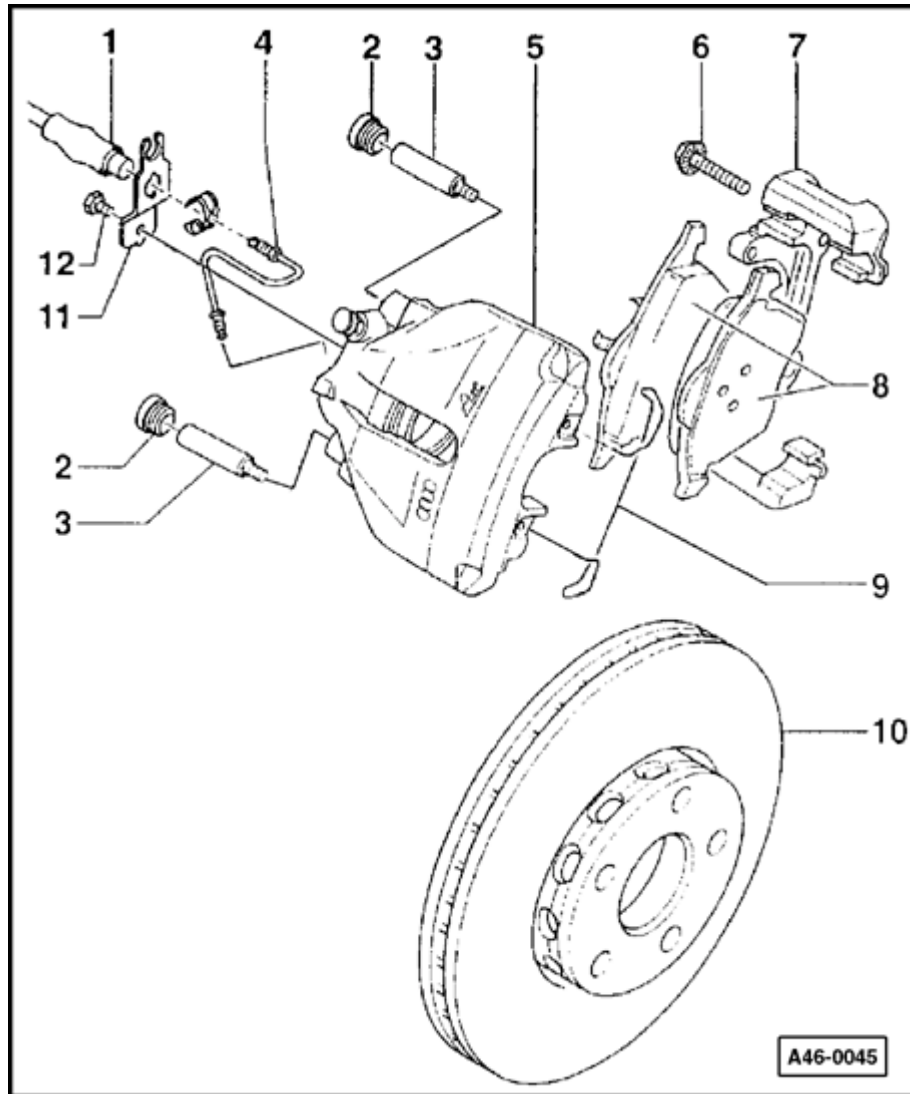


## Front brakes, servicing

### Teves/Ate front brakes

#### **WARNING!**

- ◆ *Do not re-use fasteners that are worn or deformed in normal use.*
- ◆ *Some fasteners are designed to be used only once, and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow recommendations in this manual-replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.*
- ◆ *To siphon brake fluid, always use a bleeder bottle which is only used to siphon brake fluid.*
- ◆ *Brake fluid is poisonous and must NEVER be removed by siphoning with your mouth.*

**Note:**

- ◆ Install complete repair kit.
- ◆ After installing the brake pads, depress the brake pedal firmly several times before moving the vehicle to properly seat the brake pads in their normal operating position.
- ◆ The brakes can be tested on a commercial brake dynamometer provided the speed of the two dynamometer drive rollers is not more than 5.5 km/h (3.3 mph).
- ◆ Tightening torque for the brake lines is 15 Nm (11 ft lb)

**1 - Brake hose**

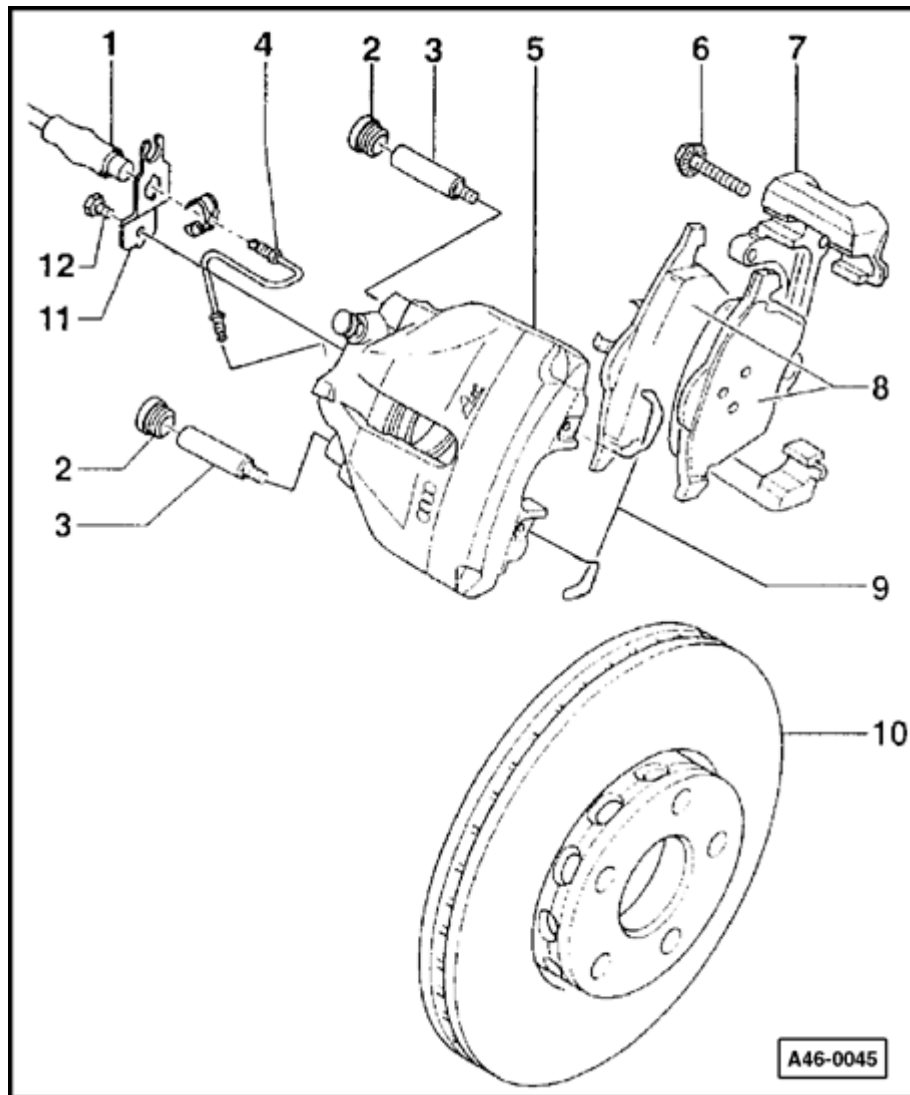
- ◆ Do not disconnect the brake hose from the caliper when replacing brake pads.

**CAUTION!**

**Do not allow the caliper to hang by the brake hose. The unsupported weight can stretch and damage the hose.**

**2 - Caps**

- ◆ Remove for access to guide pin

**3 - Guide pin**

- ◆ 25 Nm (18 ft lb)

**4 - Brake line**

- ◆ 15 Nm (11 ft lb)
- ◆ Install into caliper housing
- ◆ When tightening to brake hose, counter hold on brake hose hex
- ◆ Make sure lugs are properly seated in retainer grooves

**5 - Brake caliper housing**

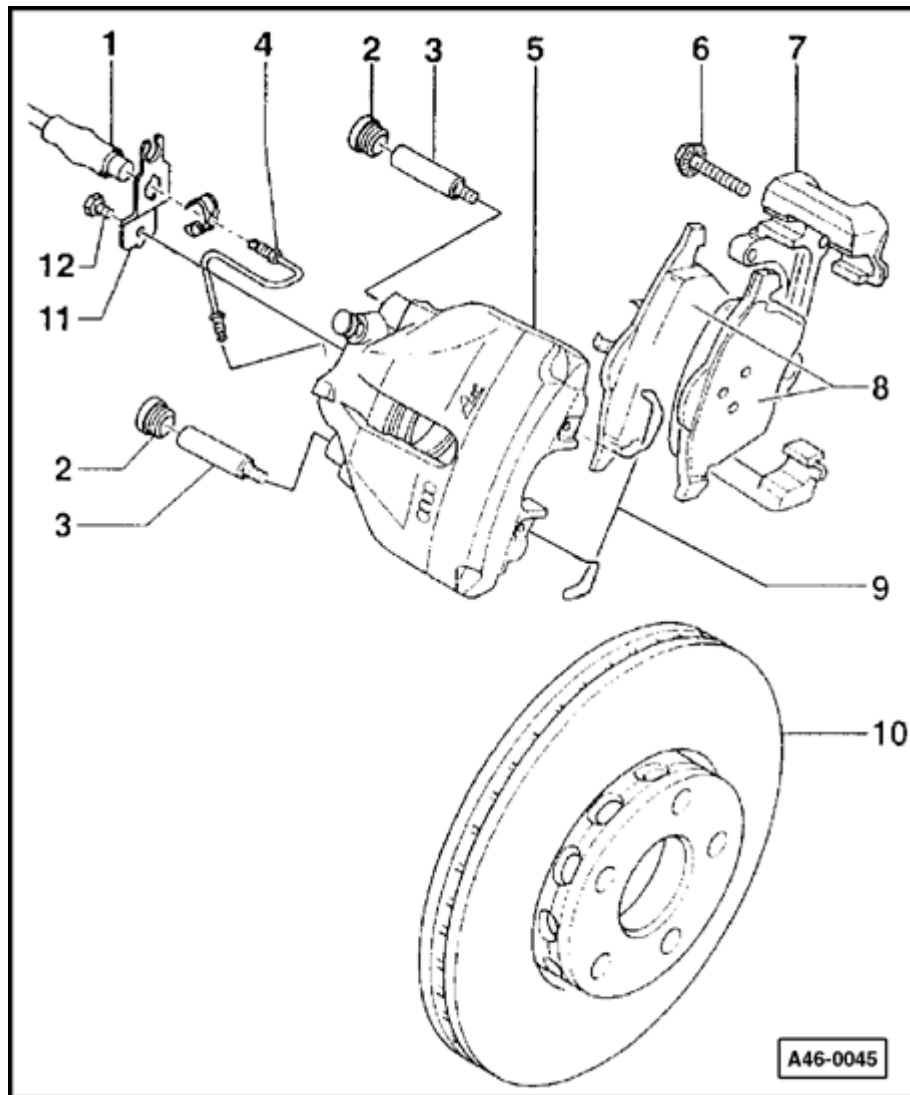
- ◆ Unbolt from brake carrier for replacing brake pads
- ◆ Servicing brake caliper ⇒ [47-2](#)

**6 - Ribbed bolt**

- ◆ 125 Nm (92 ft lb)
- ◆ Clean ribbing if re-using

**7 - Brake carrier**

- ◆ Bolt to wheel bearing housing



## 8 - Brake pads

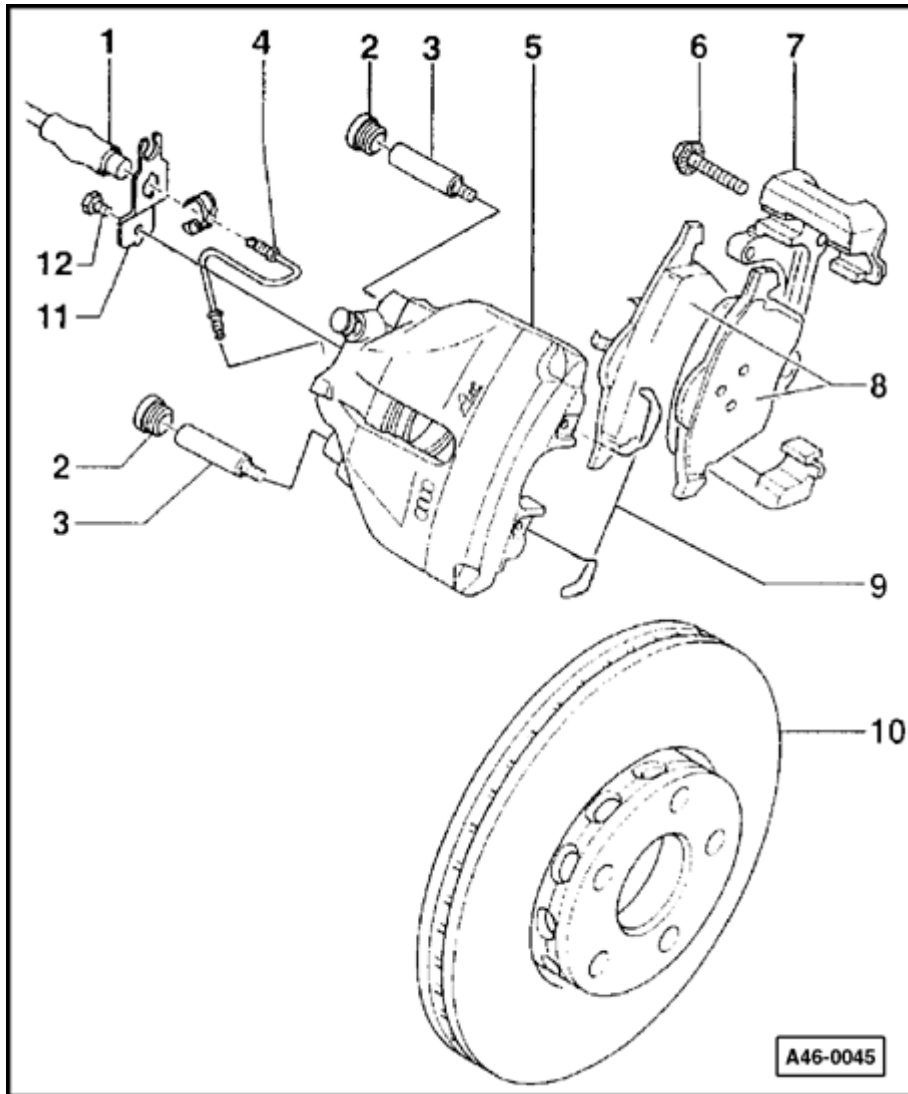
### **CAUTION!**

**The inner brake pad (with expanding spring) is marked with an arrow that must point in the direction of rotor rotation when the vehicle is moving forward. Incorrect installation can result in excessive noise.**

- ◆ Outer pads have an adhesive with a protective sheet on the backing plate; remove this sheet before installing
- ◆ Different versions ⇒ parts catalogue microfiche
- ◆ Always replace as a set on both wheels of an axle
- ◆ Removing and installing ⇒ [page 46-7](#)
- ◆ Brake pad wear limit (friction material): 2 mm (0.08 in.)
- ◆ Brake pad wear limit (including backing plate): 7 mm (0.28 in.)

### **Note:**

*Before installing new brake pads, thoroughly clean the brake calipers (free of grease). Pay particular attention to removing any adhesive residue from the outer brake pad contact surfaces.*



### 9 - Retaining spring

- ◆ Insert into both holes in brake caliper housing
- ◆ Once spring ends are seated in holes, press retaining spring under brake carrier

### **CAUTION!**

***If the spring is not installed correctly, the outer brake pad alignment mechanism will not be able to compensate for wear, and increased pedal travel will result.***

### 10 - Brake disc

- ◆ Always replace as a set on both wheels of an axle
- ◆ To remove, first unbolt caliper
- ◆ Resurface evenly on both sides starting from thickness when new

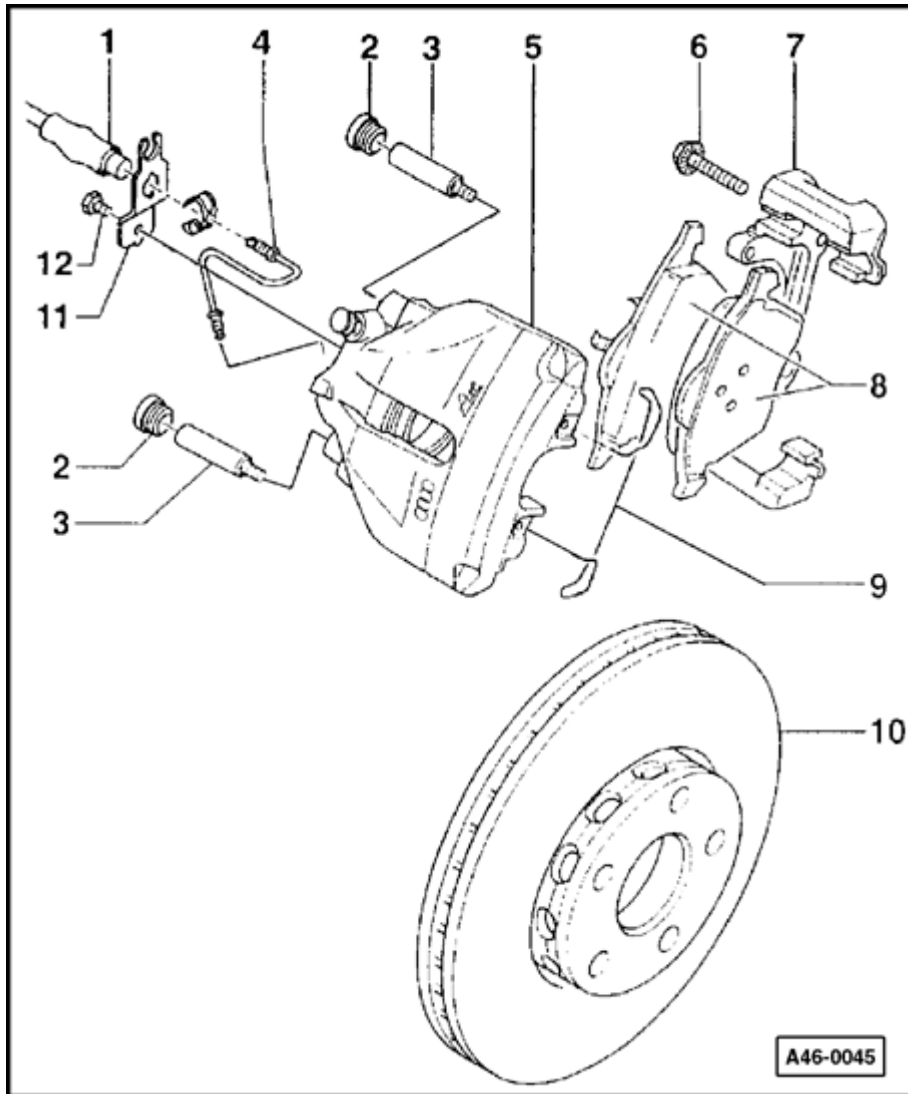
Internally ventilated brake disc:

- ◆ Diameter: 288 mm (11.34 in.)
- ◆ Thickness: 25 mm (0.984 in.)
- ◆ Wear limit: 23 mm (0.906 in.)

Non-ventilated brake disc:

- ◆ Diameter: 288 mm (11.34 in.)

- ◆ Thickness: 15 mm (0.59 in.)
- ◆ Wear limit: 13 mm (0.51 in.)

**11 - Bracket**

- ◆ Bolt to brake caliper housing

**12 - Hex bolt**

- ◆ 10 Nm (7 ft lb)

## Teves/Ate brake pads, removing and installing

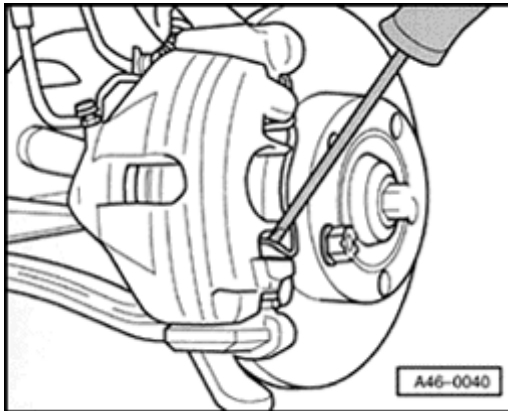
### Removing

#### Note:

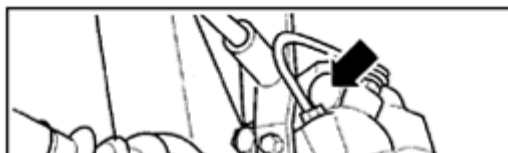
*If brake pads are to be re-used, mark their installed positions when removing. Re-install in the same positions, otherwise the car may pull to one side!*

- Raise vehicle.

- Remove wheels.

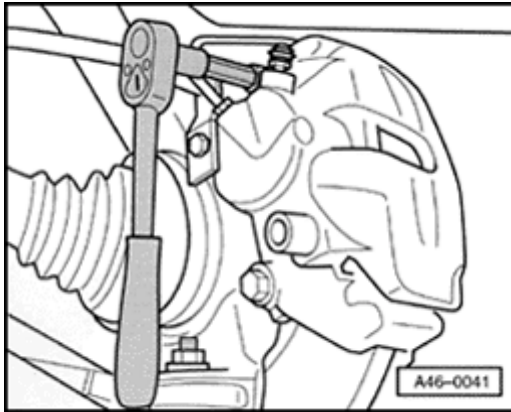


**A** - Use screwdriver to pry brake pad retaining spring out of brake caliper housing, and remove spring.



**A** - Remove top and bottom caps (arrows).



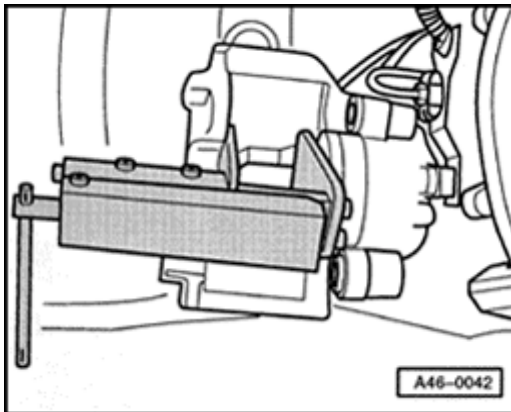


- A**
- Remove both guide pins from brake caliper.
  - Remove brake caliper housing and secure to body.

**CAUTION!**

- ◆ *Do not loosen brake hose or lines.*
  - ◆ *Secure the brake caliper with a piece of wire in order to relieve the stress on the brake hose.*
  - ◆ *Do not allow the caliper to hang by the brake hose.*
- Remove outer brake pad from brake carrier.
  - Pull inner brake pad (with expanding spring) out of brake caliper piston.

**Installing**



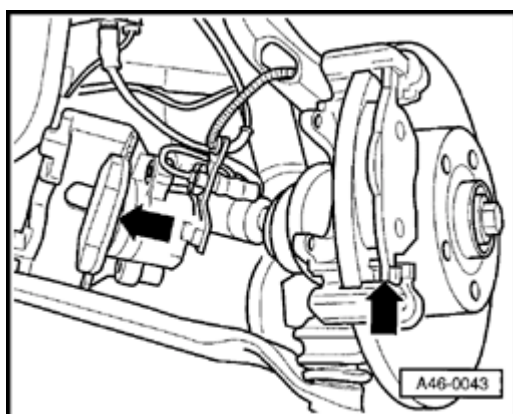
- A**
- Push piston back into brake caliper housing.

**WARNING!**

*Brake fluid is poisonous and must never be removed by siphoning with your mouth.*

**CAUTION!**

- ◆ **Extract part of the brake fluid from the brake fluid reservoir before pushing back the pistons.**
- ◆ **If this is not done, particularly if the brake fluid has been topped up in the meantime, brake fluid may flow out and cause damage. Use the bleeder bottle or a plastic bottle, which is used only for brake fluid, for extracting the fluid.**
- ◆ **The inner brake pad (with expanding spring) is marked with an arrow that must point in the direction of rotor rotation when the vehicle is moving forward. Incorrect installation can result in excessive noise.**

**A**

- Install inner brake pad (with expanding spring) in brake caliper piston (left arrow). Arrow marked on pad must point in direction of rotor rotation when vehicle is moving forward.
- Remove protective sheet from backing plate for outer brake pad.
- Install outer brake pad into brake carrier (right arrow).
- Bolt brake caliper housing to brake carrier using two guide pins.  
Tightening torque: 25 Nm (18 ft lb)
- Install both caps.

- Insert retaining spring into brake caliper housing.

- Once spring ends are seated in holes, press retaining spring under brake carrier.

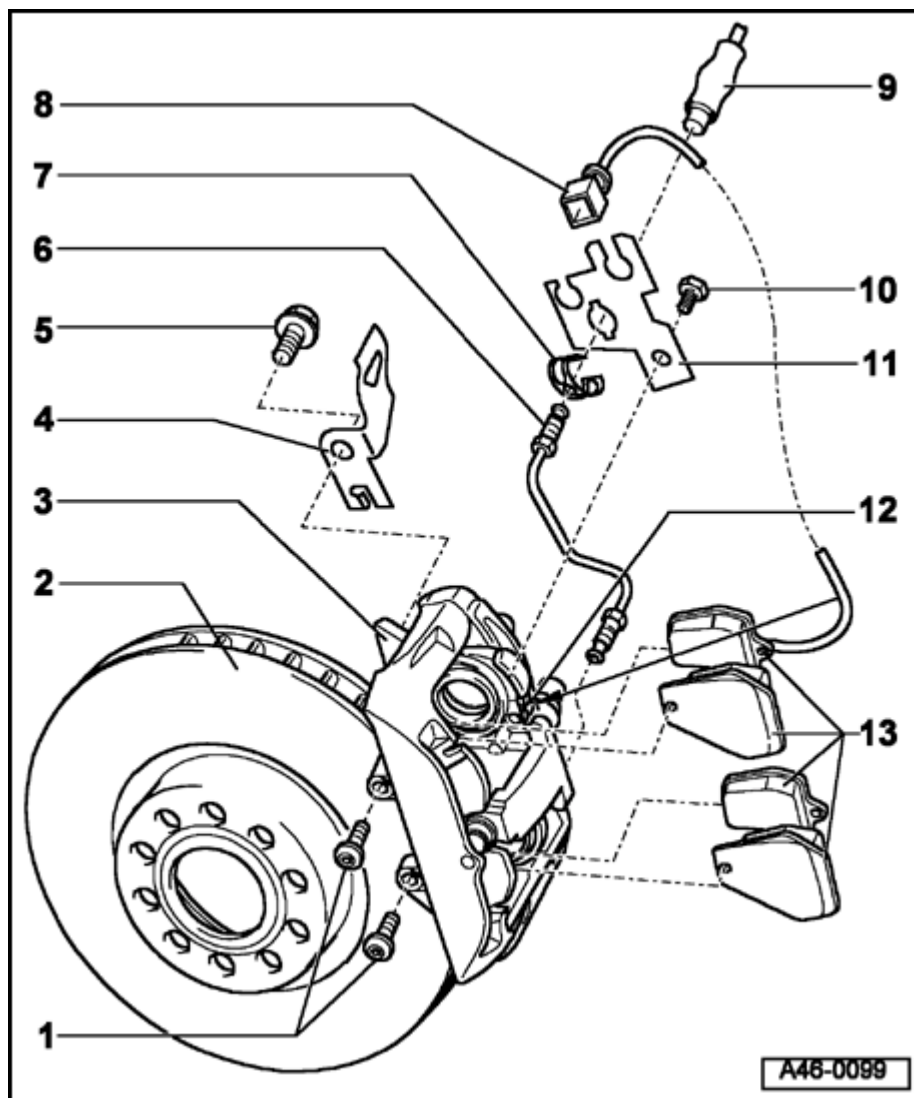
**CAUTION!**

***If the spring is not installed correctly, the outer brake pad alignment mechanism will not be able to compensate for wear, and increased brake pedal travel will result.***

**Note:**

*Depress the brake pedal firmly several times while the car is stationary so that the brake pads adjust to their normal operating positions.*

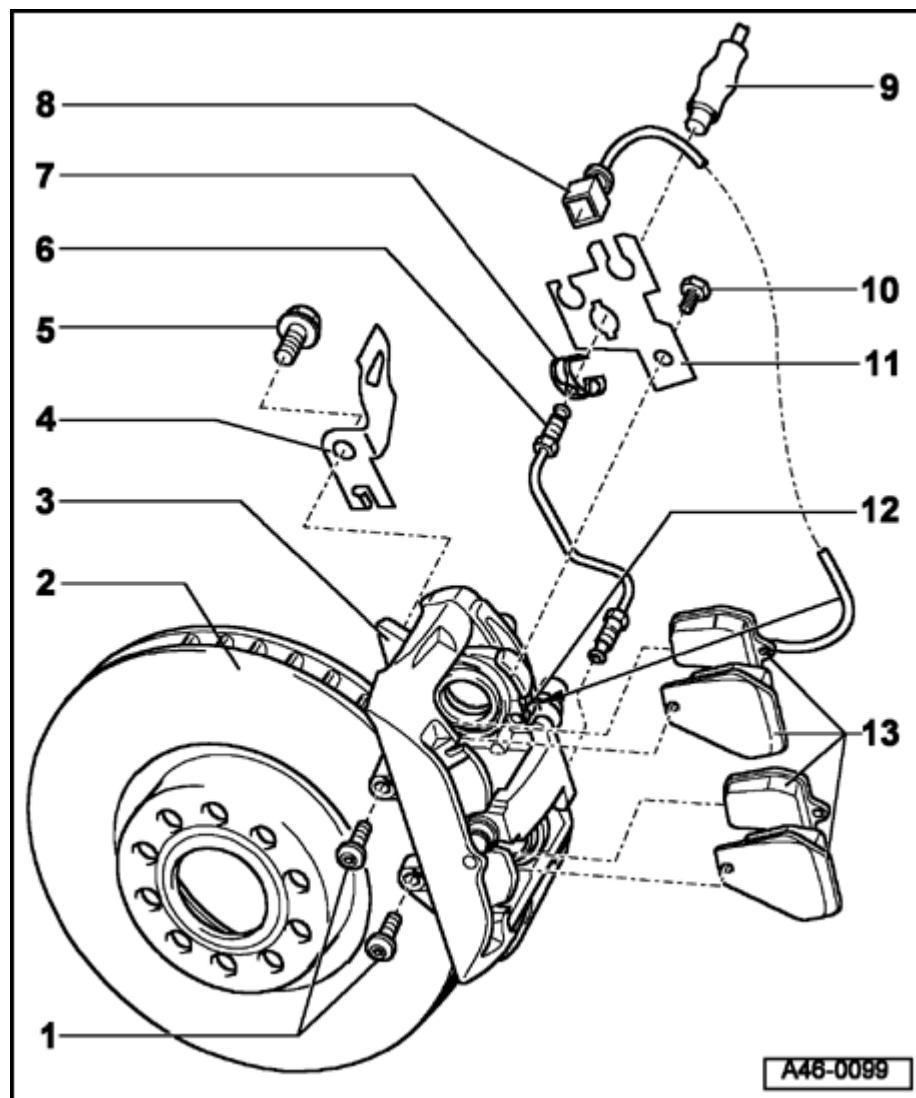
- Check brake fluid level and top up if necessary.



## Double piston front brake calipers, servicing

### **WARNING!**

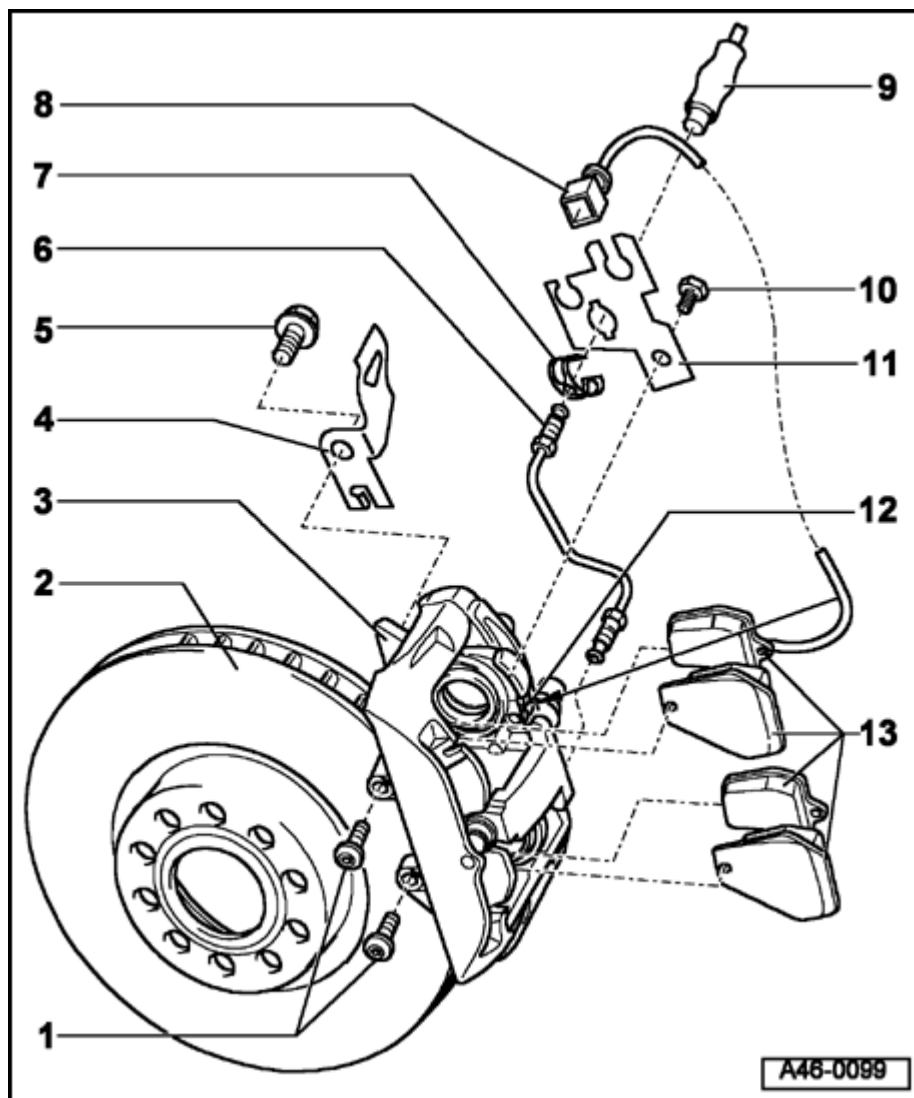
- ◆ *Do not re-use fasteners that are worn or deformed in normal use.*
- ◆ *Some fasteners are designed to be used only once, and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow recommendations in this manual—replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.*
- ◆ *To siphon brake fluid, always use a bleeder bottle which is only used to siphon brake fluid.*
- ◆ *Brake fluid is poisonous and must NEVER be removed by siphoning with your mouth.*

**Note:**

- ◆ Install complete repair kit.
- ◆ After installing the brake pads, depress the brake pedal firmly several times before moving the vehicle to properly seat the brake pads in their normal operating position.
- ◆ The brakes can be tested on a commercial brake dynamometer provided the speed of the two dynamometer drive rollers is not more than 5.5 km/h (3.3 mph).
- ◆ Tightening torque for the brake lines is 15 Nm (11 ft lb).

**1 - Torx<sup>®</sup> bolt**

- ◆ Always replace
- ◆ 25 Nm (18 ft lb)
- ◆ Remove and install using commercially available Torx<sup>®</sup> socket T40
- ◆ Bolts are included in the repair kit for the brake pads



## 2 - Brake disc

- ◆ Always replace as a set on both wheels of an axle
  - ◆ Ensure adequate thickness
  - ◆ To remove, first unbolt brake caliper
- Internally ventilated brake disc
- ◆ Diameter: 245 mm (9.65 in.)
  - ◆ Thickness: 30 mm (1.18 in.)
  - ◆ Wear limit: 28 mm (1.10 in.)

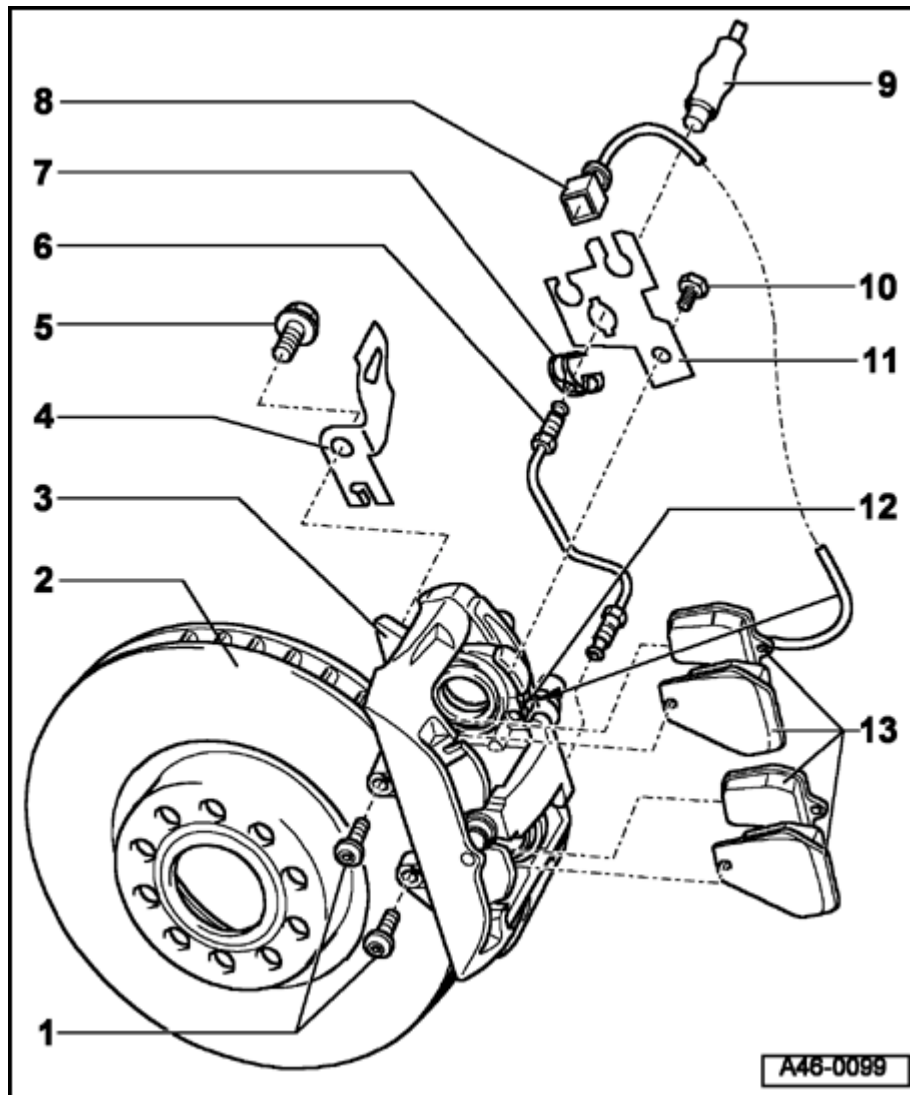
## 3 - Brake caliper

### **CAUTION!**

- ◆ **Do not allow the caliper to hang by the brake hose. The unsupported weight can stretch and damage the hose.**
- ◆ **Secure the brake caliper with a piece of wire in order to relieve the stress on the brake hose.**
- ◆ With the exception of replacing brake pads ⇒ [page 46-16](#) and servicing front brake calipers ⇒ [page 46-11](#), no further repairs may be performed to the brake caliper

## 4 - Clamping spring

46-14

**5 - Ribbed bolt**

- ◆ 200 Nm (148 ft lb)
- ◆ Clean ribbing if re-using

**6 - Brake line**

- ◆ 15 Nm (11 ft lb)

**7 - Retaining spring****8 - Harness connector**

- ◆ Only on models with wear indicators

**9 - Brake hose**

- ◆ Do not disconnect the brake hose from the caliper when replacing brake pads.

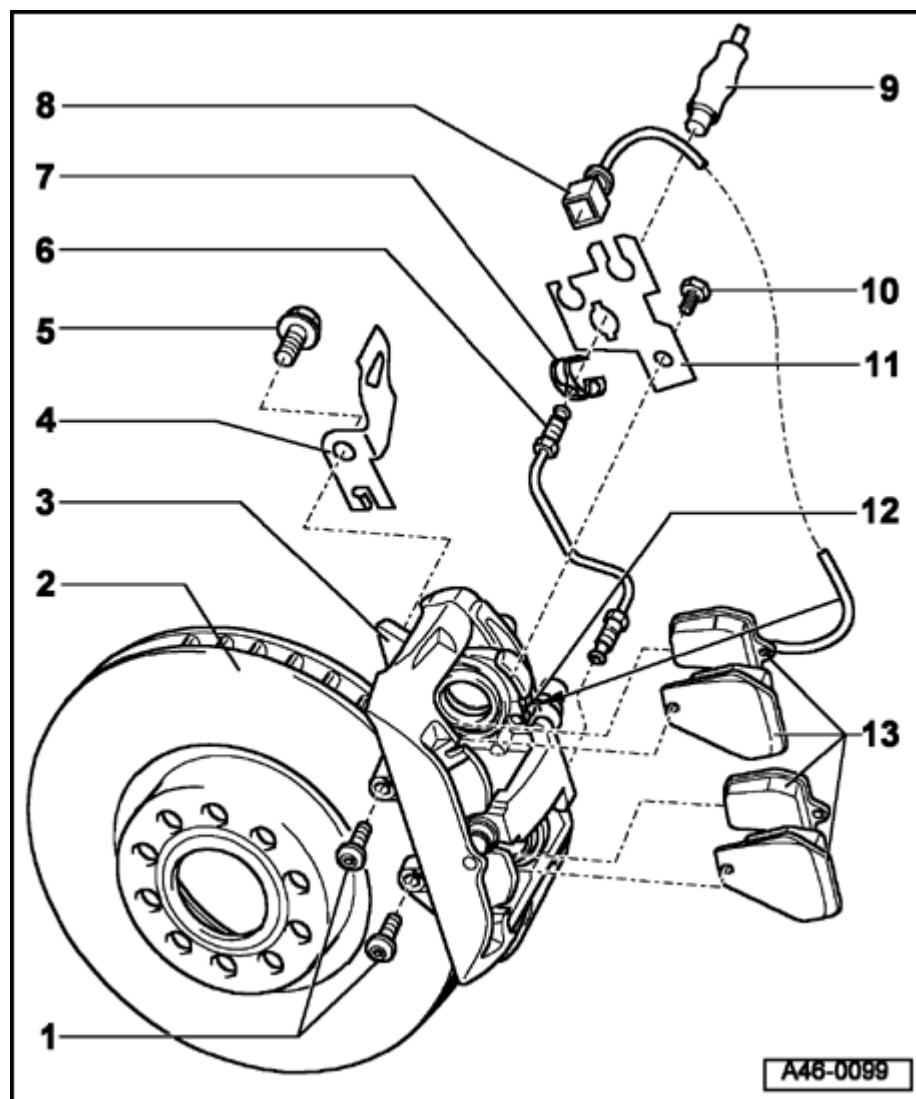
**10 - Bolt**

- ◆ 25 Nm (18 ft lb)

**11 - Bracket**

- ◆ Bolt to brake caliper housing
- ◆ Install harness connector for brake pad wear indicator





### 12 - Harness holder

- ◆ Only on models with wear indicators
- ◆ Install harness for brake pad wear indicator into harness holder

### 13 - Brake pads

- ◆ Always replace as a set on both wheels of an axle
- ◆ Different left and right sides
- ◆ Removing and installing ⇒ [page 46-16](#)

With wear indicator

- ◆ Once wear limit is reached (3 mm, 0.12 in.), warning light in instrument panel comes on
- ◆ Brake pad thickness: 14 mm (0.55 in.)
- ◆ Outer pads have an adhesive with a protective sheet on the backing plate; remove this sheet before installing

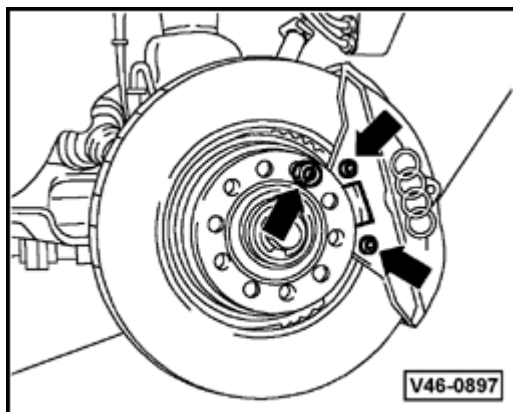
## Double piston front caliper brake pads, removing and installing

### Removing

#### Note:

*If brake pads are to be re-used, mark installed positions when removing. Re-install at the same point, otherwise the car may pull to one side!*

- Raise vehicle.
- Remove wheels.
- Secure brake disc with wheel bolt (left arrow).
- Remove both Torx<sup>®</sup> bolts for outer brake pads (right arrows).



#### **WARNING!**

***Brake fluid is poisonous and must never be removed by siphoning with your mouth.***

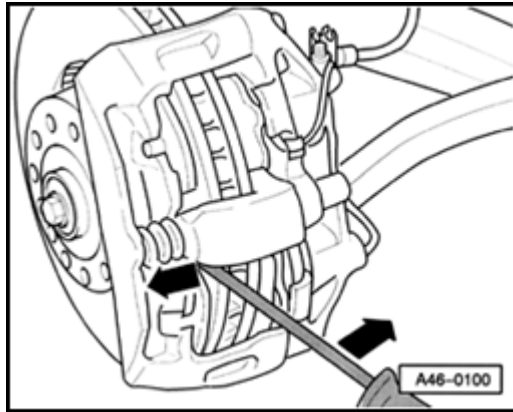
#### **CAUTION!**

- ◆ ***Extract part of the brake fluid from the brake fluid reservoir before pushing back the pistons.***
- ◆ ***If this is not done, particularly if the brake fluid has been topped up in the meantime, brake fluid may flow out and cause damage.***

***Use the bleeder bottle or a plastic bottle, which is used only for brake fluid, for extracting the fluid.***

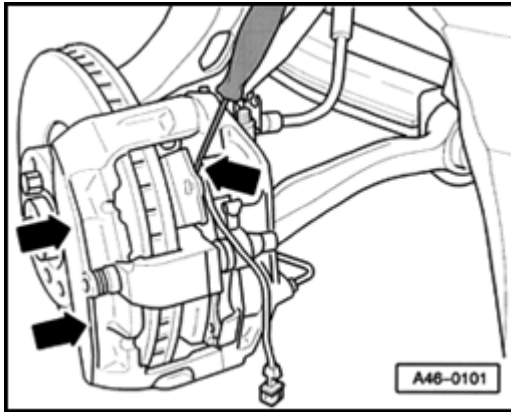
- ◆ ***The inner brake pad (with expanding spring) is marked with an arrow that must point in the direction of rotor rotation when the vehicle is moving forward. Incorrect installation can result in excessive noise.***

46-17



A

- Push piston back into brake caliper housing.
- To do this use screwdriver inserted into floating caliper frame and press frame outward.
- Remove outer brake pads first by pressing pads off brake caliper using screwdriver.

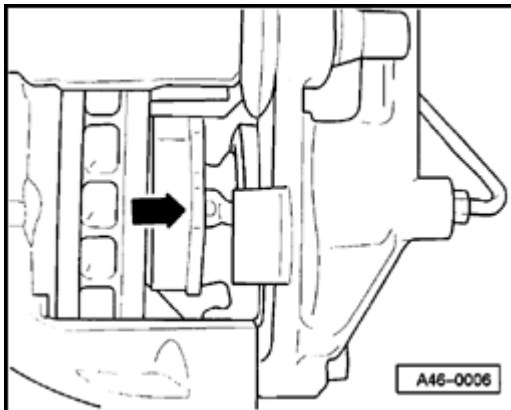


A

- Press floating frame in direction of left arrows as far as stop.
- Carefully press brake pads out of pistons using screwdriver (right arrow) and remove from caliper housing.

**Note:**

- ◆ Thoroughly clean the brake caliper housing before installing the new brake pads.
- ◆ Pay particular attention to cleaning the residues left from the outer brake pad adhesive.

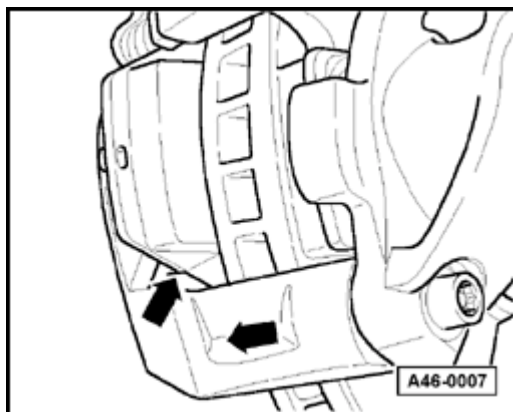
**Installing**

A

- Install bottom and top brake pads into pistons.

**Note:**

*Do not damage the protective boots when installing the brake pads.*



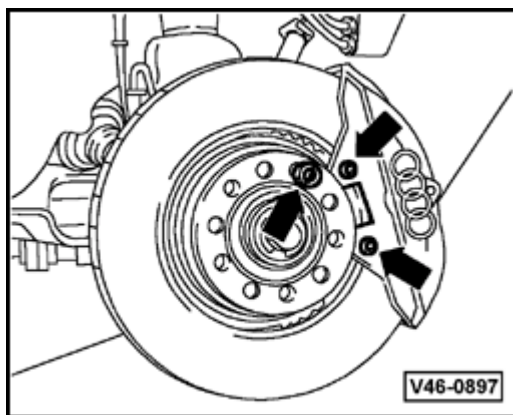
- A**
- Press floating frame out as far as stop.
  - Remove protective sheet from back of outer brake pads.

**CAUTION!**

**The repair kit contains four self-locking Torx<sup>®</sup> bolts which must always be installed.**

**Note:**

*After replacing brake pads depress the brake pedal firmly several times while the car is stationary so that the brake pads adjust to their normal operating positions.*



- A**
- Install Torx<sup>®</sup> bolts (right arrows) from repair kit into floating frame to secure outer brake pads in position.  
Tightening torque: 25 Nm (18 ft lb)
  - Remove wheel bolt from wheel hub.

**Note:**

*Make sure wheels do not hang on brake calipers when they are installed. The brake pads could be pushed out of the caliper frame.*

- Install wheels and tighten wheel bolts.  
Tightening torque: 120 Nm (89 ft lb)
- Check brake fluid level and top up if necessary.