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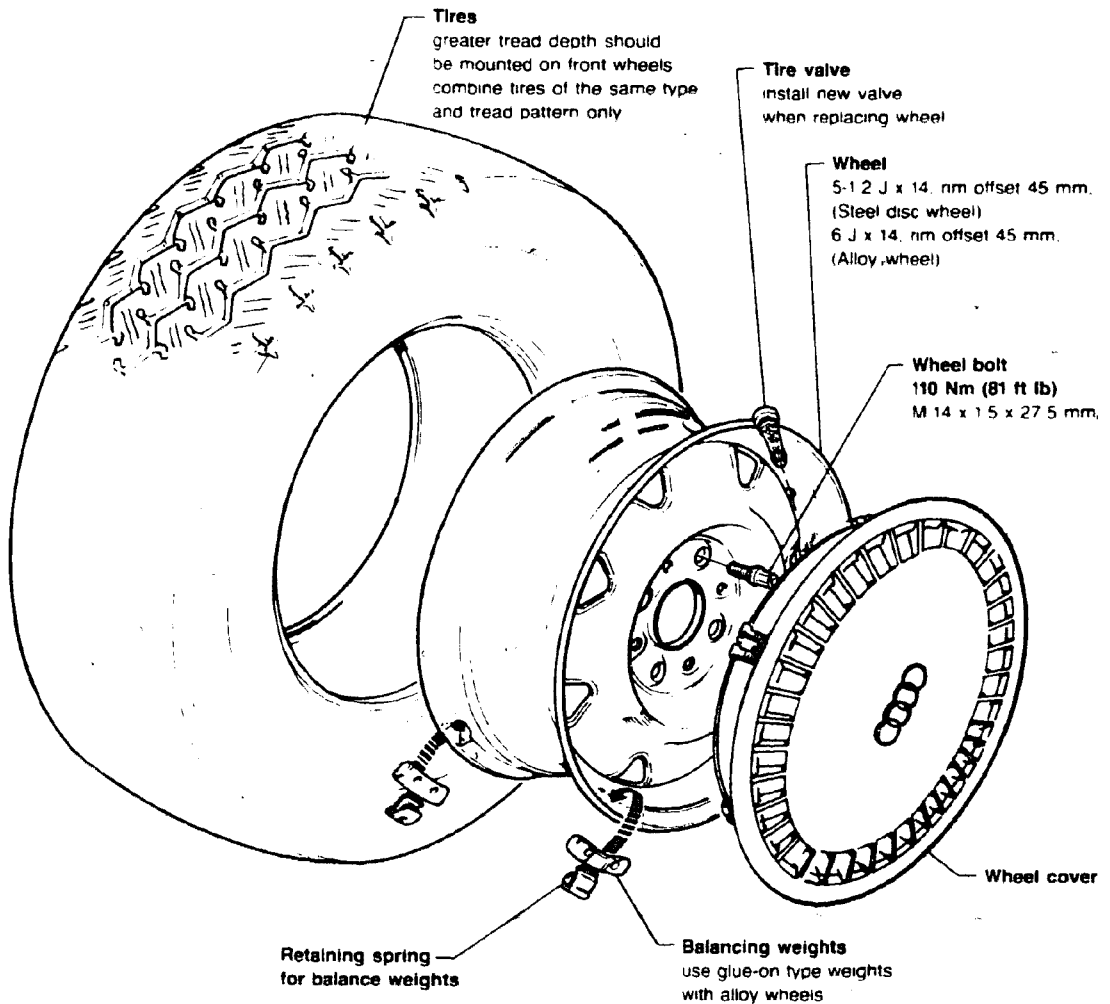
- ★ NEW INFORMATION since last filming

Wheels – Tires, Wheel Alignment

Technical Data, Wheels/Tires

| Model/Country | Tire size | Wheel | Rim offset/ Bolt circle dia (mm) |
|---------------|---------------|---------------|-------------------------------------|
| Audi 80/USA | 175 70 HR 14 | 5-1 2 J x 14* | 45 108 |
| Audi 90 USA | 195 60 VR 14 | 6 J x 14 | 45 108 |
| Audi 90/CAN | 195 60 HR 14 | 6 J x 14 | 45 108 |
| Spare wheel | 115 70 R 15 | 4 J x 15 | 56 108 |
| | 125 90 R 15** | 4 J x 15 | 45 108 |

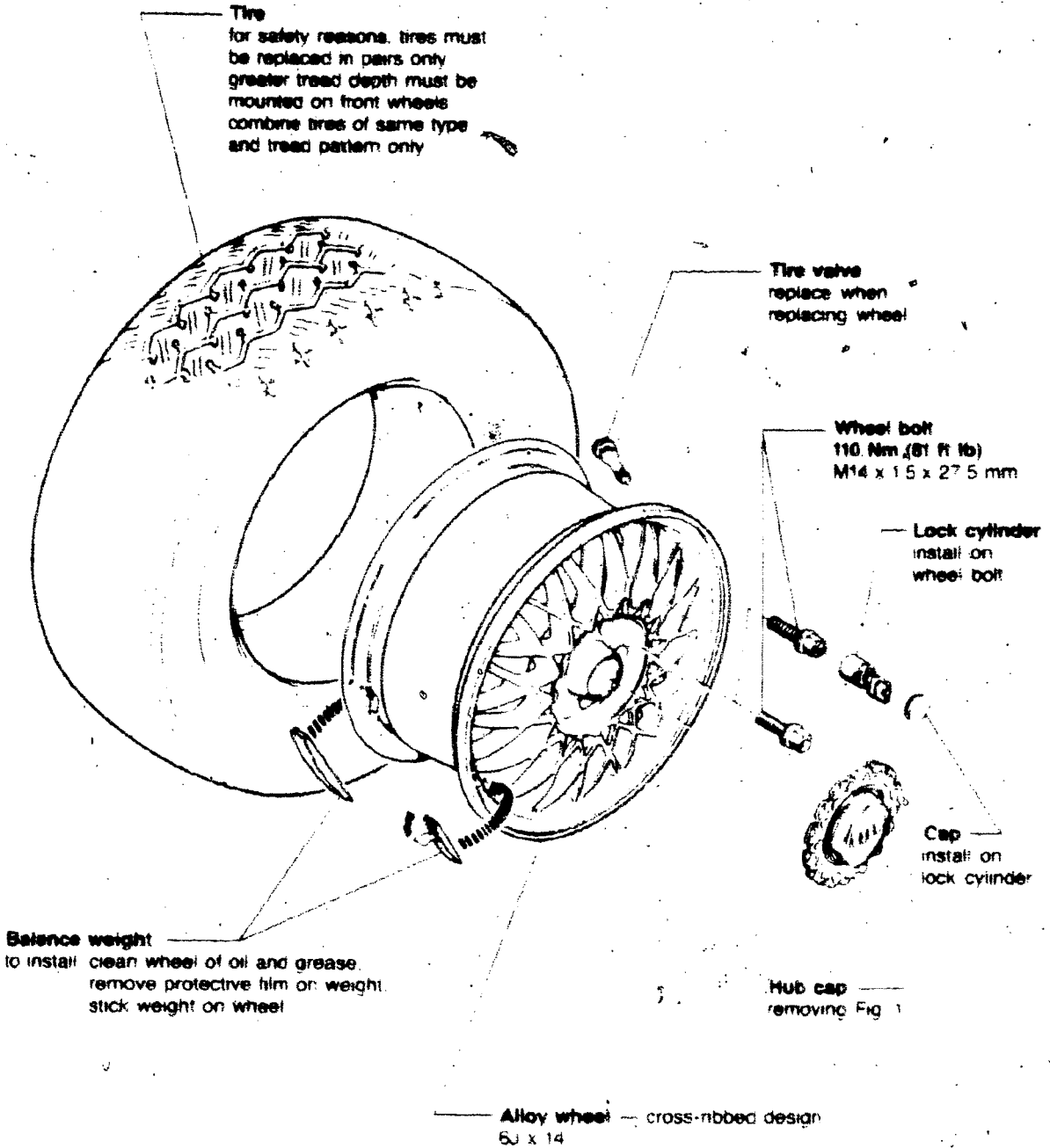
*steel disc wheel
**for vehicles with ABS



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Wheel — Tires, Wheel Alignment



44-40

G-3

Quattro

Light alloy wheel
(cross-ribbed design)

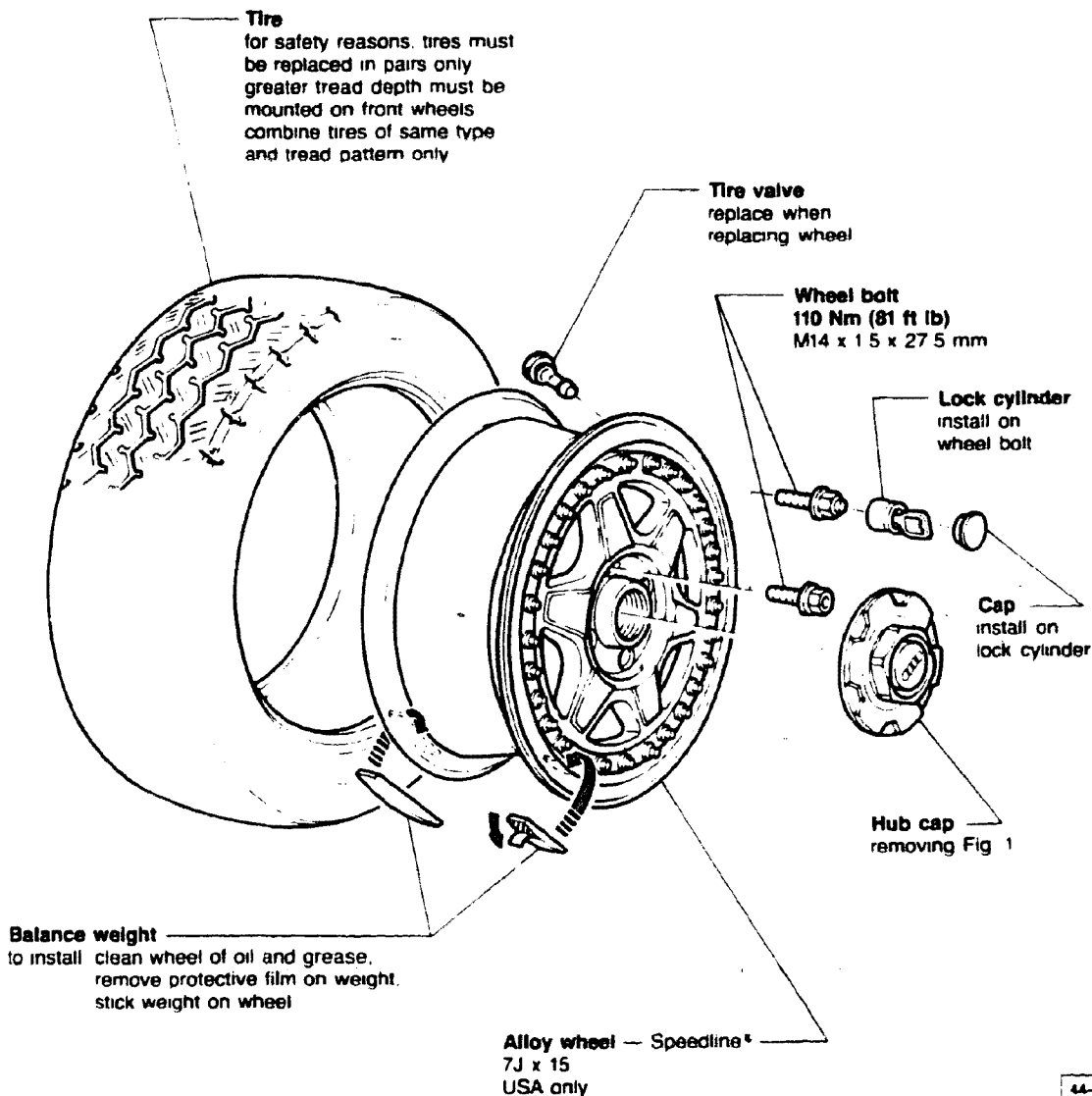
44.3

Wheel — Tires, Wheel Alignment

Technical Data, Wheels/Tires

| Model/Country | Tire size | Wheel | Rim offset/ Bolt circle dia (mm) |
|----------------------------|-----------------|----------------------|-------------------------------------|
| Coupe/Canada | 205/60 R 15 91V | 6J x 15 (aero style) | 37/108 |
| Coupe/USA | 205/60 R 15 91V | 7J x 15 (Speedline*) | 37/108 |
| Spare wheel CAN and USA | T 125/90 R 15 | 4.00 B x 15" | 40/108 |

*steel disc wheel



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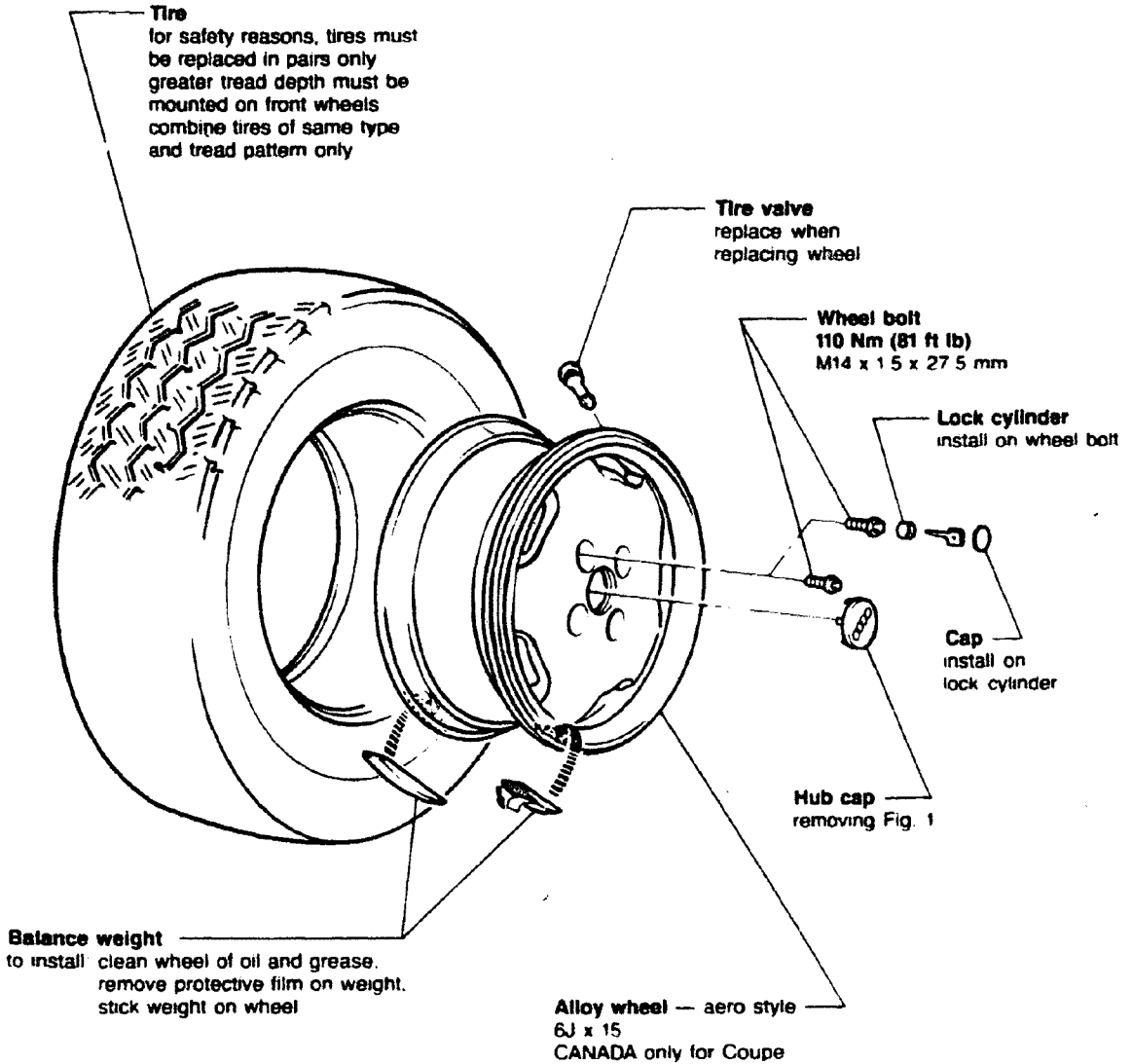
G-4

Coupe

Technical data, wheels/tires
Light alloy wheel
(Speedline*)

44.4

Wheel — Tires, Wheel Alignment



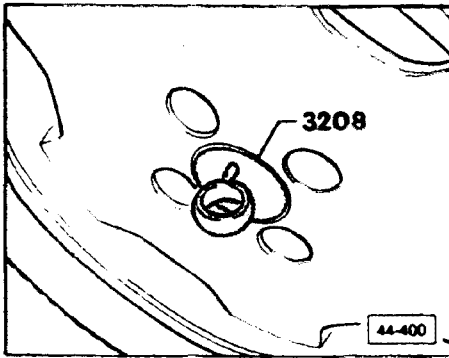
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G-5

Quattro

Light alloy wheel
(aero style)

44.5



► Fig. 1 Hub cap, removing (aero wheel shown)

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

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).

Wheels-Tires, Wheel Alignment

Paint refinishing procedure

Paint on steel and alloy wheels can be damaged by stone chipping, chemical reaction of road salts, etc. Refinish as follows:

Material required

- standard primer filler, ALN 766 001 13/10
- hardener, ALZ 010 000.13
- 2K acrylic top coat, ALN 769 — — —
- undercoat metallic, ALD 645 — — —
- 2K acrylic clear varnish, ALN 769 000.10

Work procedure

- remove wheels from vehicle
- remove tires from wheels
- clean wheels thoroughly using wheel cleaner, Part No. ZVW 177 201, or equivalent
- dry wheels thoroughly after cleaning
- remove white or yellow paint marks on newer alloy wheels with a bristle brush
- remove marks on older wheels with a wire brush
- if replacement wheels need to be painted to match, or if paint on old wheels is chipped: sandblast or glass bead wheels to remove old paint and prepare surface
- mask wheel bolt holes and bolt mating surfaces to ensure proper tightening torque on reinstallation
- spray on a thin but good covering coat of standard primer filler ALN 766 001 13/10 (follow mixing instructions on label)

Note

Only this acid-hardening filler guarantees satisfactory binding of the top coat on all wheels.

- apply top coat
- seal chrome paint L 009 100, LA 009 100 and all metallic undercoat paints with acrylic clear varnish, ALN 769 000.10.
- oven dry at maximum 70°C (160°F)

CAUTION

Part numbers are for reference only. Always check with your Parts Department for latest parts information.

WARNING

Always wear safety glasses or goggles when sandblasting or glass beading.

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 | Standard |
|--|--------------------|
| Total toe (wheels not pressed) | $- 10' \pm 10'$ |
| Camber (at straight-ahead position) | $45' \pm 30'$ |
| maximum permissible difference between right and left | max 30 |
| Toe angle difference between left and right | $55' \pm 30'$ |
| Caster (not adjustable) | $- 1' 15' \pm 30'$ |
| maximum permissible difference between both sides | max 30 |

| Rear Axle | Standard |
|--|-----------------|
| Camber (not adjustable) | $- 1' \pm 20'$ |
| maximum permissible difference between both sides | max 30 |
| Total toe (not adjustable) | $- 20' \pm 20'$ |
| maximum permissible difference between both sides | max 25 |

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 | Standard |
|--|----------------|
| Total toe (wheels not pressed) | + 10' ± 10' |
| Camber (at straight-ahead position) | - 50' ± 30' |
| maximum permissible difference between right and left | maximum 30' |
| Toe angle difference at 20° lock to left and right | - 1° - 30' |
| Caster (not adjustable) | + 1° 15' ± 30' |
| maximum permissible difference between both sides | maximum 30' |

| Rear Axle | Standard |
|--|-------------|
| Camber | - 45' ± 30' |
| maximum permissible difference between both sides | maximum 30' |
| Total toe | + 20' ± 10' |
| maximum permissible difference between both sides | maximum 25' |

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 | Sedan | Coupe |
|--|----------------|----------------|
| Total toe (wheels not pressed) | + 10' ± 10' | + 10' ± 10' |
| Camber (at straight-ahead position) | - 50' ± 30' | - 50' ± 30' |
| maximum permissible difference between right and left | maximum 30' | maximum 30' |
| Toe angle difference at 20° lock to left and right | - 1° ± 30' | - 1° ± 30' |
| Caster (not adjustable) | + 1° 25' ± 30' | + 2° 15' ± 30' |
| maximum permissible difference between both sides | maximum 30' | maximum 30' |

| Rear Axle | Sedan | Coupe |
|--|-------------|-------------|
| Camber | - 45' ± 30' | - 45' ± 30' |
| maximum permissible difference between both sides | maximum 30' | maximum 30' |
| Total toe | + 20' ± 10' | + 20' ± 10' |
| Toe per wheel | + 10' ± 5' | + 10' ± 5' |

Example

| | |
|--------------------------------------|--------------------------------------|
| Toe angle of left rear wheel +15' | Toe angle of right rear wheel +5' |
| 15' - 5' = 10' | |
| 10' ÷ 2 = 5' | |
| Toe (Deviation in alignment) = +5' | |

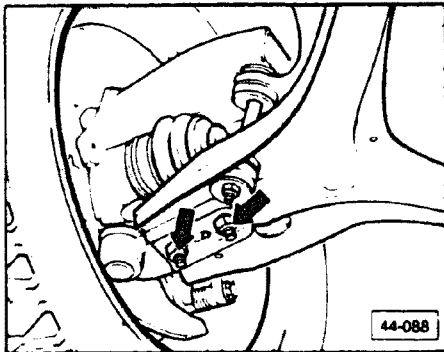
Example

| | |
|--------------------------------------|--------------------------------------|
| Toe angle of left rear wheel +15' | Toe angle of right rear wheel -5' |
| 15' + 5' = 20' | |
| 20' ÷ 2 = 10' | |
| Toe (Deviation in alignment) = +10' | |

Determining total toe/alignment of rear wheels (Two-wheel drive vehicles only)

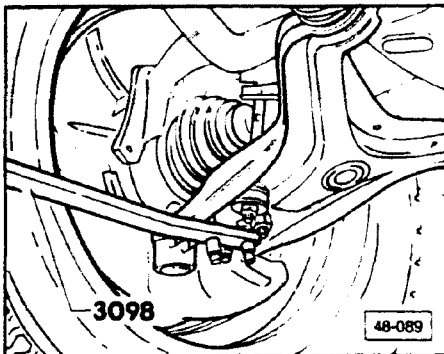
- ▶ 1 — If both toe angles are positive (+/+) or negative (-/-), subtract the lower number from the higher number and divide by 2.
- ▶ 2 — If one toe angle is positive and the other negative (+/-), add the two numbers and divide by 2.

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



Front axle camber, adjusting (vehicles with 2-point ball joint mounting)

- ▶ ■ loosen both ball joint mounting nuts on control arm (arrows)

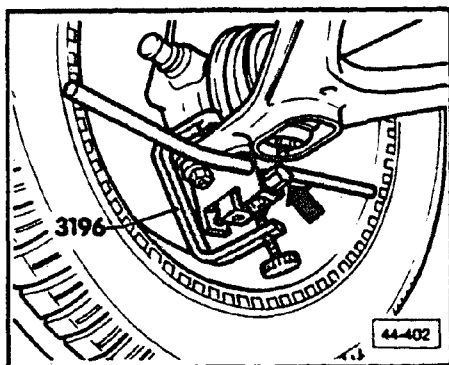


- ▶ ■ move ball joint with lever 3098 and adjust camber to specification
- tighten mounting nuts to 65 Nm (48 ft lb)
- recheck camber and correct if necessary
- check toe, adjust if necessary

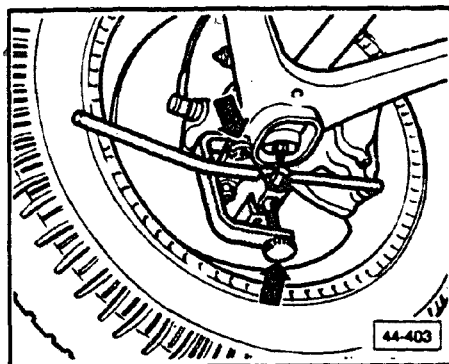
Front camber, adjusting (vehicles with 3-point ball joint mounting)



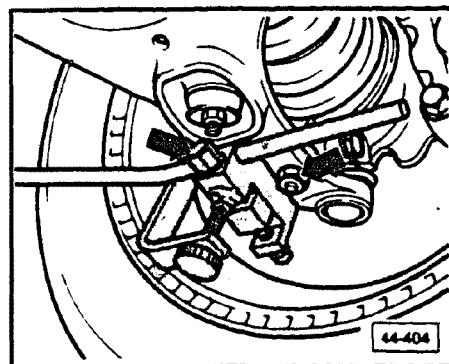
- loosen front and center ball joint nuts (arrows) until washer can be moved back and forth
- install tool 3196 with hole in tool over center ball joint nut



- turn spindle (arrow) so knurled pin on top of tool engages in hole in ball joint and tighten



- place top of tool clamp (upper arrow) over head of center ball joint bolt and tighten with knurled knob (lower arrow)



- loosen rear nut (right arrow) until washer can be moved
- turn spindle (left arrow) until desired camber is reached

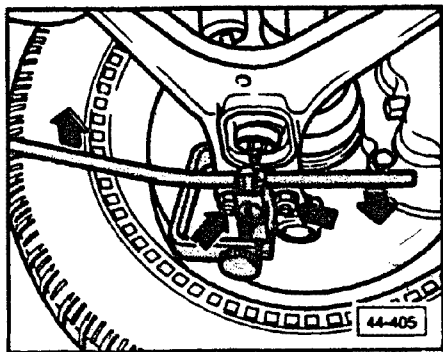
Note

If the ball joint jams on the control arm when the spindle is turned (no camber change), move the special tool by pulling the lever from side to side.

more

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Wheels — Tires, Wheel Alignment



- pull front end of tool lever inward as far as possible (**left arrow**) while pushing rear end of lever outward with similar force (**right arrow**) and hold lever in position
- have second mechanic tighten two outer ball joint mounting nuts (**center arrows**)
- remove special tool
- tighten center ball joint mounting nut
- torque all ball joint mounting nuts to 65 Nm (48 ft lb)
- check toe setting, adjust if necessary

Wheels – Tires, Wheel Alignment

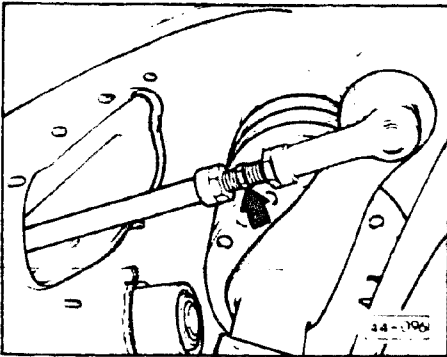
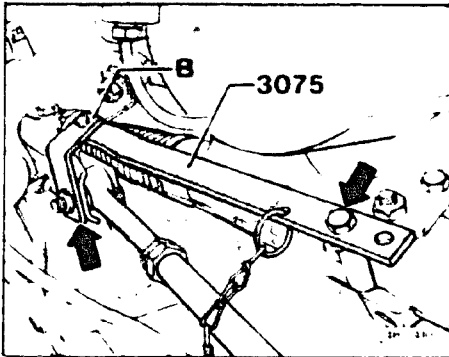
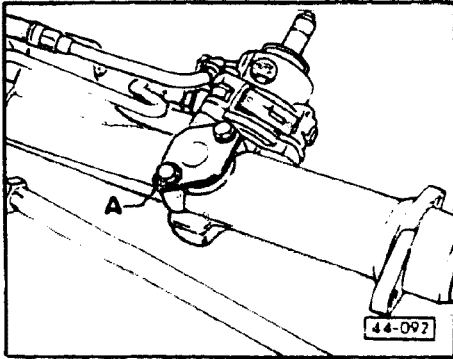
Front axle toe, adjusting

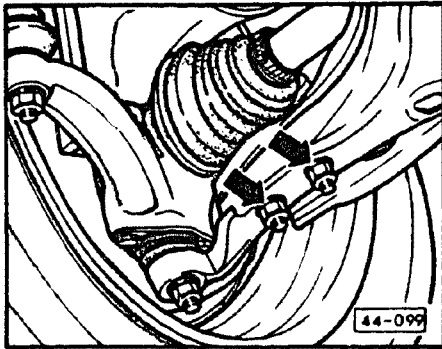
Note

Only use optical measuring equipment and special tool 3075.

Work sequence

- turn steering gear to center position
- remove bolt **A**
- attach centering tool **3075** with bracket **B** over mounting nut of left tie rod (**left arrow**)
- remove bolt from spacer on chain of centering tool
- insert bolt in hole (marked with **L**) on centering tool and tighten to steering gear (**right arrow**)
- 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 and tighten bolt **A** to 20 Nm (14 ft lb)

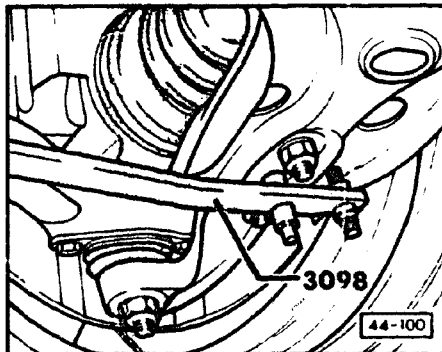




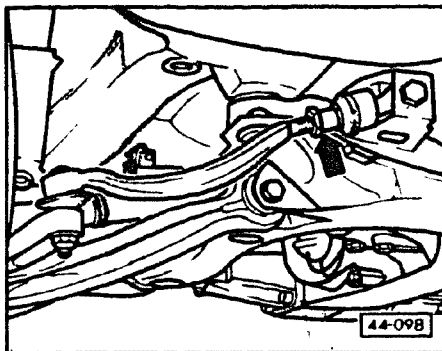
Rear camber, adjusting

Work sequence

- loosen lock nuts (arrows)



- move ball joint with lever 3098 in slotted holes in control arm
- tighten lock nuts to 75 Nm (55 ft lb)
- recheck camber and correct if necessary
- check toe, and adjust if necessary



Rear toe, adjusting

Work sequence

Note

Check adjustment on left and right with an optical axle measuring device.

- loosen lock nut (arrow)
- adjust toe by turning tie rod end
- tighten lock nut to 40 Nm (30 ft lb)

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.

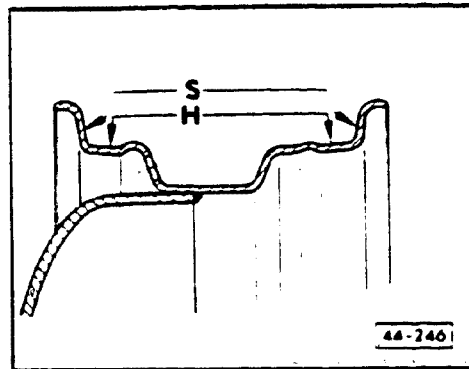
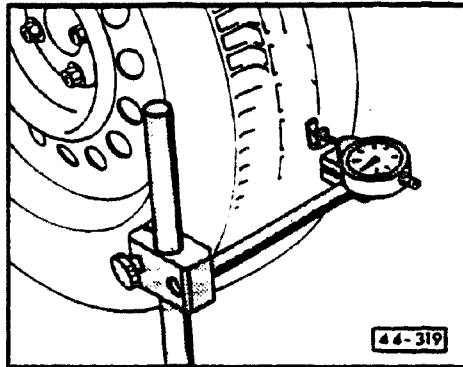
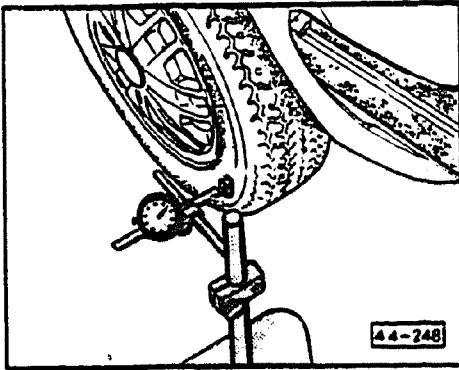
- check tire pressures and correct if necessary
- check surfaces of tires for scuffing, flat spots or other damage
- road test vehicle to determine type of condition and speed range
- check suspension components for damage or wear

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 radial 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

Wheel runout, checking

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

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.) |

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.

CAUTION

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

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
 - maximum permissible residual imbalance = 5 grams

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, 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.