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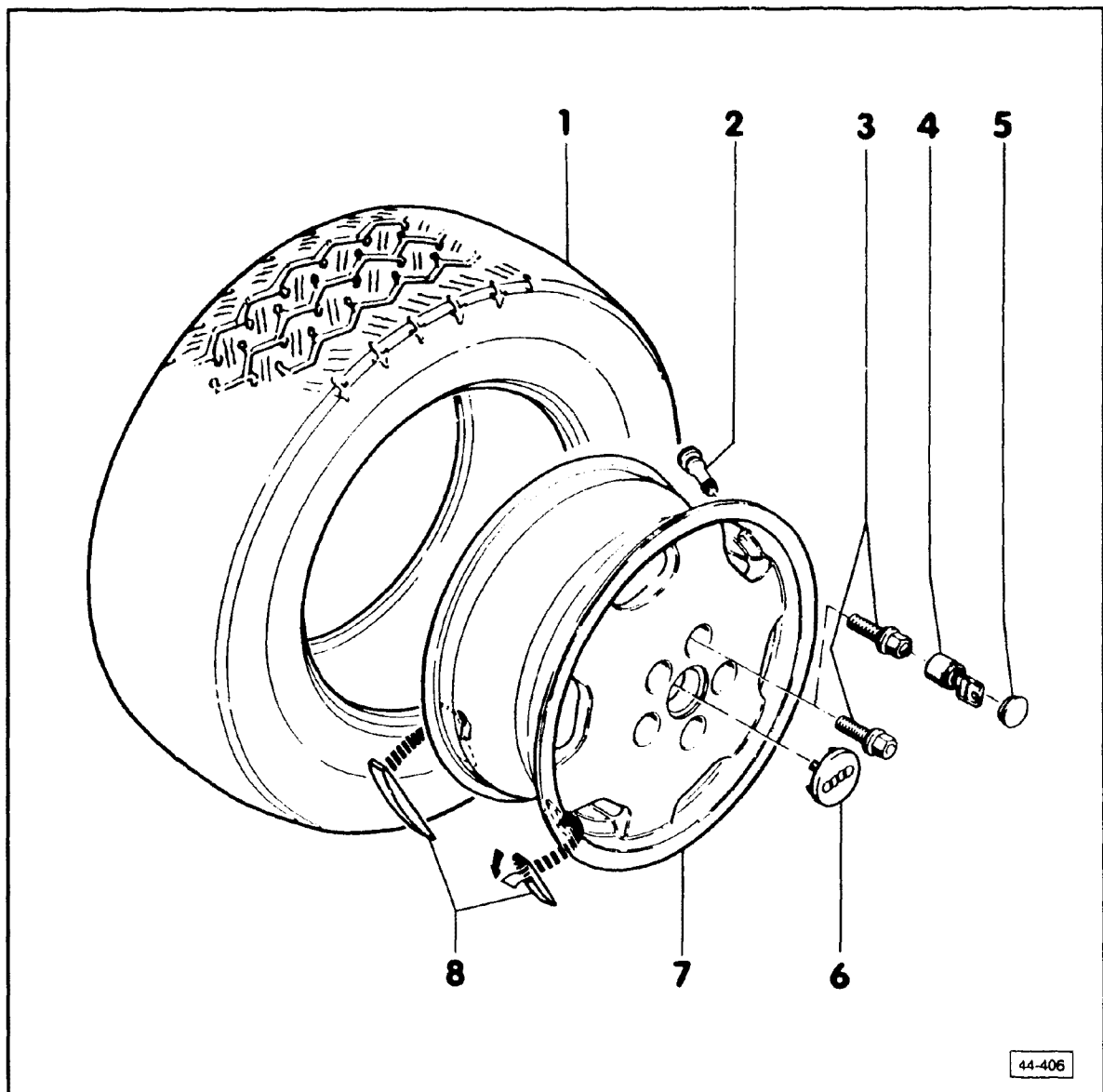
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Wheels – Tires, Wheel Alignment



1 — Tire

- size: 215/60 ZR 15
- for safety reasons, tires must be replaced in pairs only (per axle)
- greater tread depth must be mounted on front wheels
- combine tires of same type and tread pattern only

2 — Tire valve

3 — Wheel bolt

M14 x 2.5 x 27.5 mm

4 — Lock cylinder

install on wheel bolt

5 — Cap

install on lock cylinder

6 — Hub cap

rem. ring, page 44.2

7 — Alloy wheel

7 1/2 J x 15, ET 35 mm

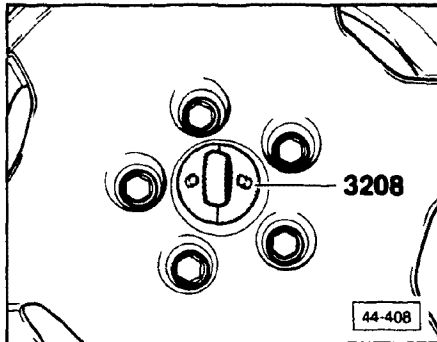
8 — Balancing weight

to install: clean wheel of oil and grease, remove protective film from weight and stick on

Wheel – Tires, Wheel Alignment

Hub cap, removing

- clean cap with wet sponge
- install tool **3208** and press onto cap
- pull to remove cap



Wheels – Tires, Wheel Alignment

Wheel alignment data for front and rear axles

Note

It is advisable to measure wheel alignment after at least 1000-2000 km (600-1200 miles) when the coil springs have been given a chance to settle.

Checking requirements

- correct adjustment of measuring equipment
- curb weight of vehicle
- tire pressures correct
- vehicle positioned accurately and suspension bounced
- no excessive play in steering and steering linkage
- check suspension for excessive play and damage

Front axle		
Total toe (wheels not pressed)		$0^{\circ} + 5'$ $- 10'$
Camber (at straight-ahead position)		$- 30' \pm 30'$
maximum permissible difference between right and left		30'
Toe angle difference between left and right		$1^{\circ} 40' \pm 30'$
Caster (not adjustable)		$+ 1^{\circ} \pm 40'$
maximum permissible difference between both sides		1°
Rear axle (not adjustable)		
Camber up to VIN 44 JN 201 030 from VIN 44 JN 201 031		$- 40' \pm 30'$ $- 50' \pm 30'$
maximum permissible difference between both sides		30'
Toe per wheel (with specified camber)		$+ 10' \pm 5'$
maximum deviation from driving direction		25'

Wheels – Tires, Wheel Alignment

Example

Toe angle of left rear wheel +15'	Toe angle of right rear wheel +5'
$15' - 5' = 10'$ $10' \div 2 = 5'$	
Toe (deviation in alignment) = +5'	

Determining total toe/alignment of rear wheels

- 1 — If both toe angles are positive (+ / +) or negative (- / -), subtract the lower number from the higher number and divide by 2.

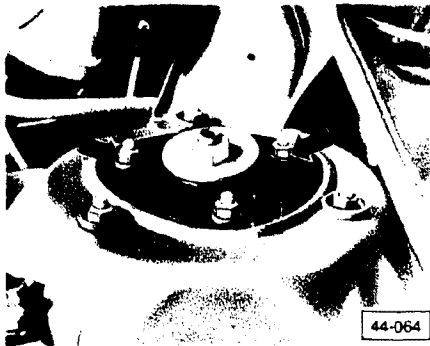
Example

Toe angle of left rear wheel +15'	Toe angle of right rear wheel -5'
$15' + 5' = 20'$ $20' \div 2 = 10'$	
Toe (deviation in alignment) = +10'	

- 2 — If one toe angle is positive and the other negative (+ / -), add the two numbers and divide by 2.

The result obtained is the actual deviation of the running direction from the longitudinal direction of the vehicle.

Wheels – Tires, Wheel Alignment



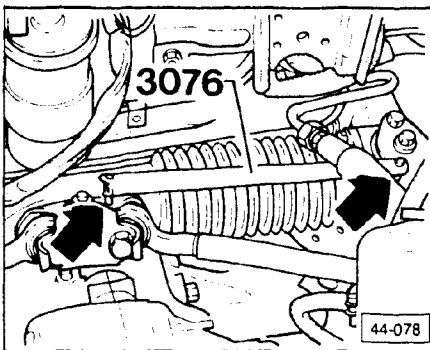
Front camber, adjusting

(vehicle standing on its wheels)

- loosen suspension strut bolts (**arrows**)
- attach socket wrench to suspension strut nut and move in slots to correct position
- tighten nuts and recheck camber, if necessary correct
- check toe, if necessary adjust

CAUTION

Toe must always be adjusted with both tie rods using special tool 3076.



Front toe, adjusting

- attach centering tool **3076** into holes on top of steering unit and tie rod carrier (**arrows**)
- measure and divide total toe in half
- loosen clamps and outer lock nut on both tie rods
- adjust each tie rod until specified setting for toe is reached
- tighten clamp and lock nuts on tie rods
- reposition steering wheel if necessary (steering wheel spokes in horizontal position)
- remove centering tool

Wheels – Tires, Wheel Alignment

Wheel alignment data for front and rear axles

Note

It is advisable to measure wheel alignment after at least 1000-2000 km (600-1200 miles) when the coil springs have been given a chance to settle.

Checking requirements

- correct adjustment of measuring equipment
- curb weight of vehicle
- tire pressures correct
- vehicle positioned accurately and suspension bounced
- no excessive play in steering and steering linkage
- check suspension for excessive play and damage

Front axle		
Total toe (wheels not pressed)	14" and 15" wheels	$+ 5' \begin{matrix} + 5' \\ - 10' \end{matrix}$
Camber	(at straight-ahead position)	$- 30' \pm 30'$
	maximum permissible difference between right and left	30'
Toe angle difference between left and right		$- 1^\circ 40' \pm 30'$
Caster	(not adjustable)	$+ 1^\circ \pm 40'$
	maximum permissible difference between both sides	1°

Rear axle		
Camber		$- 15' \pm 15'$
	maximum permissible difference between both sides	30'
Toe angle at each wheel (at specified camber)		$+ 5' \pm 5'$
Total Toe		$+ 10' \pm 10'$

Wheels – Tires, Wheel Alignment

Wheel alignment data for front and rear axles

Note

It is advisable to measure wheel alignment after at least 1000-2000 km (600-1200 miles) when the coil springs have been given a chance to settle.

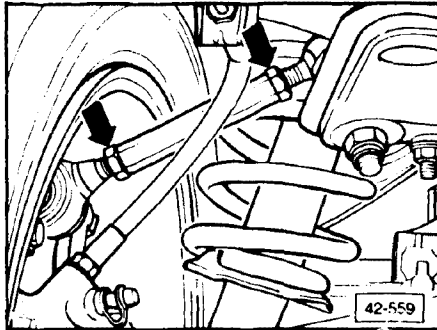
Checking requirements

- correct adjustment of measuring equipment
- curb weight of vehicle
- tire pressures correct
- vehicle positioned accurately and suspension bounced
- no excessive play in steering and steering linkage
- check suspension for excessive play and damage

Front axle		
Total toe (wheels not pressed)	15" wheels	$+10' \begin{smallmatrix} +10' \\ -5' \end{smallmatrix}$
Camber (at straight-ahead position)		$-30' \pm 30'$
	maximum permissible difference between right and left	30'
Toe angle difference between left and right		$-1^{\circ}40' \pm 30'$
Caster (not adjustable)		$+1^{\circ}15' \pm 40'$
	maximum permissible difference between both sides	1°

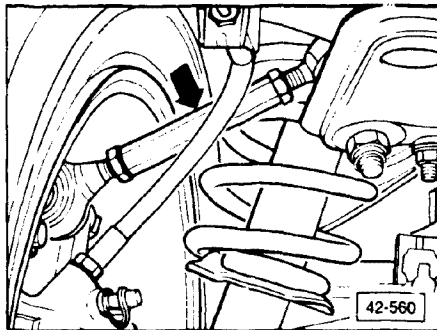
Rear axle		
Camber		$-15' \pm 15'$
	maximum permissible difference between both sides	30'
Toe angle at each wheel (at specified camber)		$+5' \pm 5'$

Wheels – Tires, Wheel Alignment

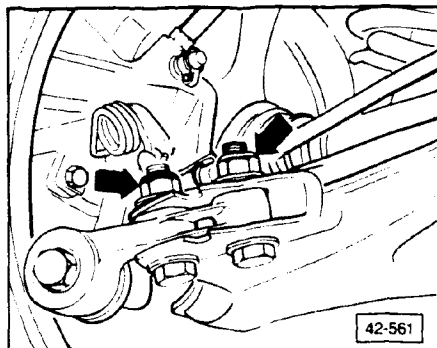


Rear camber, adjusting

- check adjustment, left and right, with an optical alignment gage
- loosen locking nuts on transverse link (**arrows**)

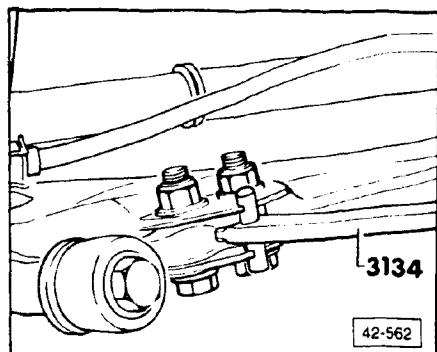


- turn sleeve of transverse link (**arrow**) to correct camber specification
- tighten locking nuts and recheck alignment



Rear toe, adjusting

- loosen nuts on pivot mount (**arrows**)



- use tool **3134** to move mount in trapezoidal arm to correct toe specification
- tighten nuts on pivot mount
- recheck camber and toe, adjust if necessary

Wheels-Tires, Wheel Alignment

Eliminating Vibrations

Wheel imbalance generates dynamic forces that can cause vehicle components such as steering gear, wheel suspension components and body to resonate. This, in turn, leads to vibrations of the steering wheel and the vehicle itself.

When vibrations of this type occur, use the following procedure to determine the source of the imbalance.

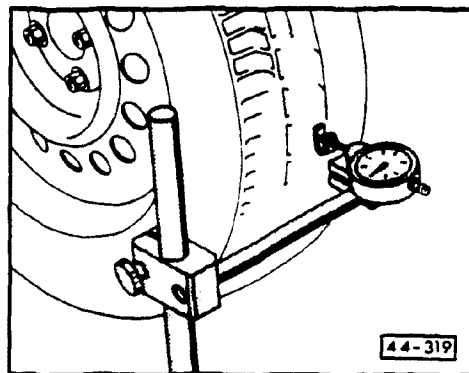
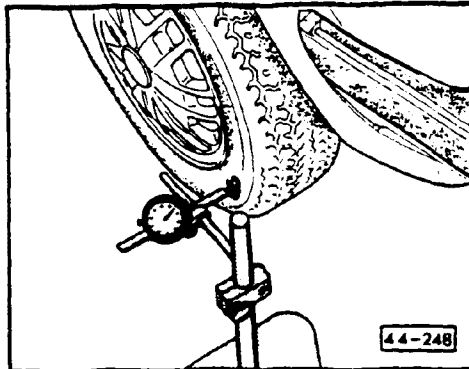
- check tire pressures and correct if necessary
- check surfaces of tires for scuffing, flat spots or other damage
- road test vehicle to determine type of condition and speed range
- check suspension components for damage or wear

Note

If a component is replaced or if tires are worn unevenly, check and align front suspension as necessary. Road test vehicle again after alignment.

- check wheel mountings
 - center boss of hub or brake drum must protrude beyond, or be flush with, center collar of wheel. If not, replace wheel.

Wheels-Tires, Wheel Alignment



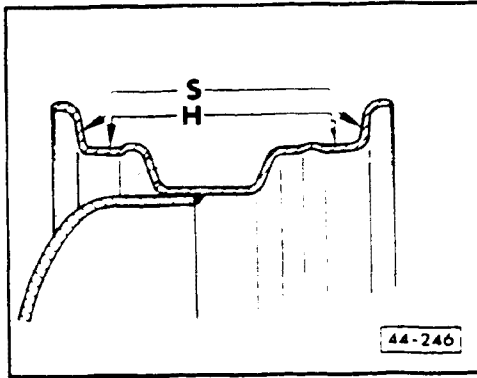
Wheel and tire runout, checking

- set up dial indicator so roller is just making contact with center of tire tread or tire wall
- rotate wheel slowly by hand and read needle deflections off meter
- mark location of maximum runout on tire

	Radial	Lateral
Tire with wheel	0.8 mm (0.032 in.)	1.2 mm (0.059 in.)

- if runout figures are within limits, balance wheel/tires (see below Wheels/tires balancing)
- if runout figures are outside limits, rotate tire on wheel
- deflate tire and push tire beads down into wheel bed
- rotate tire 120° on wheel
- inflate tire and remeasure radial runout
- if maximum figure is still outside limits, rotate tire a further 120° on wheel and remeasure radial runout
- if outside limits, check lateral and radial runout of wheels (see below)

Wheels-Tires, Wheel Alignment



	Radial (H)	Lateral (S)
Steel wheel	0.6 mm (0.024 in.)	0.8 mm (0.032 in.)
Alloy wheel	0.5 mm (0.020 in.)	0.5 mm (0.020 in.)

Wheel runout, checking

- dismount tire and mount wheel in balancing machine or on vehicle
- measure radial and lateral runout at all points shown

Note

Peak readings, up or down, which are caused by small imperfections on the wheel surface, can be ignored.

- if maximum values are exceeded, replace wheel and recheck runout of wheel and tire assembly
- balance tire and wheel assembly

Wheels/tires, balancing

- remove existing balance weights before balancing

CAUTION

Wheels **MUST** be mounted with same centering method as on vehicle (i.e. bolted to hub/arbor) and centered on a cylindrical (not conical) surface.

- maximum permissible residual imbalance = 5 grams

CAUTION

For on-the-vehicle wheel balancing of Quattro models, both axles of the vehicle **MUST** be raised and the parking brake released. If not, damage to the Torsen center differential will result.

Note

For on-the-vehicle balancing of the driving wheels, the wheels must be driven by the engine so that wheel speeds are synchronized.

Wheels-Tires, Wheel Alignment

Wheels, installing

- install wheels with point of maximum radial runout at top, then tighten lug bolts.

Note

If tire wear is approximately equal, the wheels with the lowest amount of radial runout and the smallest balance weights should be installed at the front.

- repeat road test of vehicle

If vibrations are still present, the radial and lateral oscillations of one or more tires are too high. These oscillations cannot be measured with normal workshop equipment. For such cases, the front tires, rear tires or all four tires should be replaced.

Tires, rotating

Most tire manufacturers have changed their tire rotation policy on radial belted tires. Previously, radial belted tires were to be rotated only from front to rear and rear to front on the same side of the vehicle.

All radial belted tires approved for use on Audi vehicles can now also be rotated diagonally if unusual wear such as feather-edging, is observed.

In cases of unusual tire wear, the suspension must be checked prior to tire rotation (i.e. alignment, condition of suspension components, tire balance).