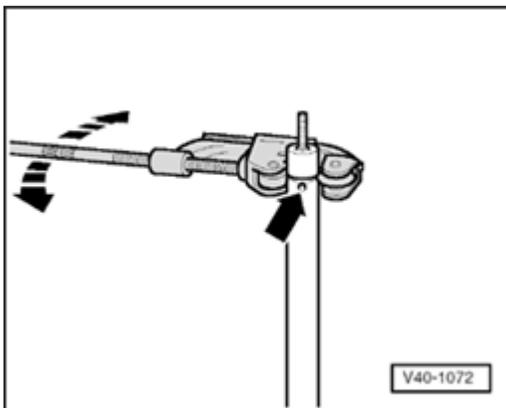


Fig. 2: Cutting Through Outer Tube Using Pipe Cutter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drill a 3 mm in diameter hole - **arrow** - through outer tube of strut or saw through tube wall.

NOTE:

- **Gas will escape while drilling or cutting.**

- Attach a pipe cutter (commercially available), as shown in illustration, and cut through outer tube.
- Pull piston rod upward, hold inner tube with pliers during this and press it downward so that it stays in outer tube when piston rod is pulled up slowly.
- Remove piston rod from inner tube.
- Empty strut tube.

Rear gas-filled struts, venting

A - Venting by drilling

- Secure gas-filled strut vertically in vise, with piston rod facing down.

CAUTION: Always wear eye protection when performing this procedure.

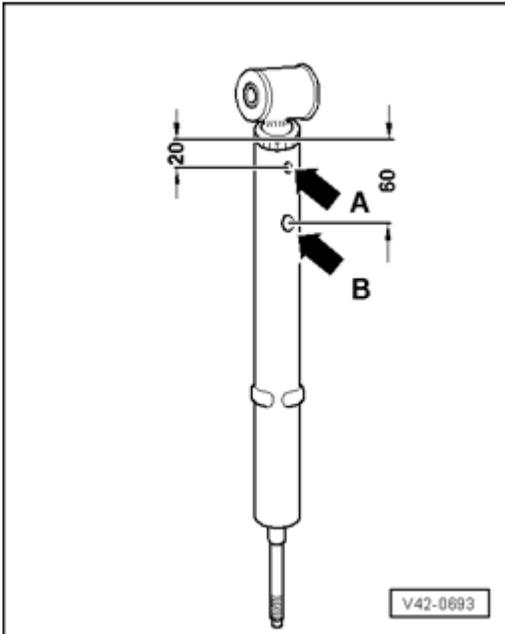


Fig. 3: Emptying Rear Gas-Filled Struts

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drill a 3 mm in diameter hole - **arrow A** - through outer tube of strut.

NOTE:

- **Gas will escape while drilling.**

- Continue to drill through inner tube (approx. 25 mm deep).
- Drill a second hole 6 mm in diameter - **arrow B** - through outer and inner tubes of strut.
- Hold strut over an appropriate container for catching oil and move piston rod repeatedly through its entire stroke until no more oil flows out.

B - Opening with a pipe cutter

Special tools, testers and auxiliary items required

- Pipe cutter, commercially available

CAUTION: Always wear eye protection when performing this procedure.

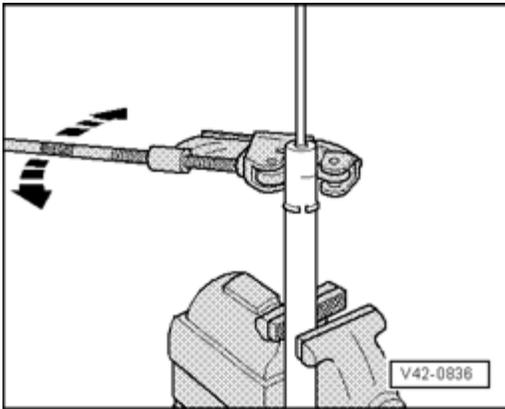


Fig. 4: Cutting Through Outer Tube Using Pipe Cutter
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drill a 3 mm in diameter hole through outer tube of strut or saw through tube wall - **arrow** -.

NOTE:

- **Gas will escape while drilling or cutting.**

- Attach a pipe cutter (commercially available), as shown in illustration, and cut through outer tube.
- Pull piston rod upward, hold inner tube with pliers during this and press it downward so that it stays in outer tube when piston rod is pulled up slowly.
- Remove piston rod from inner tube.
- Empty strut tube.

Front suspension strut (air spring suspension), draining

Removing front suspension strut (air spring suspension) --> **Suspension strut (air spring suspension) with mounting bracket, removing and installing.**

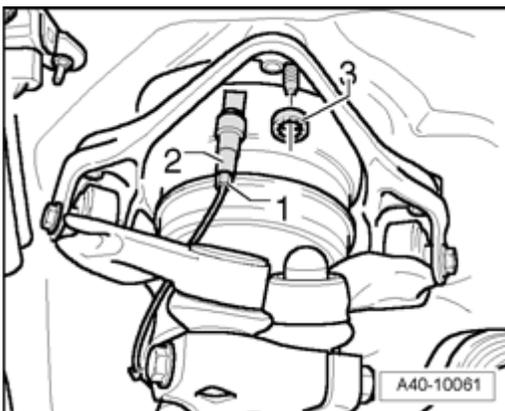


Fig. 5: Identifying Residual Pressure Valve And Connecting Piece
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slowly loosen residual pressure valve - **2** - on front suspension strut (air spring suspension) and allow air

pressure to dissipate.

A - Opening by drilling

Illustration shows a conventional shock absorber. The procedure for the suspension strut (air spring suspension) is identical.

- Secure suspension strut (air spring suspension) vertically in vise, with piston rod facing down.

CAUTION: Always wear eye protection when performing this procedure.

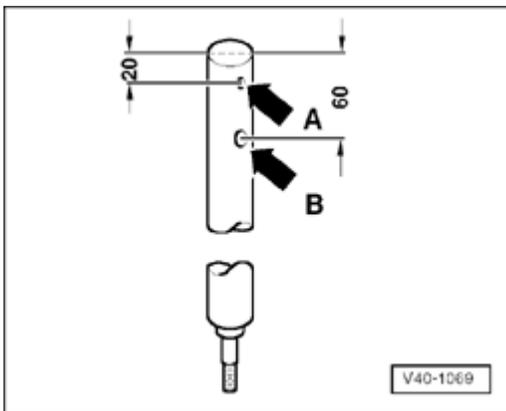


Fig. 6: Venting Through Drill Holes

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drill a 3 mm in diameter hole - **arrow A** - through outer tube of strut.
- Continue to drill through inner tube (approx. 25 mm deep).
- Drill a second hole 6 mm in diameter - **arrow B** - through outer and inner tubes of strut.
- Hold strut over an appropriate container for catching oil and move piston rod repeatedly through its entire stroke until no more oil flows out.

Pressure reservoir, draining

- Perform system bleed using VAS 5051 A --> **System bleeding or charging.**

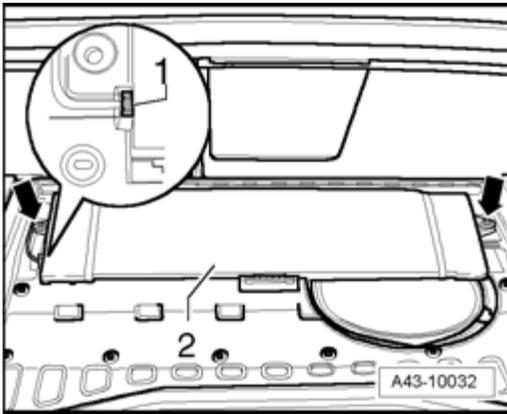


Fig. 7: Loosening Air Line On Pressure Reservoir And Letting Air Pressure Dissipate
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slowly loosen air line - **1** - on pressure reservoir - **2** - and let air pressure dissipate. Once air pressure has dissipated, remove air line - **1** -.

Power steering gear, emptying

NOTE:

- Room temperature must be at least 20 °C when emptying steering gear.

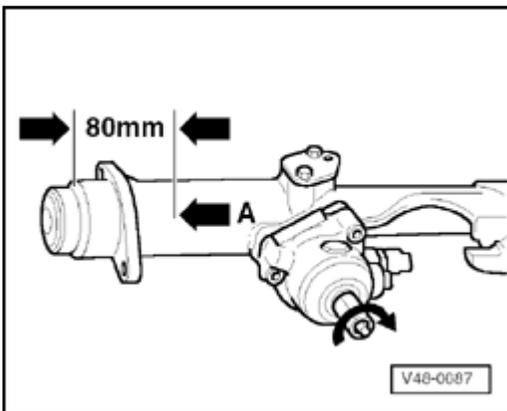


Fig. 8: Turning Steering Pinion
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Turn steering pinion in direction of - **arrow** - until stop.
- Secure steering gear horizontally in a vise.
- Place appropriate receptacle underneath steering gear.

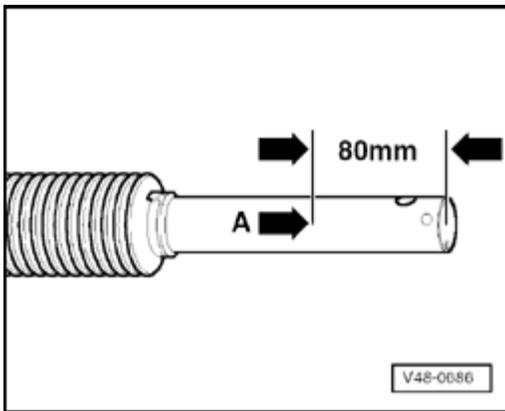


Fig. 9: Identifying Steering Gear Saw Dimensions

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Cut through steering gear where indicated with - **arrow A** -.
- Hold severed steering gear over oil receptacle and let hydraulic fluid run out. Turn steering pinion to stop in opposite direction if necessary.

SHOCK ABSORBERS, CHECKING

Leakages at shock absorbers

Shock absorbers are frequently thought to be leaking and are replaced. Examinations of test conditions and on vehicles have revealed that a large number of shock absorbers are replaced without justification.

Minor fluid excretion ("sweating") at the piston rod seal is not a legitimate reason to replace a shock absorber. An oil moistened shock absorber is OK under the following conditions:

- Oil leakage (shaded in illustration) is visible, but dull, matte and possibly dry due to dust.

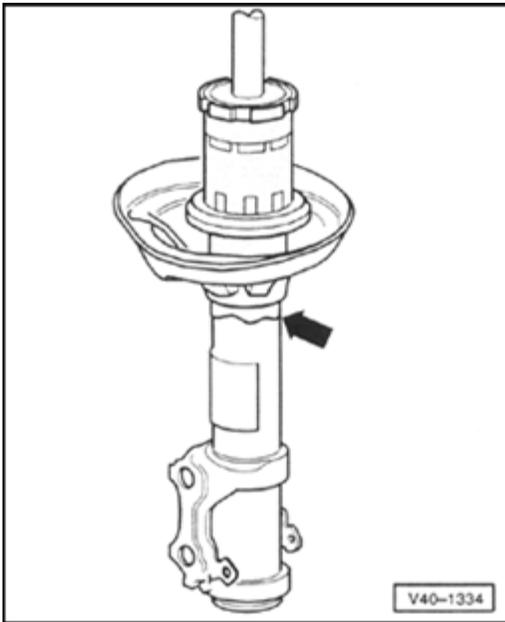


Fig. 10: Identifying Fluid Seepage

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Oil leakage extends from upper strut connection (piston rod oil seal) no further than lower spring seat - arrow -.

NOTE:

- **Minor oil excretion is advantageous since the piston rod oil seal gets lubricated, which increases service life. This is true for front and rear shock absorbers.**

Shock absorbers noises

Shock absorbers are frequently replaced due to rattling noises. Examinations of test conditions and on vehicles have revealed that 70% of the shock absorbers at blame did not have any problems and that replacement was not justified.

Proceed as follows for complaints involving rattling or cracking noises:

- Determine where, when and how noises develop during a road test with the customer - if possible road test vehicle on a dry, uneven driving surface.

NOTE:

- **It is only in the rarest of cases that the shock absorber is at fault for the noises.**

Shock absorbers (removed from vehicle), checking

Faulty shock absorbers are noticeable during driving due to loud rattling noises - caused by wheel bouncing - particularly on rough driving surfaces. They can also be externally identified by large oil loss.

- NOTE:**
- **Shock absorbers are maintenance-free, shock absorber oil cannot be refilled.**

A shock absorber that has been removed from the vehicle can be checked by hand as follows:

- Press shock absorber together by hand.
- Piston rod must move with even resistance throughout entire stroke and without jerking.
- Release piston rod.
- For shock absorbers with sufficient gas pressure, piston rod returns to initial position automatically.

- NOTE:**
- **If this does not occur, the shock absorber must not necessarily be replaced. As long as oil loss is not large, the effectiveness represents that of a conventional shock absorber.**
 - **The damping function is completely available even without gas pressure as long as there is not a large fluid loss. But the noisiness may worsen.**

Shock absorbers on shock tester, testing

Shock absorbers can be tested while still installed in vehicle via shock tester (shock absorber test tool). The damping capacity can be judged via travel of a pointer or via a print-out.

Special tools, testers and auxiliary items required

- Boge shock absorber tester or
- Sachs shock absorber tester V.A.G 1975 or
- Maha damping tester VAS 1990

- NOTE:**
- **Temperature +10 °C. to +40 °C.**
 - **Driver in vehicle.**
 - **Tire pressure OK**
 - **Vehicle driven onto center of wheel plates in straight-ahead position.**
 - **Front wheels in "straight-ahead" position.**
 - **Parking brake not engaged, foot brake not operated.**

Tolerance values

Shock absorber condition can only be judged as follows:

- Damping effect sufficient

or

- Damping effect insufficient

NOTE:

- Intermediate values for a reduced damping power cannot be read out.
- Predicting service life is not permitted.
- Measured values that involved a contribution of force by spring range end stop, are false.

The following values are valid only for the above mentioned test stands. If values specified are exceeded, the shock absorber has lost enough of its efficacy that a replacement is recommended.

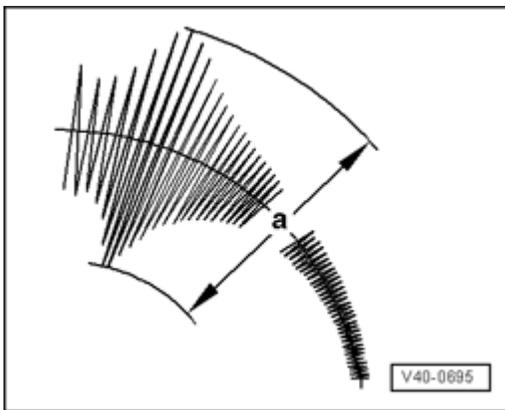


Fig. 11: Damping Effect Measurement

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Example:

Limit = 70

- a = Larger than 70: Damping effect insufficient
- a = Smaller than 70: Damping effect sufficient

Shock absorber combination installed in vehicle is indicated by corresponding PR number on vehicle data plate.

Clarification of weight Production Relevant numbers (PR No.) --> **Explanatory notes for Production Relevant numbers (PR No.):**

Limit values "a" in mm

NOTE:

- If the readout value is greater than the limit value "a" (table value): Damping effect insufficient. Replace shock absorber.
- If the readout value is less than the limit value "a" (table value): Damping effect sufficient. Shock absorber does not need to be replaced.

2008 Audi A6 Quattro

SUSPENSION Suspension, Wheels, Steering

Vehicle model	Front axle	Rear axle	Additional information
A6 standard suspension front axle sedan/ Avant A6 urban suspension front axle sedan/ Avant	38	/	Applies to Front and Quattro
A6 standard suspension rear axle sedan/ Avant A6 urban suspension rear axle sedan/ Avant	/	38	Applies to Front and Quattro
A6 rough terrain suspension front axle sedan/ Avant	30	/	Applies to Front and Quattro
A6 rough terrain suspension rear axle sedan/ Avant	/	45	Applies to Front and Quattro
A6 air spring suspension front axle sedan/ Avant	42	/	Applies to Front and Quattro
A6 air spring suspension rear axle sedan/ Avant	/	42	Applies to Front and Quattro
A6 sport suspension front axle sedan/ Avant	35	/	Applies to Front and Quattro
A6 sport suspension rear axle sedan/ Avant	/	35	Applies to Front and Quattro

PLACING VEHICLE ONTO LIFTING PLATFORM AND ONTO WHEELS

Raising and lowering with air spring suspension system opened and not opened

Raising with air spring suspension system not opened

- Before raising vehicle with lifting platform, place vehicle on "Lift" (height adjustment) and switch on "vehicle jack mode" --> **Vehicle jack mode**.

This ensures that lift arms of lifting platform can be swung under vehicle and no uncontrolled regulations of air spring suspension system are activated.

- Position lift arms of lifting platform under designated take-up points on longitudinal members and lift vehicle.

Lowering with air spring suspension system not opened

- Lower lifting platform and set vehicle on wheels.
- Swing back lift arms of lifting platform.
- Switch off "vehicle jack mode" and set desired driving mode --> **Vehicle jack mode**.

NOTE:

- **Deactivation (switching off) the "vehicle jack mode" is also performed**

automatically at a vehicle speed above 10 km/h.

Lowering with air spring suspension system opened

CAUTION: Vehicle must not be set upon its wheels before the air spring suspension system has been charged.

- Perform system charging using VAS 5051 A --> **System bleeding or charging.**
- Lower lifting platform and set vehicle on wheels.

If vehicle is not high enough to swing back lift arms of lifting platform (insufficient pressure in pressure reservoir), engine must be allowed to run at idle. This switches on compressor of air supply unit.

- Switch off "vehicle jack mode" and set desired driving mode --> **Vehicle jack mode.**