2003-2008 BRAKES

Brakes - Brake Mechanics

46 BRAKE DISC MEASUREMENT SHEET - AS OF MY 2003 (ALL MODELS)

INFORMATION

Brake disc measurement sheet

NOTE: **Notes on checking and measurement points can be found in:**

- ***--> 46 Technical data/brake wear limits***
- **--> 465002 Checking front brake discs (wear assessment)**
- **--> 465302 Checking rear brake discs (wear assessment)**

To document the measured result, a copy or print of the data card illustrated can be used. The data cards cannot be ordered.

1. Make a copy or print of the data card shown.

NOTE:

- ***Actual values that are identical in all versions are already entered!***
- ***In the course of further development these values may change. If necessary, carry out a check and insert the new values accordingly. --> 46 Technical data/brake wear limits***

2. Before measurement (Test 1 through Test 3), enter the general data, vehicle type and the missing nominal values (new brake disc thickness / brake disc wear limit) into the data card.

3. Carry out measurements (actual status) and enter the values in the alignment card.

4. If brake discs are to be replaced, carry out Test 2 with the new discs again and enter the latest values in a new data card.

Measuring prerequisites

- Note the labor operation numbers.

- Measuring brake discs: 80 time units per axle.

Brake disc measurement	
Customer:	Rep. Order No.:
Street:	Vehicle Ident No.:
Place:	Reg. number:

Telephone:		Date of first registration:		
Vehicle type:		Odometer reading [km/miles]		
Checker		Date/Signature		
Nominal values				
Test 1 = brake disc thickness				
- Brake disc thickness, new [mm]:			Front:	Rear:
- Wear limit [mm]:			Front:	Rear:
Test 2 = lateral runout				
- Brake disc installed [mm]			max.: 0.06	
- Wheel hub			max.:	
- Brake disc removed [mm]			max.: 0.03	
Test 3 = Thickness tolerance of brake disc				
Thickness tolerance of brake disc [mm]			max.:	
Measured values (actual values) [mm]	front left	front right	rear left	rear right
Test 1 = Brake disc thickness (measured at 3 points, each offset by 120°)				
Measurement point A				
Measurement point B				
Measurement point C				
Test 2 = lateral runout				
- Brake disc installed				
- Wheel hub				
- Brake disc removed (difference wheel hub/brake disc installed)				
Test 3 = Thickness tolerance of brake disc				
Thickness tolerance				

46 01 CHECKING THE THICKNESS OF THE DISC BRAKE PADS - AS OF MY 2003 (ALL MODELS)

CHECKING

Checking thickness of the disc brake pads

WARNING: Risk of accident if brake pads and brake discs are not replaced in time.

- **Injury and material damage due to impaired braking effect.**

--> The brake pads must be replaced when the brake pad warning indicator lights up, but no later than when there is a residual pad thickness of 2 mm.

--> Brake discs must be replaced on reaching the wear limits.

NOTE:

- ***If brake pad wear is indicated by the warning light, the warning contact (sensor including line and plug connection) must also be replaced.***
- **Replacement of the warning contact can be avoided by replacing the brake pads no later than when the pad thickness is 2.5 mm -arrows- . See Fig. 1.**
- ***Warning contacts must be replaced if the core of the line is worn.***
- ***However, if only the plastic part of the warning contact is worn, there is no need to replace it.***

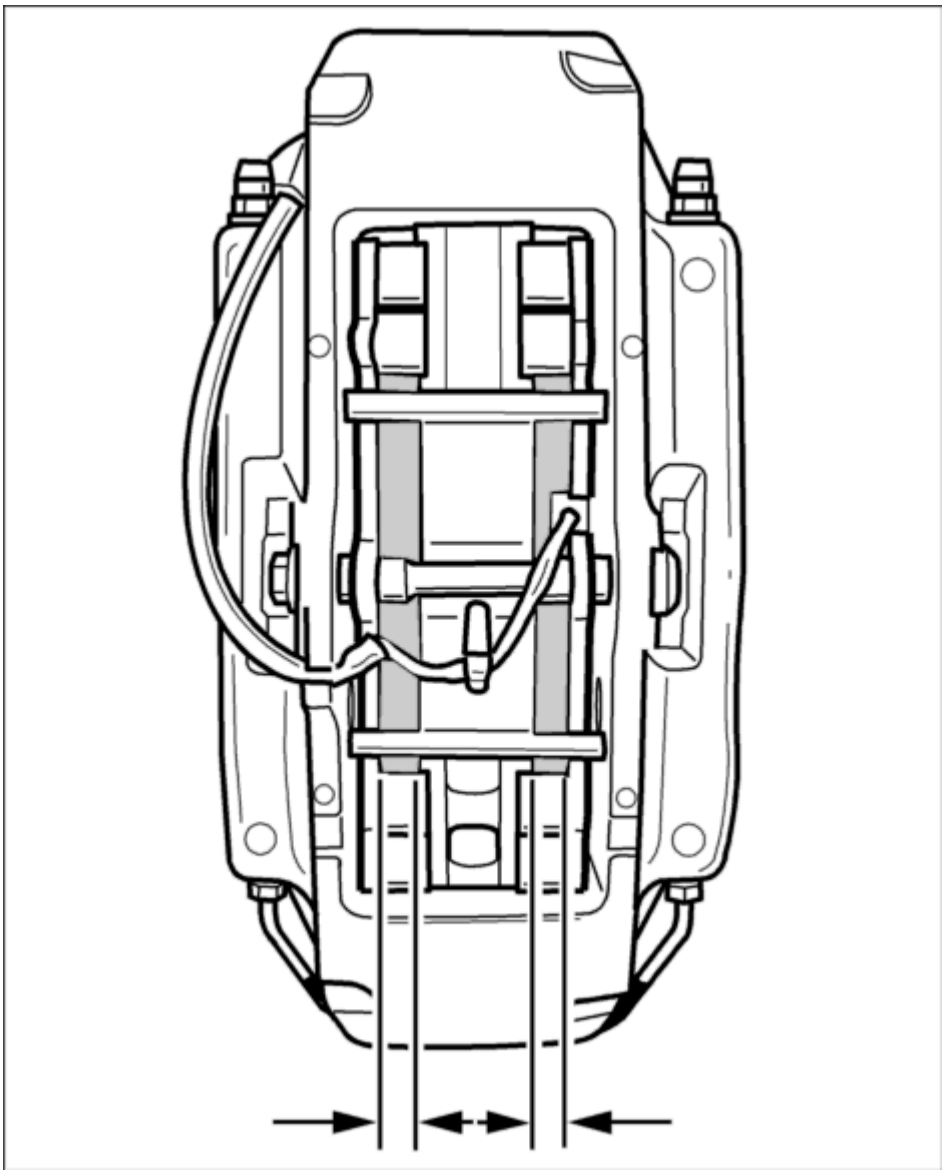


Fig. 1: Brake pads thickness
Courtesy of PORSCHE OF NORTH AMERICA, INC.

CAUTION: Increased risk of accident or damage to brake discs when mounting/removing wheels.

- **Material damage to the brake discs.**

--> Use assembly aids (assembly pins) to exclude any possibility of heavy contact of the wheel with the brake disc. The assembly aids (assembly pins) are located in the luggage compartment.

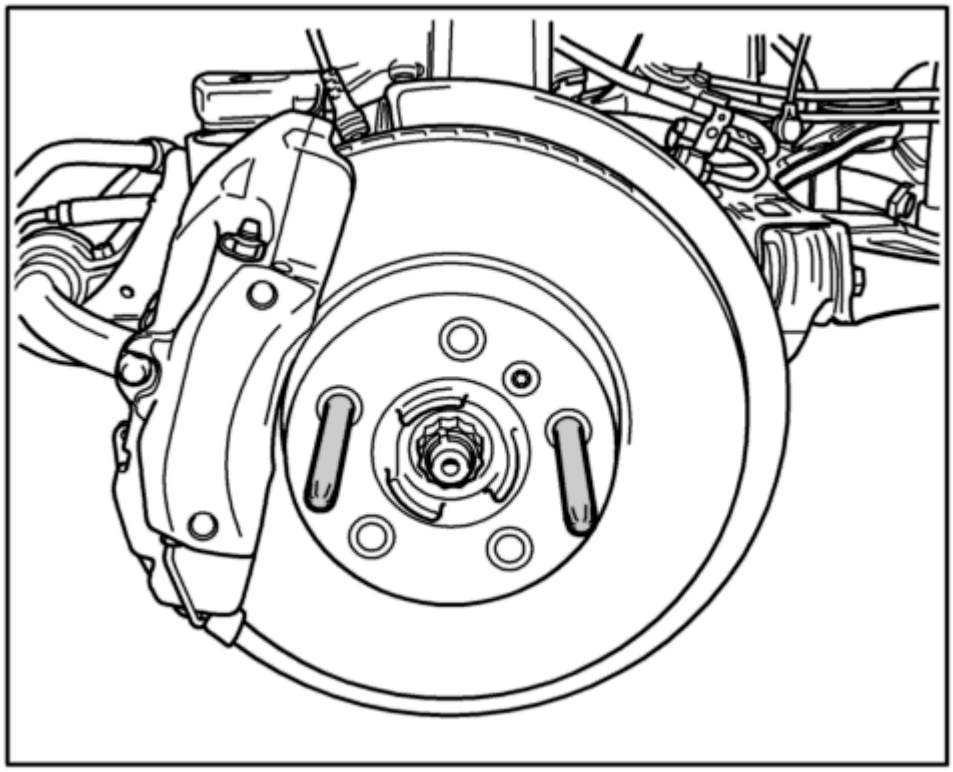


Fig. 2: Brake caliper and brake disc
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. To check the brake pads, remove the wheels. Before removal/installation of wheel, screw the assembly aids (assembly pins) **-see illustration-** , instead of two wheel bolts, into the wheel hub. During removal, first remove the three remaining wheel bolts and remove the wheel carefully without touching the brake discs. See **Fig. 2**.

2. Visually inspect the brake pads for wear.

46 02 CHECKING THE THICKNESS OF THE DISC BRAKE PADS - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE TURBO S)

CHECKING THE THICKNESS OF THE DISC BRAKE PADS

Checking thickness of the disc brake pads

WARNING: Risk of accident if brake pads and brake discs are not replaced in time.

- **Injury and material damage due to impaired braking effect.**

--> The brake pads must be replaced when the brake pad warning indicator lights up, but no later than when there is a residual pad thickness of 2 mm.

--> Brake discs must be replaced on reaching the wear limits.

NOTE:

- ***If brake pad wear is indicated by the warning light, the warning contact (sensor including line and plug connection) must also be replaced.***
- **Replacement of the warning contact can be avoided by replacing the brake pads no later than when the pad thickness is 2.5 mm -arrows- . See Fig. 3.**
- ***Warning contacts must be replaced if the core of the line is worn.***
- ***However, if only the plastic part of the warning contact is worn, there is no need to replace it.***

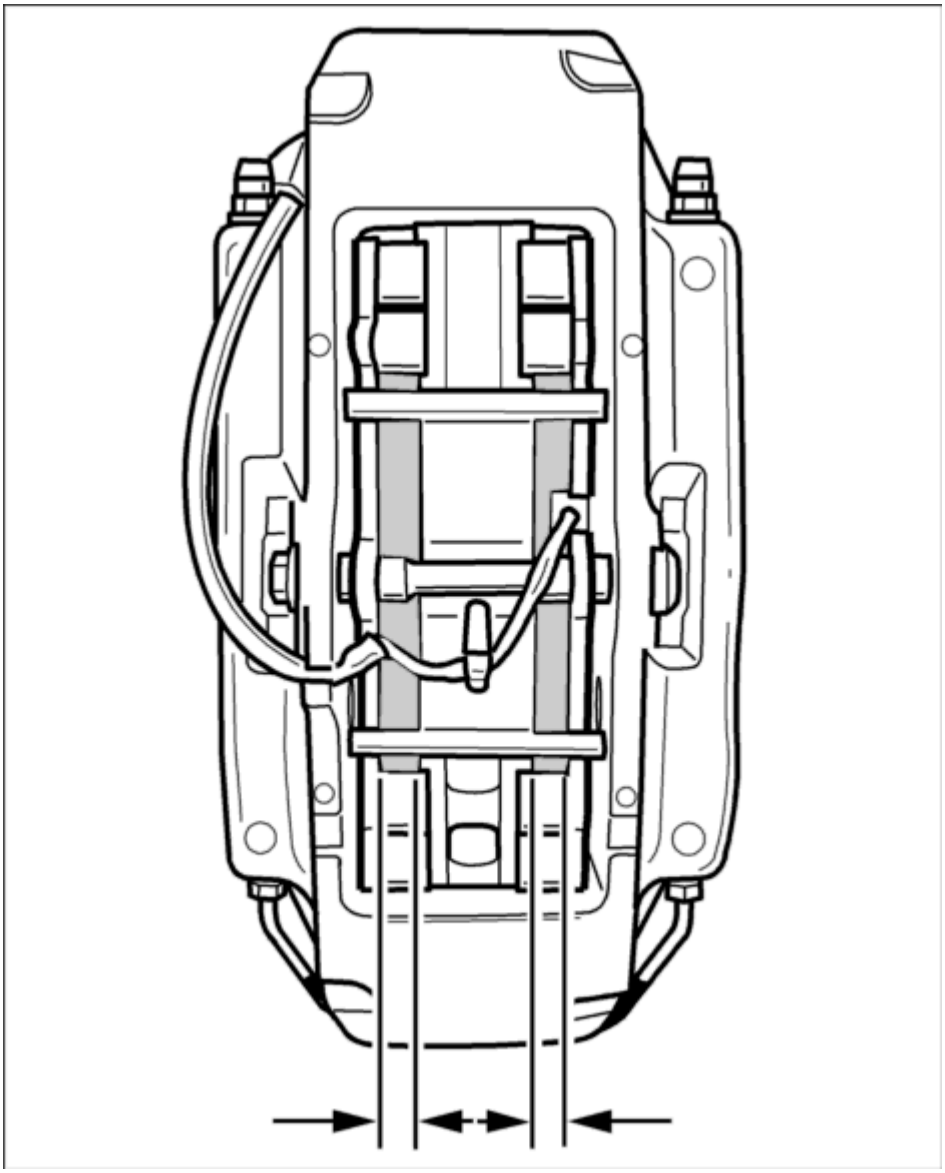


Fig. 3: Brake pads thickness
Courtesy of PORSCHE OF NORTH AMERICA, INC.

CAUTION: Increased risk of accident or damage to brake discs when mounting/removing wheels.

- **Material damage to the brake discs.**

--> Use assembly aids (assembly pins) to exclude any possibility of heavy contact of the wheel with the brake disc. The assembly aids (assembly pins) are located in the luggage compartment.

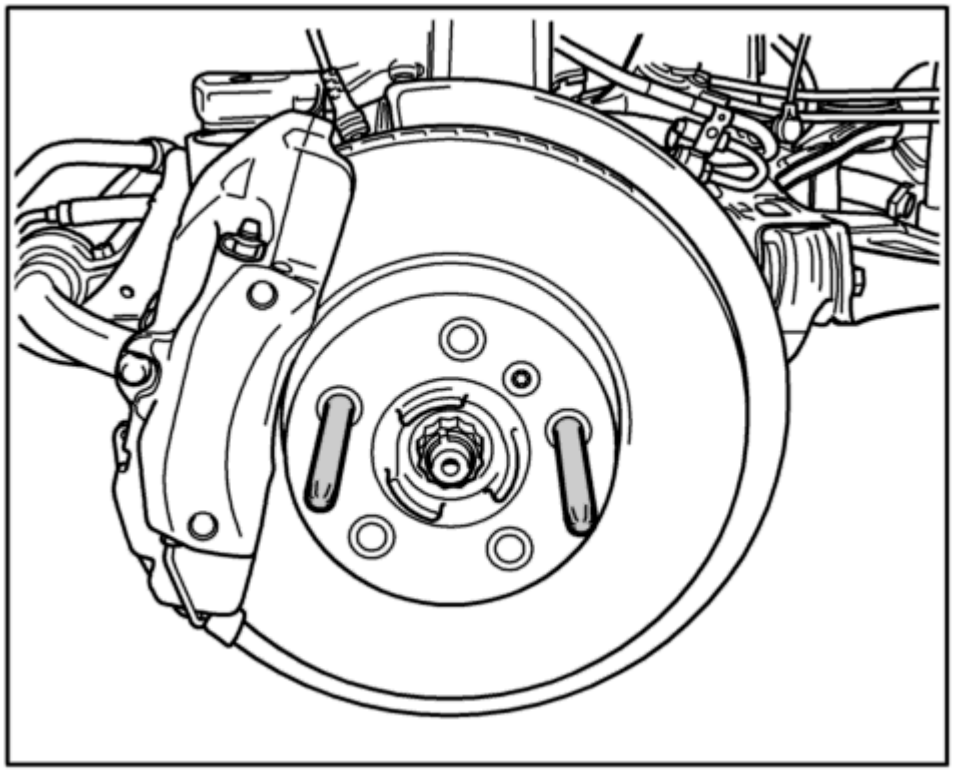


Fig. 4: Brake caliper and brake disc
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. To check the brake pads, remove the wheels. Before removal/installation of wheel, screw the assembly aids (assembly pins) **-see illustration-** , instead of two wheel bolts, into the wheel hub. During removal, first remove the three remaining wheel bolts and remove the wheel carefully without touching the brake discs. See **Fig. 4**.

2. Visually inspect the brake pads for wear.

46 IN COMPONENT ARRANGEMENT - FOOT-OPERATED PARKING BRAKE - AS OF MY 2003 (CAYENNE TIP, CAYENNE MAN, CAYENNE S TIP, CAYENNE S MAN, CAYENNE TURBO)

COMPONENT ARRANGEMENT

A foot-operated parking brake is used in the Porsche Cayenne.

Special demands for a sporty, multi-purpose vehicle have been taken into account when designing the foot-

operated parking brake. To achieve the required capabilities, it was designed as a foot-activated parking brake with an intermediate transmission ratio. The Cayenne can be parked reliably with a full load on gradients of 55%.

A cable is routed from the foot-operated lever to a deflection lever under the center console which transmits traction to a turnbuckle with a transmission ration of 3.1. Two cables are routed from the turnbuckle to the parking brakes on the rear axle.

The foot-operated parking brake is designed as a duo-servo drum brake and is integrated into the rear brake discs.

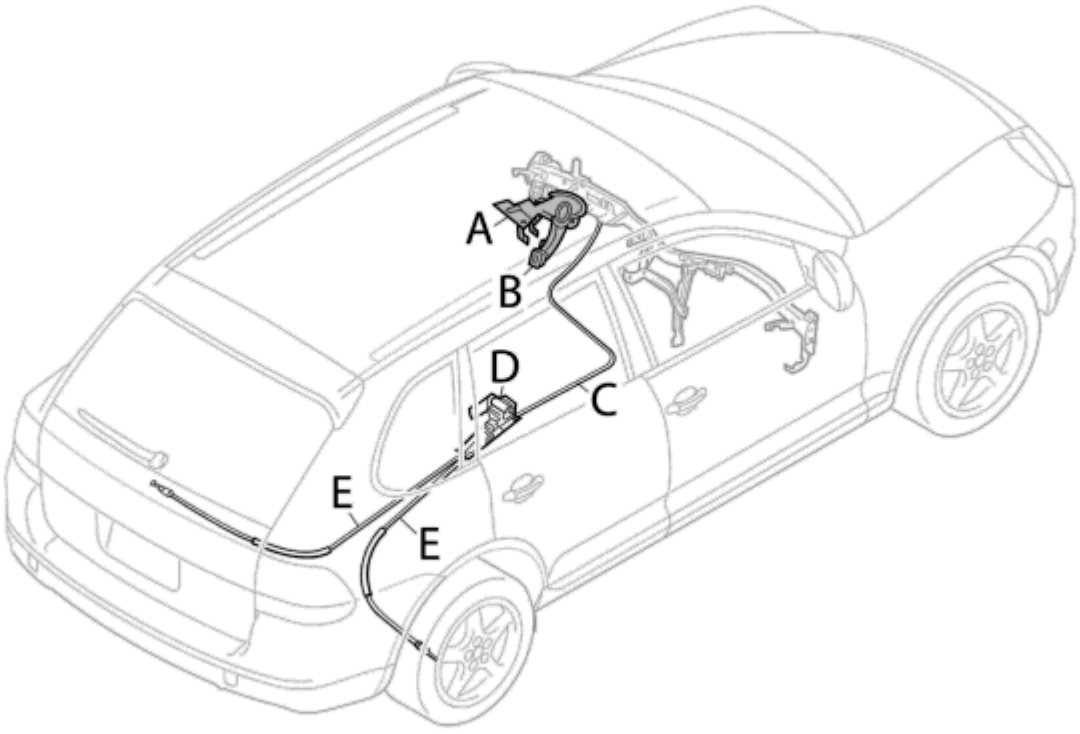


Fig. 5: Parking brake components
Courtesy of PORSCHE OF NORTH AMERICA, INC.

A - Parking brake release. Location: lower dashboard trim panel.

B - Parking brake pedal. Location: left side of driver's footwell.

C - Parking brake cable. Location: under carpet in driver's footwell.

D - Deflector. Location: under center console.

E - Brake cable, rear. Location: Each fitted from the console/deflector to a rear wheel brake.

46 IN COMPONENT ARRANGEMENT - FOOT-OPERATED PARKING BRAKE - AS OF MY 2003 (ALL MODELS)

INFORMATION

Component arrangement - foot-operated parking brake

A foot-operated parking brake is used in the Porsche Cayenne.

Special demands for a sporty, multi-purpose vehicle have been taken into account when designing the foot-operated parking brake. To achieve the required capabilities, it was designed as a foot-activated parking brake with an intermediate transmission ratio. The Cayenne can be parked reliably with a full load on gradients of 55%.

A cable is routed from the foot-operated lever to a deflection lever under the center console which transmits traction to a turnbuckle with a transmission ration of 3.1. Two cables are routed from the turnbuckle to the parking brakes on the rear axle.

The foot-operated parking brake is designed as a duo-servo drum brake and is integrated into the rear brake discs.

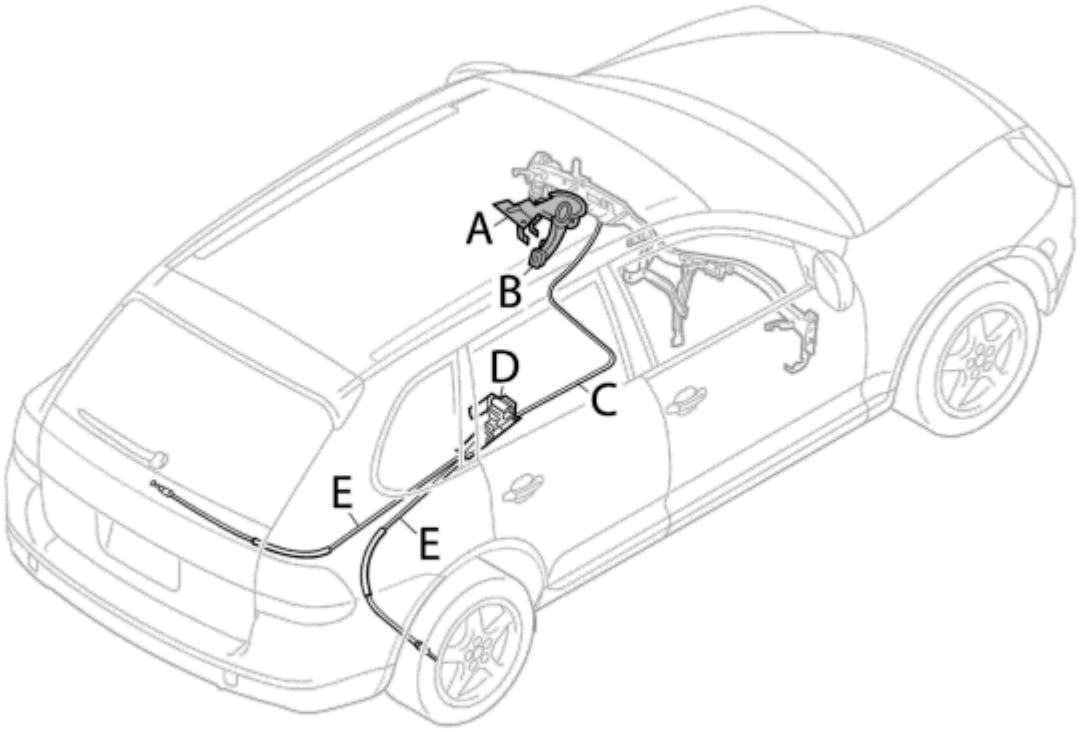


Fig. 6: Parking brake components
Courtesy of PORSCHE OF NORTH AMERICA, INC.

-A- - Parking brake release. Arrangement: In the trim for lower dashboard. See **Fig. 6**.

-B- - Parking brake pedal. Arrangement: In left of driver's footwell. See **Fig. 6**.

-C- - Parking brake cable. Arrangement: Under carpet in driver's footwell. See **Fig. 6**.

-D- - Deflector. Arrangement: Under center console. See **Fig. 6**.

-E- - Brake cable, rear. Arrangement: Fitted from the console/deflector to a rear wheel brake. See **Fig. 6**.

46 TW TIGHTENING TORQUES FOR BRAKE MECHANICS - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE S TIO TITAN)

TIGHTENING TORQUES FOR BRAKE MECHANICS

Location	Explanation	Type	Basic value	Tolerance 1	Tolerance 2
Brake caliper to wheel carrier front	Thread M16 x 1.5 (Replace screws and lock nuts after each removal.)	Tightening torque	200 ftlb.		
Brake caliper to wheel carrier rear	Thread M14 x 1.5 (Replace screws and lock nuts after each removal.)	Tightening torque	133 ftlb.		
Fastening screw, brake caliper to wheel hub (front and rear axle)	Thread M12 x 1.5 (Replace screws and lock nuts after each removal.)	Tightening torque	10.5 ftlb.		
Plug, brake disc rear	Thread M12 x 1.5 x 5.5	Tightening torque	10.5 ftlb.		
Brake cover plate to front axle	Thread M8 x 12	Tightening torque	15 ftlb.		
Caliper carrier to wheel carrier rear	Thread M8 x 16	Tightening torque	15 ftlb.		
Caliper carrier to wheel carrier rear	Thread M6 x 12	Tightening torque	6 ftlb.		
Retaining pin for front brake pads	Thread M8 x 15 (always replace retaining pin)	Tightening torque	22 ftlb.	+/-1.5 ftlb.	
Speed sensor to front and rear axles	Thread M6 x 16	Tightening torque	6 ftlb.		
Brake hose holder to wheel carrier front axle	Thread M6 x 12	Tightening torque	6.5 ftlb.		
Cable holder to wheel carrier front axle	Thread M8 x 14	Tightening torque	22 ftlb.		
Brake booster	Thread M8	Tightening torque	19 ftlb.	+/-2 ftlb.	
Mount for hydraulic unit support	Thread M6 x 10	Tightening torque	7.5 ftlb.		
Mount for intermediate piece	Thread M6 x 14	Tightening torque	7.5 ftlb.		
Foot-operated parking brake pedal to mounting bracket	Thread M8 x 40	Tightening torque	17 ftlb.		
Foot-operated parking brake pedal to mounting bracket	Thread M8 x 16	Tightening torque	17 ftlb.		
Deflector to body (tunnel)	Thread M8 x 20	Tightening torque	17 ftlb.		

Pedals (pedal bearing block) to firewall	Thread M8 x 20	Tightening torque	17 ftlb.	+/-2 ftlb.	
Clutch slave cylinder to pedal bearing block	Thread M6 x 25	Tightening torque	7.5 ftlb.	+/-1.0 ftlb.	
Screws for articulated strut to pedal bearing block		Tightening torque	7.5 ftlb.	+/-1.0 ftlb.	
Brake lever shaft bolt (inserted from right to left)	Thread M8	Tightening torque	15 ftlb.	+/-2 ftlb.	
Clip (holder) stop light switch		Tightening torque	6 ftlb.	+/-0.5 ftlb.	
Wheel to wheel hub	Thread M14 x 1.5	Tightening torque	118 ftlb.		
ABS cable holder to wheel carrier rear axle	Thread M6 x 16	Tightening torque	6 ftlb.		
Brake line holder to brake caliper rear axle	Thread M6 x 12	Tightening torque	6 ftlb.		
Cable holder for speed sensor/ABS to control arm rear (upper front)	Thread M6	Tightening torque	6 ftlb.		

46 TW TECHNICAL DATA/BRAKE WEAR LIMITS - AS OF MY 2003 (CAYENNE TIP, CAYENNE MAN)

TECHNICAL VALUES

Technical data for Cayenne 17" brake system (V6)

Location	Explanation	Type	Basic value	Tolerance 1	Tolerance 2
Operating brake (foot brake) with grey cast iron brake discs (standard brake) with PSM (Porsche Stability Management) as standard.	Hydraulic dual-circuit brake system with diagonal brake-circuit division. Vacuum brake booster, internally ventilated brake discs with six-piston aluminum monobloc fixed-calliper brake at front axle and four-piston aluminum monobloc fixed-calliper brake at rear axle.				
PSM	Porsche Stability Management (PSM) as standard with functions ABS, ASR (Traction Control TC, engine drag torque control MSR, ABD, lock control (longitudinal). Optional: level adjustment, infinite shock absorber adjustment, rear axle block.				
Tandem-brake booster Ø (vacuum)			9/10 inch		

Boost ratio			7		
Brake master cylinder Ø			26.99 mm		
Brake-circuit division			18/18 mm		
Brake master cylinder Ø front			330 mm		
Brake discs Ø rear			330 mm		
Brake disc thickness front			32 mm		
Brake disc thickness rear			28 mm		
Thickness tolerance of brake disc max.			0.01 mm		
Effective brake disc Ø front			265.6 mm		
Effective brake disc Ø rear			280.4 mm		
Piston Ø in brake calliper front	2 x 34 mm + 2 x 36 mm + 2 x 38 mm				
Piston Ø in brake calliper rear	2 x 28 mm +2 x 30 mm				
Brake pad area front			384 cm^2		
Brake pad area rear			188 cm^2		
Total brake pad area			572 cm^2		

Technical data/wear limits for Cayenne 17" brake system (V6)

Location	Explanation	Type	Basic value	Tolerance 1	Tolerance 2
Pad thickness front	Wear limit 2 mm		approx. 10.5 mm		
Pad thickness rear	Wear limit 2 mm		approx. 11.5 mm		
Brake disc thickness front	new		32 mm		
Brake disc thickness rear	new		28 mm		
Brake disc minimum thickness after machining, front	Only as new brake discs may be reworked! Only rework the brake disc symmetrically, evenly from both sides!		31.6 mm		

Brake disc minimum thickness after machining, front	Only as new brake discs may be reworked! Only rework the brake disc symmetrically, evenly from both sides!		27.6 mm		
Brake disc wear dimension front			30 mm		
Brake disc wear dimension rear			26 mm		
Peak-to-valley surface roughness of brake disc after machining max.			0.006 mm		
Thickness tolerance of brake discs after machining max.			0.01 mm		
Lateral runout of brake disc max.			0.03 mm		
Lateral runout of wheel hub max.			0.02 mm		
Lateral runout of brake disc when installed max.			0.06 mm		
Pushrod play	not adjustable				
Parking brake (foot-operated parking brake)	Drum brake acting mechanically on both rear wheels				
Parking-brake drum Ø	Wear limit 211 mm		210 mm		
Brake shoe width			30 mm		
Brake pad thickness	Wear limit 1 mm		3 mm		

46 TW TECHNICAL DATA/BRAKE WEAR LIMITS - AS OF MY 2003 (CAYENNE S TIP, CAYENNE S MAN, CAYENNE S TIO TITAN)

TECHNICAL VALUES

Technical data for 18" brake system (V8 + Turbo)

Location	Explanation	Type	Basic value	Tolerance 1	Tolerance 2
Operating brake (foot brake) with grey cast iron brake discs (standard brake) with PSM (Porsche Stability Management) as standard	Hydraulic dual-circuit brake system with diagonal brake-circuit division. Vacuum brake booster, internally ventilated brake discs with six-piston aluminum monobloc fixed-calliper brake at front axle and four-piston aluminum monobloc fixed-calliper brake at rear axle.				
	Porsche Stability Management (PSM) as standard with functions ABS, ASR				

PSM	(Traction Control TC, engine drag torque control MSR, ABD, lock control (longitudinal). Optional: level adjustment, infinite shock absorber adjustment, rear axle block.				
Tandem-brake booster Ø (vacuum)			9/10 inch		
Boost ratio			7		
Brake master cylinder Ø			26.99 mm		
Brake-circuit division			18/18 mm		
Brake master cylinder Ø front			350 mm		
Brake discs Ø rear			330 mm		
Brake disc thickness front			34 mm		
Brake disc thickness rear			28 mm		
Thickness tolerance of brake disc max.			0.01 mm		
Effective brake disc Ø front			284.6 mm		
Effective brake disc Ø rear			280.4 mm		
Piston Ø in brake calliper front	2 x 30 mm + 2 x 34 mm + 2 x 38 mm				
Piston Ø in brake calliper rear	2 x 28 mm +2 x 30 mm				
Brake pad area front			428 cm^2		
Brake pad area rear			189 cm^2		
Total brake pad area			616 cm^2		

Technical data/wear limits for 18" brake system (V8 + Turbo)

Location	Explanation	Type	Basic value	Tolerance 1	Tolerance 2
Pad thickness front	Wear limit 2 mm		approx. 10.5 mm		

Pad thickness rear	Wear limit 2 mm		approx. 11.5 mm		
Brake disc thickness front	new		34 mm		
Brake disc thickness rear	new		28 mm		
Brake disc minimum thickness after machining, front	Only as new brake discs may be reworked! Only rework the brake disc symmetrically, evenly from both sides!		33.6 mm		
Brake disc minimum thickness after machining, front	Only as new brake discs may be reworked! Only rework the brake disc symmetrically, evenly from both sides!		27.6 mm		
Brake disc wear dimension front			32 mm		
Brake disc wear dimension rear			26 mm		
Peak-to-valley surface roughness of brake disc after machining max.			0.006 mm		
Thickness tolerance of brake discs after machining max.			0.01 mm		
Lateral runout of brake disc max.			0.03 mm		
Lateral runout of wheel hub max.			0.02 mm		
Lateral runout of brake disc when installed max.			0.06 mm		
Pushrod play	not adjustable				
Parking brake (foot-operated parking brake)	Drum brake acting mechanically on both rear wheels				
Parking-brake drum Ø	Wear limit 211 mm		210 mm		
Brake shoe width			30 mm		
Brake pad thickness	Wear limit 1 mm		3 mm		

46 TW TECHNICAL DATA/BRAKE WEAR LIMITS - AS OF MY 2003 (CAYENNE TURBO S)

TECHNICAL VALUES

Technical data for 19" brake system (Turbo Kit + Turbo S)

Location	Explanation	Type	Basic value	Tolerance 1	Tolerance 2
Operating brake (foot	Hydraulic dual-cicuit brake system with diagonal brake-circuit division, Vacuum				

brake) with grey cast iron brake discs (standard brake) with PSM (Porsche Stability Management) as standard	brake booster, internally ventilated brake discs with six-piston aluminum monobloc fixed-calliper brake at front axle and four-piston aluminum monobloc fixed-calliper brake at rear axle.				
PSM	Porsche Stability Management (PSM) as standard with functions ABS, ASR (Traction Control TC, engine drag torque control MSR, ABD, lock control (longitudinal). Optional: level adjustment, infinite shock absorber adjustment, rear axle block.				
Tandem-brake booster Ø (vacuum)			9/10 inch		
Boost ratio			7		
Brake master cylinder Ø			26.99 mm		
Brake-circuit division			18/18 mm		
Brake master cylinder Ø front			380 mm		
Brake discs Ø rear			356 mm		
Brake disc thickness front			38 mm		
Brake disc thickness rear			28 mm		
Thickness tolerance of brake disc max.			0.01 mm		
Effective brake disc Ø front			304 mm		
Effective brake disc Ø rear			306 mm		
Piston Ø in brake calliper front	2 x 32 mm + 2 x 36 mm + 2 x 38 mm				
Piston Ø in brake calliper rear	2 x 28 mm +2 x 32 mm				
Brake pad area front			492 cm^2		
Brake pad area rear			192 cm^2		
Total brake pad area			684 cm^2		

Technical data/wear limits for 19" brake system (Turbo Kit + Turbo S)

Location	Explanation	Type	Basic value	Tolerance 1	Tolerance 2
Pad thickness front	Wear limit 2 mm		approx. 11.25 mm		
Pad thickness rear	Wear limit 2 mm		approx. 12.2 mm		
Brake disc thickness front	new		38 mm		
Brake disc thickness rear	new		28 mm		
Brake disc minimum thickness after machining, front	Only as new brake discs may be reworked! Only rework the brake disc symmetrically, evenly from both sides!		37.6 mm		
Brake disc minimum thickness after machining, front	Only as new brake discs may be reworked! Only rework the brake disc symmetrically, evenly from both sides!		27.6 mm		
Brake disc wear dimension front			36 mm		
Brake disc wear dimension rear			26 mm		
Peak-to-valley surface roughness of brake disc after machining max.			0.006 mm		
Thickness tolerance of brake disc after machining max.			0.01 mm		
Lateral runout of brake disc max.			0.03 mm		
Lateral runout of wheel hub max.			0.02 mm		
Lateral runout of brake disc when installed max.			0.06 mm		
Pushrod play	not adjustable				
Parking brake (foot-operated parking brake)	Drum brake acting mechanically on both rear wheels				
Parking-brake drum Ø	Wear limit 211 mm		210 mm		
Brake shoe width			30 mm		
Brake pad thickness	Wear limit 1 mm		3 mm		

46 TW TECHNICAL DATA/BRAKE WEAR LIMITS - AS OF MY 2003 (CAYENNE TURBO)

TECHNICAL VALUES

Technical data for 18" brake system (V8 + Turbo)

Location	Explanation	Type	Basic value	Tolerance 1	Tolerance 2
Operating brake (foot brake) with grey cast iron brake discs (standard brake) with PSM (Porsche Stability Management) as standard	Hydraulic dual-circuit brake system with diagonal brake-circuit division. Vacuum brake booster, internally ventilated brake discs with six-piston aluminum monobloc fixed-calliper brake at front axle and four-piston aluminum monobloc fixed-calliper brake at rear axle.				
PSM	Porsche Stability Management (PSM) as standard with functions ABS, ASR (Traction Control TC, engine drag torque control MSR, ABD, lock control (longitudinal). Optional: level adjustment, infinite shock absorber adjustment, rear axle block.				
Tandem-brake booster Ø (vacuum)			9/10 inch		
Boost ratio			7		
Brake master cylinder Ø			26.99 mm		
Brake-circuit division			18/18 mm		
Brake master cylinder Ø front			350 mm		
Brake discs Ø rear			330 mm		
Brake disc thickness front			34 mm		
Brake disc thickness rear			28 mm		
Thickness tolerance of brake disc max.			0.01 mm		
Effective brake disc Ø front			284.6 mm		
Effective brake disc Ø rear			280.4 mm		
Piston Ø in brake calliper front	2 x 30 mm + 2 x 34 mm + 2 x 38 mm				
Piston Ø in brake calliper rear	2 x 28 mm +2 x 30 mm				
Brake pad area front			428 cm^2		

Brake pad area rear			189 cm^2		
Total brake pad area			616 cm^2		

Technical data for 19" brake system (Turbo Kit + Turbo S)

Location	Explanation	Type	Basic value	Tolerance 1	Tolerance 2
Operating brake (foot brake) with grey cast iron brake discs (standard brake) with PSM (Porsche Stability Management) as standard	Hydraulic dual-cicuit brake system with diagonal brake-circuit division. Vacuum brake booster, internally ventilated brake discs with six-piston aluminum monobloc fixed-calliper brake at front axle and four-piston aluminum monobloc fixed-calliper brake at rear axle.				
PSM	Porsche Stability Management (PSM) as standard with functions ABS, ASR (Traction Control TC, engine drag torque control MSR, ABD, lock control (longitudinal). Optional: level adjustment, infinite shock absorber adjustment, rear axle block.				
Tandem-brake booster Ø (vacuum)			9/10 inch		
Boost ratio			7		
Brake master cylinder Ø			26.99 mm		
Brake-circuit division			18/18 mm		
Brake master cylinder Ø front			380 mm		
Brake discs Ø rear			356 mm		
Brake disc thickness front			38 mm		
Brake disc thickness rear			28 mm		
Thickness tolerance of brake disc max.			0.01 mm		
Effective brake disc Ø front			304 mm		
Effective brake disc Ø rear			306 mm		

Piston Ø in brake calliper front	2 x 32 mm + 2 x 36 mm + 2 x 38 mm				
Piston Ø in brake calliper rear	2 x 28 mm +2 x 32 mm				
Brake pad area front			492 cm^2		
Brake pad area rear			192 cm^2		
Total brake pad area			684 cm^2		

Technical data/wear limits for 18" brake system (V8 + Turbo)

Location	Explanation	Type	Basic value	Tolerance 1	Tolerance 2
Pad thickness front	Wear limit 2 mm		approx. 10.5 mm		
Pad thickness rear	Wear limit 2 mm		approx. 11.5 mm		
Brake disc thickness front	new		34 mm		
Brake disc thickness rear	new		28 mm		
Brake disc minimum thickness after machining, front	Only as new brake discs may be reworked! Only rework the brake disc symmetrically, evenly from both sides!		33.6 mm		
Brake disc minimum thickness after machining, front	Only as new brake discs may be reworked! Only rework the brake disc symmetrically, evenly from both sides!		27.6 mm		
Brake disc wear dimension front			32 mm		
Brake disc wear dimension rear			26 mm		
Peak-to-valley surface roughness of brake disc after machining max.			0.006 mm		
Thickness tolerance of brake discs after machining max.			0.01 mm		
Lateral runout of brake disc max.			0.03 mm		
Lateral runout of wheel hub max.			0.02 mm		
Lateral runout of brake disc when installed max.			0.06 mm		

Pushrod play	not adjustable				
Parking brake (foot-operated parking brake)	Drum brake acting mechanically on both rear wheels				
Parking-brake drum Ø	Wear limit 211 mm		210 mm		
Brake shoe width			30 mm		
Brake pad thickness	Wear limit 1 mm		3 mm		

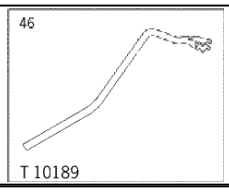
Technical data/wear limits for 19" brake system (Turbo Kit + Turbo S)

Location	Explanation	Type	Basic value	Tolerance 1	Tolerance 2
Pad thickness front	Wear limit 2 mm		approx. 11.25 mm		
Pad thickness rear	Wear limit 2 mm		approx. 12.2 mm		
Brake disc thickness front	new		38 mm		
Brake disc thickness rear	new		28 mm		
Brake disc minimum thickness after machining, front	Only as new brake discs may be reworked! Only rework the brake disc symmetrically, evenly from both sides!		37.6 mm		
Brake disc minimum thickness after machining, front	Only as new brake discs may be reworked! Only rework the brake disc symmetrically, evenly from both sides!		27.6 mm		
Brake disc wear dimension front			36 mm		
Brake disc wear dimension rear			26 mm		
Peak-to-valley surface roughness of brake disc after machining max.			0.006 mm		
Thickness tolerance of brake disc after machining max.			0.01 mm		
Lateral runout of brake disc max.			0.03 mm		
Lateral runout of wheel hub max.			0.02 mm		
Lateral runout of brake disc when installed max.			0.06 mm		
Pushrod play	not adjustable				
Parking brake (foot-operated parking brake)	Drum brake acting mechanically on both rear wheels				
Parking-brake drum Ø	Wear limit 211 mm		210 mm		
Brake shoe width			30 mm		

Brake pad thickness	Wear limit 1 mm			3 mm		

46 05 19 REMOVING AND INSTALLING BRAKE PEDAL - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE S TIO TITAN)

TOOLS

Designation	Type	Number	Explanation	
unlocking tool	VW-tool	T10189		

PRELIMINARY WORK

1. Move the driver's seat back.

2. Remove the lower cover. Refer to **70 22 19 Removing and installing cover under dashboard - as of MY 2003 (All Models)** . At the diagnostic socket just unclip the connector from the rear.

REMOVING BRAKE PEDAL

NOTE:

- ***For better accessibility, remove the lower cover under the steering column.***

Installation Location:

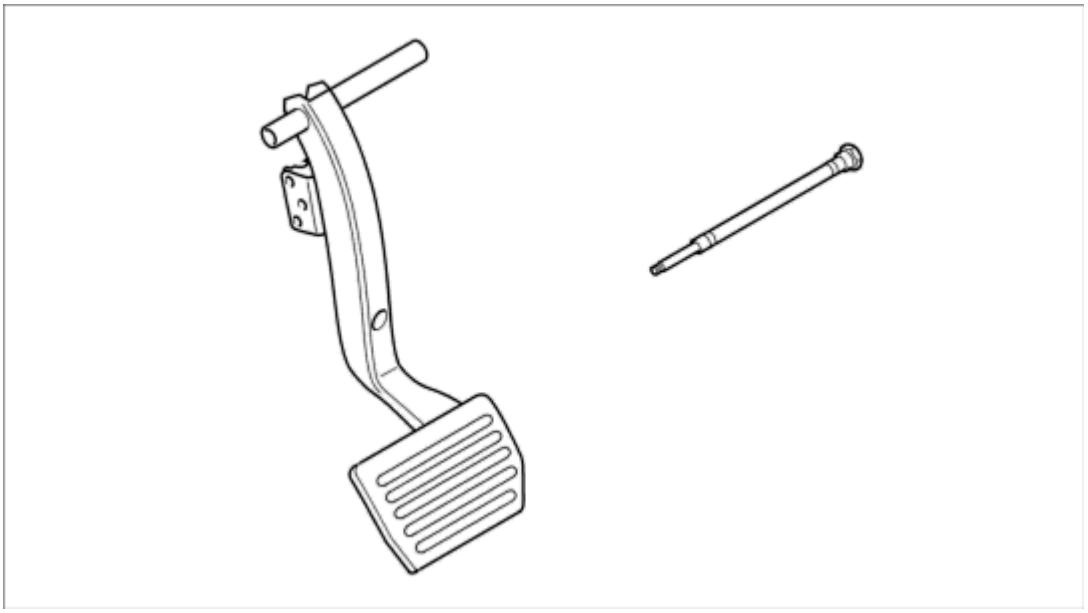


Fig. 7: Brake pedal and pin
Courtesy of PORSCHE OF NORTH AMERICA, INC.

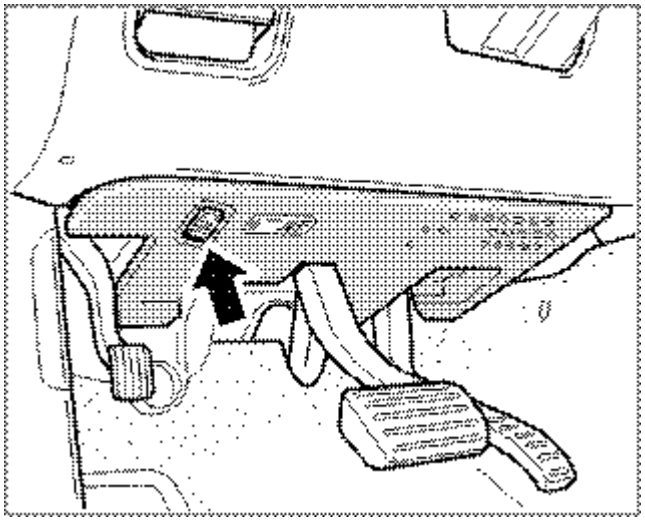


Fig. 8: Dash lower cover and diagnostic socket
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Remove the lower cover. Refer to **70 22 19 Removing and installing cover under dashboard - as of MY 2003 (All Models)** . At the diagnostic socket **-arrow-** just unclip the connector from the rear. See **Fig. 8**.

2. Remove the lower cover (in knee area) and the deformation element. Refer to **70 19 19 Removing and installing trim under dashboard - as of MY 2003 (All Models)** .

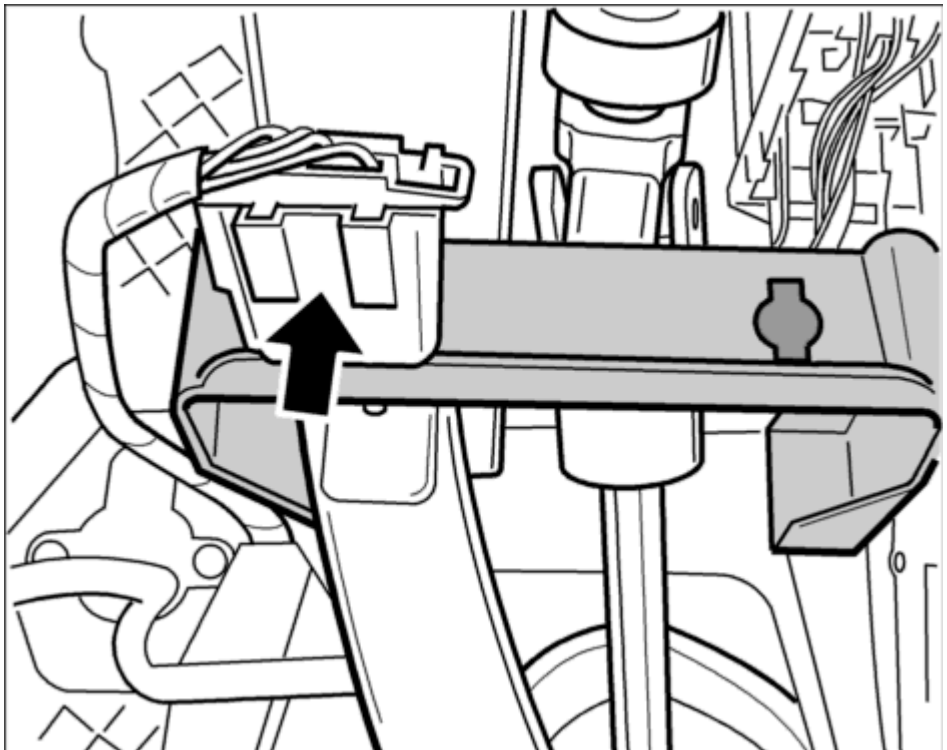


Fig. 9: Clip for stop light switch
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Remove the holder for the stop light switch and unclip the connector **-arrow-** . Refer to **94 36 19 Removing and installing brake light switch - as of MY 2003 (All Models)** . See **Fig. 9**.

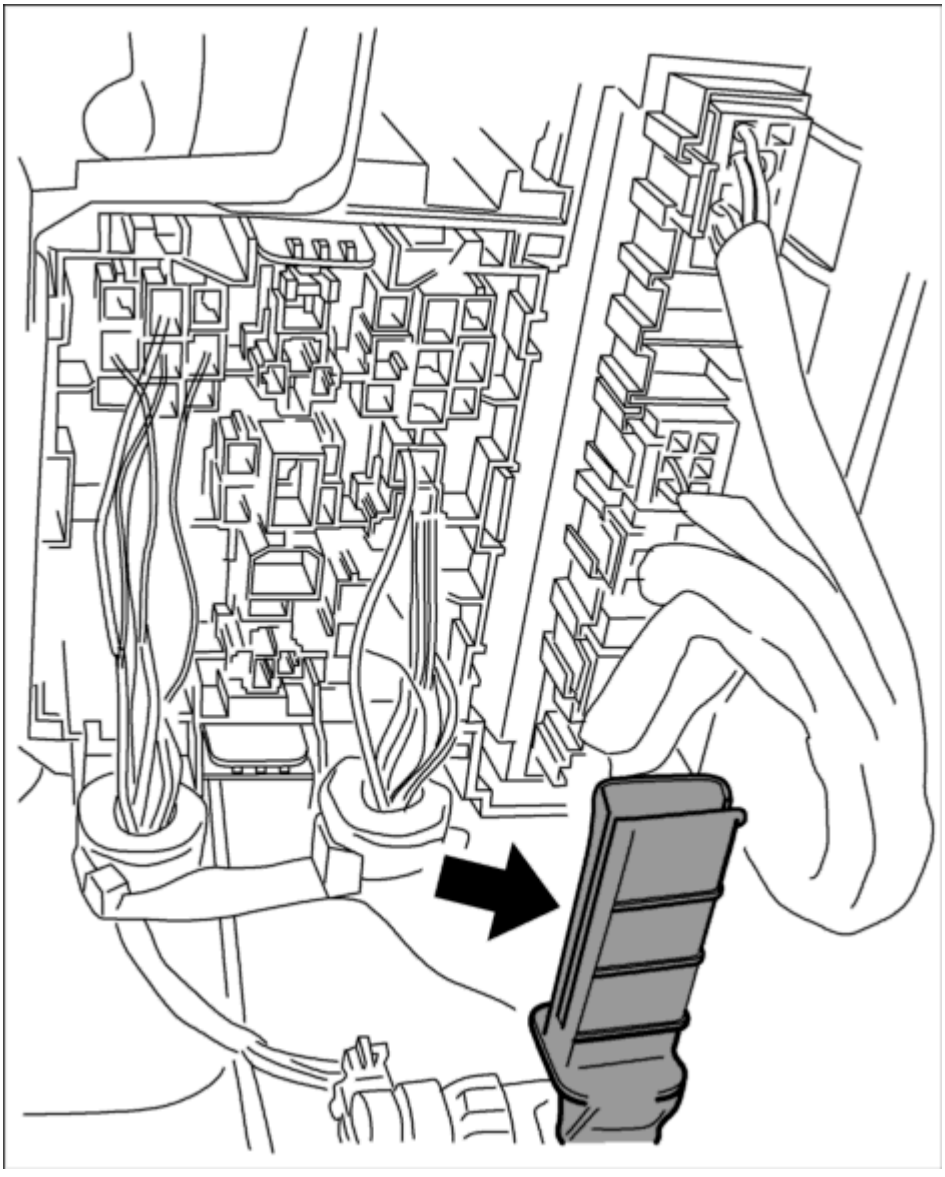


Fig. 10: Lower cover holder
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Remove the holder **-arrow-** of the lower cover for the dashboard. See **Fig. 10**.

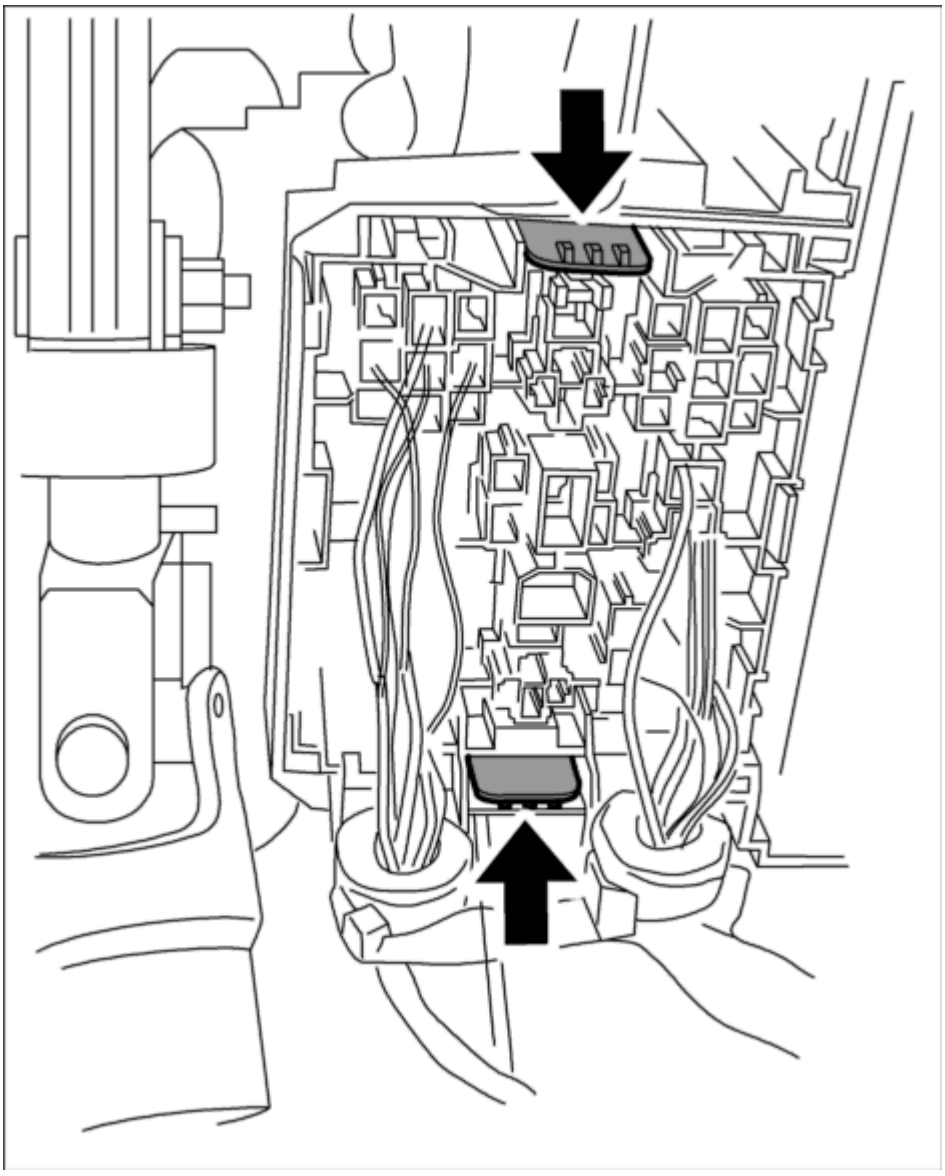


Fig. 11: Relay carrier tabs
Courtesy of PORSCHE OF NORTH AMERICA, INC.

5. Remove relay carrier **-arrows-** . Refer to **97 90 19 Removing and installing relay carrier, plenum chamber E-box - as of MY 2003 (All Models)** . See **Fig. 11**.

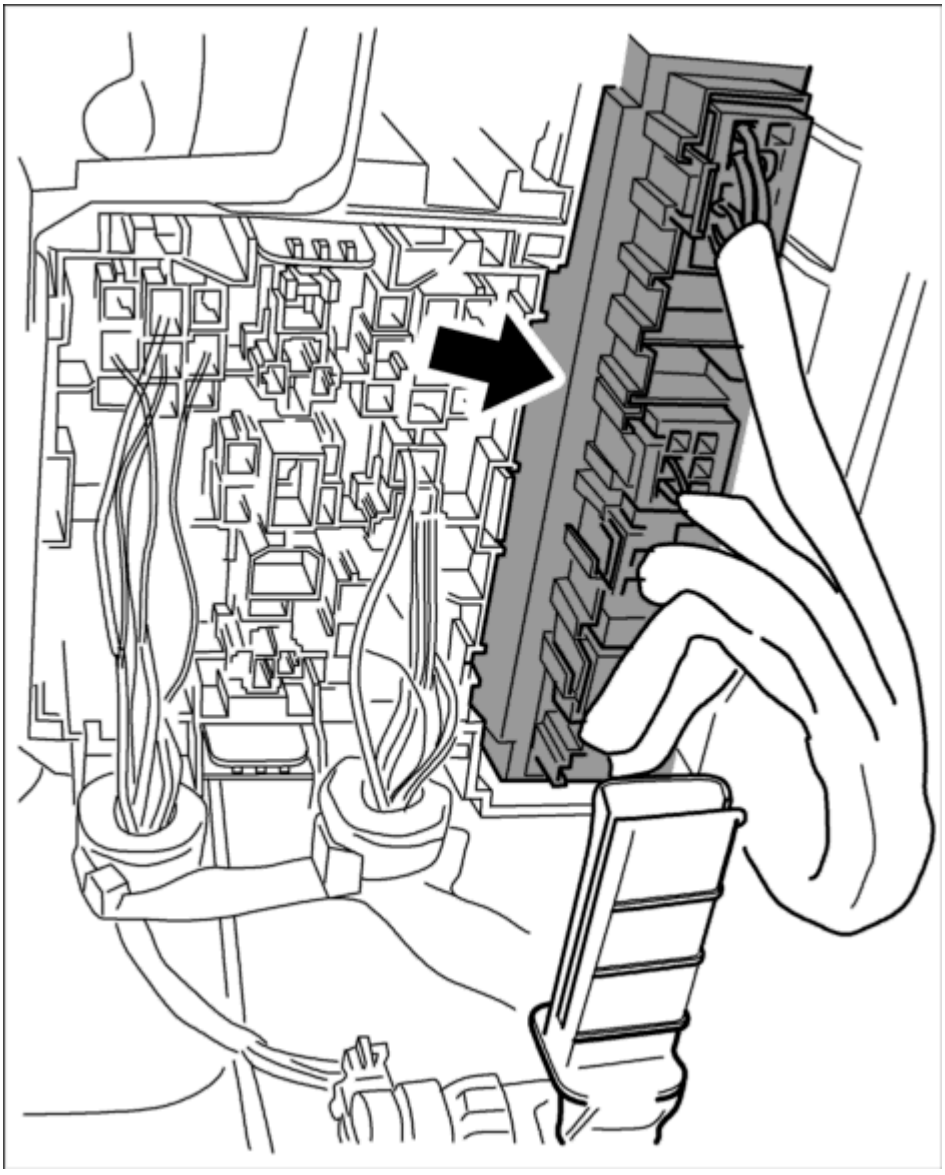


Fig. 12: Control units
Courtesy of PORSCHE OF NORTH AMERICA, INC.

6. Remove both control units **-arrow-** , on the right side under the dashboard. Refer to **96 66 19 Removing and installing Kessy/immobiliser control unit - as of MY 2003 (All Models)** . Refer to **97 10 19 Removing and installing vehicle electrical system control unit - as of MY 2003 (All Models)** . See **Fig. 12**.

7. Release the support (relay carrier/Kessy control unit/immobilizer/vehicle electrical system control unit) (left side and front engaged, right side screwed) and let them hang. In this way, the brake pedal shaft can be pushed out toward the center of the vehicle (cardan tunnel).

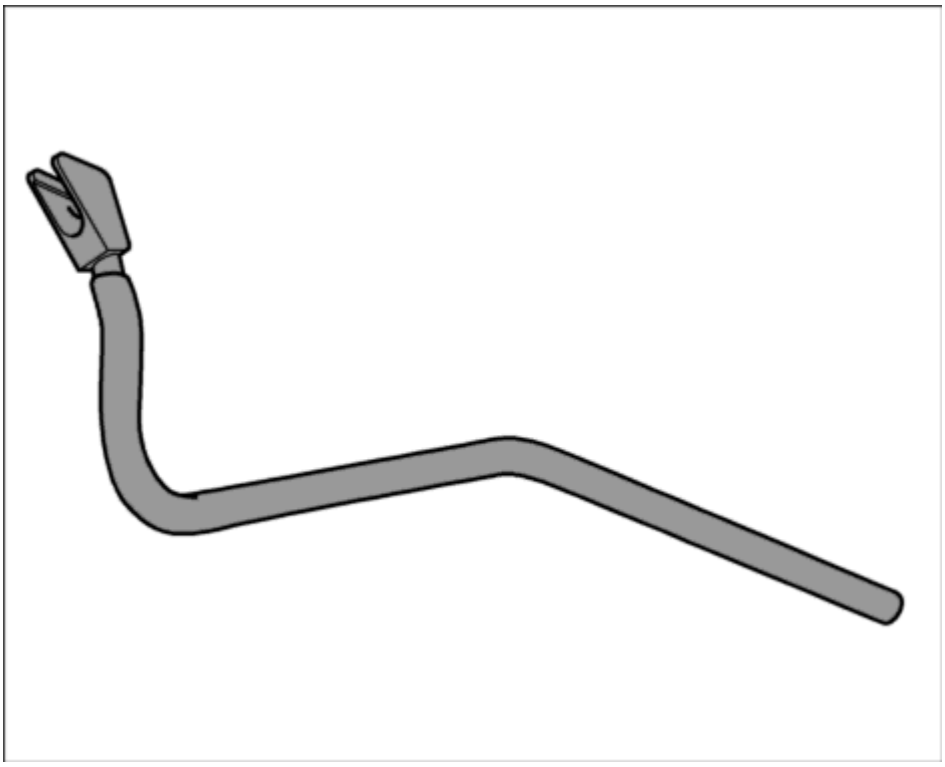


Fig. 13: Unlocking tool T10189
Courtesy of PORSCHE OF NORTH AMERICA, INC.

8. Disengage the brake pushrod from the brake pedal mounting using the **unlocking tool T10189**. Observe the following procedure for this purpose:

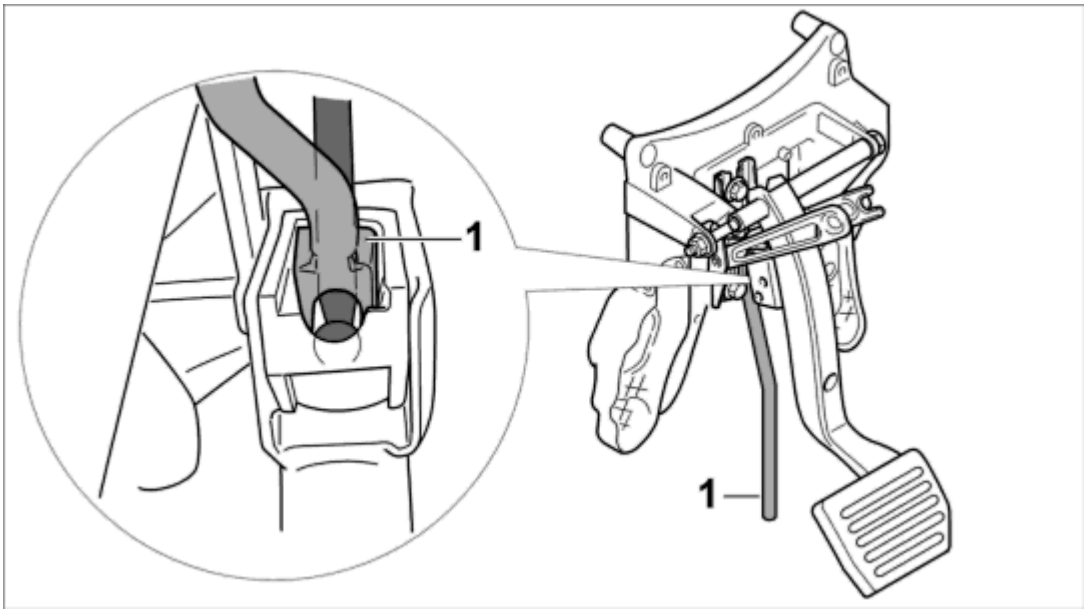


Fig. 14: Positioning unlocking tool T10189
Courtesy of PORSCHE OF NORTH AMERICA, INC.

-1- - **unlocking tool T10189** for brake pedal.

- Position the **unlocking tool T10189** **-1-** so that the fork sits in correct position in the brake pedal mounting (in the inset, the fork in contact, view against the direction of travel). See **Fig. 14**.

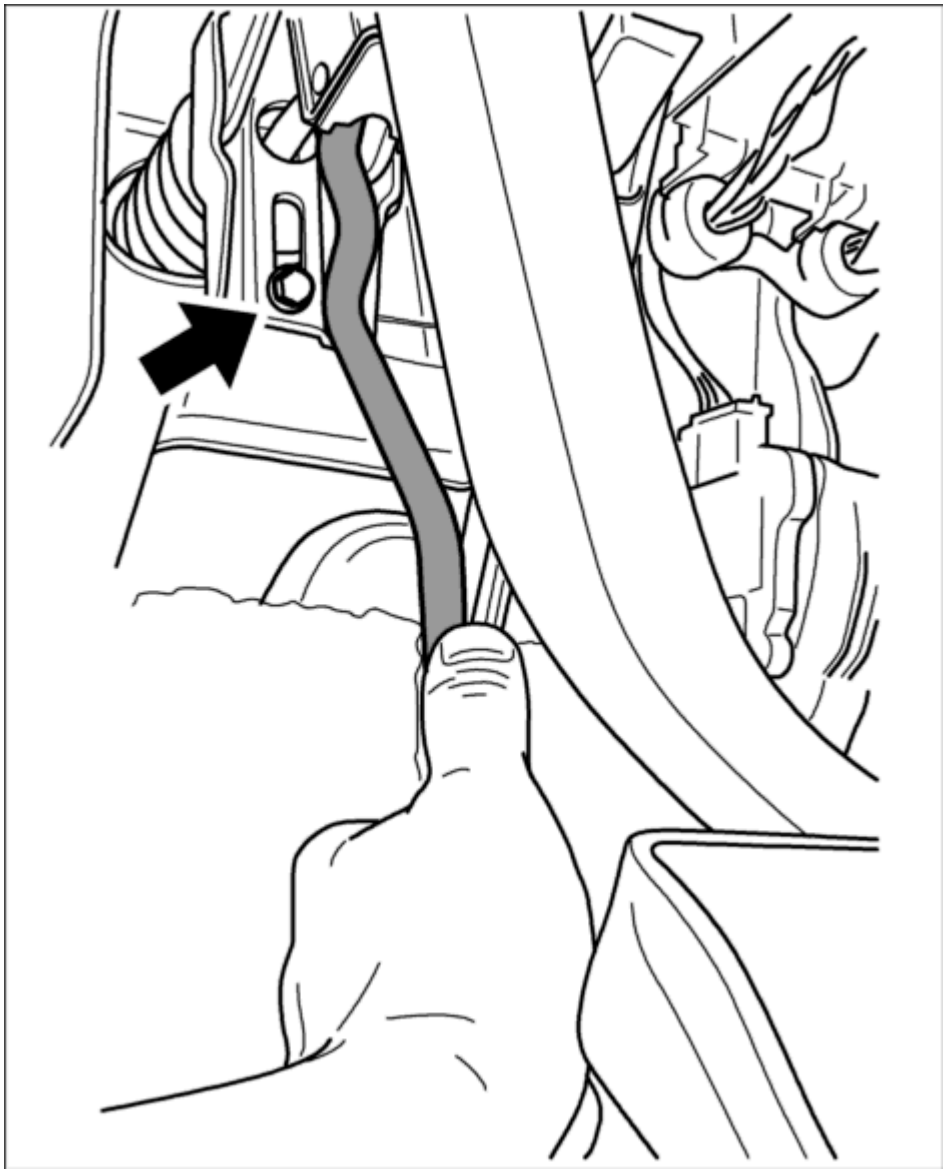


Fig. 15: Unlocking tool T10189 force deflection point
Courtesy of PORSCHE OF NORTH AMERICA, INC.

- Position the **unlocking tool T10189** so that it is located in the right mold of the support and is perpendicular to the vehicle floor. Like this, the force deflection point (bending in the unlocking tool T10189) is precisely next to the screw head **-arrow-** . See **Fig. 15**.



Fig. 16: Releasing pushrod from brake pedal
Courtesy of PORSCHE OF NORTH AMERICA, INC.

- When pressing forward on the lever (unlocking tool) (in direction of travel!), the brake pedal mounting is pressed apart and the ball of the pushrod is released. At the same time, pull the brake pedal to the rear (against the direction of travel!) and release the brake pedal from the pushrod.

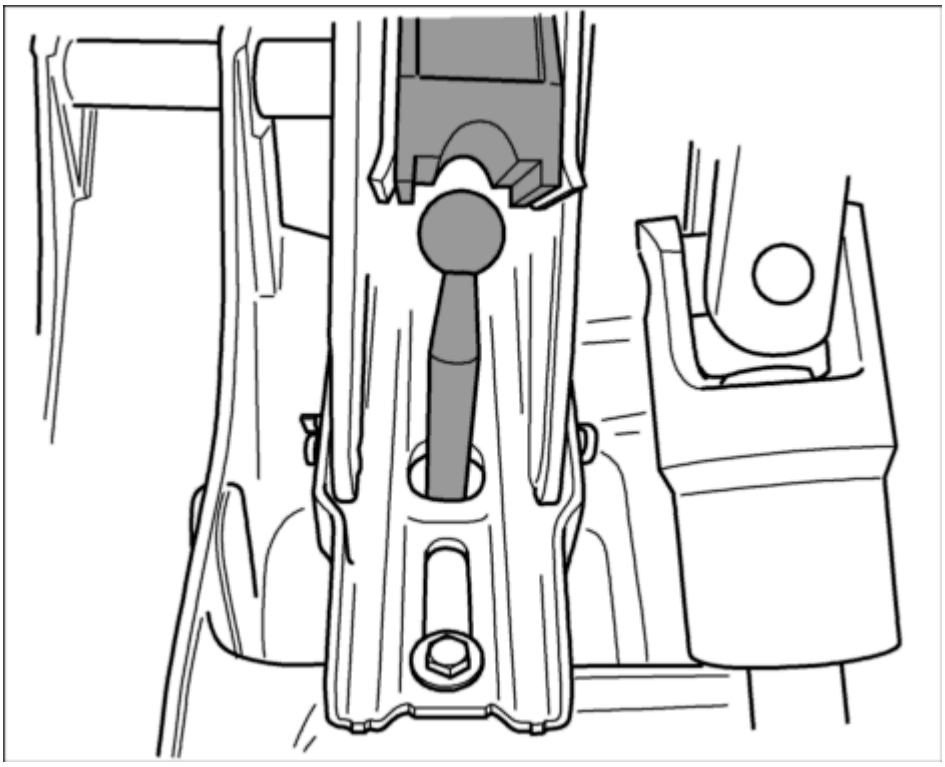


Fig. 17: Brake pedal released from the pushrod
Courtesy of PORSCHE OF NORTH AMERICA, INC.



Fig. 18: Brake pedal shaft (pin)
Courtesy of PORSCHE OF NORTH AMERICA, INC.

9. Counter the brake pedal shaft (pin) **-arrows-** on the right side and slightly loosen to the left **-(arrows)-** . The nut remains on the brake pedal shaft to protect the thread. See **Fig. 18**.

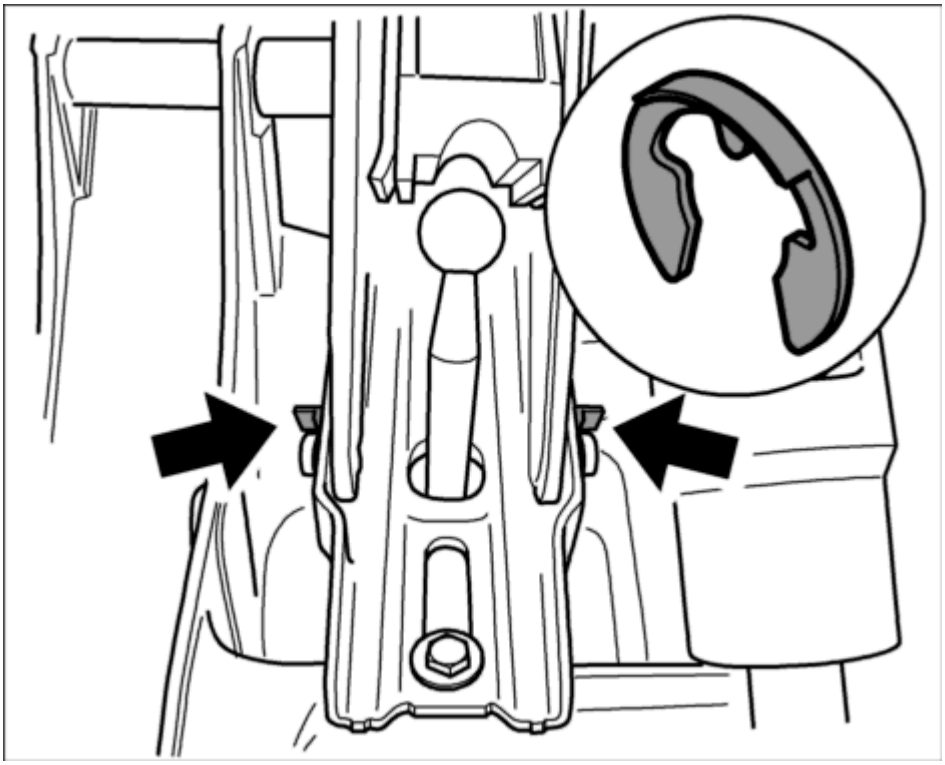


Fig. 19: Retaining pin retainer
Courtesy of PORSCHE OF NORTH AMERICA, INC.

10. Loosen the two upward running struts of the articulated strut and let them hang. To do this, remove the retainer on each retaining pin, remove the retaining pins, and let the struts hang down.

11. Using a hammer, force out the brake pedal shaft a few millimeters with short, heavy blows from left to right.

12. Place a screwdriver under the head of the brake pedal shaft (right side). Remove the nut, and lever out the brake pedal shaft carefully toward the center of the vehicle (cardan tunnel).

13. Carefully press out the brake pedal shaft so that the brake pedal can be removed.

INSTALLING BRAKE PEDAL

Installation is in reverse order.

NOTE:

- ***Do not grease or spray the brake pedal shaft (pin).***
- ***For vehicles with automatic transmission a spacer tube is used instead of the clutch pedal.***
- ***Use new lock nuts.***

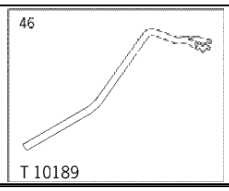
- ***Observe correct tightening torques --> 46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan).***
- ***Tightening torque for brake pedal shaft (pin): 15 ± 2 ftlb.***

SUBSEQUENT WORK

Remove the lower cover. Refer to **70 22 19 Removing and installing cover under dashboard - as of MY 2003 (All Models)** .

46 11 15 ADJUSTING THE BRAKE PUSHROD - AS OF MY 2003 (ALL MODELS)

TOOLS

Designation	Type	Number	Explanation	
unlocking tool	VW-tool	T10189		

ADJUSTING

Adjusting the brake pushrod

NOTE:

- ***The brake pushrod play is strictly specified.***
- ***The play cannot be adjusted.***

The brake pushrod can be removed from the brake pedal with the **unlocking tool T10189**.

46 36 19 REMOVING AND INSTALLING THE FRONT DISC BRAKE PADS - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE TURBO S)

TOOLS

Designation	Type	Number	Explanation	
piston resetting fixture (replaces P83)	commercially available tool	NR.144		

PRELIMINARY WORK

Preliminary work

Remove wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

REMOVING

Removing front brake pads

The core of the warning contact line must not be left exposed! Worn insulation is not significant!

If necessary, remove a little brake fluid from the expansion tank by suction to prevent overflow when the disc brake pad is pushed back!

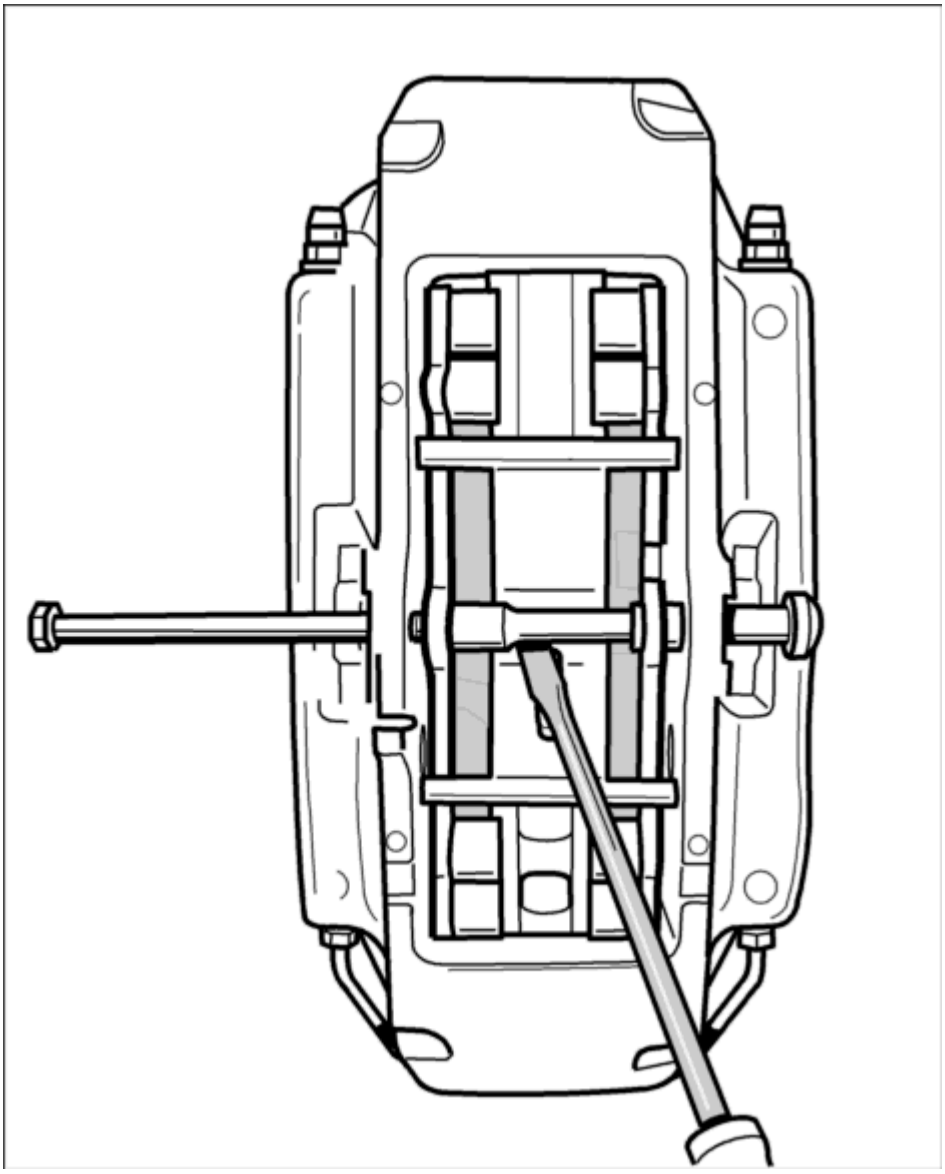


Fig. 20: Holding down expanding springs with a screwdriver
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Remove fastening screw at retainer pin. Then screw in auxiliary screw M8. Hold down expanding springs with a screwdriver **-see illustration-** and remove retainer pin. See **Fig. 20**.

2. Remove warning contact line from brake caliper and expanding spring. Remove warning contacts from the brake disc pads.

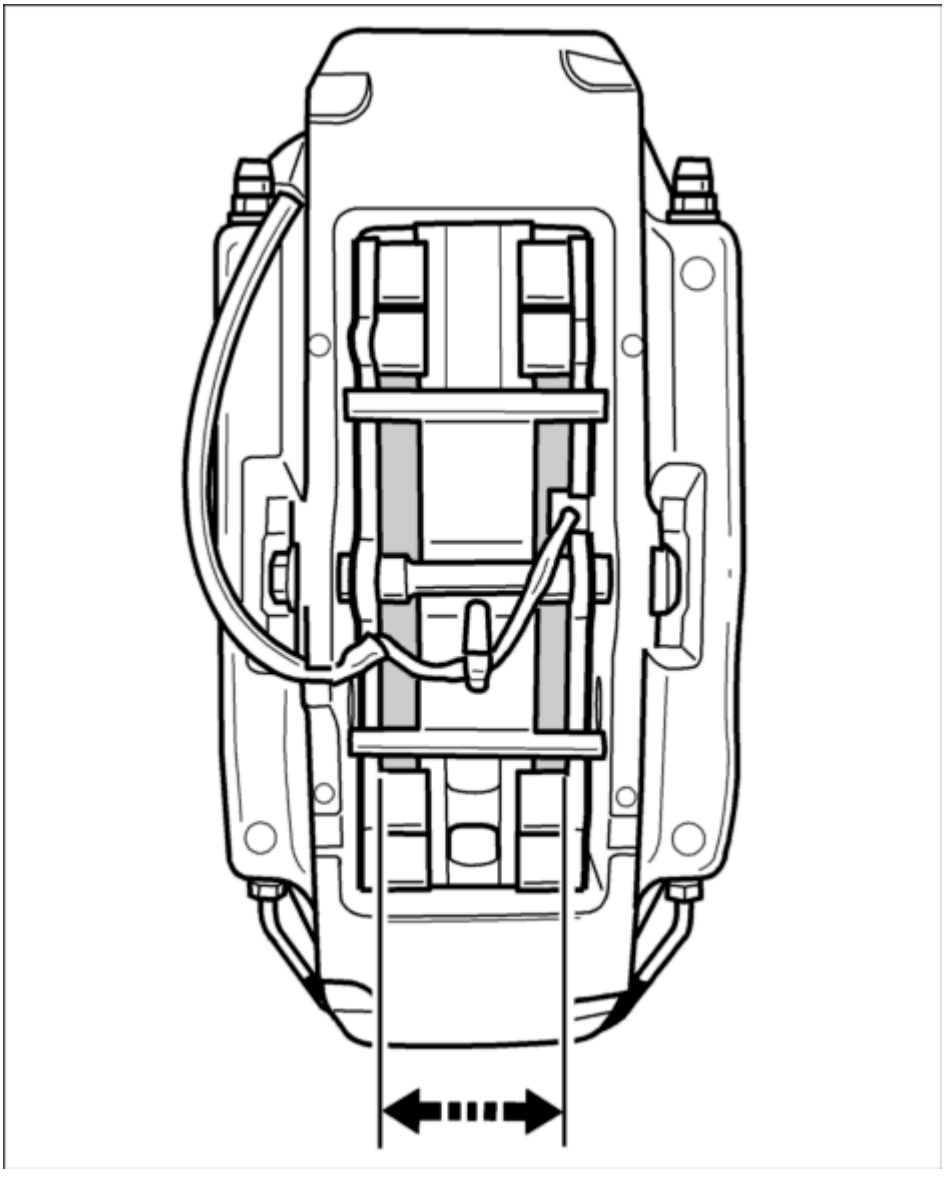


Fig. 21: Pushing pads back using piston resetting fixture
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Place **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4, on brake caliper between the disc brake pads and push the pads back evenly **-arrows-** . See **Fig. 21**.

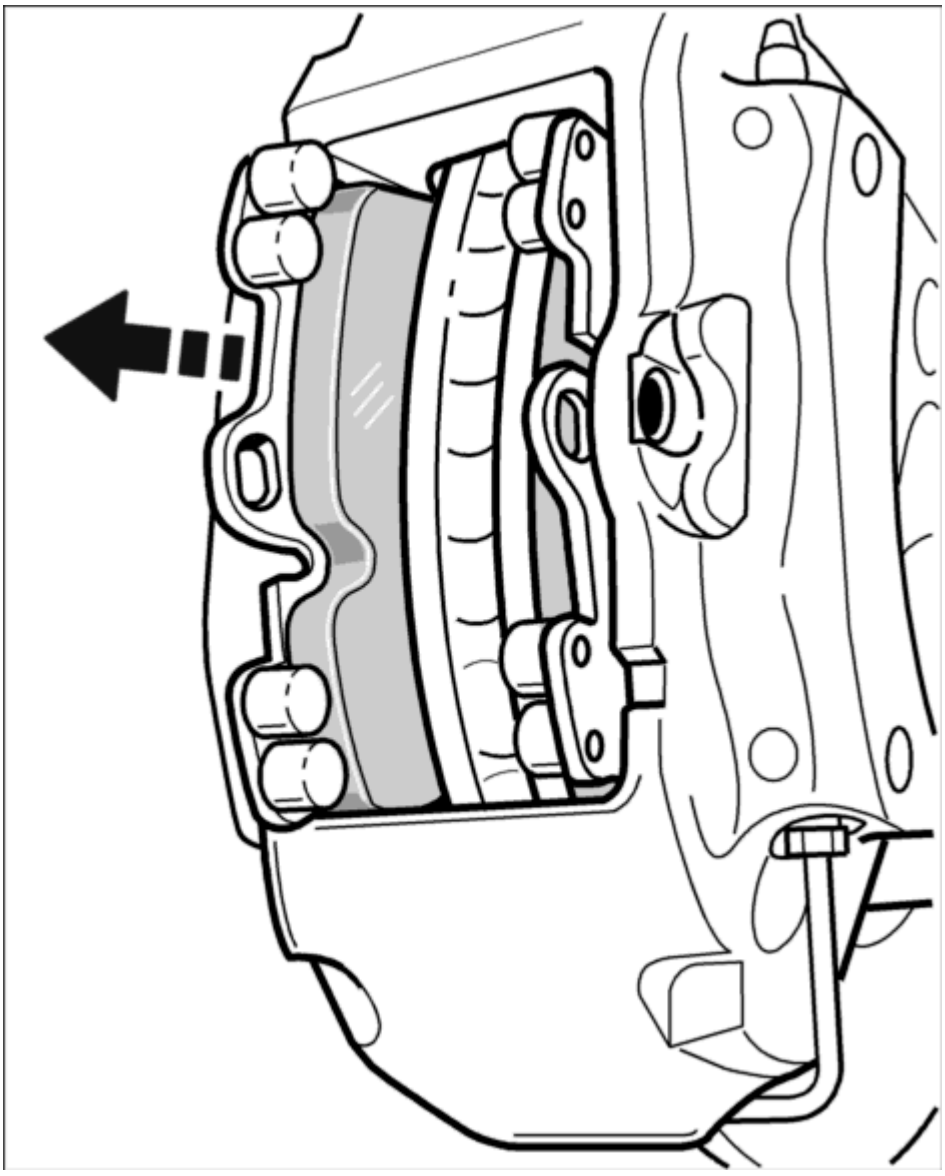


Fig. 22: Removing disc brake pads
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Remove disc brake pads.

INSTALLING

Installing front disc brake pads

WARNING: Danger of accident if old parts are fitted on brake caliper.

- **Fit new expanding spring, new retaining pin and new retaining pin screw on the brake caliper.**

-->

WARNING: **Danger of accident if brake pads of the wrong quality are installed.**

- **Use only the type-specific brake pads in the Porsche Spare Parts Catalogue.**

-->

Do not grease the back of the disc brake pad!

The new disc brakes must be clean and free of grease!

Check disc brakes for wear; for wear limits see --> *46 Technical data/brake wear limits* !

The core of the warning contact line must not be left exposed! Worn insulation is not significant!

Use a new repair kit!

Observe tightening torques --> **46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan)**.

1. If necessary, push brake piston back into its original position using the **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4.

2. Fit new disc brake pads.

NOTE:

- ***Make sure that the retaining pin is inserted in the correct position! The flat side surfaces prevent the retaining pin from twisting in the brake caliper.***

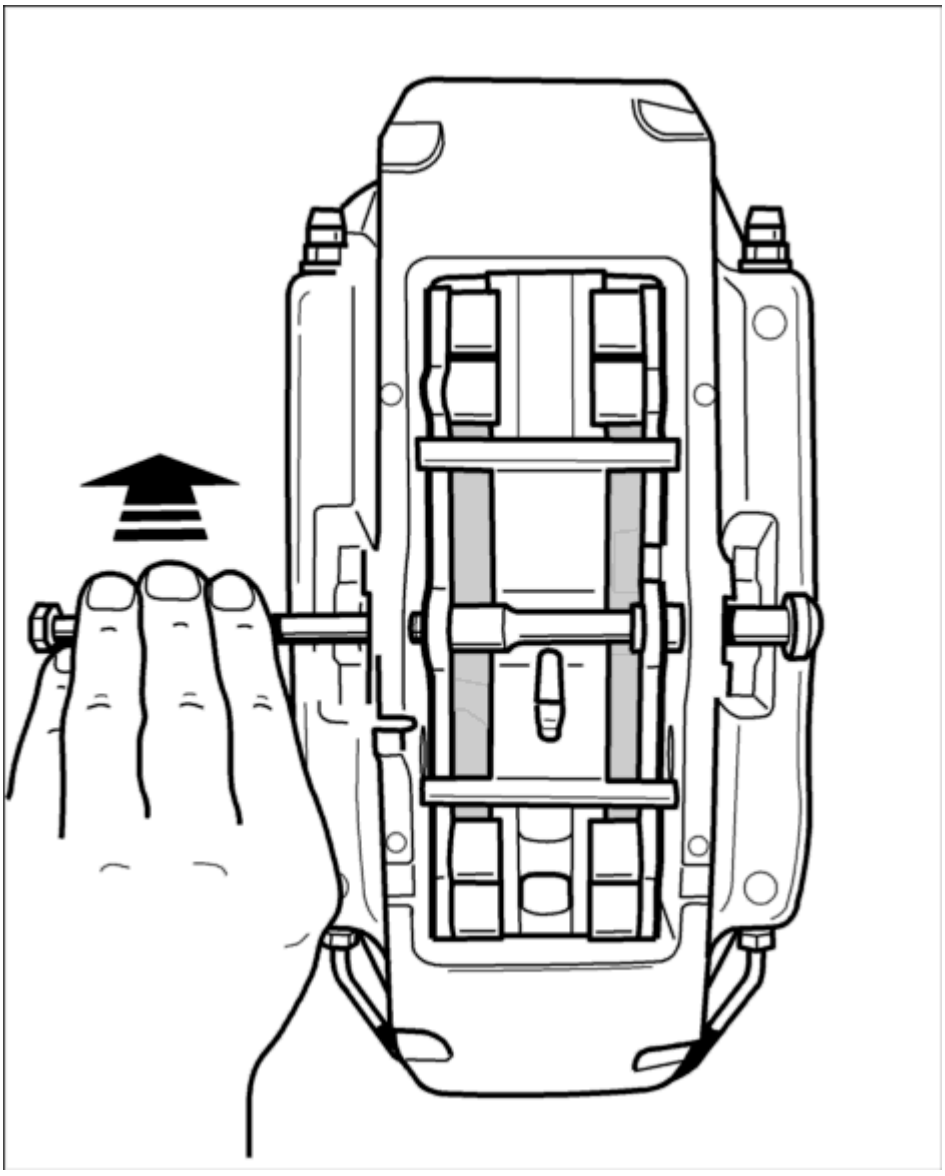


Fig. 23: Installing retaining pin
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Install expanding spring. center the retaining pin in the bore with the M8 auxiliary screw. To do so, press retaining pin back with auxiliary screw and push retaining pin through. Remove auxiliary screw and fit fastening screw at retaining pin with specified tightening torque --> **46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan)**.

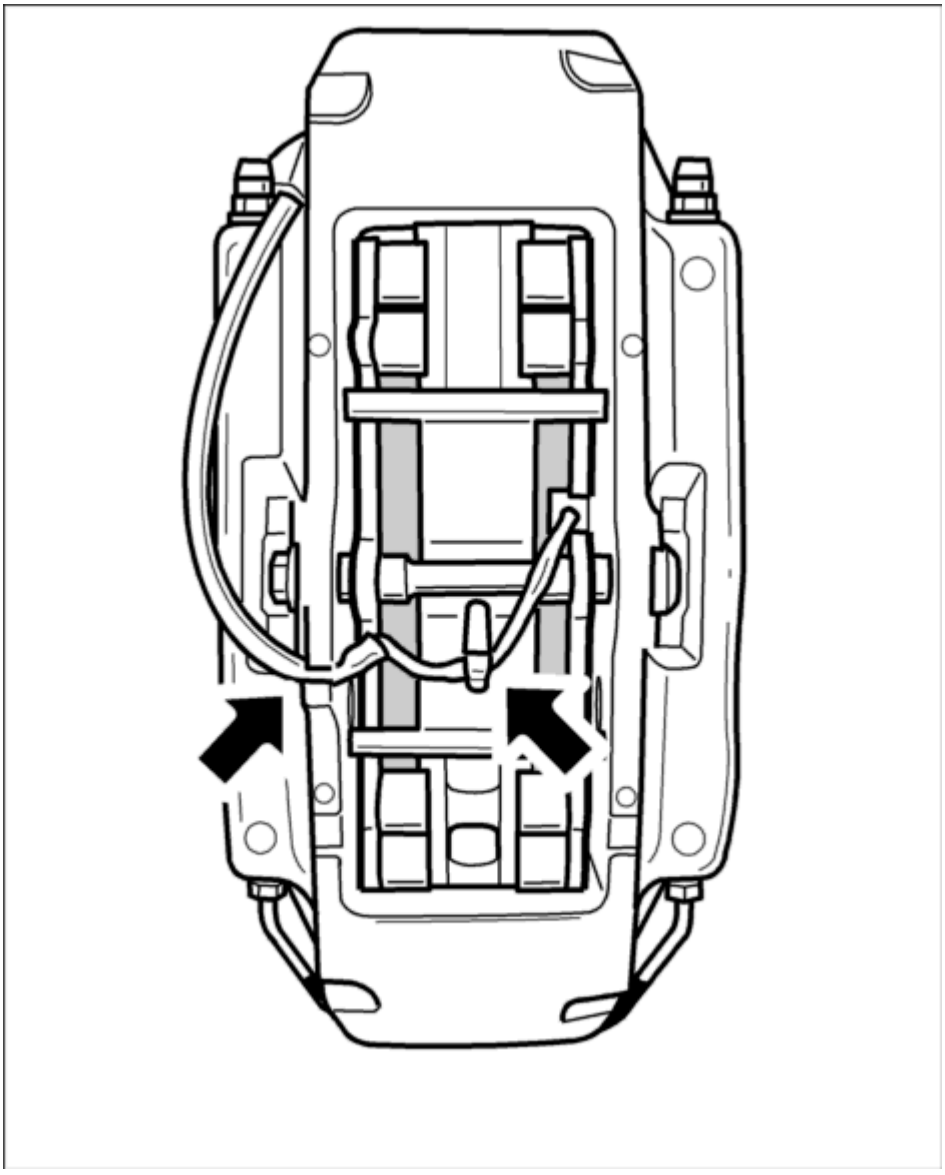


Fig. 24: Installing warning contact line at disc brake pads and expanding spring
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Install warning contact line at disc brake pads and expanding spring **-arrows-** . The cable guide in the expanding spring must be at the bottom! See **Fig. 24**.

5. Position disc brake pads by operating the brake several times.

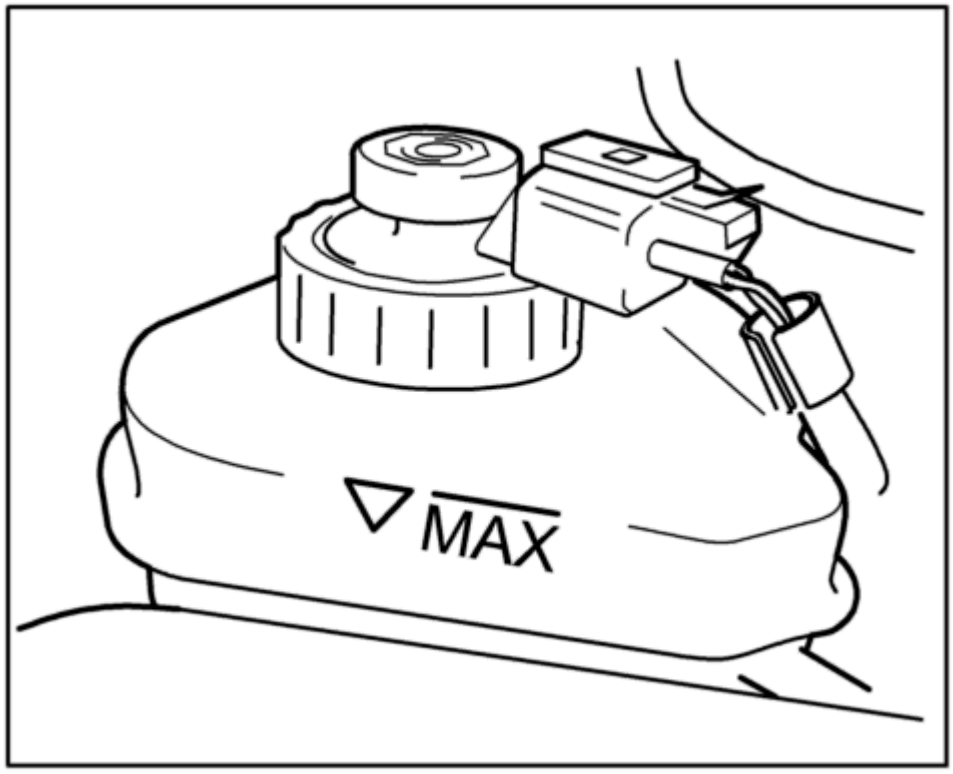


Fig. 25: Brake fluid reservoir
Courtesy of PORSCHE OF NORTH AMERICA, INC.

6. Check brake fluid level and correct if necessary. The brake fluid level must lie within the **-MAX-MIN marking-** .

SUBSEQUENT WORK

Subsequent work

1. Fit wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

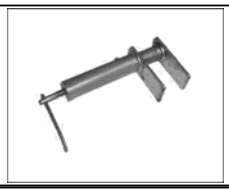
INFORMATION

Bedding in the brake pads

New brake pads require a bedding-in period of approx. 200 km! Only then do they achieve their best friction and wear coefficient! During this period, the brakes should only be subjected to full stress at high speed in emergencies!

46 36 20 REMOVING AND INSTALLING FRONT BRAKE PADS - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE S TIO TITAN)

TOOLS

Designation	Type	Number	Explanation	
piston resetting fixture (replaces P83)	commercially available tool	NR.144		

PRELIMINARY WORK

Preliminary work

1. Remove wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

REMOVING FRONT BRAKE PADS

WARNING: Danger of accident if brake pads of the wrong quality are installed.

- **This can result in longer braking distances and more wear.**

--> Use only the type-specific brake pads in the Porsche Spare Parts Catalogue.

The core of the warning contact line must not be left exposed! Worn insulation is not significant!

If necessary, remove a little brake fluid from the expansion tank by suction to prevent overflow when the disc brake pad is pushed back!

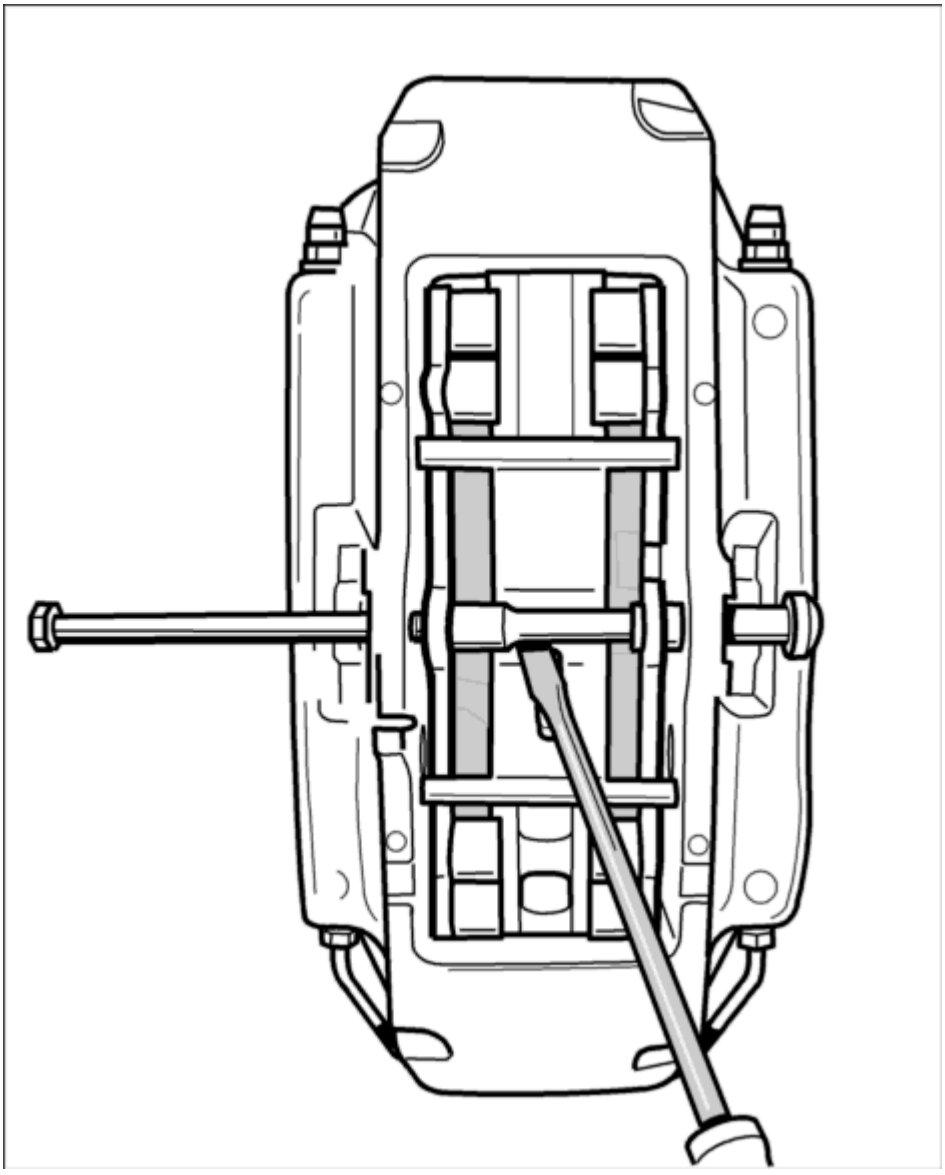


Fig. 26: Holding down expanding springs with a screwdriver
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Remove fastening screw at retainer pin. Next screw the M8 auxiliary screw into the retaining pin. Hold down expanding springs with a screwdriver and remove retaining pin. See **Fig. 26**.

2. Remove warning contact line from brake caliper and expanding spring. Remove warning contacts from the brake disc pads.

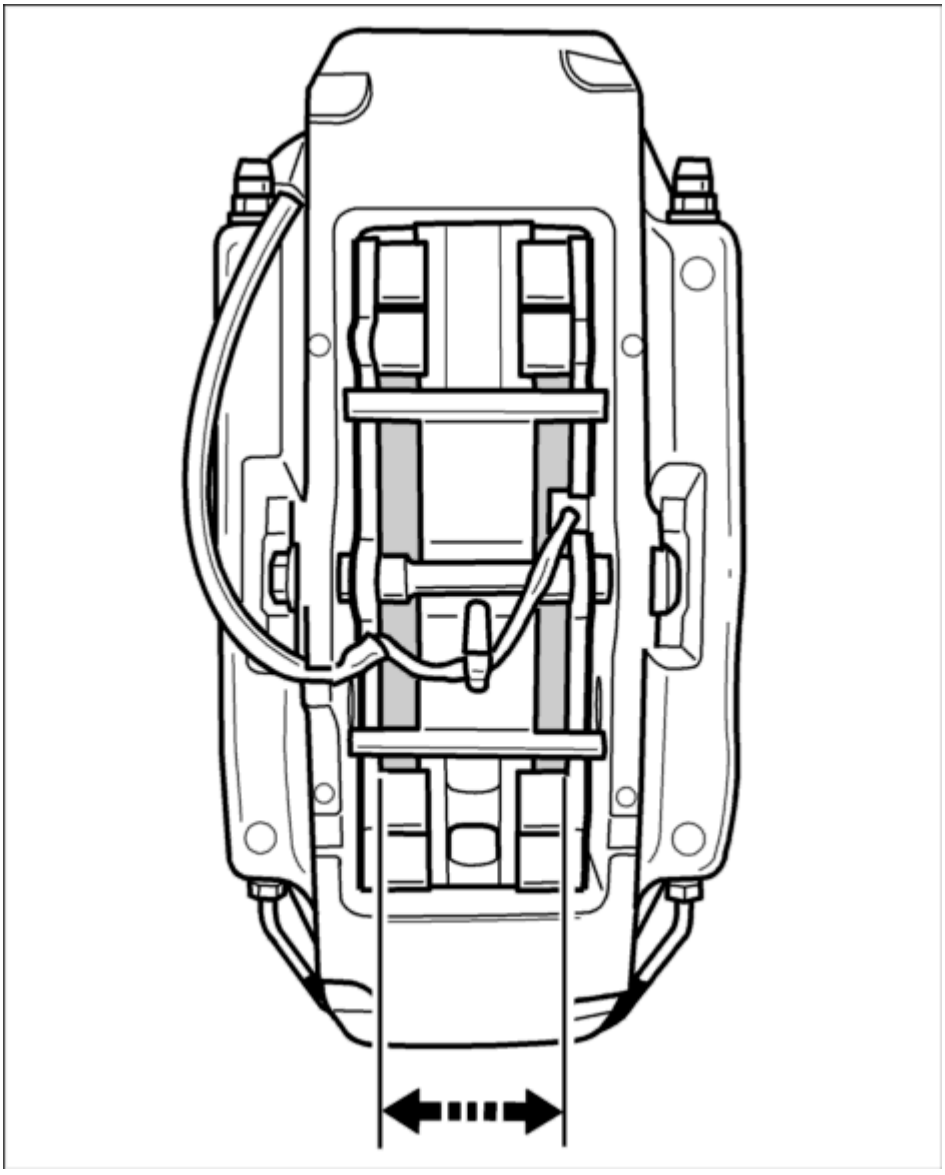


Fig. 27: Pushing pads back using piston resetting fixture
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Place **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4, on brake caliper between the disc brake pads and push the pads back evenly **-direction arrows-** . See **Fig. 27**.

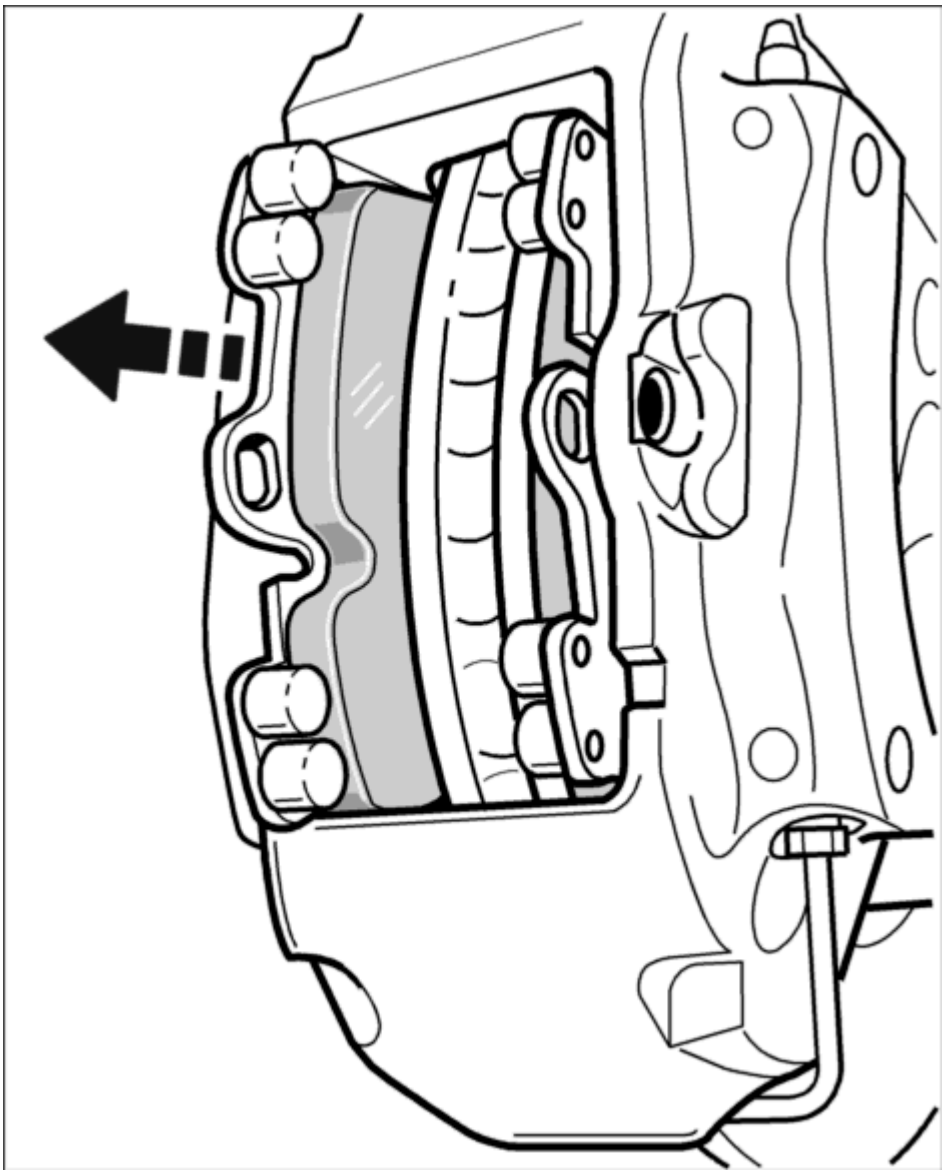


Fig. 28: Removing brake pad
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Remove disc brake pads.

INSTALLING FRONT BRAKE PADS

WARNING: Danger of accident if old parts are fitted on brake caliper.

- **This can cause malfunctions.**

--> Fit new expanding spring, new retaining pin and new retaining pin screw on the brake caliper.

Do not grease the back of the disc brake pad !

The new disc brakes must be clean and free of grease!

Check disc brakes for wear. For wear limits see Technical Data --> **46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan)**.

The core of the warning contact line must not be left exposed! Worn insulation is not significant!

Use a new repair kit!

Observe correct tightening torques --> **46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan)**.

1. If necessary, push brake piston back into its original position using the **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4.

2. Fit new disc brake pads.

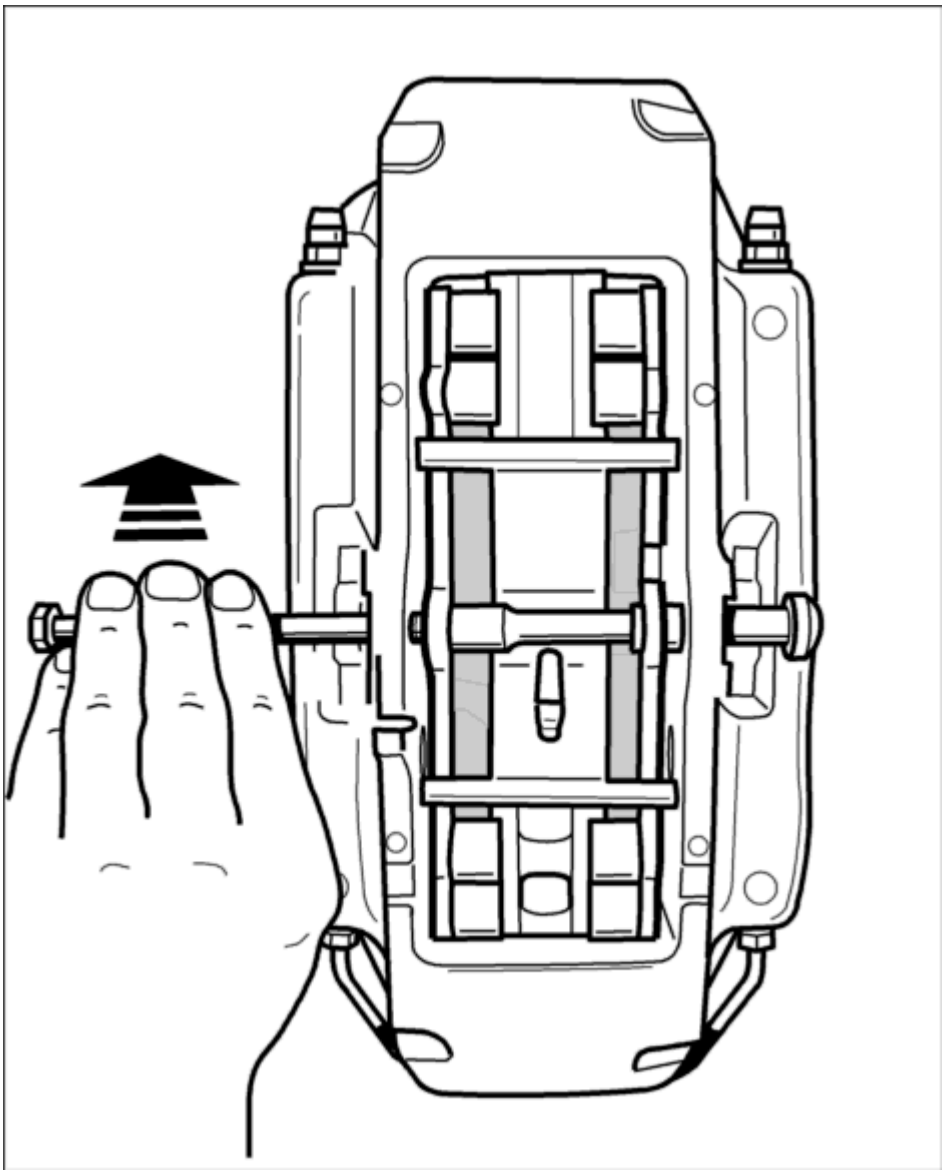


Fig. 29: Installing retaining pin
Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- ***Make sure that the retaining pin is inserted in the correct position. The flat side surfaces prevent the retaining pin from twisting in the brake caliper.***

3. Install expanding spring. center the retaining pin in the bore with the M8 auxiliary screw. To do so, push retaining pin back with auxiliary screw and push retaining pin through. Remove auxiliary screw and fit fastening screw at retaining pin with specified tightening torque --> **46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan)**.

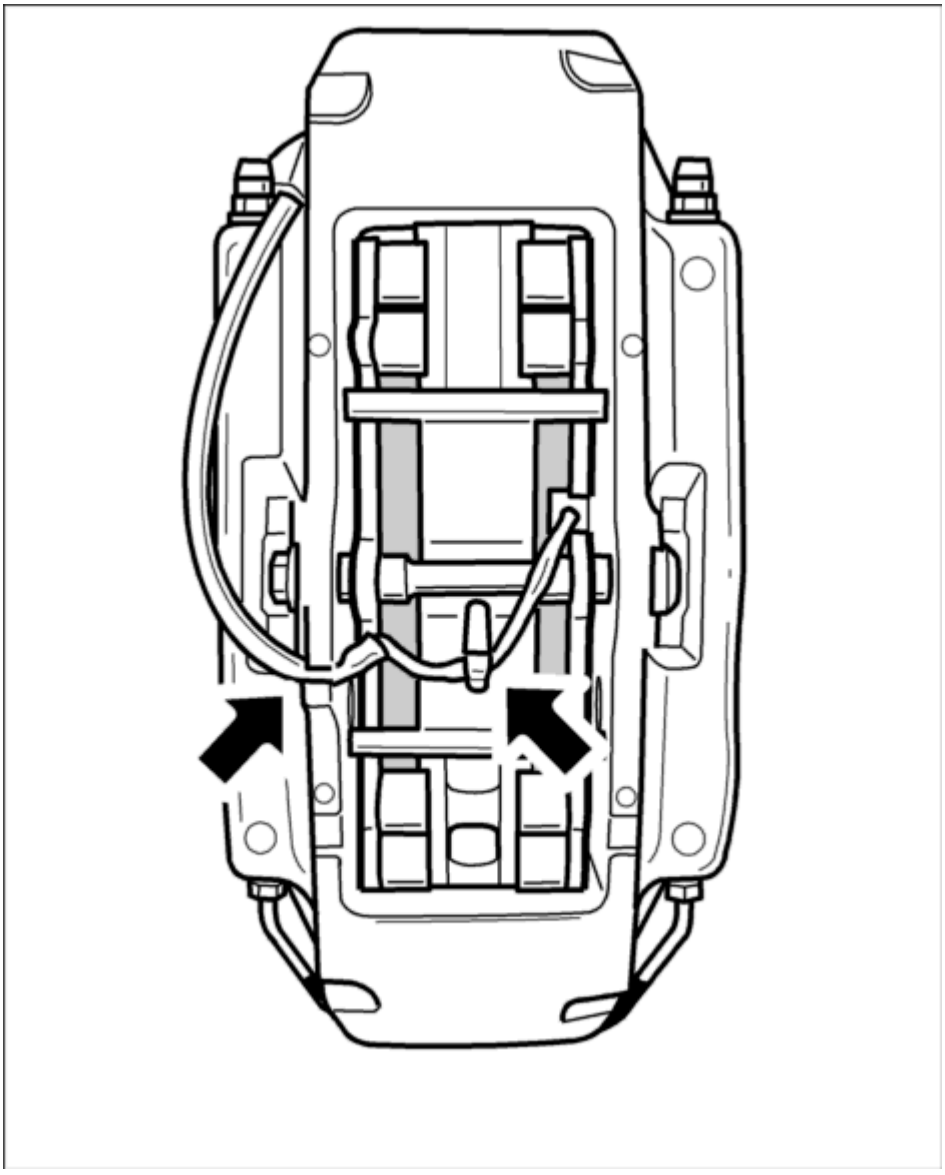


Fig. 30: Installing warning contact line at disc brake pads and expanding spring
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Install warning contact line at disc brake pads and expanding spring **-arrows-** . The cable guide in the expanding spring must be at the bottom! See **Fig. 30**.

5. Position disc brake pads by operating the brake several times.

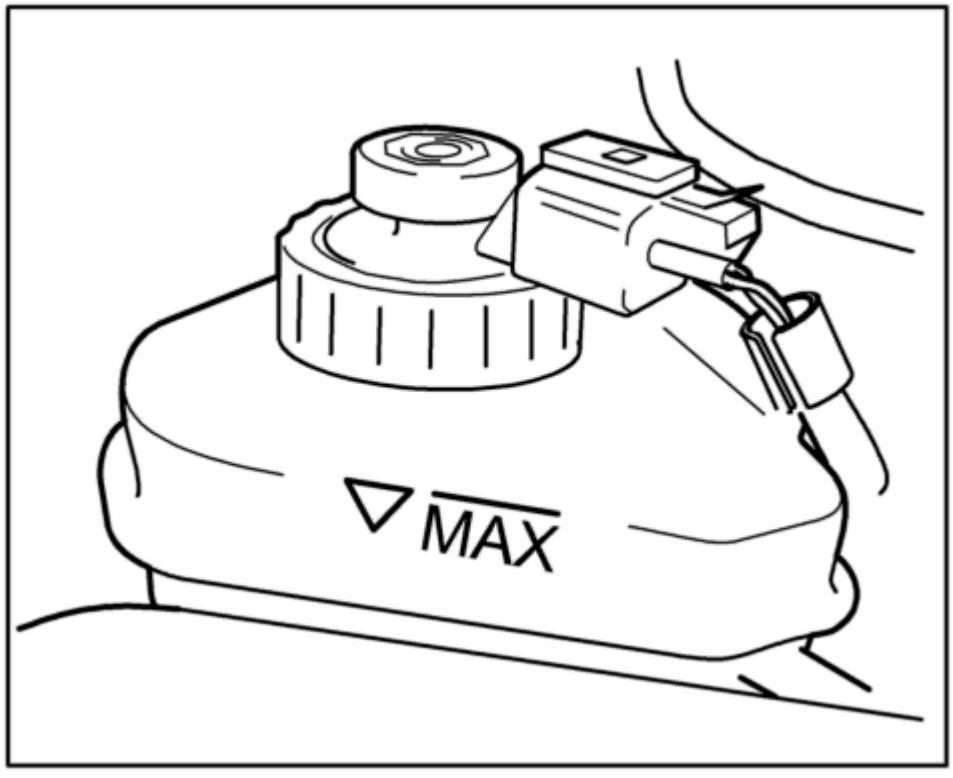


Fig. 31: Brake fluid reservoir
Courtesy of PORSCHE OF NORTH AMERICA, INC.

6. Check brake fluid level and correct if necessary. The brake fluid level must lie within the MAX - MIN marking. See **Fig. 31**.

Bedding in the brake pads

New brake pads require a bedding-in period of approx. 200 km! Only then do they achieve their best friction and wear coefficient! During this period, the brakes should only be subjected to full stress at high speed in emergencies!

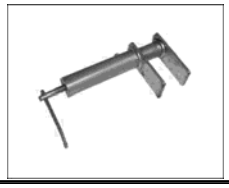
SUBSEQUENT WORK

Mount wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

46 38 19 REMOVING AND INSTALLING THE REAR DISC BRAKE PADS - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE TURBO S)

TOOLS

Designation	Type	Number	Explanation	
piston resetting fixture (replaces P83)	commercially available tool	NR.144		

PRELIMINARY WORK

Preliminary work

Remove wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

REMOVING

Removing rear disc brake pads

The core of the warning contact line must not be left exposed! Worn insulation is not significant!

If necessary, remove a little brake fluid from the expansion tank by suction to prevent overflow when the disc brake pad is pushed back!

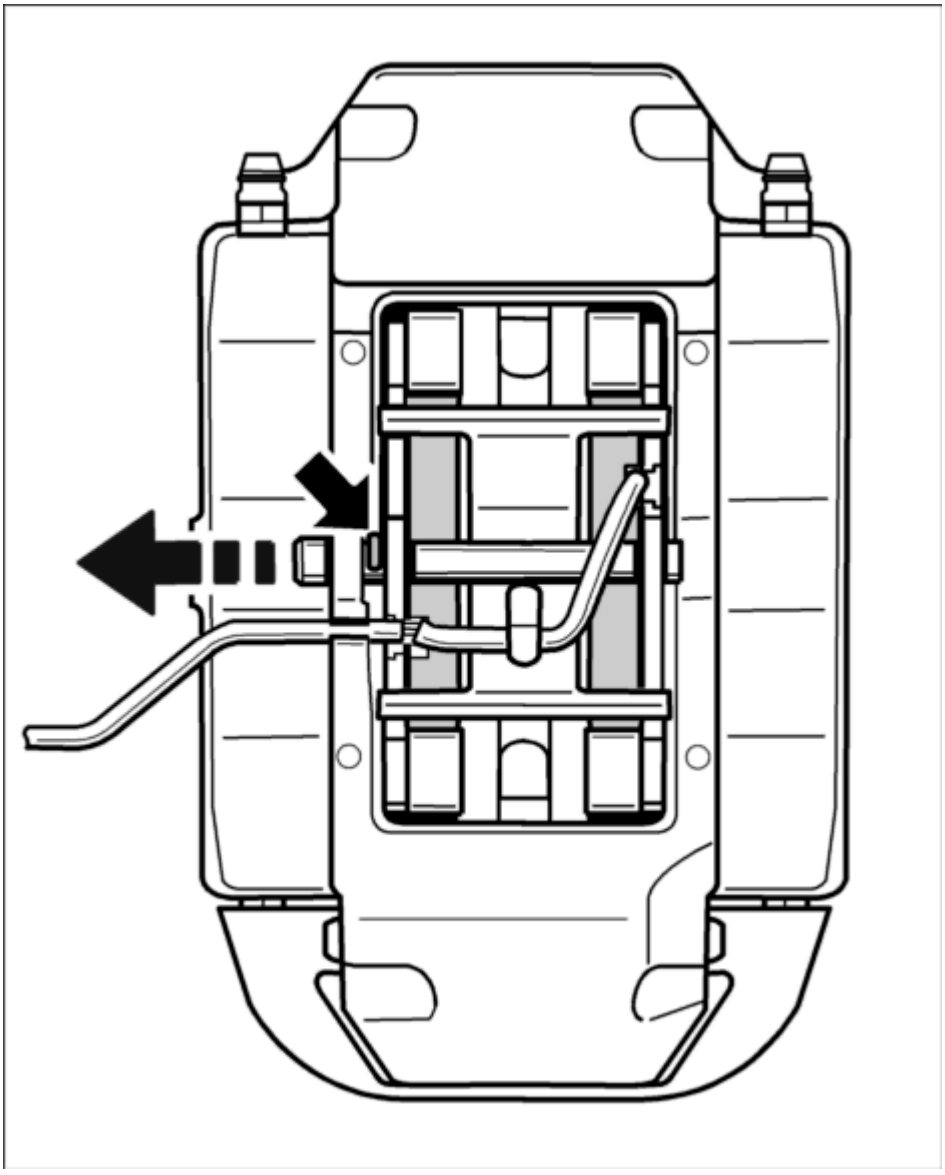


Fig. 32: Removing retaining pin
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Remove lock (securing clip) **-top arrow-** from retaining pin and remove retaining pin **-direction arrow-** inwards. See **Fig. 32**.

2. Remove warning contact line from brake caliper and expanding spring. Remove warning contacts from the brake disc pads.

3. Remove expanding spring.

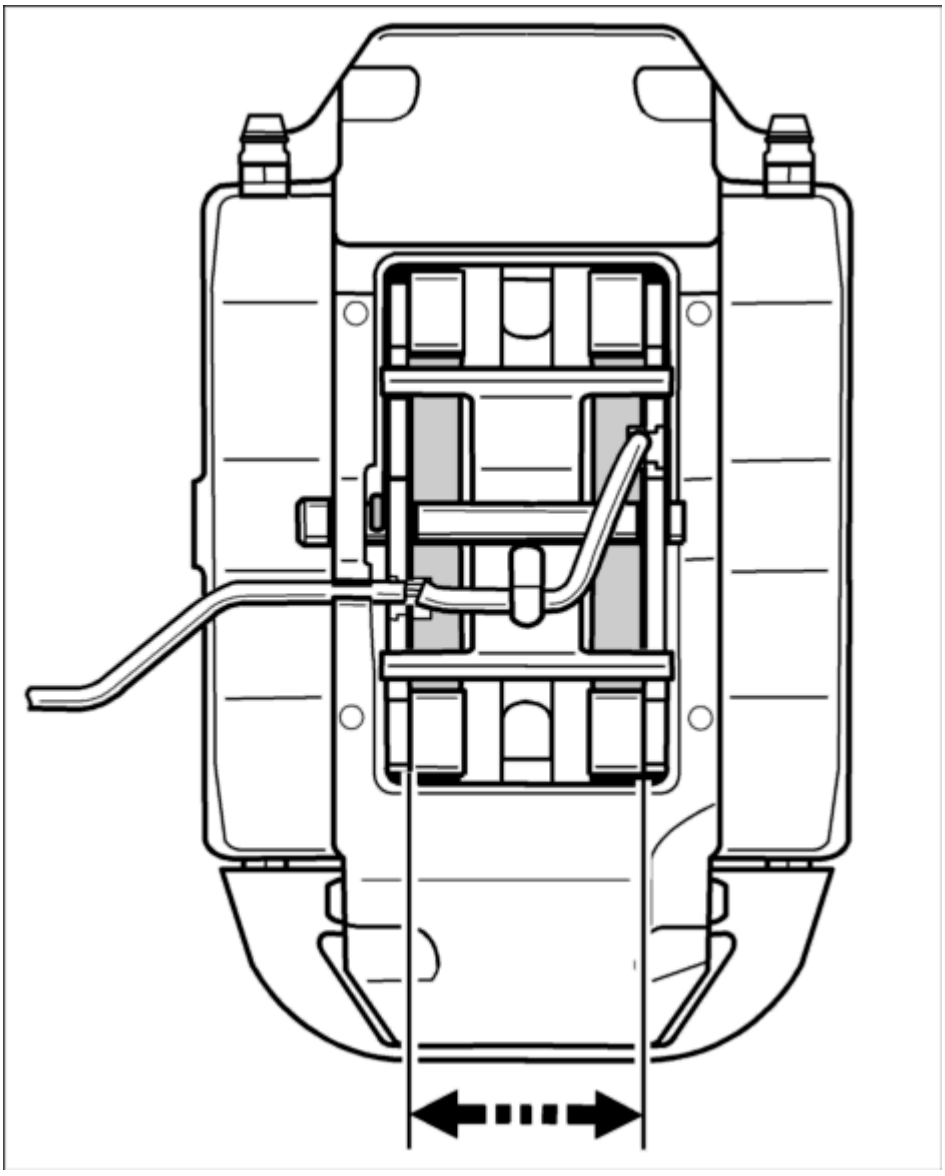


Fig. 33: Pushing pads back using piston resetting fixture
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Place **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4, on brake caliper between the disc brake pads and push the pads back evenly **-direction arrows-** . See **Fig. 33**.

5. Remove disc brake pads.

INSTALLING

Installing rear disc brake pads

WARNING: Danger of accident if old parts are fitted on brake caliper.

- **Fit new expanding spring, new retaining pin and new safety bracket on the brake calliper.**

-->

WARNING: **Danger of accident if brake pads of the wrong quality are installed.**

- **Use only the type-specific brake pads in the Porsche Spare Parts Catalogue.**

-->

NOTE:

- ***The back of the pad backing plates must not be greased.***
- ***Check disc brakes for wear; for wear limits see --> 46 Technical data/brake wear limits.***
- ***Disc brakes must be clean and free of grease.***
- ***The core of the warning contact wire must not be left exposed! Worn insulation is not significant.***
- ***If necessary, remove a little brake fluid from the expansion tank by suction to prevent spilling when the disc brake pad is pushed back.***
- ***Use new repair kit.***
- ***Observe tightening torques --> 46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan).***

1. If necessary, push brake piston back into its original position using the **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4.

2. Fit disc brake pads.

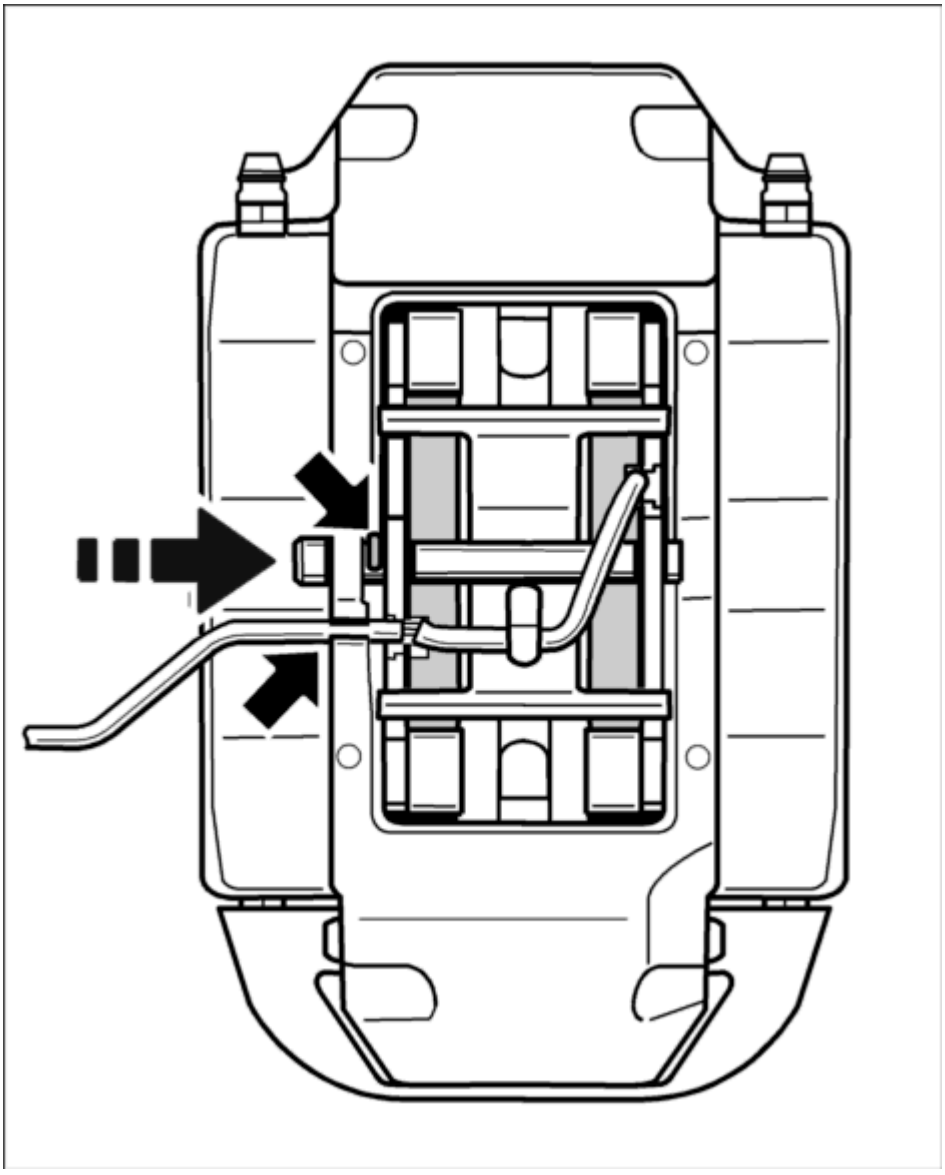


Fig. 34: Fitting expanding spring, retaining pin and warning contact line
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Fit expanding spring, retaining pin **-direction arrow-** and lock (safety bracket) **-top arrow-** at top of retaining pin. See **Fig. 34**.

4. Fit warning contact line at bottom of brake caliper **-bottom arrow-** and warning contacts at disc brake pads. See **Fig. 34**.

5. Press the brake pedal several times while the car is stationary to position the pads on the brake disc.

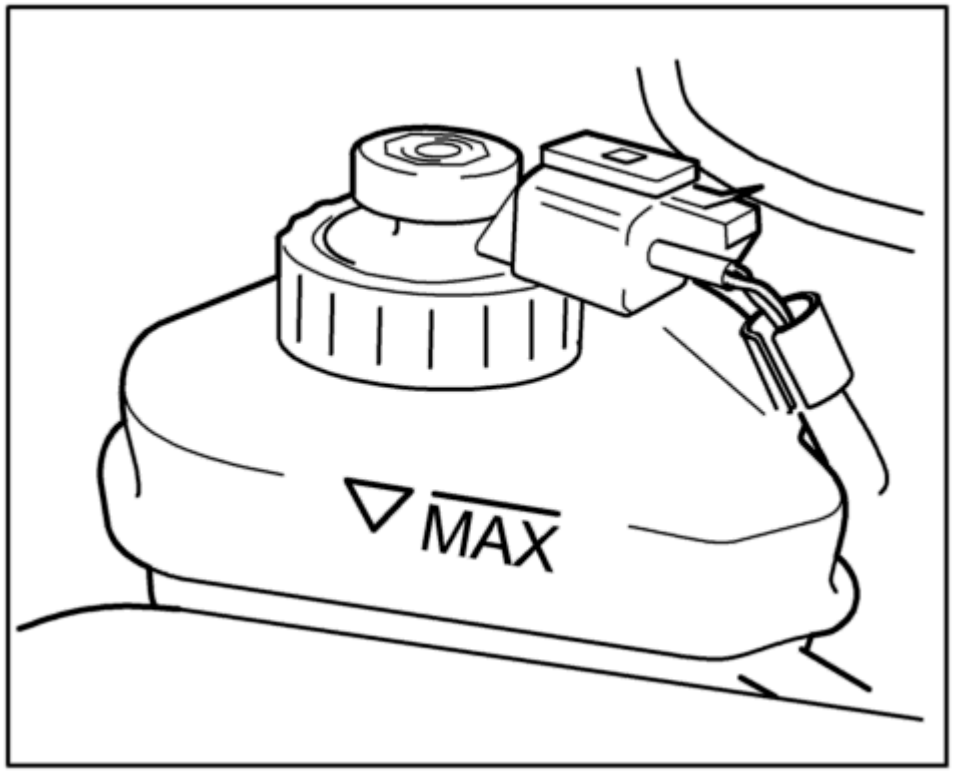


Fig. 35: Brake fluid reservoir
Courtesy of PORSCHE OF NORTH AMERICA, INC.

6. Check brake fluid level and correct if necessary. The brake fluid level must lie within the **-MAX-MIN marking-** . See **Fig. 35**.

SUBSEQUENT WORK

Subsequent work

1. Fit wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

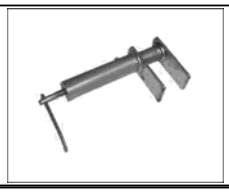
INFORMATION

Bedding in the brake pads

New brake pads require a bedding-in period of approx. 200 km! Only then do they achieve their best friction and wear coefficient! During this period, the brakes should only be subjected to full stress at high speed in emergencies!

46 38 20 REMOVING AND INSTALLING REAR BRAKE PADS - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE S TIO TITAN)

TOOLS

Designation	Type	Number	Explanation	
piston resetting fixture (replaces P83)	commercially available tool	NR.144		

PRELIMINARY WORK

Preliminary work

1. Remove wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

REMOVING REAR DISC BRAKE PADS

WARNING: Danger of accident if brake pads of the wrong quality are installed.

- **This can result in longer braking distances and more wear.**

--> Use only the type-specific brake pads in the Porsche Spare Parts Catalogue.

The core of the warning contact line must not be left exposed! Worn insulation is not significant !

If necessary, remove a little brake fluid from the expansion tank by suction to prevent overflow when the disc brake pad is pushed back!

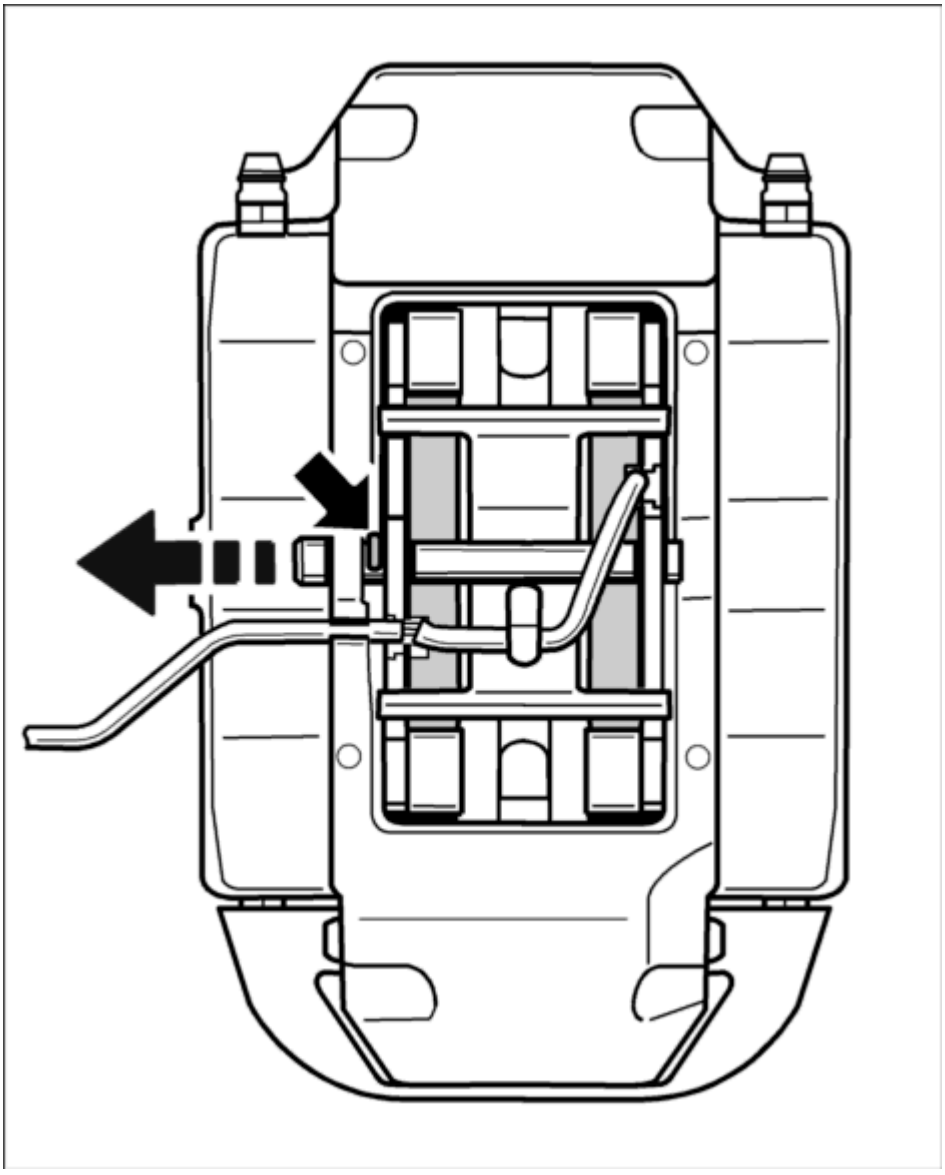


Fig. 36: Removing retaining pin
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Remove lock (securing clip) **-arrow-** at top from retaining pin and remove retaining pin **-direction arrow-** inwards. See **Fig. 36**.

2. Remove warning contact line from brake caliper and expanding spring. Remove warning contacts from the brake disc pads.

3. Remove expanding spring.

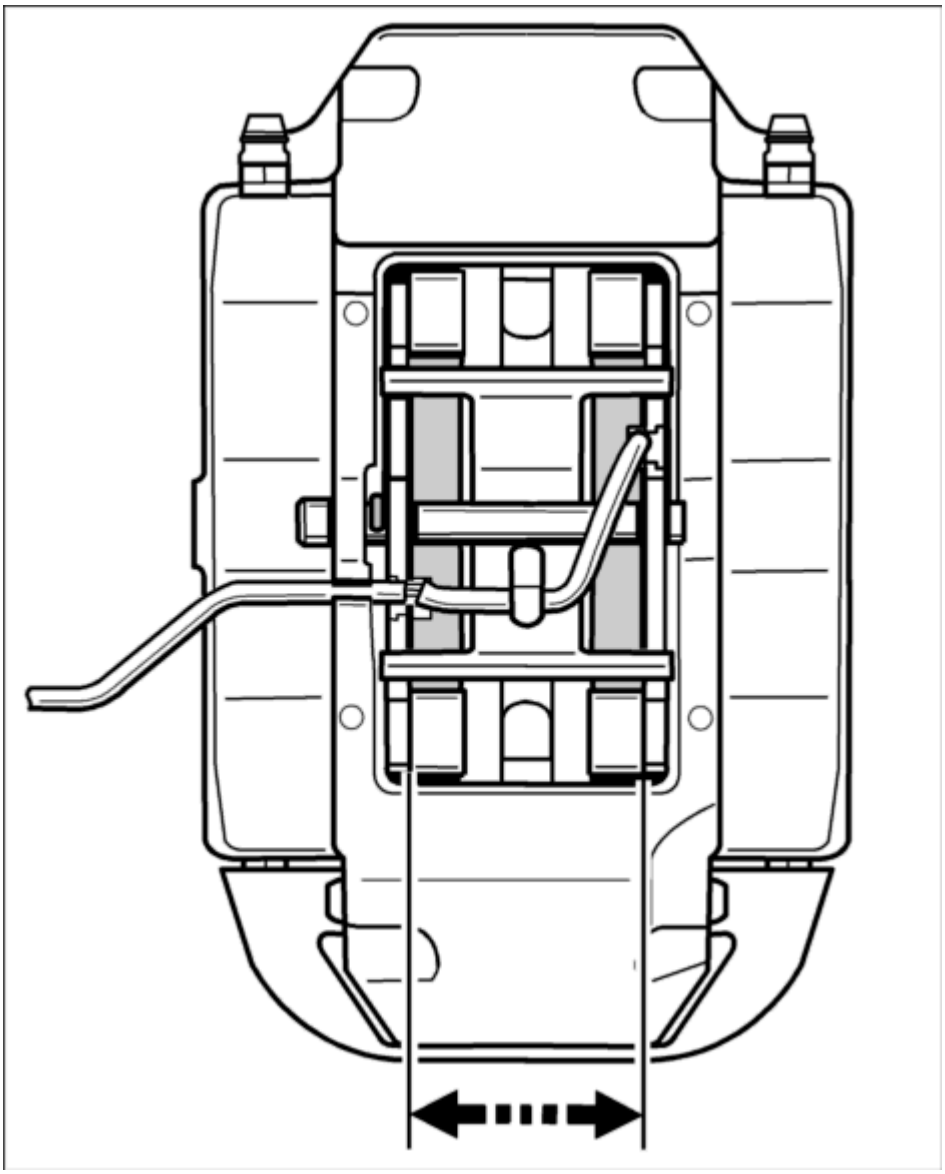


Fig. 37: Pushing pads back using piston resetting fixture
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Place **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4, on brake caliper between the disc brake pads and push the pads back evenly **-direction arrows-** . See **Fig. 37**.

5. Remove disc brake pads.

INSTALLING REAR DISC BRAKE PADS

WARNING: **Danger of accident if old parts are fitted on brake caliper.**

- **This can cause malfunctions.**

--> Fit new expanding spring, new retaining pin and new retaining pin screw on the brake caliper.

The back of the pad backing plates must not be greased !

Check disc brakes for wear. For wear limits see Technical Data --> **46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan)**.

New disc brakes must be clean and free of grease!

The core of the warning contact line must not be left exposed! Worn insulation is not significant!

If necessary, remove a little brake fluid from the expansion tank by suction to prevent overflow when the disc brake pad is pushed back!

Use a new repair kit!

Observe correct tightening torques --> **46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan)**.

1. If necessary, push brake piston back into its original position using the **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4.

2. Fit disc brake pads.

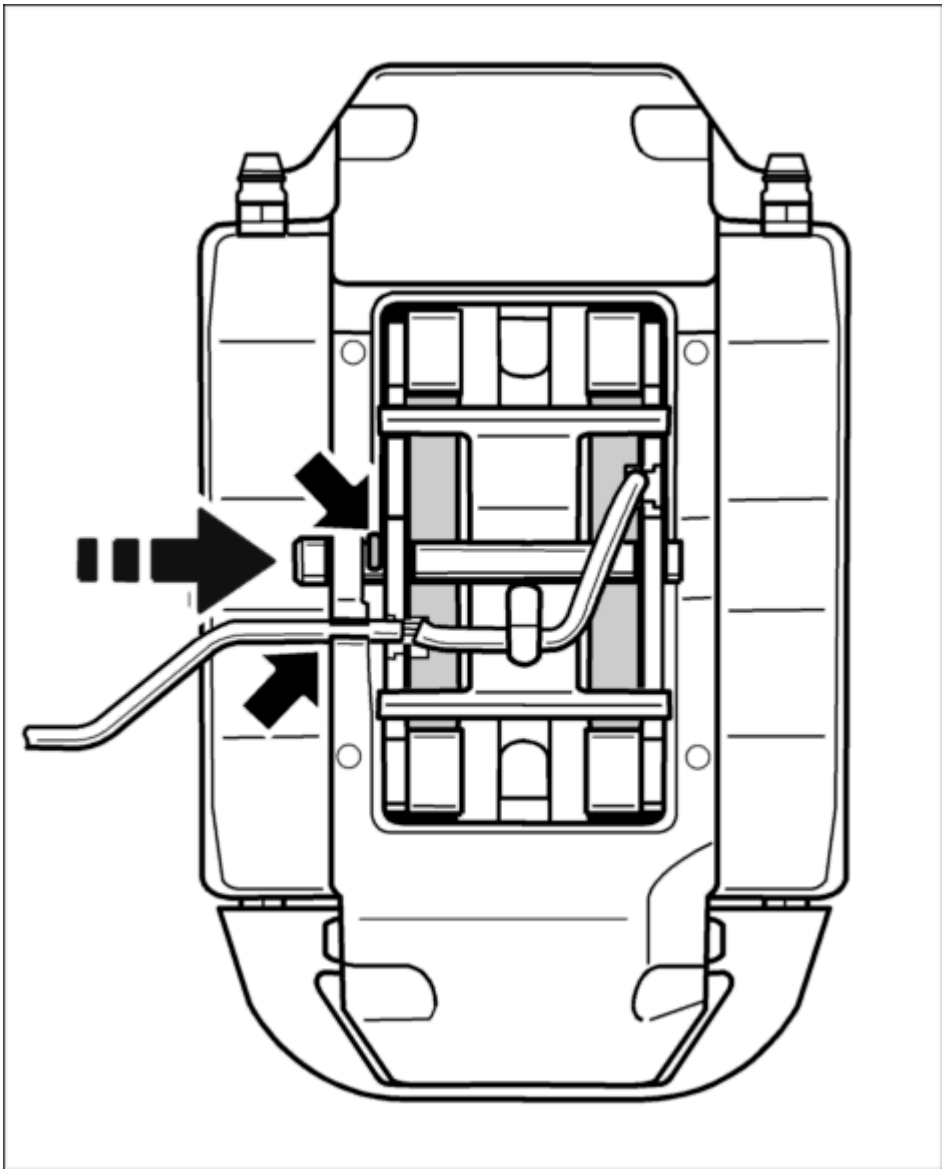


Fig. 38: Fitting expanding spring, retaining pin and warning contact line
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Install expanding spring, retaining pin **-direction arrow-** and lock (safety bracket) **-arrow-** at top of retaining pin. See **Fig. 38**.

4. Install warning contact line at bottom of brake caliper **-arrow-** and warning contacts at disc brake pads. See **Fig. 38**.

5. Press the brake pedal several times while the car is stationary to position the pads on the brake disc.

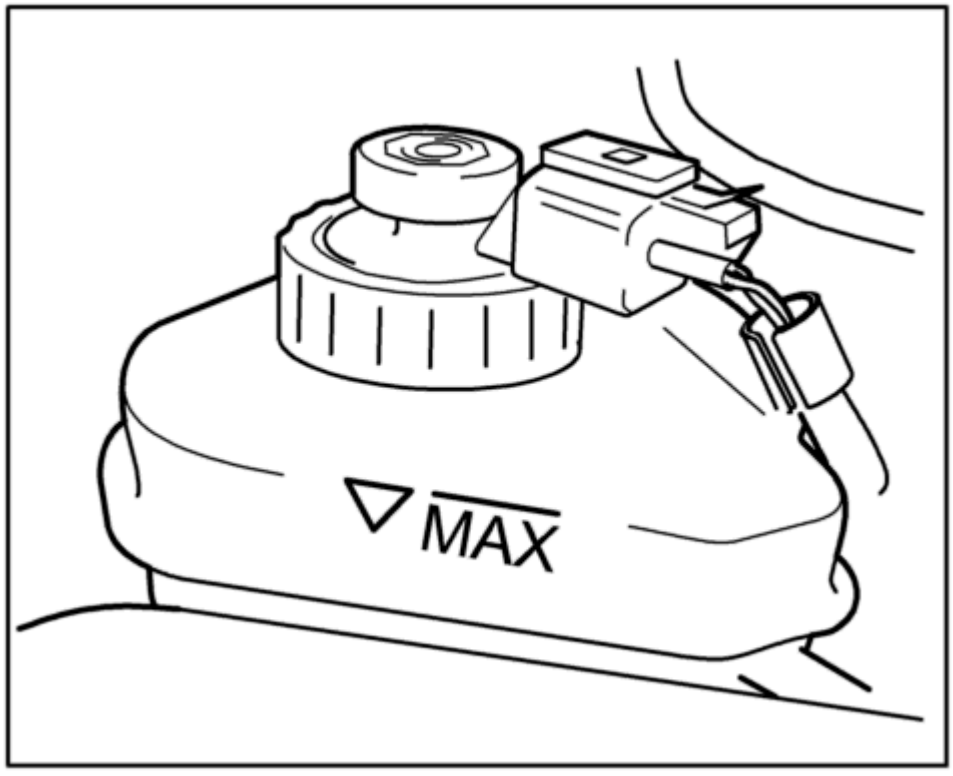


Fig. 39: Brake fluid reservoir
Courtesy of PORSCHE OF NORTH AMERICA, INC.

6. Check brake fluid level and correct if necessary. The brake fluid level must lie within the MAX - MIN marking. See **Fig. 39**.

Bedding in the brake pads

New brake pads require a bedding-in period of approx. 200 km! Only then do they achieve their best friction and wear coefficient! During this period, the brakes should only be subjected to full stress at high speed in emergencies!

SUBSEQUENT WORK

Mount wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

46 50 02 CHECKING FRONT BRAKE DISCS (WEAR ASSESSMENT) - AS OF MY 2003 (ALL MODELS)

TOOLS

Designation	Type	Number	Explanation	
dial gauge set with ball joint arm	commercially available tool	NR.147-1		

				
adapter plate	special tool	P 9510/1		

INFORMATION

Brake disc wear assessment - General

Normally, brake disc replacement is necessary after the thickness falls below the minimum. In rare, isolated cases (of very high loads for long periods) replacement may be necessary due to crack formation. To a certain extent these cracks may be rated as not important. A description is given in the following sections of when to replace brake discs.

Cracks arise through material fatigue due to frequent and extreme thermal expansion fluctuations. Particularly in cases of very high loads for long periods, these thermal expansion fluctuations produce internal stresses. The result may be cracks in the friction surface. These cracks allow relaxation of the friction disc, so that the speed at which the cracks develop is very slow.

The cracks run from the center of the friction surface to the (inner and outer) edges of the brake disc. As different vehicle types have different brake disc sizes, differences arise for the maximum crack length limits.

The maximum crack length limit is calculated as follows:

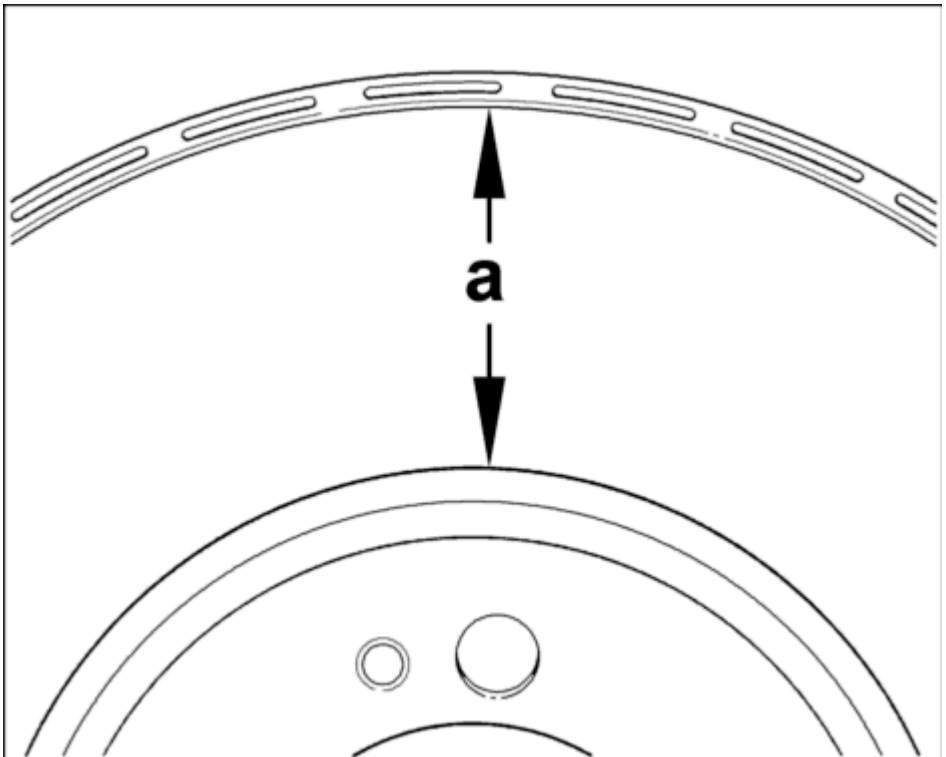


Fig. 40: Width of friction surface a
Courtesy of PORSCHE OF NORTH AMERICA, INC.

0.5 x a (**-a-** = width of friction surface in mm). See **Fig. 40**.

Larger cracks impair braking comfort and reduce brake disc strength, therefore making brake disc replacement necessary as a precaution.

Irrespective of the crack length, the brake disc must be replaced if the crack has extended as far as the outer and/or inner edge of the disc.

Bedding in the brake pads and brake discs

New brake pads require a bedding-in period of approx. 200 km! Not until then do they achieve their best friction and wear coefficient. During this period, the brakes should be subjected to full stress when travelling at high speed only in emergencies. The slightly reduced braking effect must be compensated for by increased pressure on the brake pedal. The same also applies after replacing or machining brake discs.

CHECKING

Checking front brake discs (evaluating cracks)

Different vehicle types have different brake disc sizes. This produces differences for the maximum crack length limits.

The maximum crack length limit is calculated as follows:

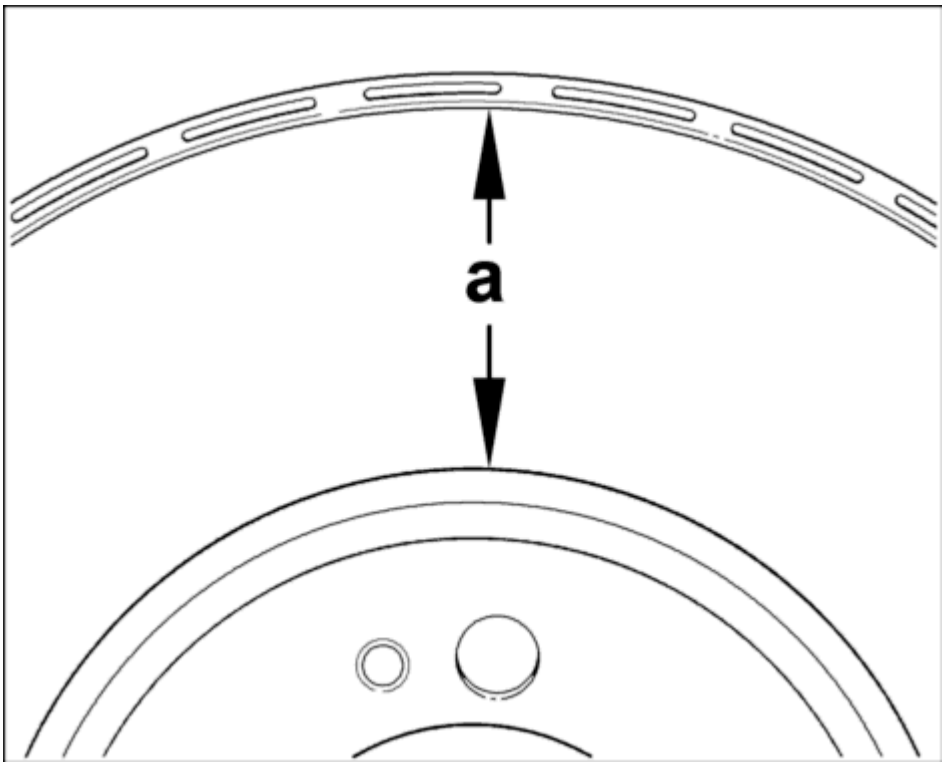


Fig. 41: Width of friction surface a
Courtesy of PORSCHE OF NORTH AMERICA, INC.

0.5 x a (**-a-** = width of friction surface in mm). See **Fig. 41**.

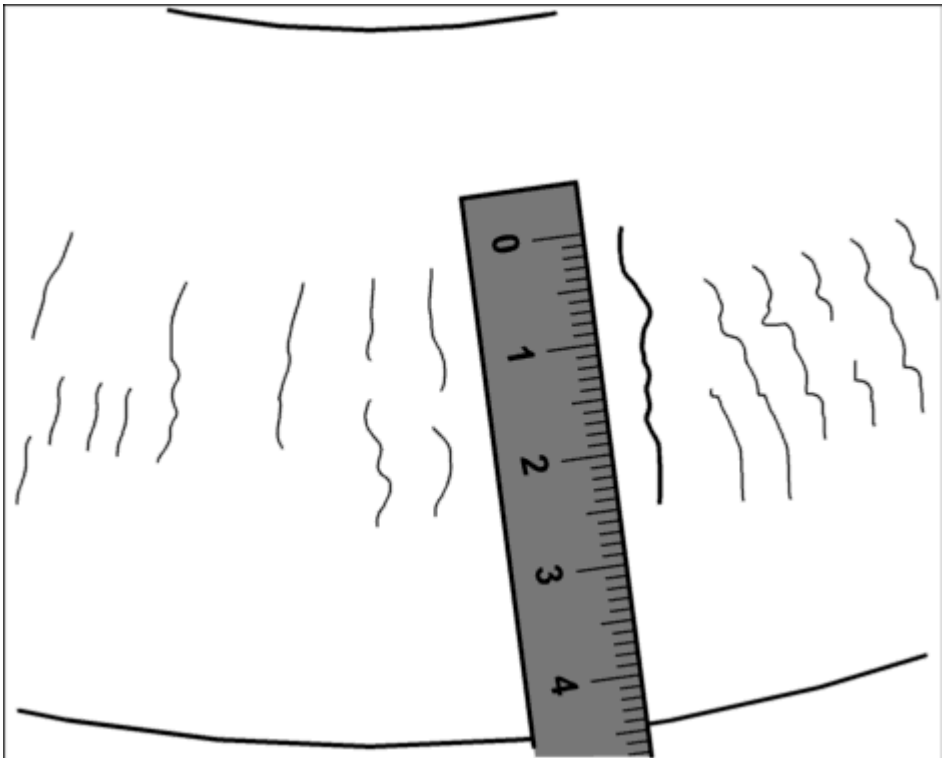


Fig. 42: Brake discs
Courtesy of PORSCHE OF NORTH AMERICA, INC.

The length of a crack can be measured with a steel rule, for example. **-steel rule-** . See **Fig. 42**.

NOTE: Irrespective of the crack length, the brake disc must be replaced if the crack has extended as far as the outer and/or inner edge of the disc.

As a precaution, brake discs must be replaced when:

- the **--> Maximum crack length: 0.5 x a mm** (a = friction surface width in mm) is exceeded!
- the **--> Maximum crack width: 1 mm** is exceeded!
- the **--> Maximum crack depth: 1.5 mm** is exceeded!

Checking front brake discs (minimum thickness)

NOTE: Normally, brake discs are used until the maximum wear dimension is reached. --> *46 Technical data/brake wear limits* Only in a few exceptional cases is it advisable to skim the brake discs (if there is deep scoring or corrosion of the friction surface). In this case only the disc brake dressing machines approved by Porsche AG are to be used (see Workshop Equipment Manual, Chapter 3.4).

- ***Only as new brake discs may be reworked!***
- ***Only rework the brake discs symmetrically, evenly from both sides!***

As the pressure force of a brake piston on the brake pad varies in magnitude, different areas of wear arise on the friction surface. The brake disc can basically be divided into two areas of wear:

-A- Outer and inner wear area. See **Fig. 43**.

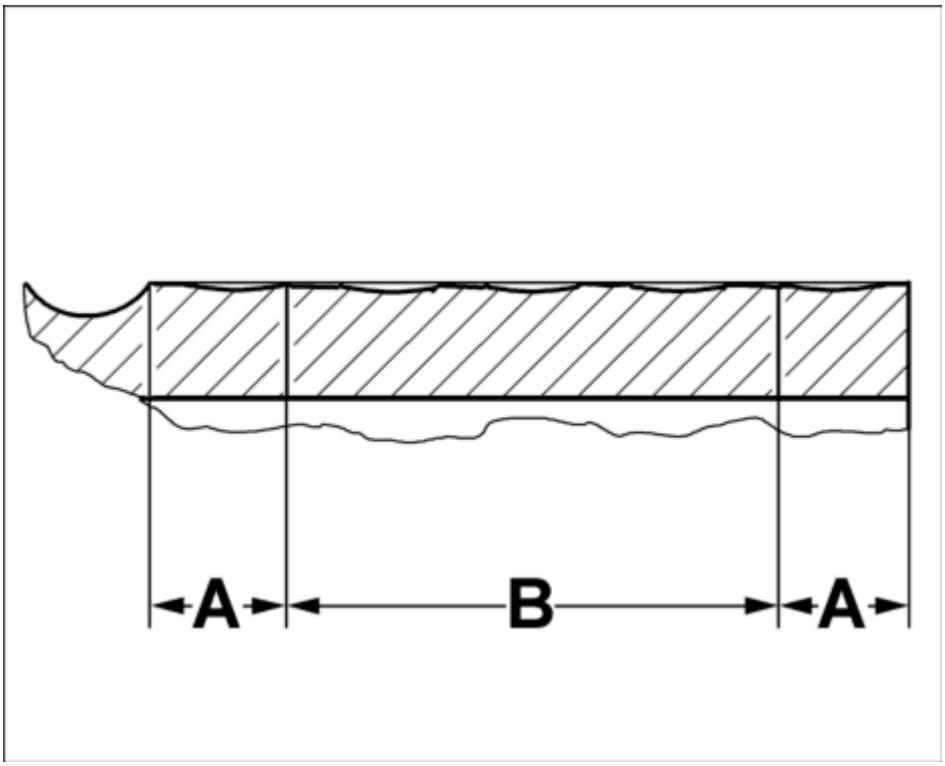


Fig. 43: Wear areas A and B
Courtesy of PORSCHE OF NORTH AMERICA, INC.

-B- Central wear area. See **Fig. 43**.

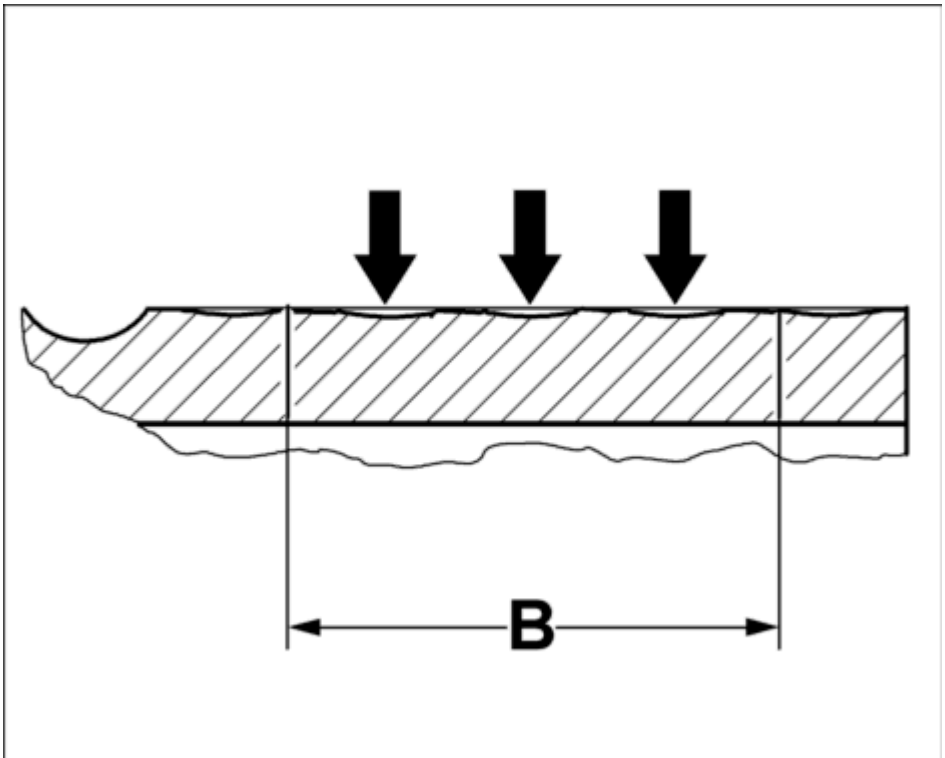


Fig. 44: Wear area B
Courtesy of PORSCHE OF NORTH AMERICA, INC.

The central wear area **-B-** is the area with the highest degree of wear. See **Fig. 44**.

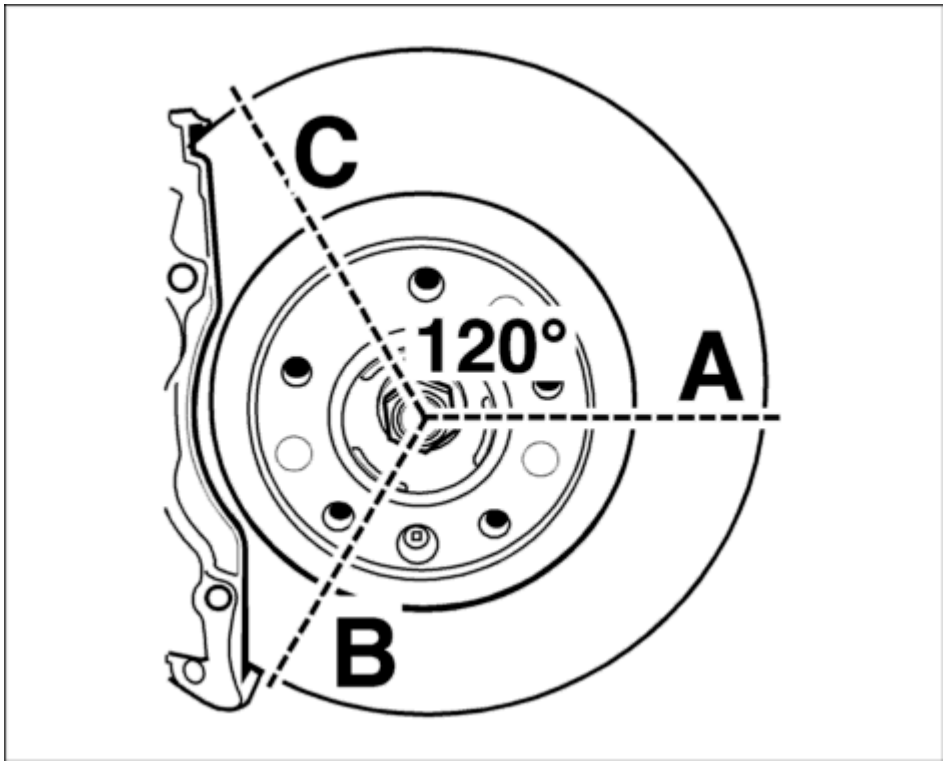


Fig. 45: Measurement points for brake disc thickness
Courtesy of PORSCHE OF NORTH AMERICA, INC.

- Measure the brake discs with a suitable micrometer at a minimum of three different places (**-A, B, C-**), offset by 120°. See **Fig. 45**.

Checking lateral runout (brake disc/wheel hub) and thickness tolerance

NOTE: Fasten dial gauge set with ball joint arm to wheel bearing housing.

For checking lateral runout two adapters are used. The brake disc and wheel hub can be measured with these.

Brake disc lateral runout

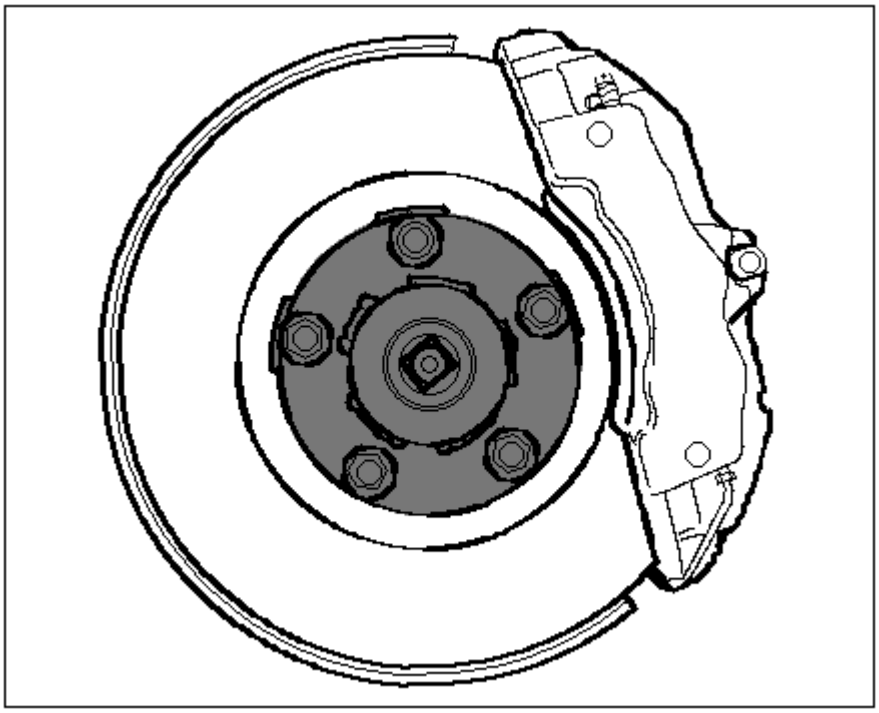


Fig. 46: Adapter plate on wheel hub
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Remove the wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** . and fit the **adapter plate P 9510/1** with tightening torque 160 Nm (118 ftlb.).

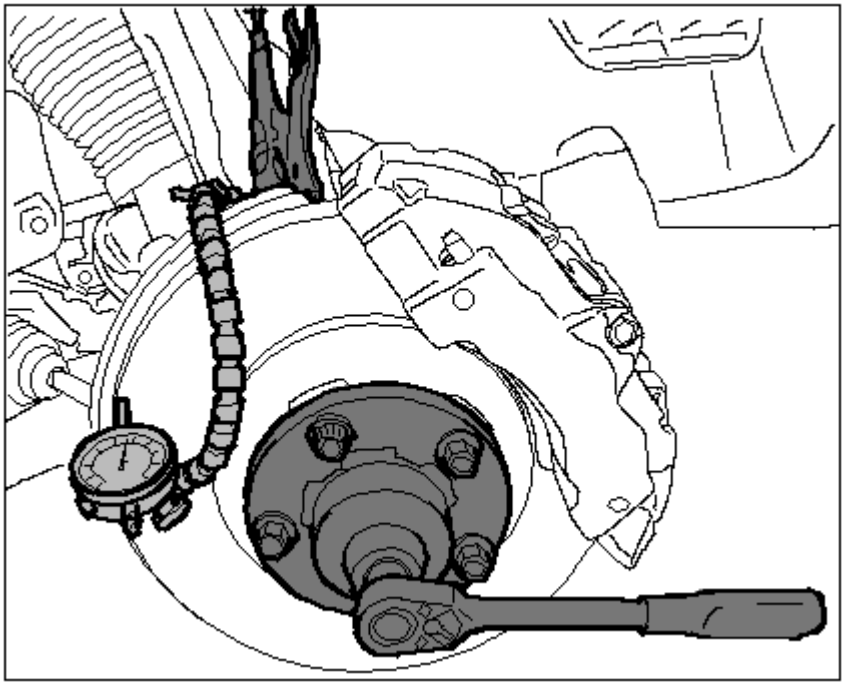


Fig. 47: Dial gauge on brake disc
Courtesy of PORSCHE OF NORTH AMERICA, INC.

2. Fit the adapter **dial gauge set with ball joint arm NR.147-1** at a suitable position on the wheel bearing housing.

3. Fit the dial gauge with some preload and measure the lateral runout at the greatest external diameter of the brake disc.

Wheel hub lateral runout

NOTE: The front face of the wheel hub must not be corroded. If necessary, clean with fine emery cloth.

- Measure the wheel hub lateral runout at the front face of the wheel hub. You should always measure the external and internal diameters of the wheel bolt area.

1. Remove the brake disc. Refer to **465019 Removing and installing the front brake disc [9PAAD1 9PAAD7 9PAAE1 9PAAE7 9PAAF1 9PAAJ1]**

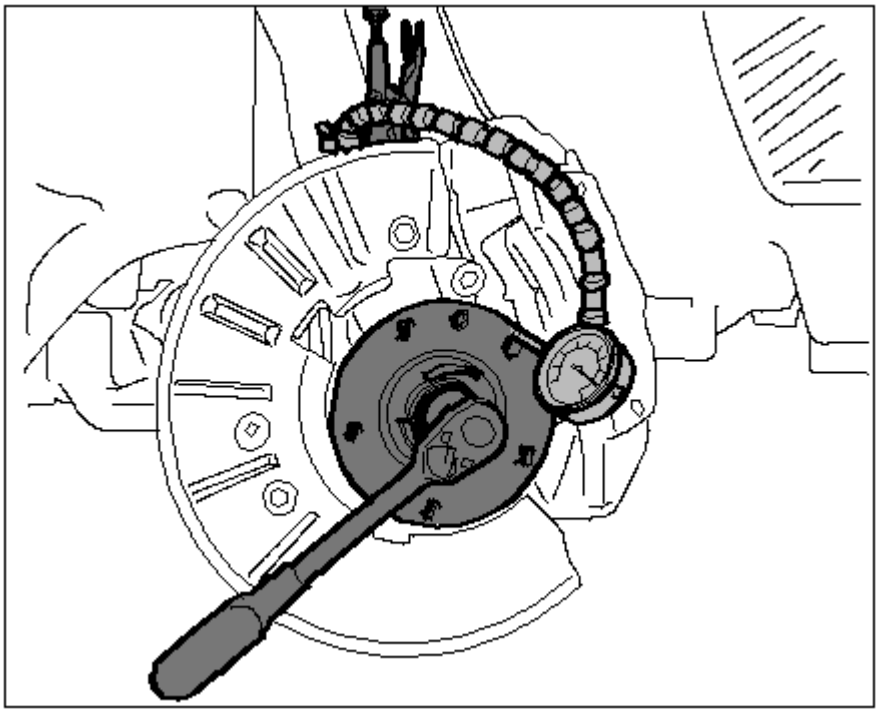


Fig. 48: Dial gauge on wheel hub
Courtesy of PORSCHE OF NORTH AMERICA, INC.

2. Fit the adapter **dial gauge set with ball joint arm NR.147-1** at a suitable position on the wheel bearing housing. Fit the dial gauge with some preload.

Brake disc thickness tolerance

- Brake disc thickness tolerance max. 0.01 mm.

- Measure the thickness tolerance with a suitable micrometer screw within the braking surface at approx. eight points.

46 50 19 REMOVING AND INSTALLING FRONT BRAKE DISC - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE S TIO TITAN)

TOOLS

Designation	Type	Number	Explanation	
piston resetting fixture (replaces P83)	commercially available tool	NR.144		

PRELIMINARY WORK

Preliminary work

1. Remove wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

REMOVING FRONT BRAKE DISC

NOTE:

- ***In order to gain better access for removal of the brake calliper, it is beneficial to turn the wheels fully either to the right or the left.***

1. Release retainer for plug of wear indicator on wheel carrier.

2. Disconnect the speed sensor on the ABS sensor.

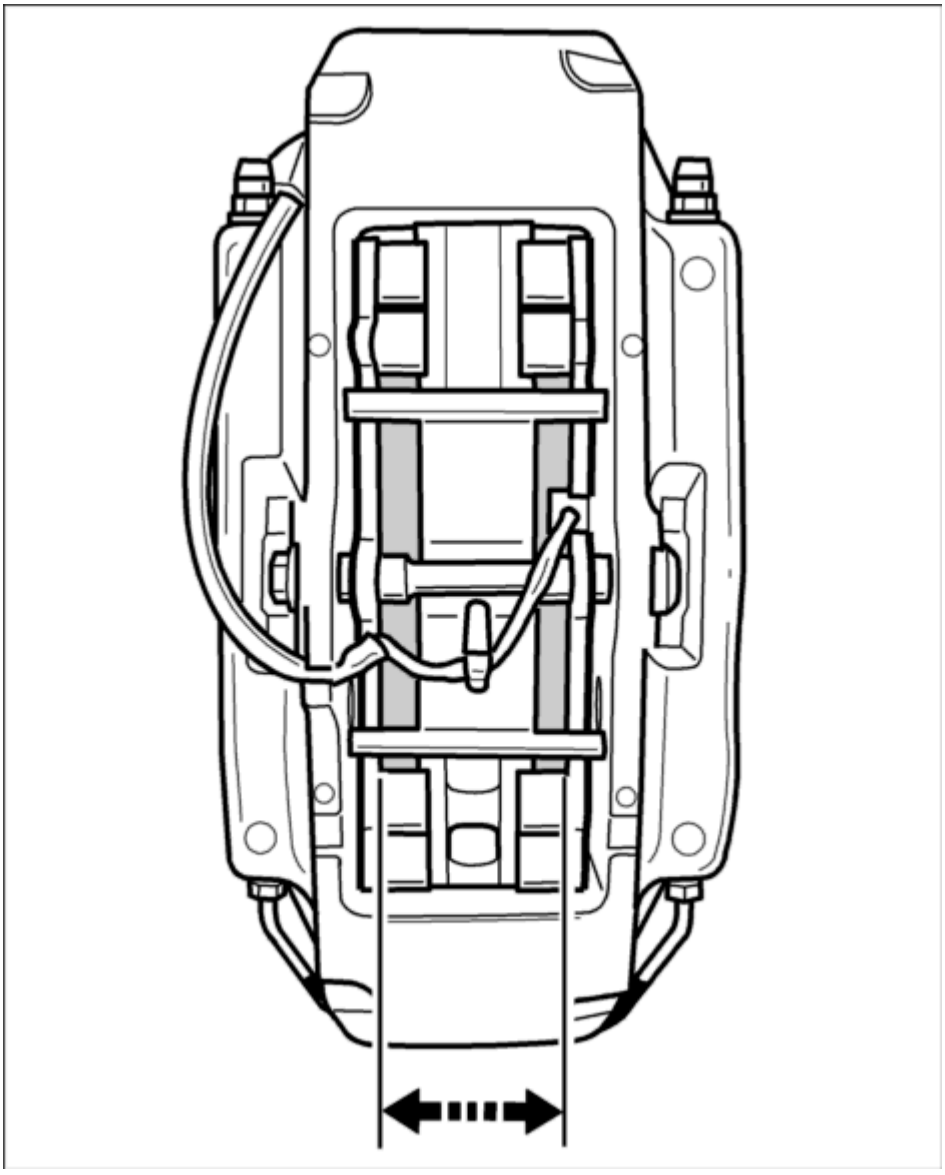


Fig. 49: Pushing brake pad away from rotor
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Push brake pad back slightly and evenly with **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4 **-direction arrow-** . Make sure that no brake fluid runs out of the supply tank - if necessary, remove by suction. See **Fig. 49**.

4. Undo brake caliper on wheel carrier and hang it in a suitable place in the wheel well (do not open the brake hydraulics!).

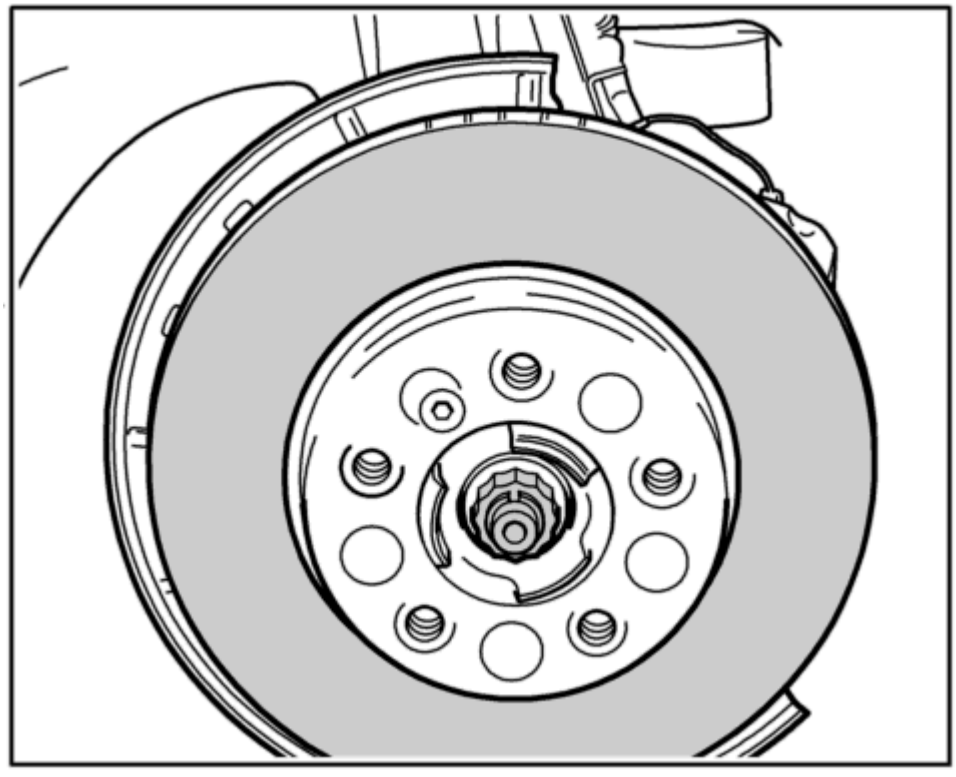


Fig. 50: Brake disc and fastening screw
Courtesy of PORSCHE OF NORTH AMERICA, INC.

5. Remove brake disc after unscrewing the fastening screw. If necessary, remove the brake disc by tapping it gently with a rubber hammer.

INSTALLING FRONT BRAKE DISC

Do not confuse right and left brake discs during assembly!

Distinguishing characteristic: Part No.! The flat surface of the brake discs is marked with R = right or L = left.

1. Check that all parts are in perfect condition and replace them if necessary.

2. Clean the levelling and centering surfaces on the brake disc and wheel hub. Then apply a very thin coat of Optimoly TA to the centering surface on the wheel hub.

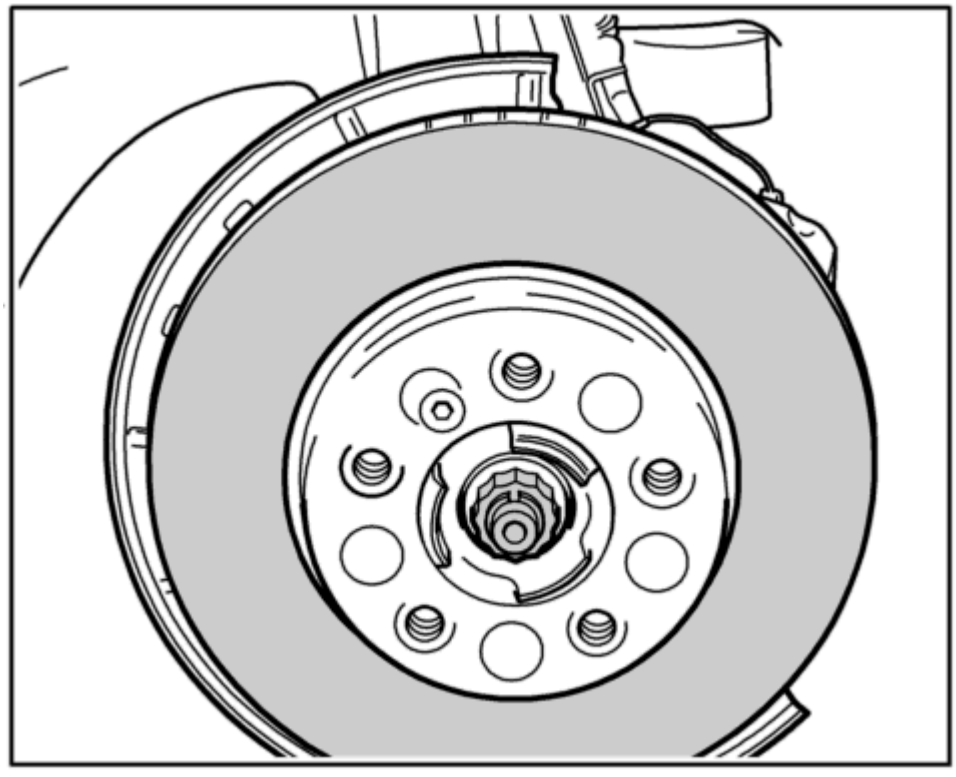


Fig. 51: Brake disc and fastening screw
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Fit the brake disc. Observe correct tightening torque --> **46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan)**.

4. Fit the brake caliper. Replace the brake caliper fastening screws after each removal. Observe correct tightening torque --> **46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan)**.

5. Install retainer for plug of wear indicator on wheel carrier.

6. Connect the speed sensor on the ABS sensor.

7. Position disc brake pads by operating the brake several times.

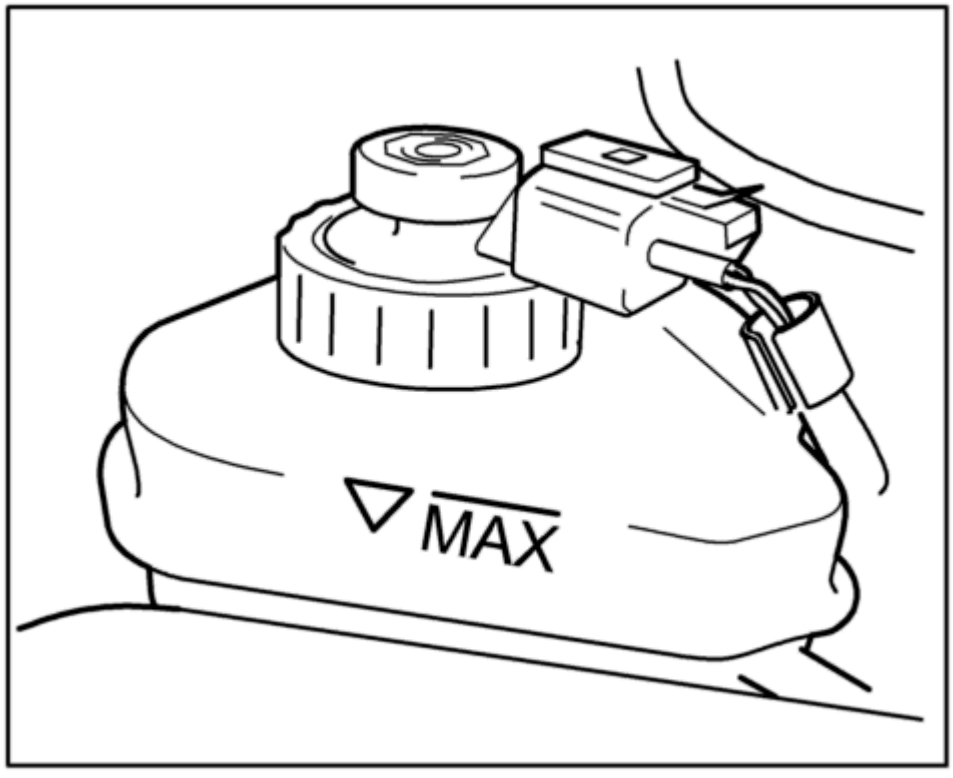


Fig. 52: Brake fluid reservoir
Courtesy of PORSCHE OF NORTH AMERICA, INC.

8. Check brake fluid level and correct if necessary. The brake fluid level must lie within the MAX - MIN marking. See **Fig. 52**.

SUBSEQUENT WORK

Mount wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

46 53 02 CHECKING REAR BRAKE DISCS (WEAR ASSESSMENT) - AS OF MY 2003 (ALL MODELS)

TOOLS

Designation	Type	Number	Explanation	
dial gauge set with ball joint arm	commercially available tool	NR.147-1		
adapter plate	special tool	P 9510/1		

INFORMATION

Brake disc wear assessment - General

Normally, brake disc replacement is necessary after the thickness falls below the minimum. In rare, isolated cases (of very high loads for long periods) replacement may be necessary due to crack formation. To a certain extent these cracks may be rated as not important. A description is given in the following sections of when to replace brake discs.

Cracks arise through material fatigue due to frequent and extreme thermal expansion fluctuations. Particularly in cases of very high loads for long periods, these thermal expansion fluctuations produce internal stresses. The result may be cracks in the friction surface. These cracks allow relaxation of the friction disc, so that the speed at which the cracks develop is very slow.

The cracks run from the center of the friction surface to the (inner and outer) edges of the brake disc. As different vehicle types have different brake disc sizes, differences arise for the maximum crack length limits.

The maximum crack length limit is calculated as follows:

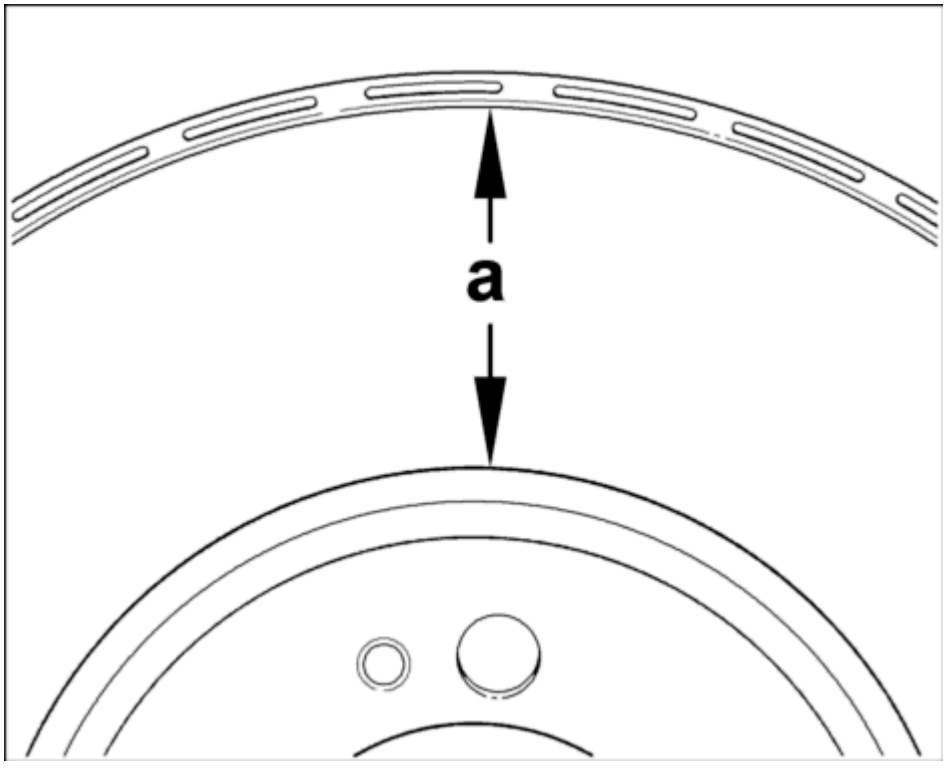


Fig. 53: Width of friction surface a
Courtesy of PORSCHE OF NORTH AMERICA, INC.

0.5 x a (-**a**- = width of friction surface in mm). See **Fig. 53**.

Larger cracks impair braking comfort and reduce brake disc strength, therefore making brake disc replacement necessary as a precaution.

Irrespective of the crack length, the brake disc must be replaced if the crack has extended as far as the outer

and/or inner edge of the disc.

Bedding in the brake pads and brake discs

New brake pads require a bedding-in period of approx. 200 km! Not until then do they achieve their best friction and wear coefficient. During this period, the brakes should be subjected to full stress when travelling at high speed only in emergencies. The slightly reduced braking effect must be compensated for by increased pressure on the brake pedal. The same also applies after replacing or machining brake discs.

CHECKING

Checking rear brake discs (evaluating cracks)

Different vehicle types have different brake disc sizes. This produces differences for the maximum crack length limits.

The maximum crack length limit is calculated as follows:

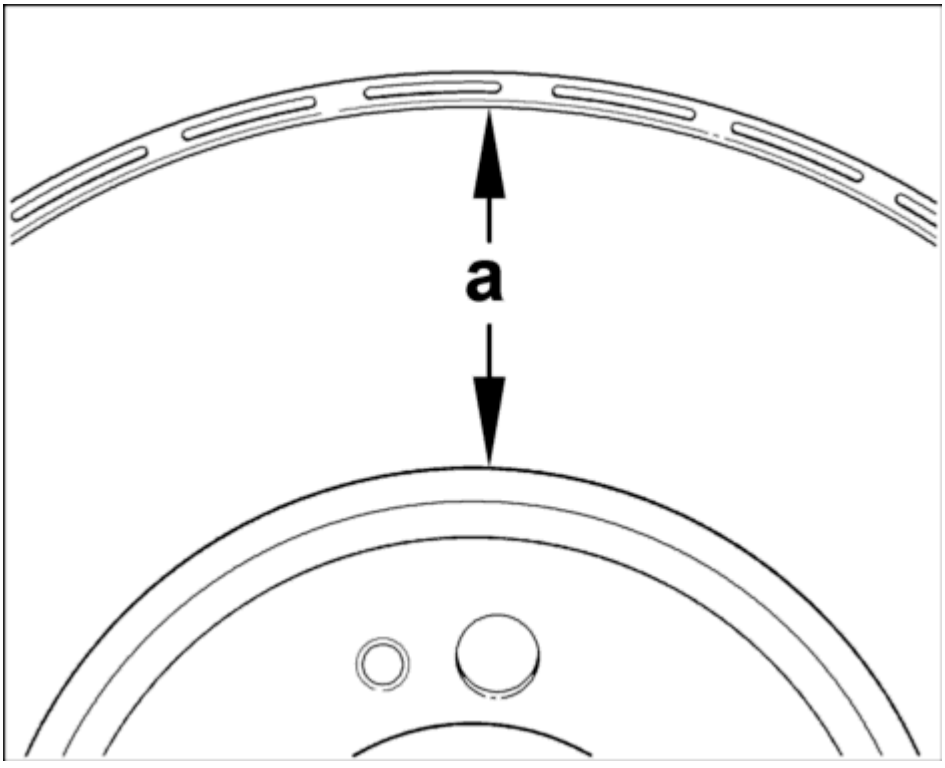


Fig. 54: Width of friction surface a
Courtesy of PORSCHE OF NORTH AMERICA, INC.

0.5 x a (**-a-** = width of friction surface in mm). See **Fig. 54**.

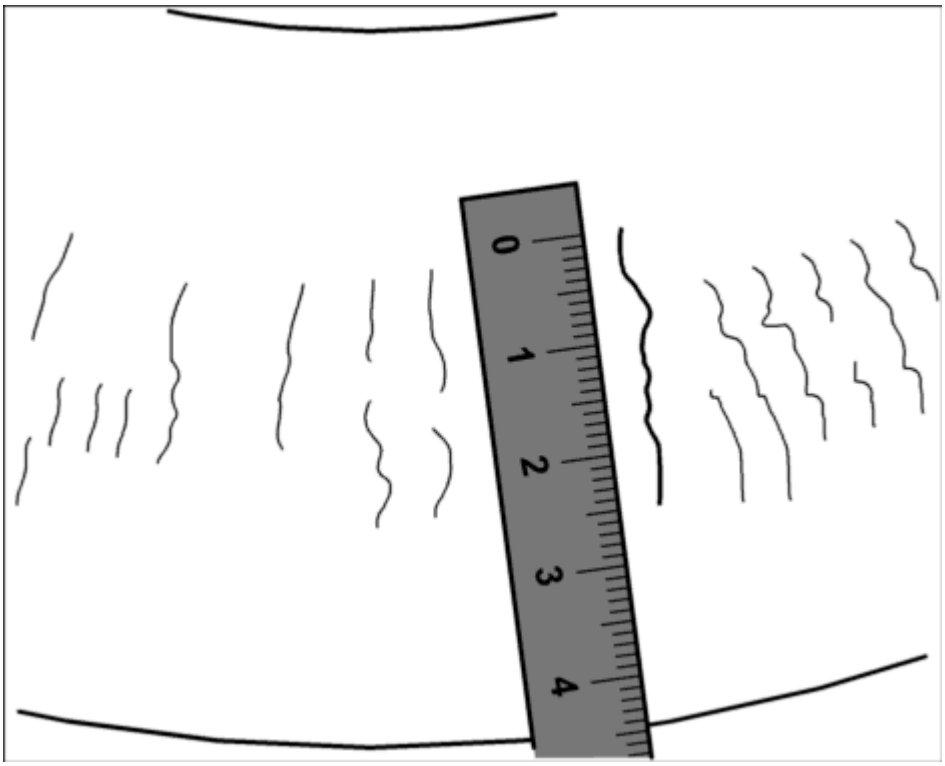


Fig. 55: Brake discs
Courtesy of PORSCHE OF NORTH AMERICA, INC.

The length of a crack can be measured with a steel rule, for example. **-steel rule-** . See **Fig. 55**.

NOTE: Irrespective of the crack length, the brake disc must be replaced if the crack has extended as far as the outer and/or inner edge of the disc.

As a precaution, brake discs must be replaced when:

- the --> **Maximum crack length: 0.5 x a mm** (a = friction surface width in mm) is exceeded!
- the --> **Maximum crack width: 1 mm** is exceeded!
- the --> **Maximum crack depth: 1.5 mm** is exceeded!

Checking rear brake discs (minimum thickness)

NOTE: Normally, brake discs are used until the maximum wear dimension is reached. --> *46 Technical data/brake wear limits* Only in a few exceptional cases is it advisable to skim the brake discs (if there is deep scoring or corrosion of the friction surface). In this case only the disc brake dressing machines approved by Porsche AG are to be used (see Workshop Equipment Manual, Chapter 3.4).

- ***Only as new brake discs may be reworked!***
- ***Only rework the brake discs symmetrically, evenly from both sides!***

As the pressure force of a brake piston on the brake pad varies in magnitude, different areas of wear arise on the friction surface. The brake disc can basically be divided into two areas of wear:

-A- Outer and inner wear areas. See **Fig. 56**.

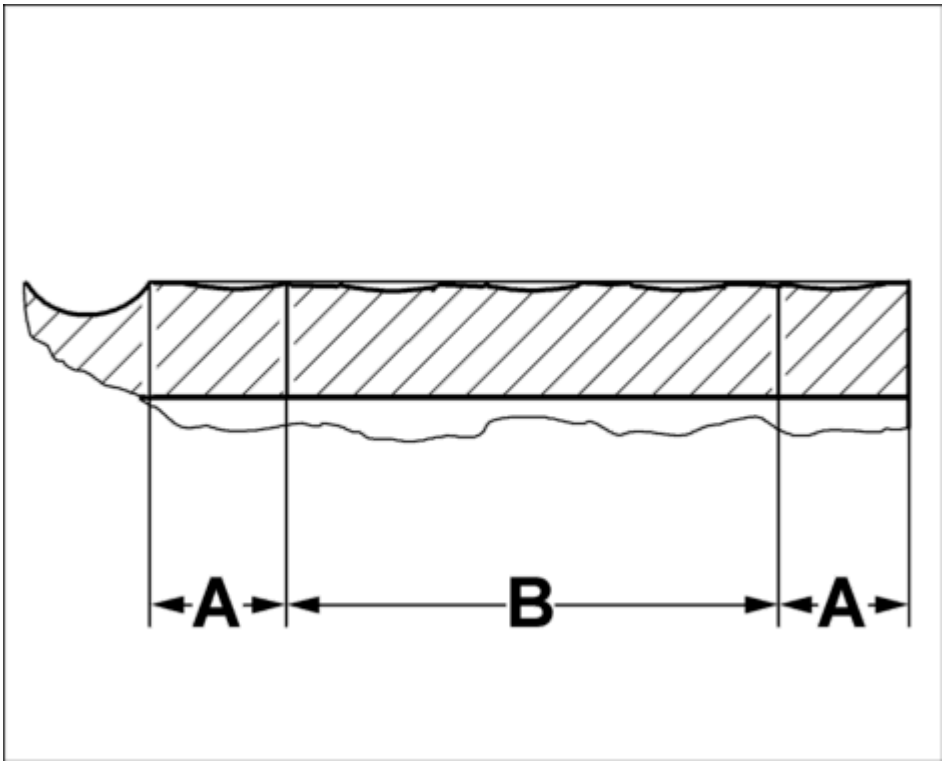


Fig. 56: Wear areas A and B
Courtesy of PORSCHE OF NORTH AMERICA, INC.

-B- Central wear area. See **Fig. 56**.

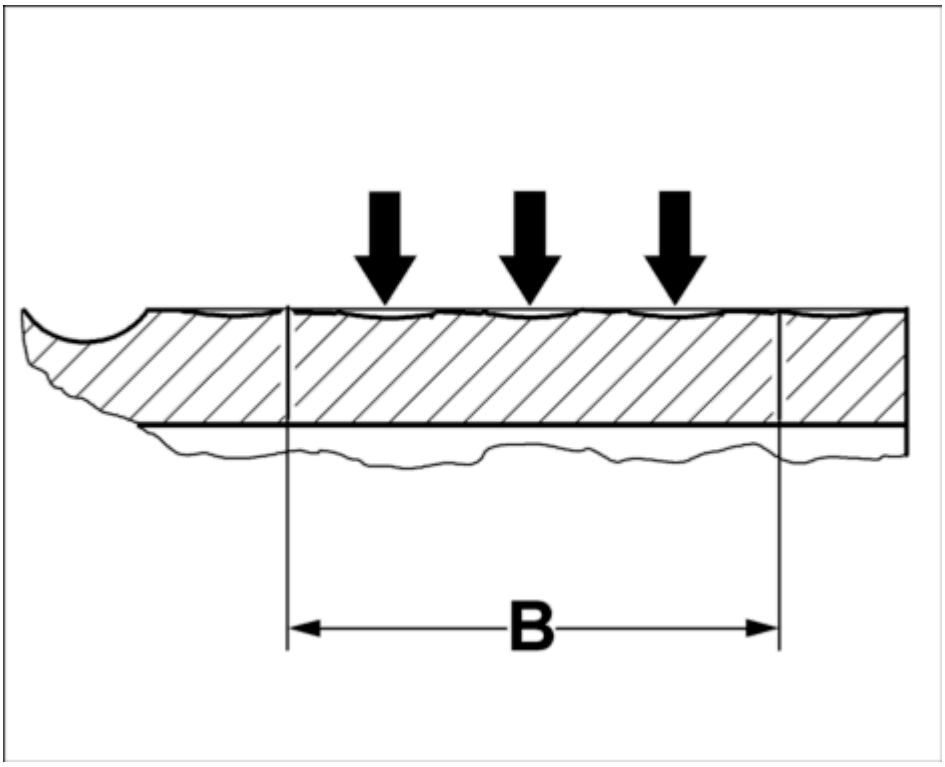


Fig. 57: Wear area B
Courtesy of PORSCHE OF NORTH AMERICA, INC.

The central wear area **-B-** is the area with the highest degree of wear. See **Fig. 57**.

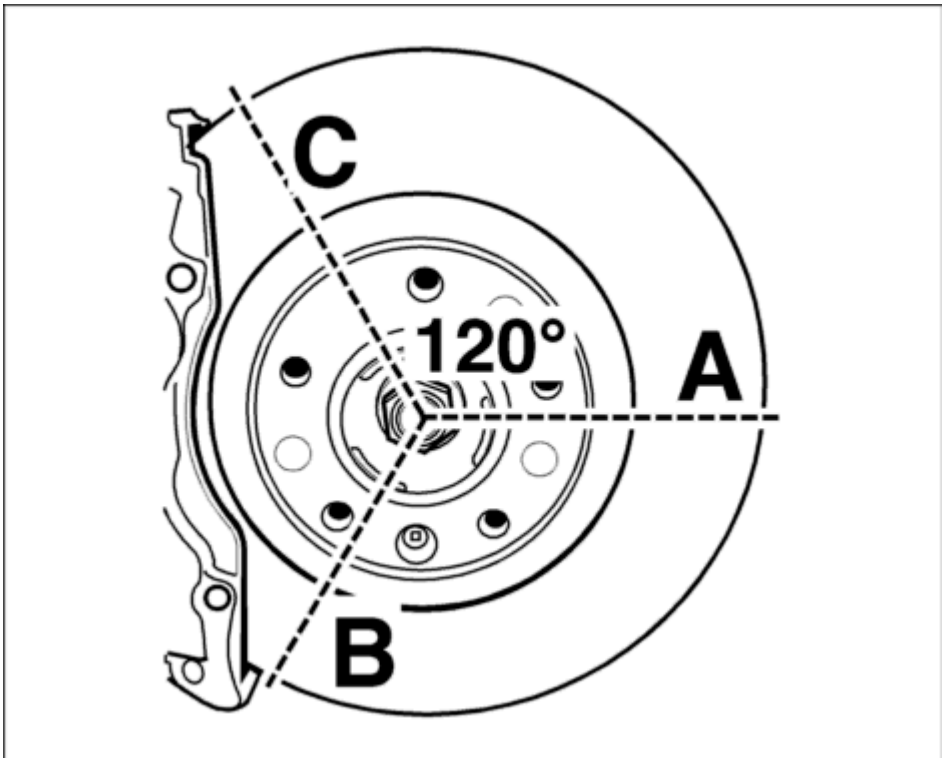


Fig. 58: Measurement points for brake disc thickness
Courtesy of PORSCHE OF NORTH AMERICA, INC.

- Measure the brake discs with a suitable micrometer at a minimum of three different places (**-A, B, C-**), offset by 120°. See **Fig. 58**.

Checking lateral runout (brake disc/wheel hub) and thickness tolerance

NOTE: Fasten dial gauge set with ball joint arm to wheel bearing housing.

For checking lateral runout two adapters are used. The brake disc and wheel hub can be measured with these.

Brake disc lateral runout

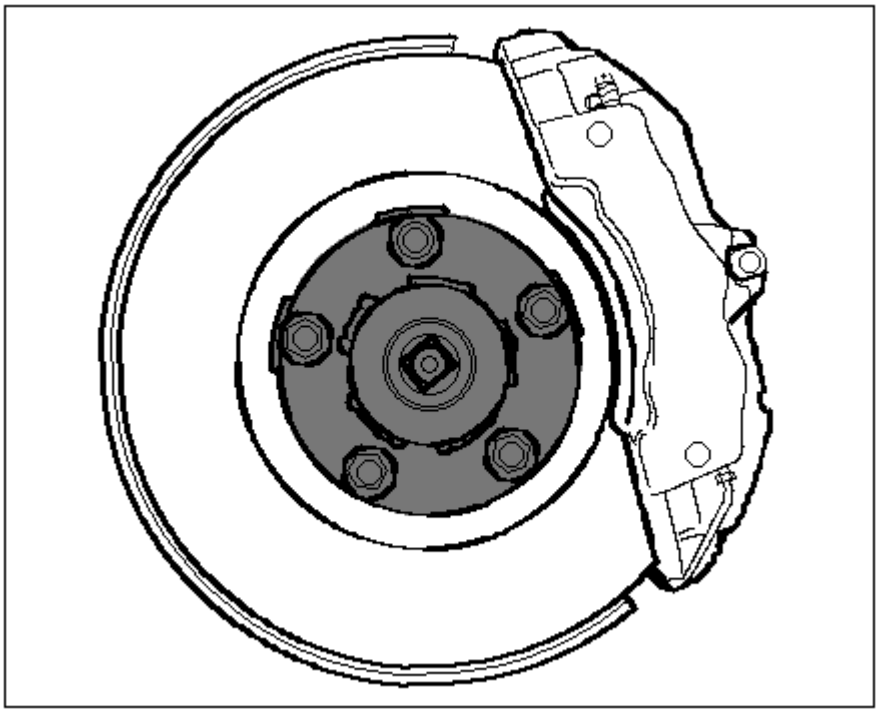


Fig. 59: Adapter plate on wheel hub
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Remove the wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** . and fit the **adapter plate P 9510/1** with tightening torque 160 Nm (118 ftlb.).

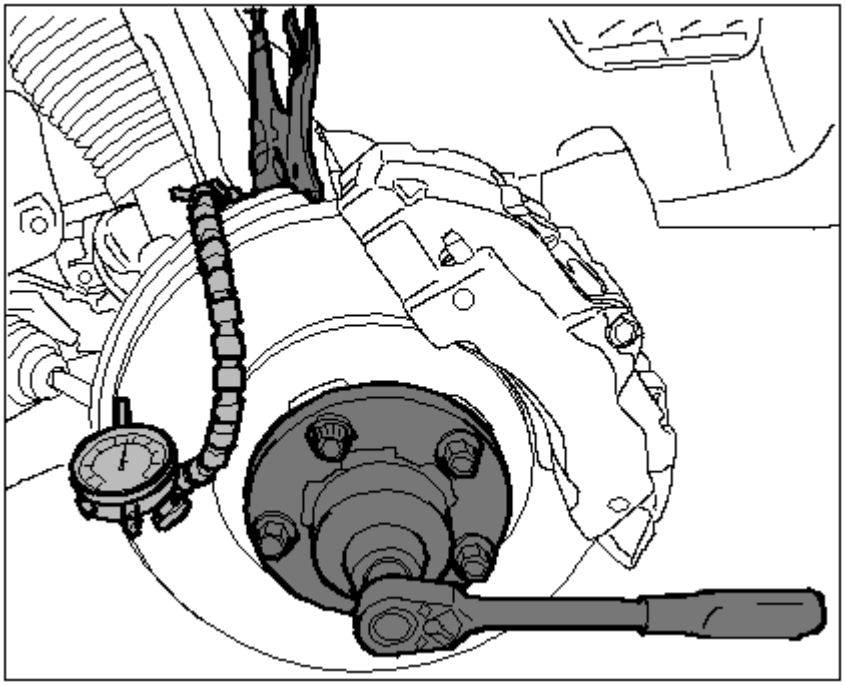


Fig. 60: Dial gauge on brake disc
Courtesy of PORSCHE OF NORTH AMERICA, INC.

2. Fit the adapter **dial gauge set with ball joint arm NR.147-1** at a suitable position on the wheel bearing housing (schematic representation of front axle).

3. Fit the dial gauge with some preload and measure the lateral runout at the greatest external diameter of the brake disc.

Wheel hub lateral runout

NOTE: The front face of the wheel hub must not be corroded. If necessary, clean with fine emery cloth.

- Measure the wheel hub lateral runout at the front face of the wheel hub. You should always measure the external and internal diameters of the wheel bolt area.

1. Remove the brake disc. Refer to **465319 Removing and installing rear brake disc [9PAAD1 9PAAD7 9PAAE1 9PAAE7 9PAAF1 9PAAJ1]**.

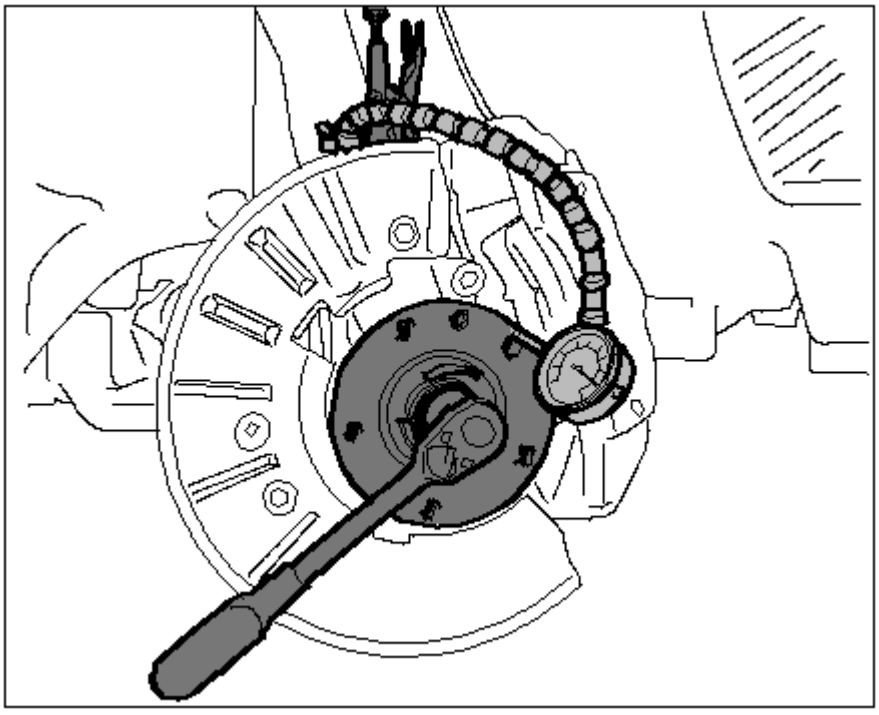


Fig. 61: Dial gauge on wheel hub
Courtesy of PORSCHE OF NORTH AMERICA, INC.

2. Fit the adapter **dial gauge set with ball joint arm NR.147-1** at a suitable position on the wheel bearing housing (schematic representation of front axle). Fit the dial gauge with some preload.

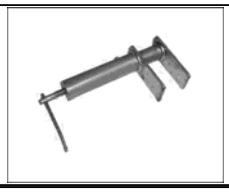
Brake disc thickness tolerance

- Brake disc thickness tolerance max. 0.01 mm.

- Measure the thickness tolerance with a suitable micrometer screw within the braking surface at approx. 8 points.

46 53 19 REMOVING AND INSTALLING REAR BRAKE DISC - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE S TIO TITAN)

TOOLS

Designation	Type	Number	Explanation	
piston resetting fixture (replaces P83)	commercially available tool	NR.144		

PRELIMINARY WORK

Preliminary work

1. Remove wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

2. Remove brake caliper. Refer to **47 41 19 Removing and installing rear brake calliper - as of MY 2003 (All Models Except Cayenne S TIO Titan)** .

REMOVING REAR BRAKE DISC

1. Disconnect plug connection for brake pad wear indicator on wheel carrier.

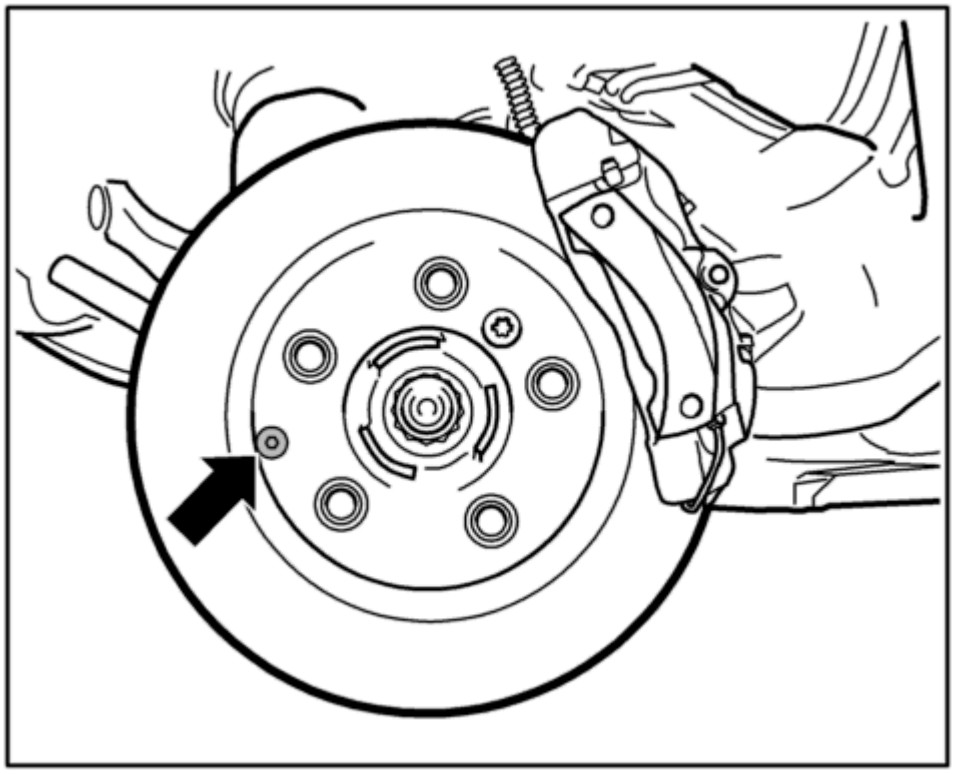


Fig. 62: Identifying screw plug
Courtesy of PORSCHE OF NORTH AMERICA, INC.

2. Remove screw plug **-arrow-** . The adjustment device can be turned through this bore. See **Fig. 62**.

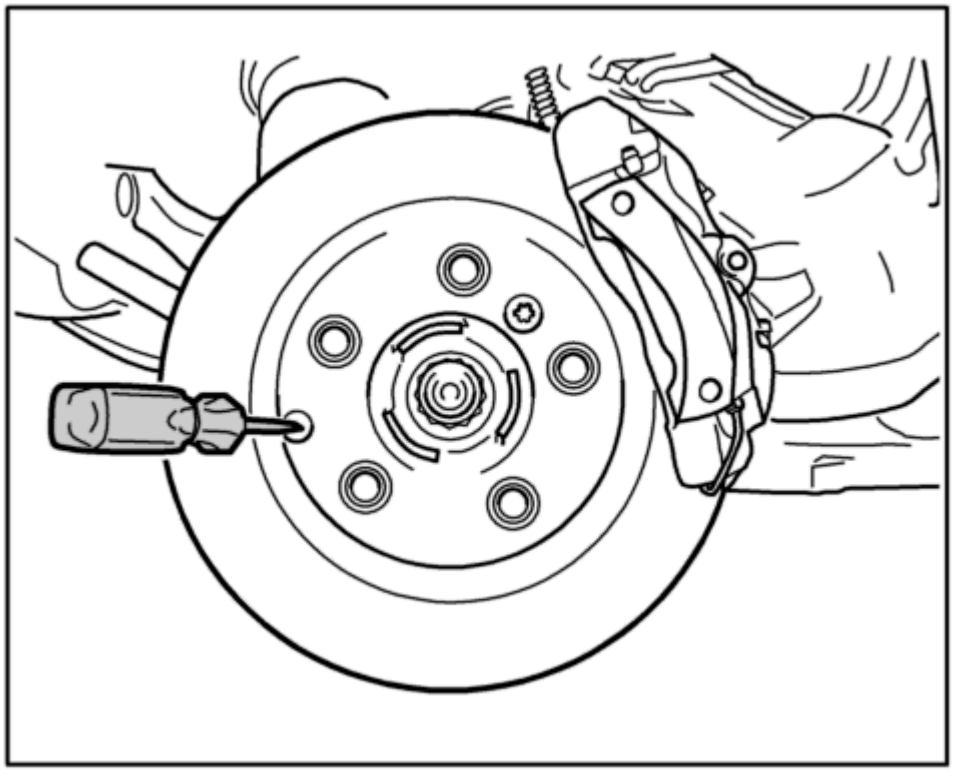


Fig. 63: Turning adjustment device with screwdriver
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Turn the brake disc in such a way that the adjustment device becomes visible. With a screwdriver through the bore, turn the adjustment device towards "release". See **Fig. 63**.

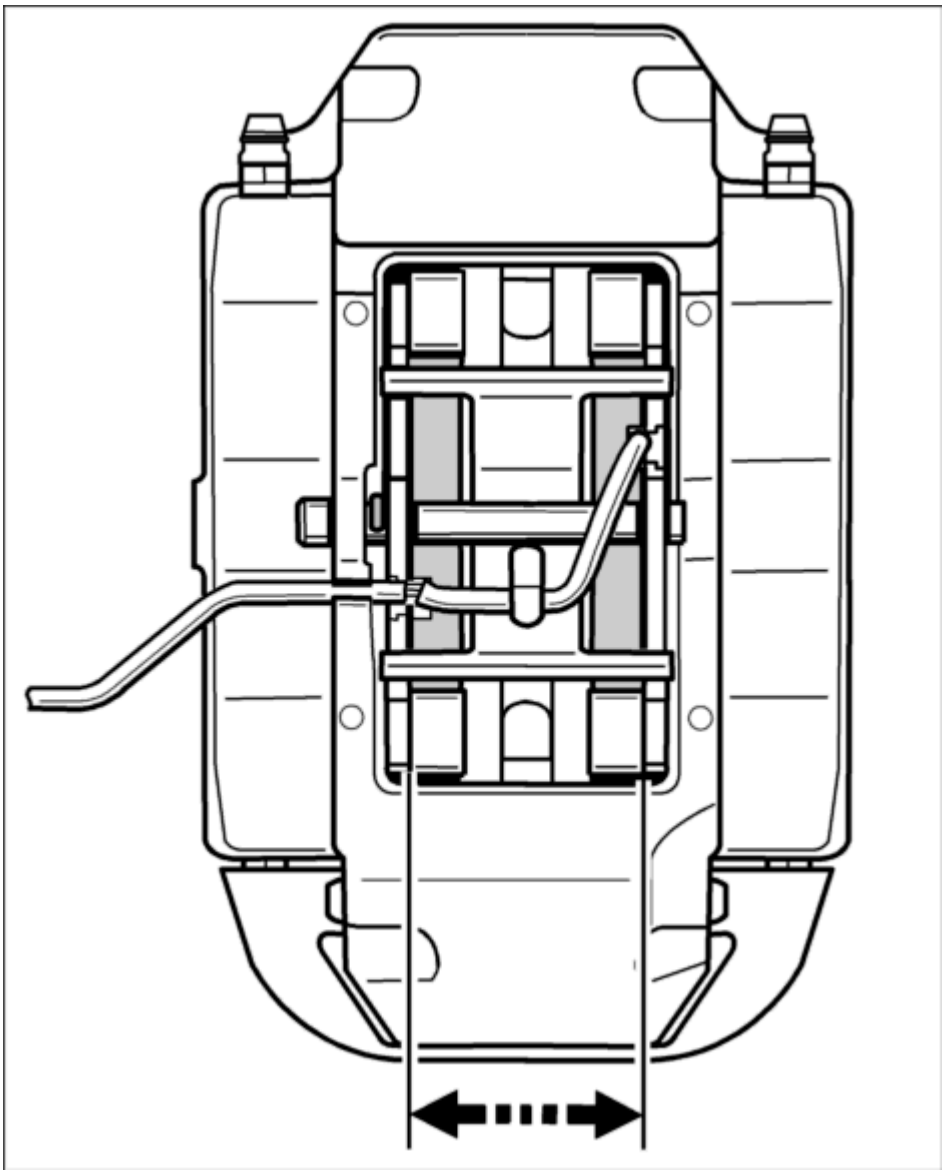


Fig. 64: Pushing pads back using piston resetting fixture
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Push brake pad back slightly and evenly with **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4 **-direction arrow-** . See **Fig. 64**.

5. Undo brake caliper on wheel carrier and hang it in a suitable place in the wheel well (do not open the brake hydraulics). But first pull out the electrical lines from the holder on the brake caliper and the brake pad wear line from the holder on the wheel carrier.

6. Remove brake disc after unscrewing the fastening screw. If necessary, remove the brake disc by tapping it gently with a rubber hammer.

INSTALLING REAR BRAKE DISC

Do not confuse right and left brake discs during assembly!

Distinguishing characteristic: Part No.! The flat surface of the brake discs is marked with R = right or L = left.

1. Check that all parts are in perfect condition and replace them if necessary.

2. Clean the levelling and centering surfaces on the brake disc and wheel hub. Then apply a very thin coat of Optimoly TA to the centering surface on the wheel hub.

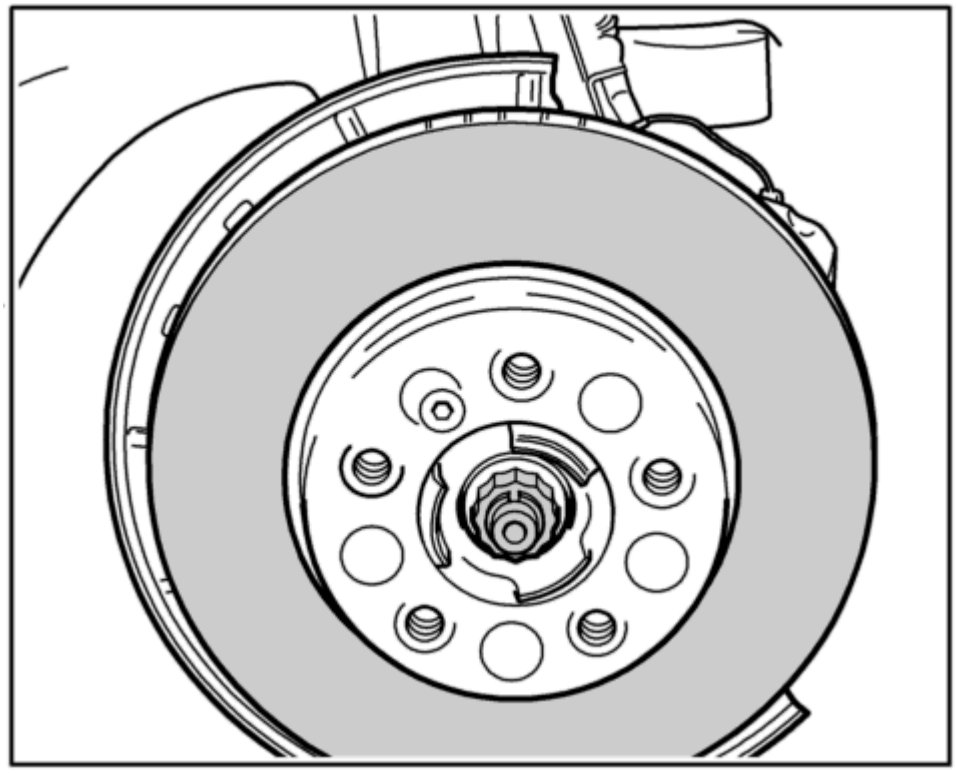


Fig. 65: Brake disc and fastening screw
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Fit the brake disc. Observe tightening torque. --> **46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan)**.

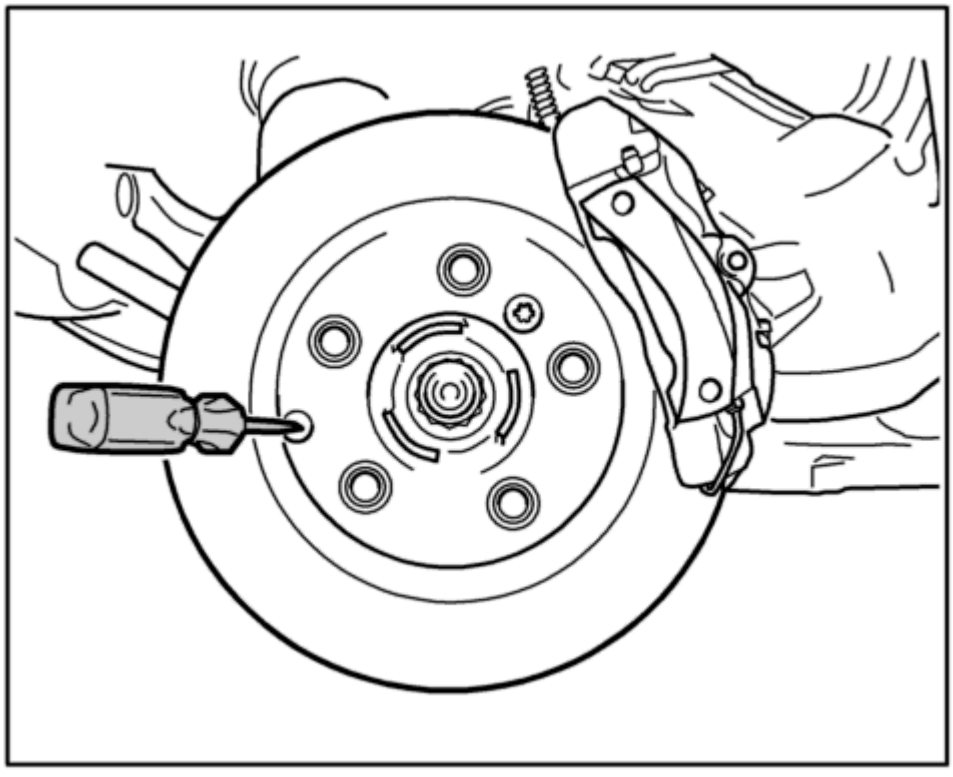


Fig. 66: Turning adjustment device with screwdriver
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Adjust the brake shoes of the foot-operated parking brake with a screwdriver. **--> 468316 Adjusting foot-operated parking brake - "adjusting"**See **Fig. 66**.

5. Fit the brake caliper. Replace the brake caliper fastening screws after each removal. Observe tightening torque. --> **46 TW Tightening torques for brake mechanics - as of MY 2003 (All Models Except Cayenne S TIO Titan)**.

6. Position disc brake pads by operating the brake several times.

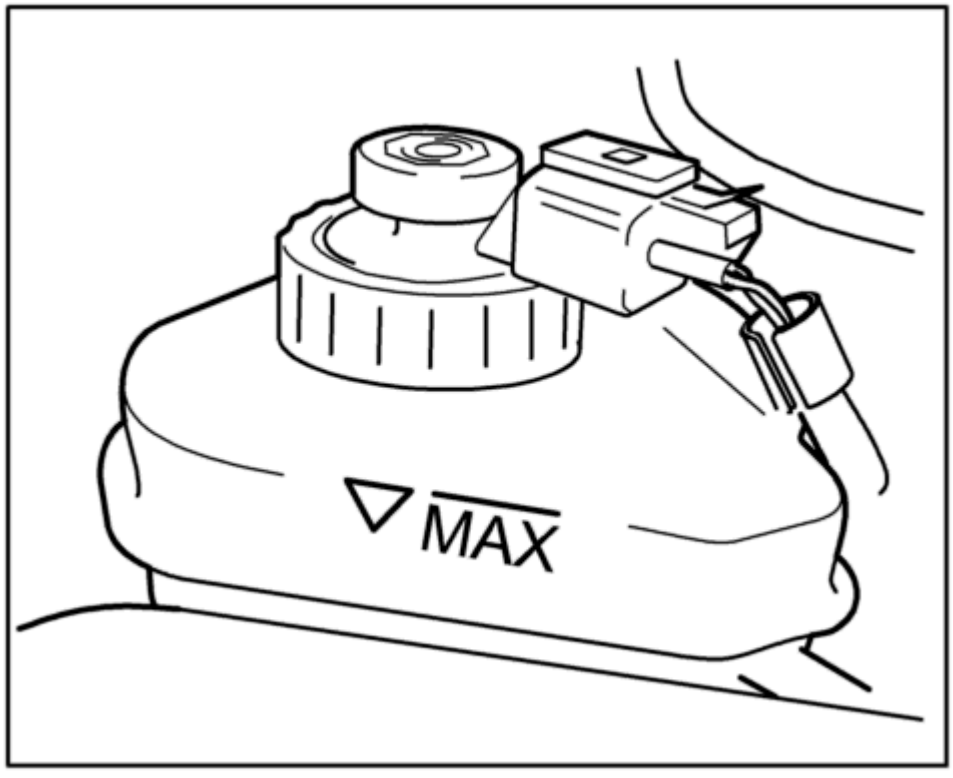


Fig. 67: Brake fluid reservoir
Courtesy of PORSCHE OF NORTH AMERICA, INC.

7. Check brake fluid level and correct if necessary. The brake fluid level must lie within the MAX - MIN marking. See **Fig. 67**.

SUBSEQUENT WORK

Mount wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

46 58 19 REMOVING AND INSTALLING FRONT BRAKE CABLE FOR FOOT-OPERATED PARKING BRAKE - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE S TIO TITAN)

PRELIMINARY WORK

1. Move control pedal to zero position (pull release). Parking brake is released.

2. Remove trim panel in the sill area. Refer to **68 05 19 Removing and installing inner door sill trim - as of MY 2003 (All Models)** .

3. Remove lower A-pillar trim panel panel. Refer to **70 57 19 Removing and installing A-pillar trim - as of MY 2003 (All Models)** .

4. Remove center console. Refer to **68 17 19 Removing and installing center console - as of MY 2003 (All Models)** .

5. Remove cover in the driver's footwell. Refer to **70 22 19 Removing and installing cover under dashboard - as of MY 2003 (All Models)** .

6. And remove the driver's seat (to facilitate assembly). Refer to **72 01 19 Removing and installing front seat - as of MY 2003 (All Models Except Cayenne S TIO Titan)** .

REMOVING FRONT BRAKE CABLE

Installation Location:

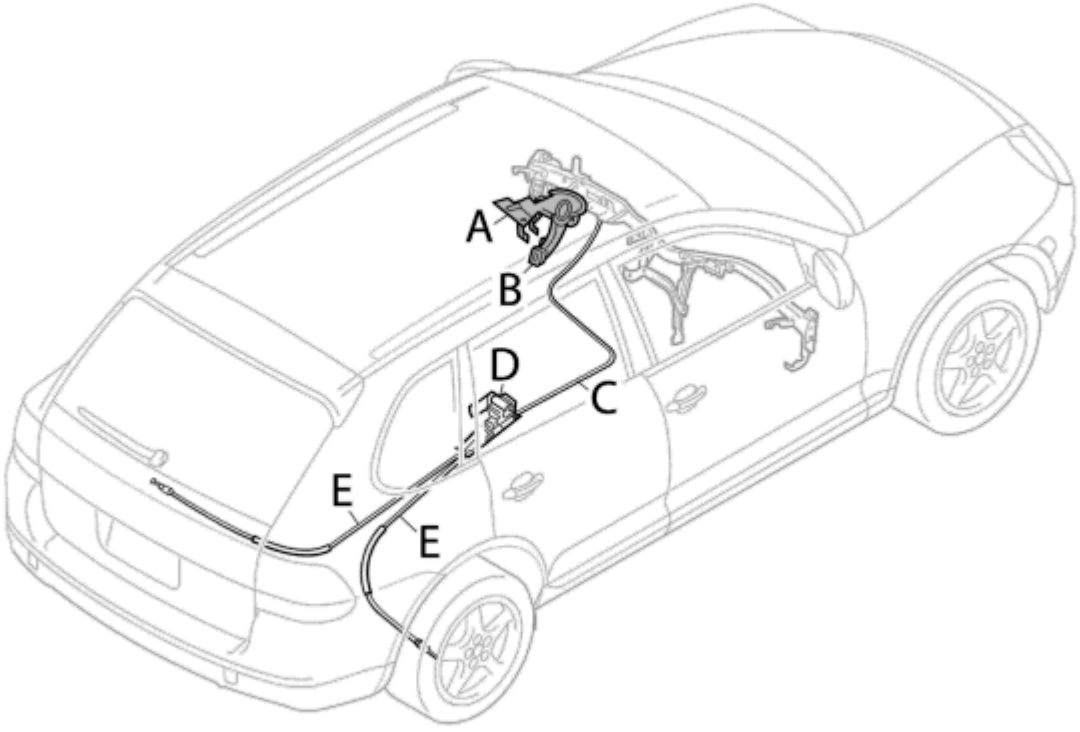


Fig. 68: Parking brake components
Courtesy of PORSCHE OF NORTH AMERICA, INC.

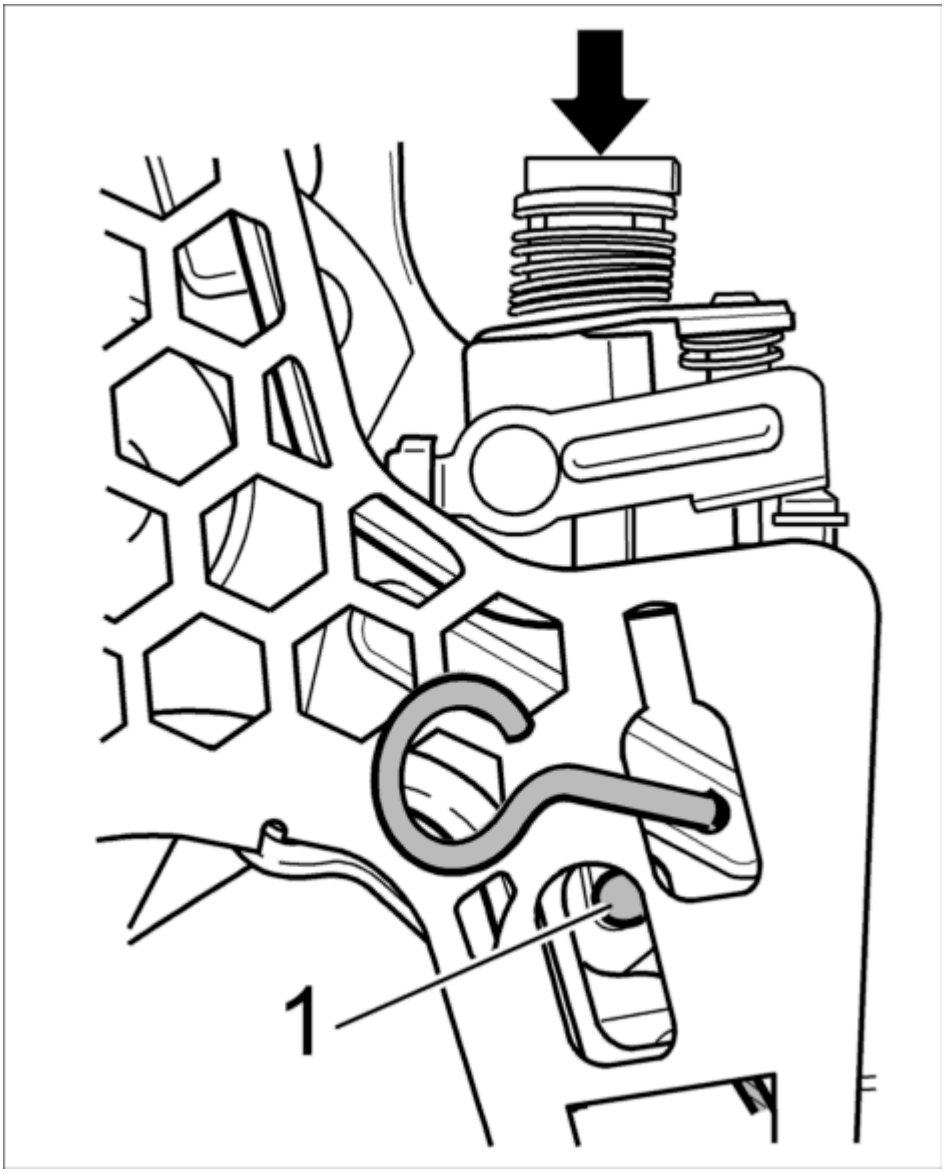


Fig. 69: Identifying auxiliary pin and ball head of front brake cable
Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- ***Front brake cable means: From the release for the foot-operated parking brake to the deflector under the center console.***
- ***The actuating pedal for the foot-operated parking brake does not have to be removed to do this.***

1. Fix the adjustment device using an auxiliary pin (max. 3.5 mm Ø). In other words: press the adjustment device together **-arrow-** until the assembly bores are covered and the auxiliary pin can be inserted **--> 466019 Removing and installing actuator for foot-operated parking brake - "removing"**. Only remove the ball

head of the brake cable **-1-** when the brake cable has been removed from the deflector (center console). See **Fig. 69**.

2. Lift the front carpet (do not bend) and push the rear carpet aside.

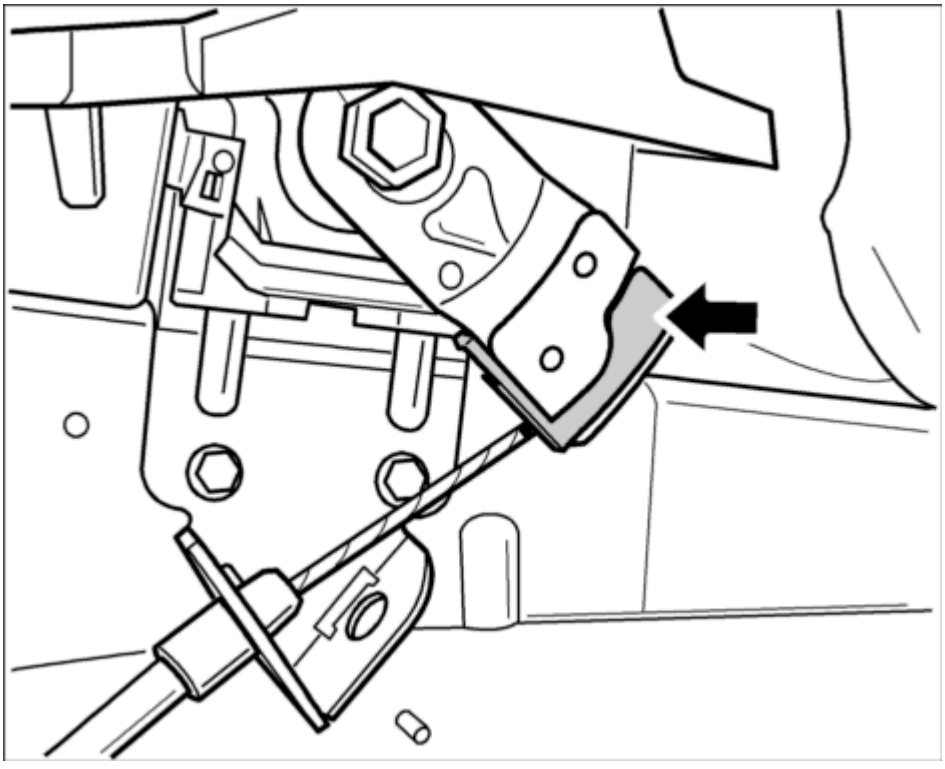


Fig. 70: Identifying cable securing clip on the deflector
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Remove securing clip on the deflector **-arrow-** . See **Fig. 70**.

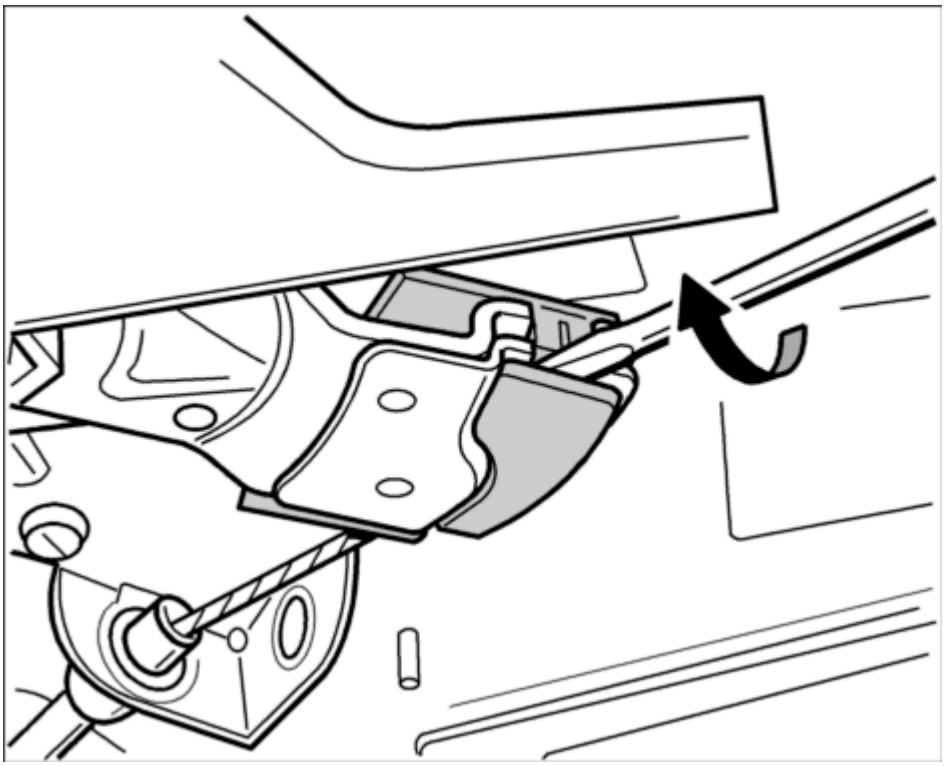


Fig. 71: Unclipping securing clip using a screwdriver
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Unclip securing clip using a screwdriver and remove it. See **Fig. 71**.

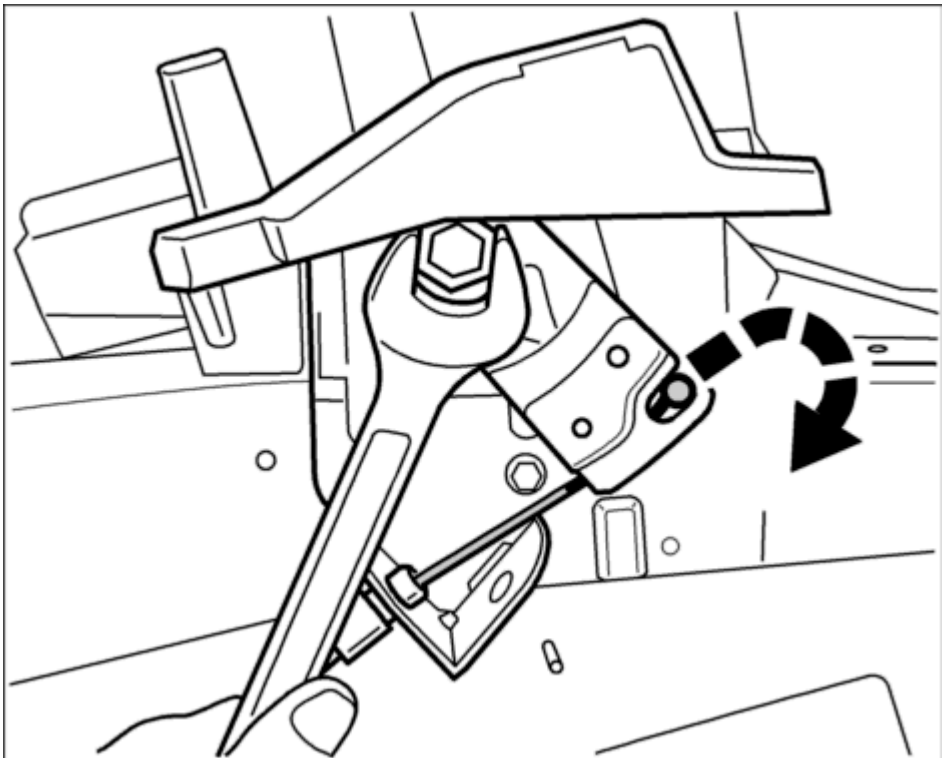


Fig. 72: Removing cable ball head from latch on deflector
Courtesy of PORSCHE OF NORTH AMERICA, INC.

5. Remove the ball head from the latch on the deflector. To do this place an open-ended wrench (a/f 22) on the deflector hexagon and turn it until the end of the cable can be removed (arrow). See **Fig. 72**.

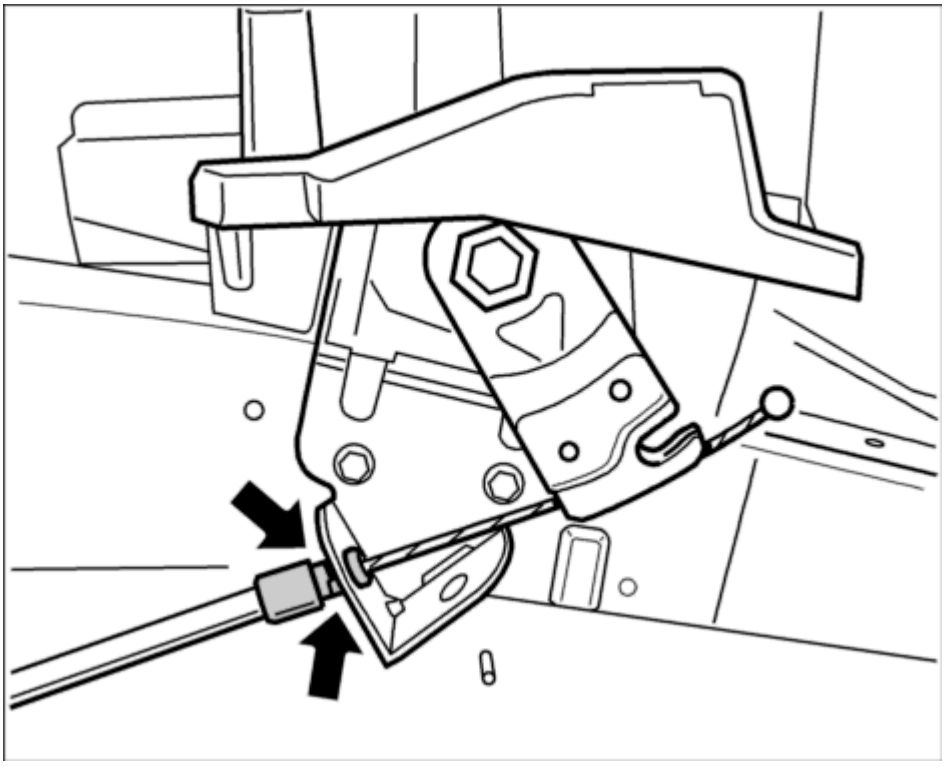


Fig. 73: Removing the brake cable from bracket
Courtesy of PORSCHE OF NORTH AMERICA, INC.

6. To remove the brake cable, press the retaining lugs on the securing clip **-arrows-**) together and pull it out of the bracket. See **Fig. 72**.

7. Remove the cover of the actuating module.

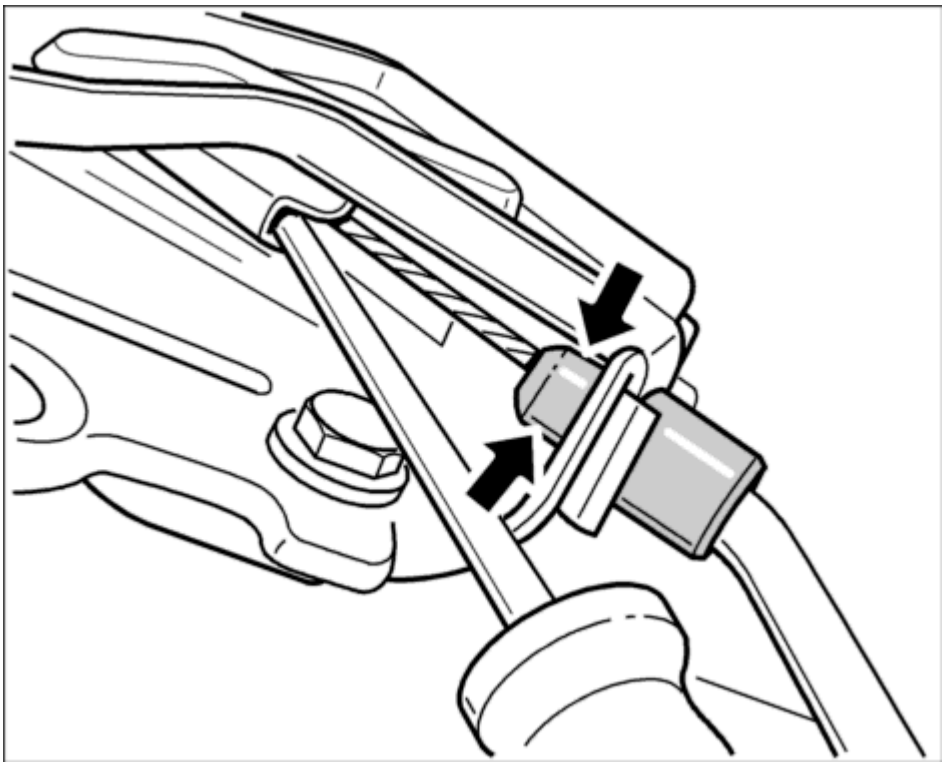


Fig. 74: Pressing retaining lugs on the cable securing clip
Courtesy of PORSCHE OF NORTH AMERICA, INC.

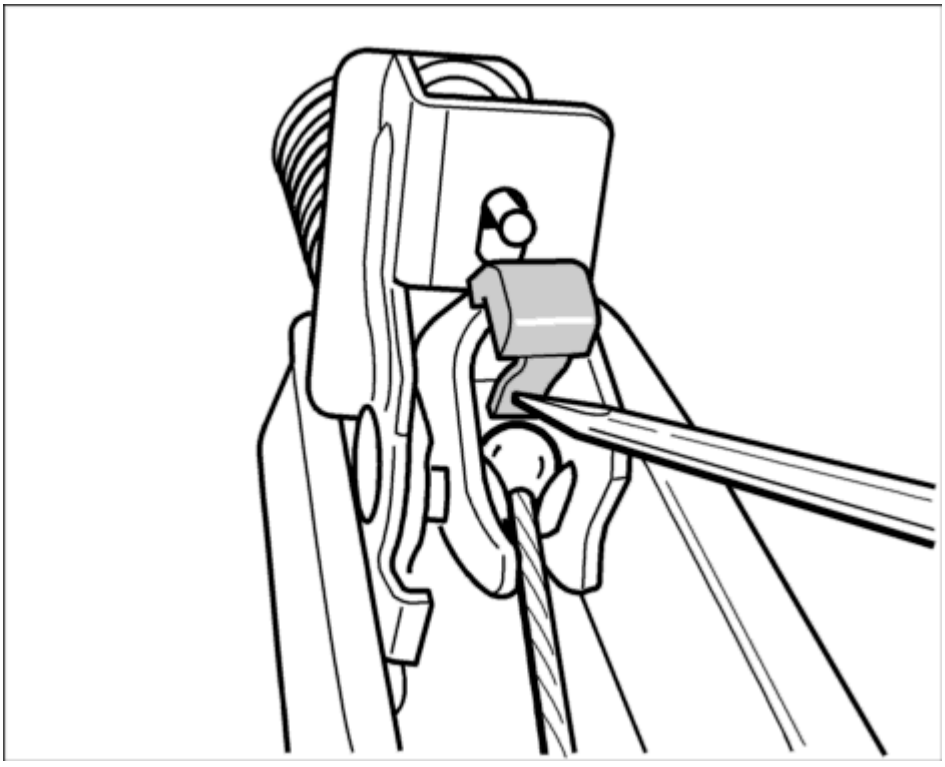


Fig. 75: Pressing cable retainer back using a small screwdriver
Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- ***The cable retainer on the actuating pedal for the front brake cable cannot be removed and is not available as an individual part. During removal, carefully press the cable retainer back using a small screwdriver.*** **See Fig. 75.**

8. Remove the brake cable at the actuating pedal. To do this, press the retaining lugs on the securing clip -**arrows-** together and pull the brake cable out of the bracket. Push the ball head out of the latch. Carefully press the securing lug back using a small screwdriver and remove the brake cable. See **Fig. 74**.

9. Remove the brake cable under the wiring harness and under the air guide.

INSTALLING FRONT BRAKE CABLE

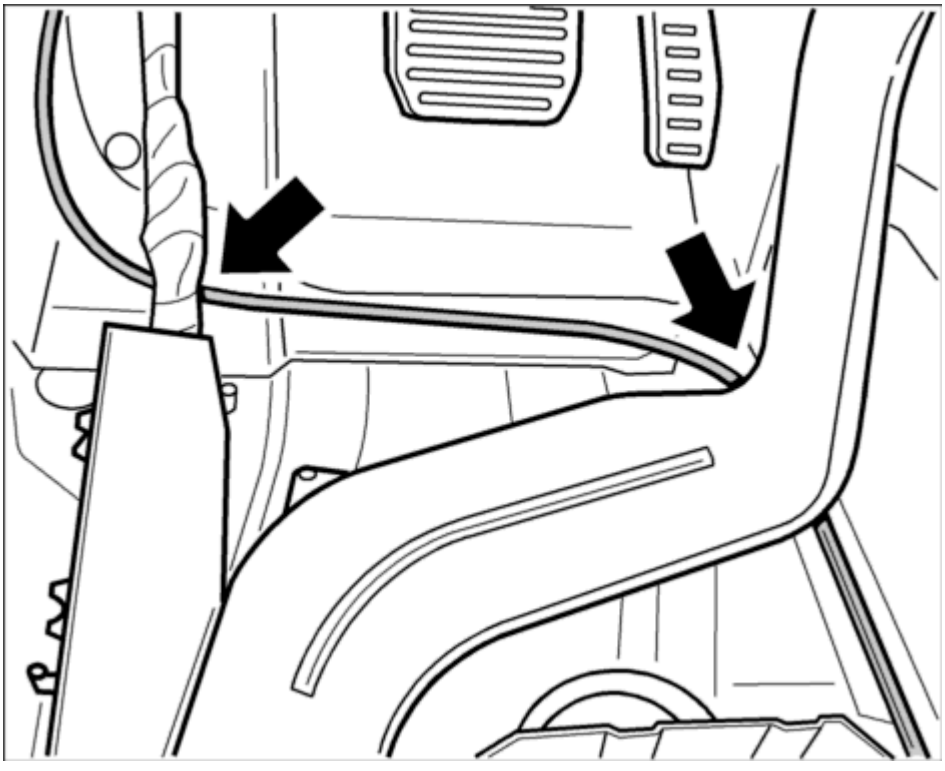


Fig. 76: Brake cable routing
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Lay the brake cable under the wiring harness **-arrow-** and under the air guide **-arrow-** . See **Fig. 76**.

2. Fit the ball head to the latch on the actuating pedal. Make sure that the securing lug is not damaged.

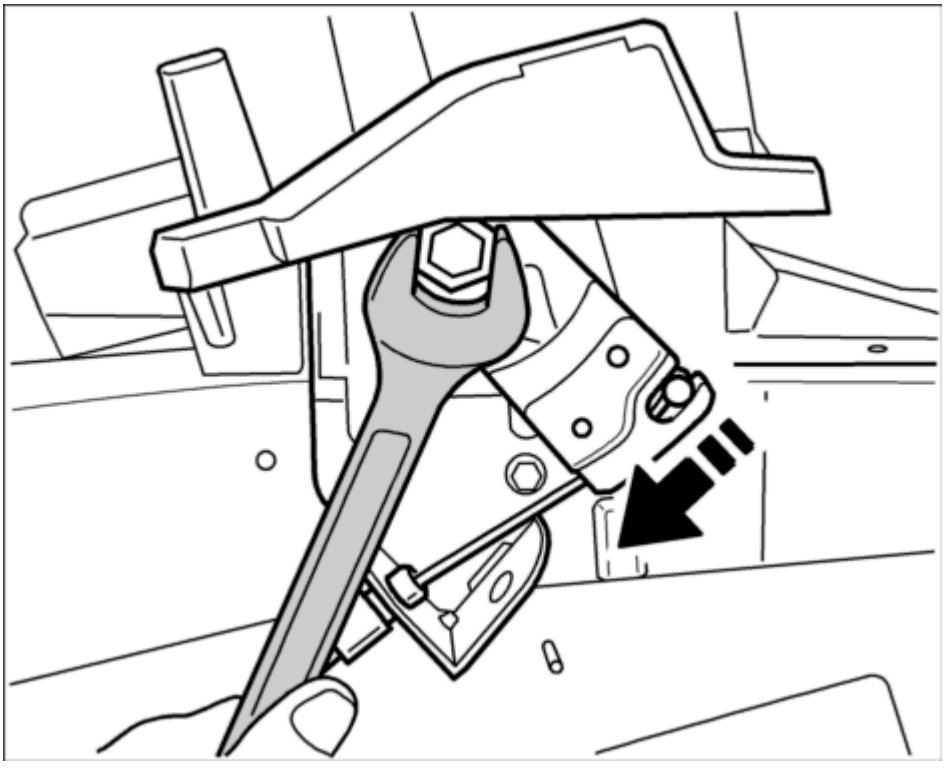


Fig. 77: Turning deflector hexagon using an open-ended wrench
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Push the ball head into the latch on the deflector. To do this use an open-ended wrench (a/f 22) on the deflector hexagon and turn it until the end of the cable can be inserted. See **Fig. 77**.

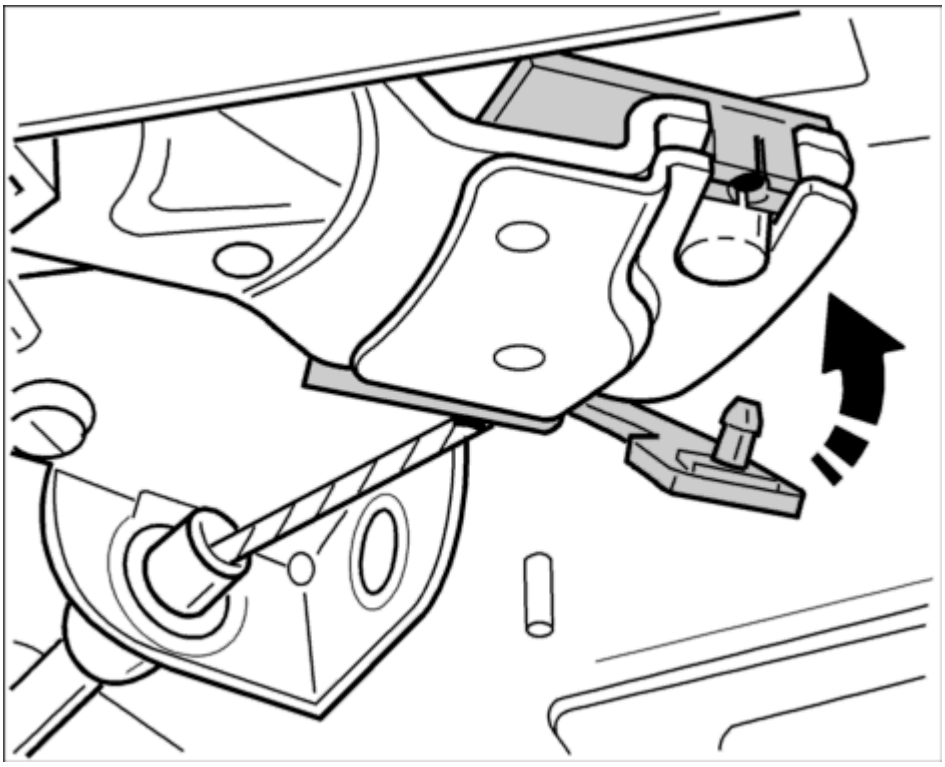


Fig. 78: Engaging securing clip into bracket on deflector
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Engage the securing clip into the bracket on the deflector and make sure it is fitted correctly. Observe the following note for this purpose: See **Fig. 78**.

NOTE:

- ***Damaged securing clips must be replaced. The brake cable can become detached if the securing clip is defective.***
- ***Pass securing clip behind brake cable.***
- **Clip in securing clip -direction arrow- . See Fig. 80.**
- ***Securing clip in end position.* See Fig. 81.**

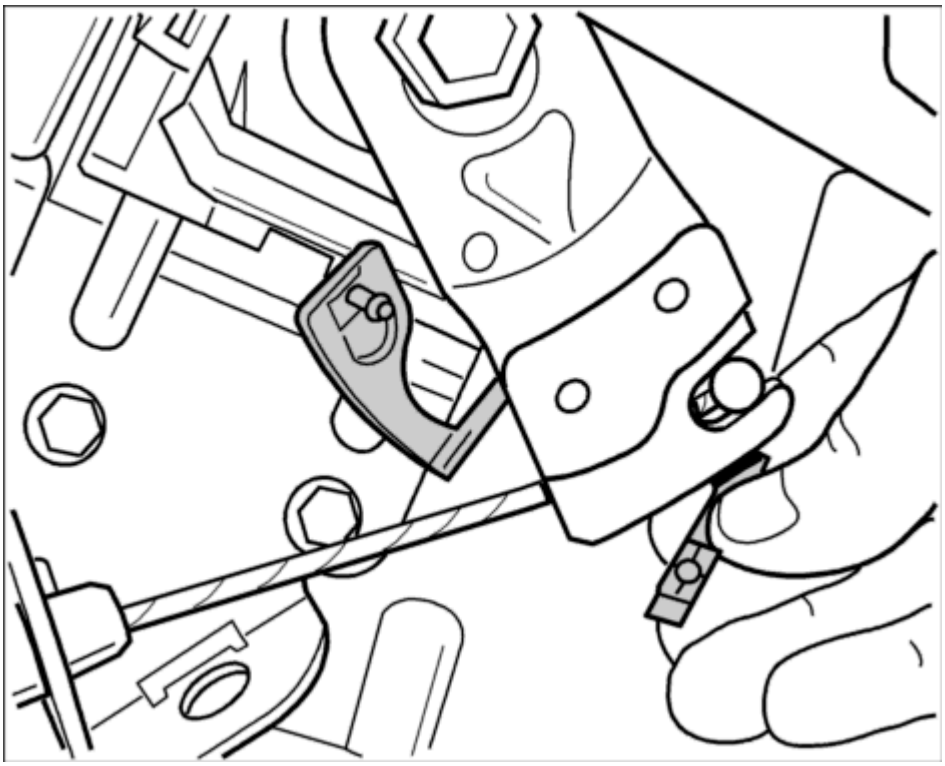


Fig. 79: Brake cable securing clip
Courtesy of PORSCHE OF NORTH AMERICA, INC.

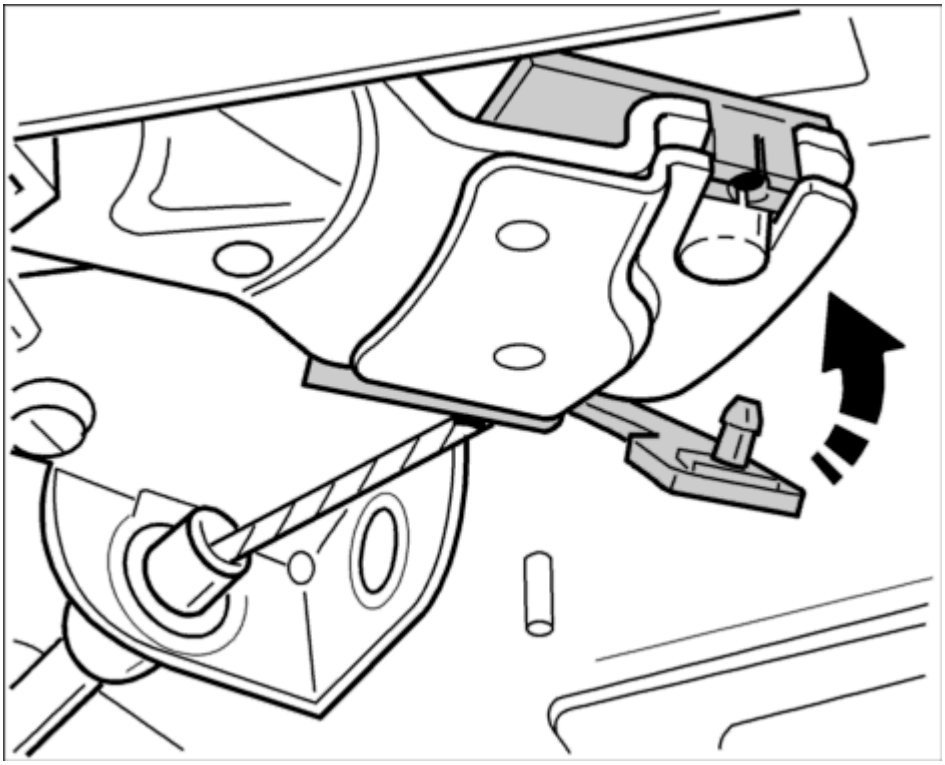


Fig. 80: Engaging securing clip into bracket on deflector
Courtesy of PORSCHE OF NORTH AMERICA, INC.

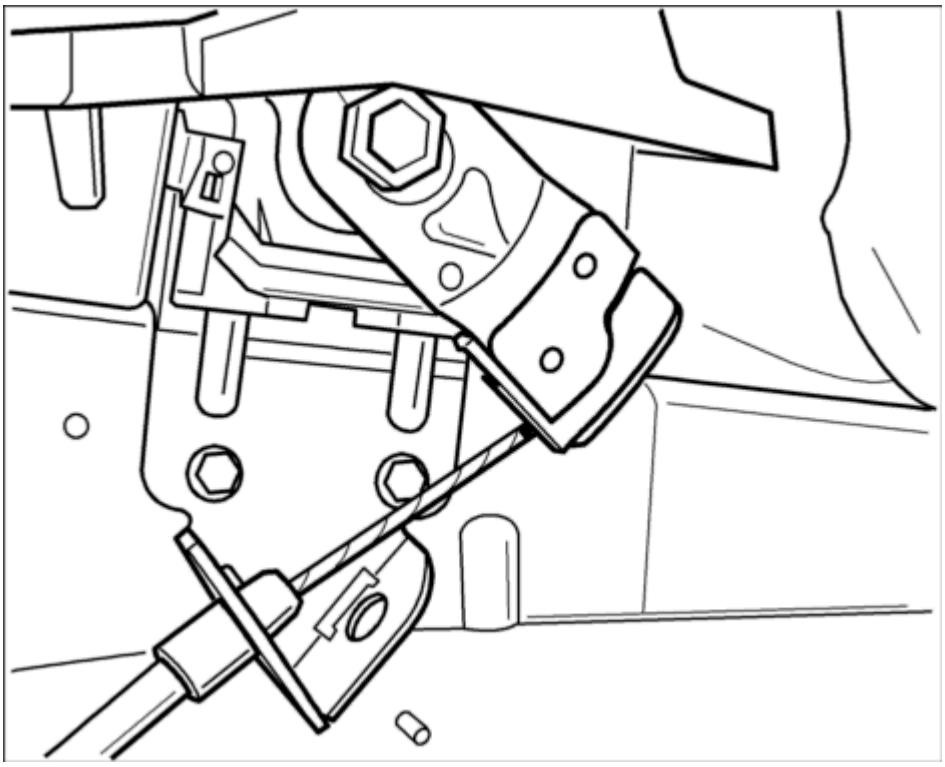


Fig. 81: Identifying brake cable secured in deflector
Courtesy of PORSCHE OF NORTH AMERICA, INC.

5. Install cover of driver's footwell. Refer to **70 22 19 Removing and installing cover under dashboard - as of MY 2003 (All Models)** . and lay the carpet.

6. Perform a function test.

SUBSEQUENT WORK

1. Fit center console. Refer to **68 17 19 Removing and installing center console - as of MY 2003 (All Models)** .

2. Install lower A-pillar trim panel panel. Refer to **70 57 19 Removing and installing A-pillar trim - as of MY 2003 (All Models)** . and fit the trim panel in the sill area. Refer to **68 05 19 Removing and installing inner door sill trim - as of MY 2003 (All Models)** .

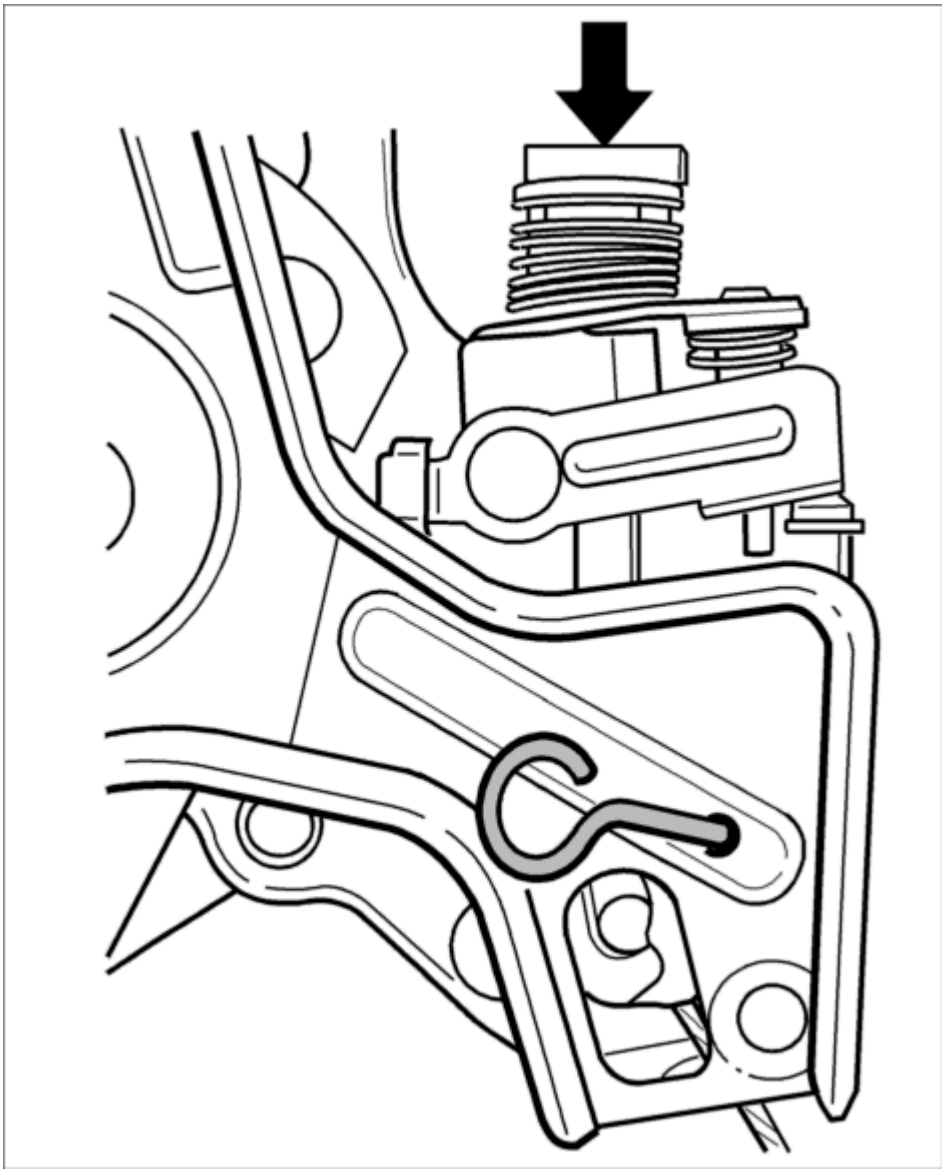


Fig. 82: Auxiliary pin inserted in actuator of foot-operated parking brake
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Remove auxiliary pin from the actuator of the foot-operated parking brake and install cover on actuating module. See **Fig. 82**.

4. Install driver's seat. Refer to **72 01 19 Removing and installing front seat - as of MY 2003 (All Models Except Cayenne S TIO Titan)** .

5. Carry out a function test on the foot-operated parking brake.

46 60 19 REMOVING AND INSTALLING PEDAL FOR FOOT-OPERATED PARKING BRAKE - AS OF MY 2003 (ALL MODELS)

PRELIMINARY WORK

1. Remove lower trim panel in footwell (with diagnostic socket and footwell lighting) and the trim panel support on the bulkhead (only inserted). Refer to **70 22 19 Removing and installing cover under dashboard - as of MY 2003 (All Models)** .

2. Remove lower dashboard trim panel. Refer to **70 19 19 Removing and installing trim under dashboard - as of MY 2003 (All Models)** .

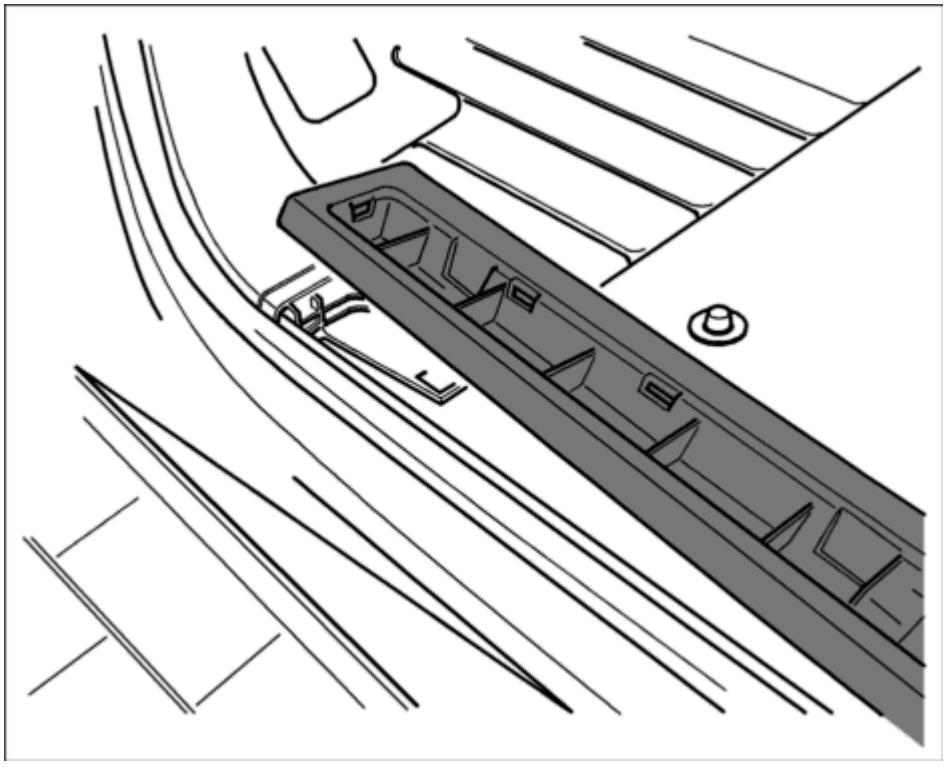


Fig. 83: Trim panel
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Remove side cover of dashboard (fuse box) and the lower A-pillar trim panel. Refer to **70 24 19 Removing and installing front side section trim - as of MY 2003 (All Models)** . To remove the A-pillar trim panel, only partial removal of the >> trim panel for front side section << is required!

REMOVING PEDAL FOR FOOT-OPERATED PARKING BRAKE

Pedal for foot-operated parking brake (FPB)

The foot-operated parking brake is abbreviated to FPB in the table below.

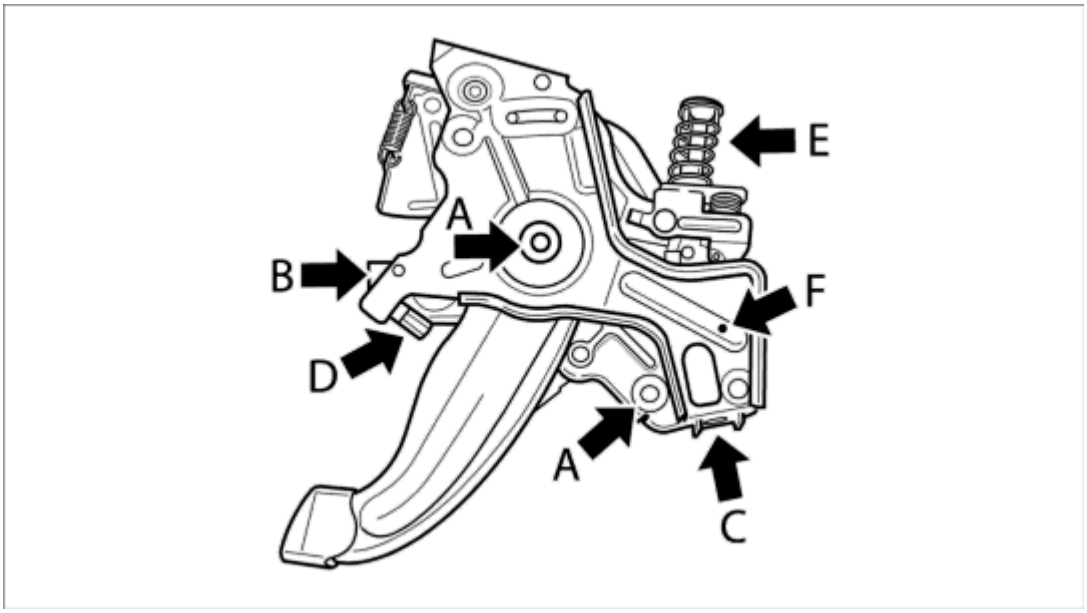


Fig. 84: Foot-operated parking brake (FPB) assembly
Courtesy of PORSCHE OF NORTH AMERICA, INC.

No.	Designation	Qty.	Removal	Fitting
-A- . See **Fig. 84**.	Mounting points for FPB pedal	2		Replace micro-encapsulated screw. M8 tightening torque = 17 ftlb.
-B- . See **Fig. 84**.	Cable receiver for bowden cable for releasing the FPB	1	Take off side cover (dashboard) to facilitate removal.	Pay attention to routing of bowden cable.
-C- . See **Fig. 84**.	Cable receiver for front brake cable	1	Take care not to damage cable retainer during removal. Not available as individual part.	The cable retainer engages automatically during installation.
-D- . See **Fig. 84**.	Contact switch	1		Check function of contact switch following installation (signal light in instrument cluster).
-E- . See **Fig. 84**.	Adjustment device (automatic cable adjustment)	1		Automatically set when actuated for first time.
-F- . See **Fig. 84**.	Assembly bore	1		Only for installation (makes brake cable assembly easier).

Removing pedal for foot-operated parking brake (FPB)

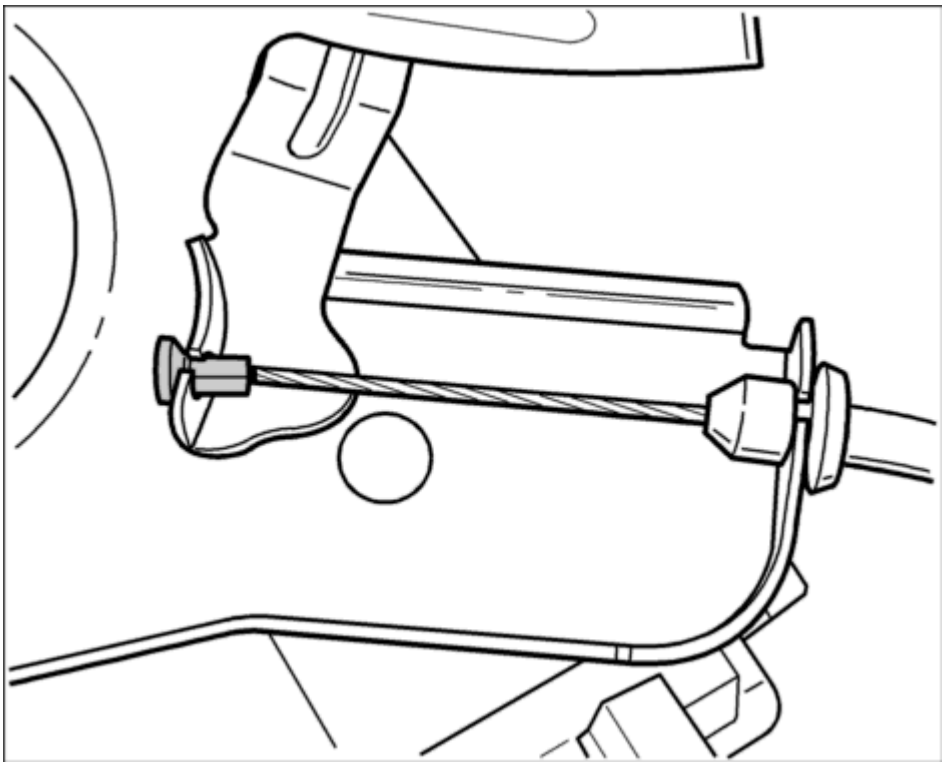


Fig. 85: Bowden cable
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Loosen bowden cable for releasing the FPB at the dashboard (at the side). Pull the release lever slightly. Then, slide the bowden cable in the direction of travel and take the bowden cable sleeve out of the bracket.

2. Remove protective cover (two screws) over the foot-operated parking brake pedal.

3. Remove cover (protective grille) of foot-operated parking brake pedal.

4. Remove FPB switch.

NOTE:

- ***Fix cables using tie-wraps to prevent damage while removing and inserting the FPB pedal.***
- ***The for the front brake cable cannot be removed and is not available as an individual part. Push the cable retainer back carefully during removal (Point 8).*** **See Fig. 86.**

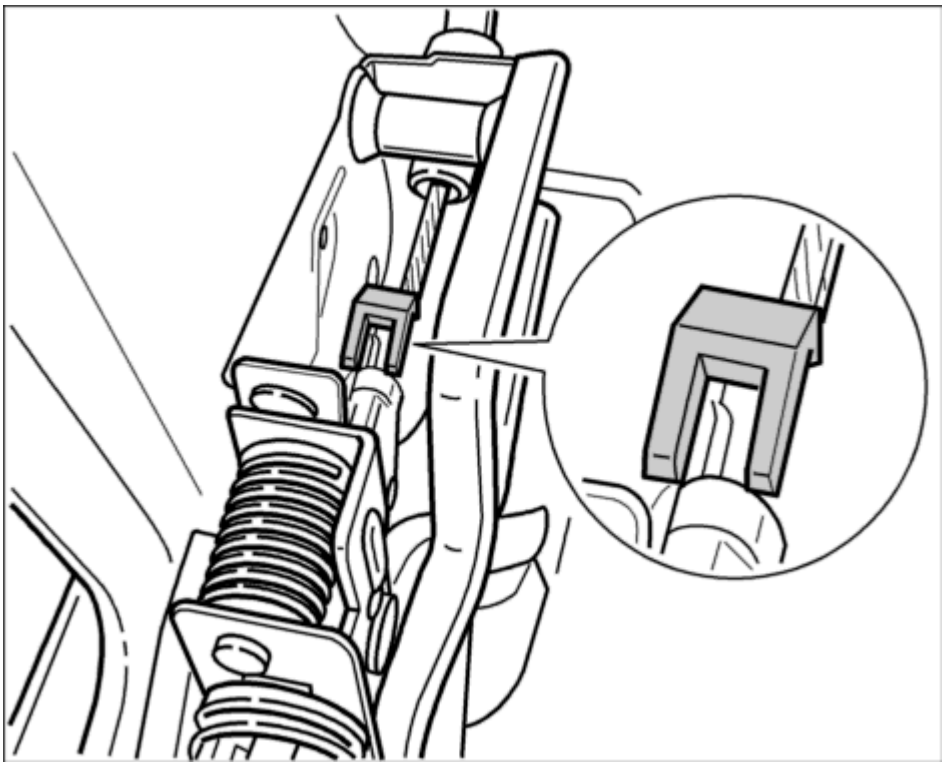


Fig. 86: Front brake cable retainer
Courtesy of PORSCHE OF NORTH AMERICA, INC.

5. Lay the carpet aside. Remove fastening screws of FPB pedal (two M8 screws). Next remove the FPB pedal. The pedal must not be actuated (removal aid).

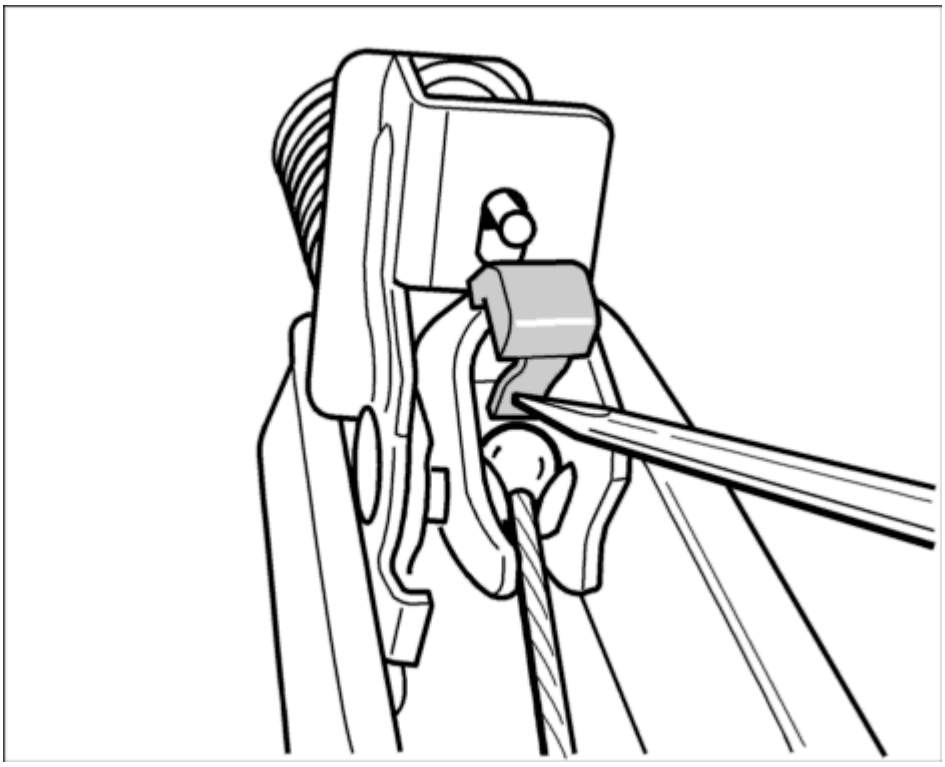


Fig. 87: Pressing cable retainer back using a small screwdriver
Courtesy of PORSCHE OF NORTH AMERICA, INC.

6. Disengage front cable. To do this carefully press back the retaining lug using a small screwdriver. See **Fig. 87**.

INSTALLING PEDAL FOR FOOT-OPERATED PARKING BRAKE

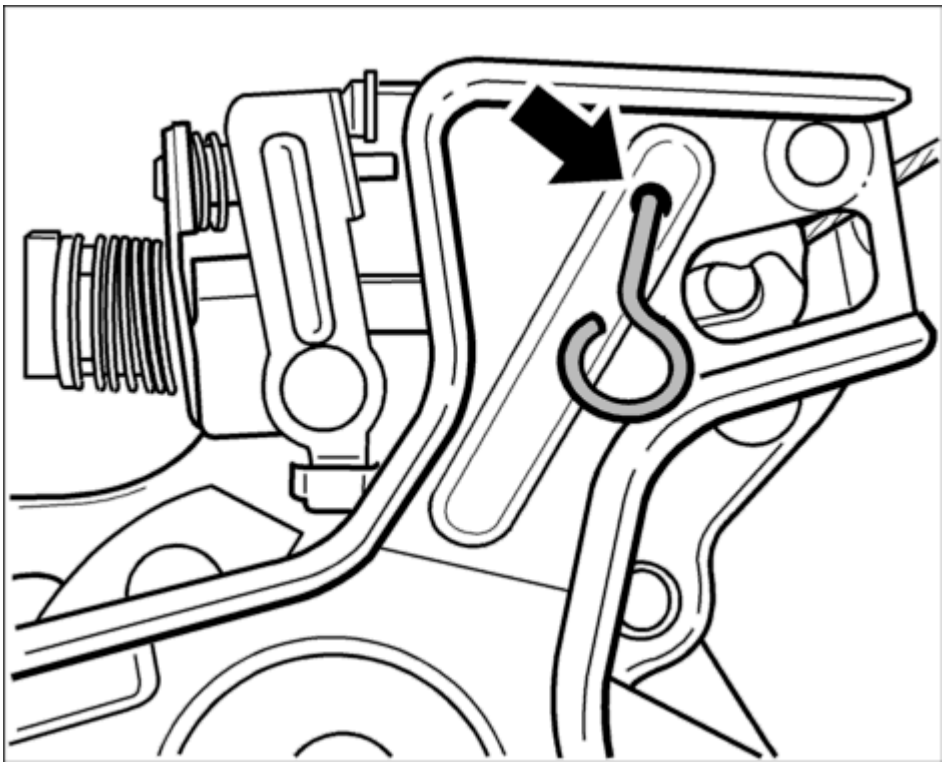


Fig. 88: Auxiliary pin inserted in actuator of foot-operated parking brake
Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- ***Replace micro-encapsulated screws.***
- ***If the bowden cable or front brake cable are damaged, replace them.***
- ***Automatic cable adjustment means that the foot-operated parking brake does not need to be set (basic setting).***

1. Fix the adjustment device using an auxiliary pin (max. 3.5 mm Ø) **-arrow-** (this makes assembly easier). In other words: press the adjustment device together until the assembly bores are covered and the auxiliary pin can be inserted. Engage front brake cable. The retainer engages automatically. Remove the auxiliary pin again. See **Fig. 88**.

2. Insert the FPB pedal.

3. Tighten the fastening screws to 23 Nm (17 ftlb.). Take off the additional tie-wraps used during removal.

4. Remove FPB switch. Route cables neatly.

5. Engage the bowden cable for releasing the FPB in the lever.

6. Engage bowden cable in the release lever.

7. Lay carpet. Fit cover (protective grille) of foot-operated parking brake pedal and protective cover (two screws) over the pedal.

SUBSEQUENT WORK

1. Fit lower A-pillar trim panel and side cover of dashboard. Refer to **70 24 19 Removing and installing front side section trim - as of MY 2003 (All Models)** .

Remove lower dashboard trim panel. Refer to **70 19 19 Removing and installing trim under dashboard - as of MY 2003 (All Models)** .

2. Remove lower trim panel in footwell (with diagnostic socket and footwell lighting) and the trim panel support on the bulkhead (only inserted). Refer to **70 22 19 Removing and installing cover under dashboard - as of MY 2003 (All Models)** .

3. Check operation of foot-operated parking brake.

46 79 55 REPLACING REAR BRAKE CABLE FOR FOOT-OPERATED PARKING BRAKE - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE S TIO TITAN)

PRELIMINARY WORK

1. Move control pedal of the foot-operated parking brake to the zero position. To do this, pull the release lever on the dashboard.

2. Remove cover in the footwell. Refer to **70 22 19 Removing and installing cover under dashboard - as of MY 2003 (All Models)** .

REMOVING AND INSTALLING REAR BRAKE CABLE

Removing rear brake cable

Rear brake cable **-E-** means: From the deflector under the center console **-D-** to the Quickfit lock in the brake drum on the rear wheel. See **Fig. 89**.

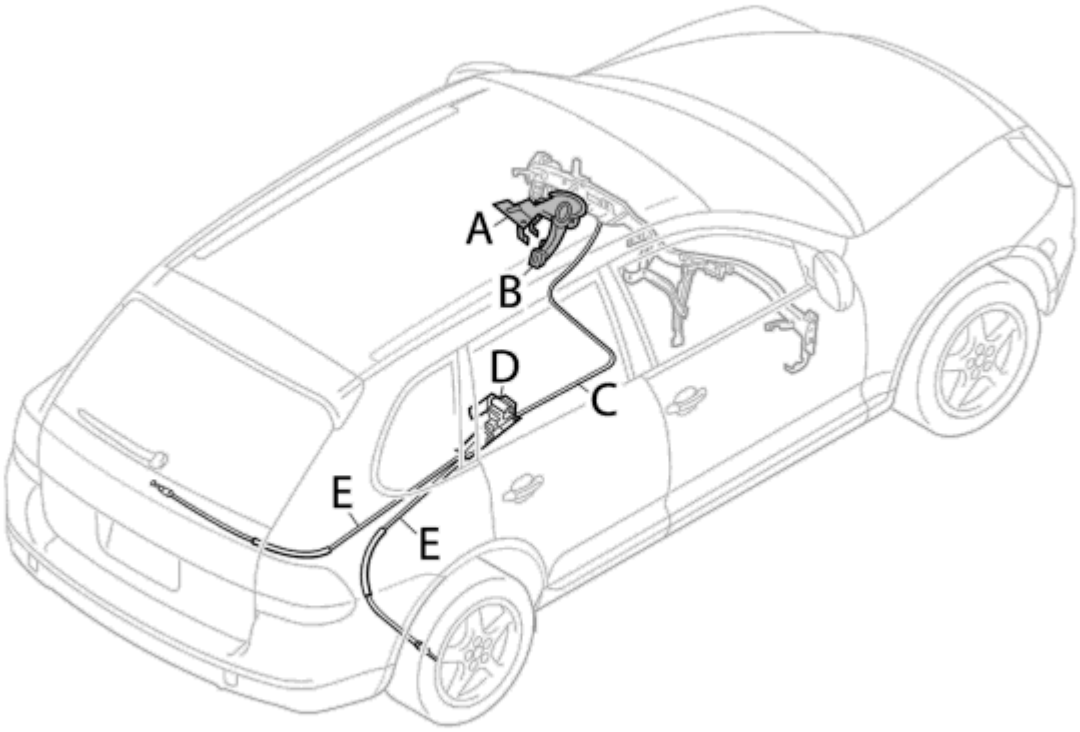


Fig. 89: Parking brake components
Courtesy of PORSCHE OF NORTH AMERICA, INC.

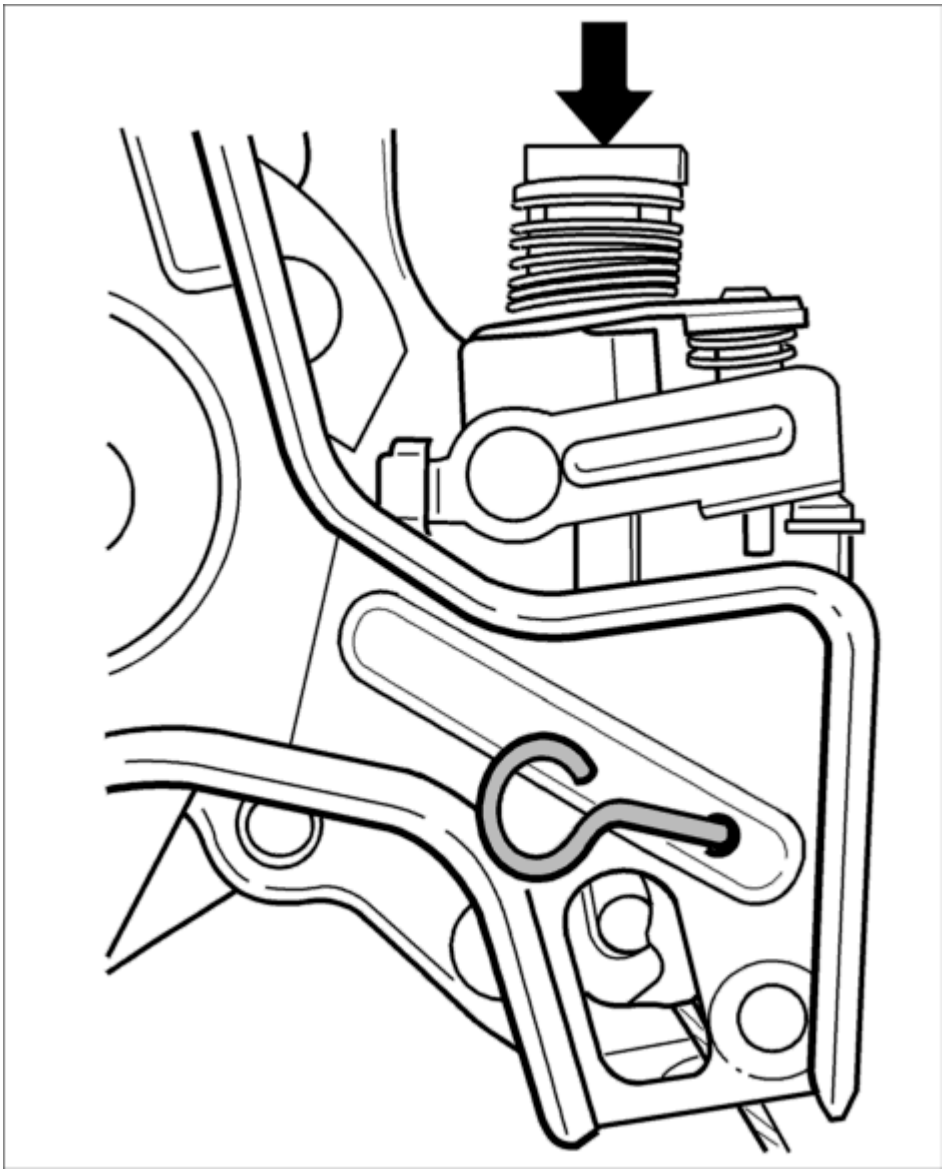


Fig. 90: Auxiliary pin inserted in actuator of foot-operated parking brake
Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- ***When performing various tasks on the rear axle, e. g. removing and installing the wheel bearing housing, the brake cable only needs to be detached without removing the entire brake cable. The description at the end of the installation section, --> 467955 Replacing rear brake cable for foot-operated parking brake - "detaching", can be used for this purpose.***

1. Fix the adjustment device using an auxiliary pin (max. 3.5 mm Ø). In other words, press the adjustment device together **-arrow-** until the assembly bores coincide and the auxiliary pin can be inserted **--> 466019 Removing and installing pedal for foot-operated parking brake - "Removing"**. The cover of the pedal need not be removed. The auxiliary pin can be inserted through the cover. See **Fig. 90**.

2. Remove center console. Refer to **68 17 19 Removing and installing center console - as of MY 2003 (All Models)** .

3. Raise the vehicle. Refer to **40 V0 LIFTING THE VEHICLE - AS OF MY 2003 (CAYENNE TURBO S, CAYENNE S TIO TITAN)** or **40 V0 LIFTING THE VEHICLE - AS OF MY 2003 (CAYENNE TIP, CAYENNE MAN, CAYENNE S TIP, CAYENNE S MAN, CAYENNE TURBO)** .

4. Remove the relevant rear wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

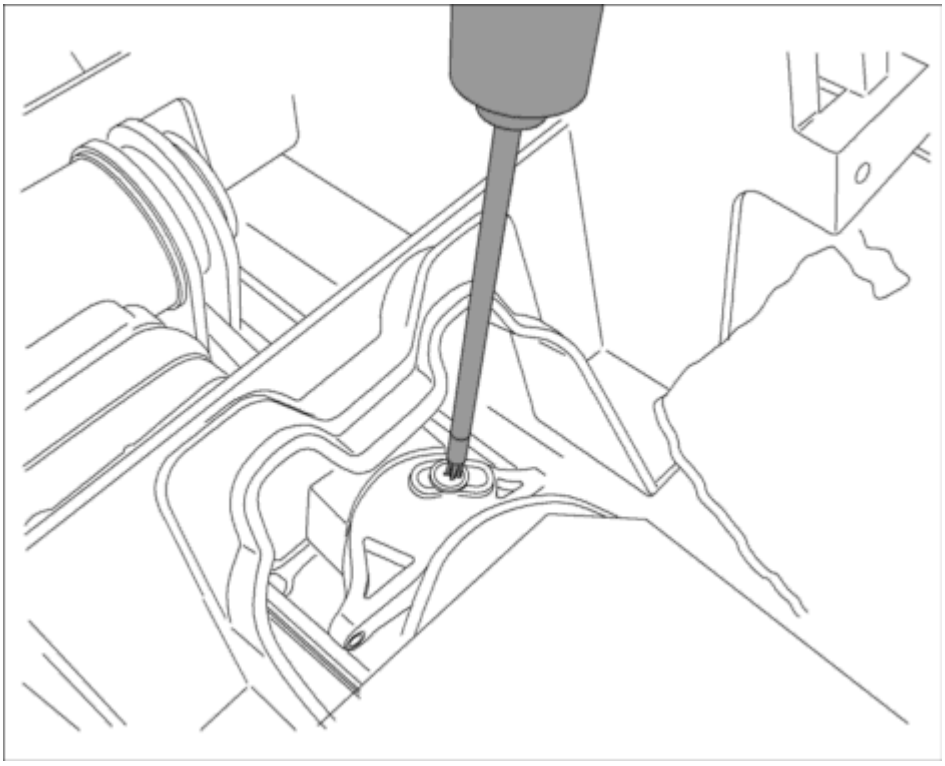


Fig. 91: Identifying fastening screw
Courtesy of PORSCHE OF NORTH AMERICA, INC.

5. Pull the balancing clip of the deflector completely back, against the direction of travel, and loosen the small fastening screw. See **Fig. 91**.

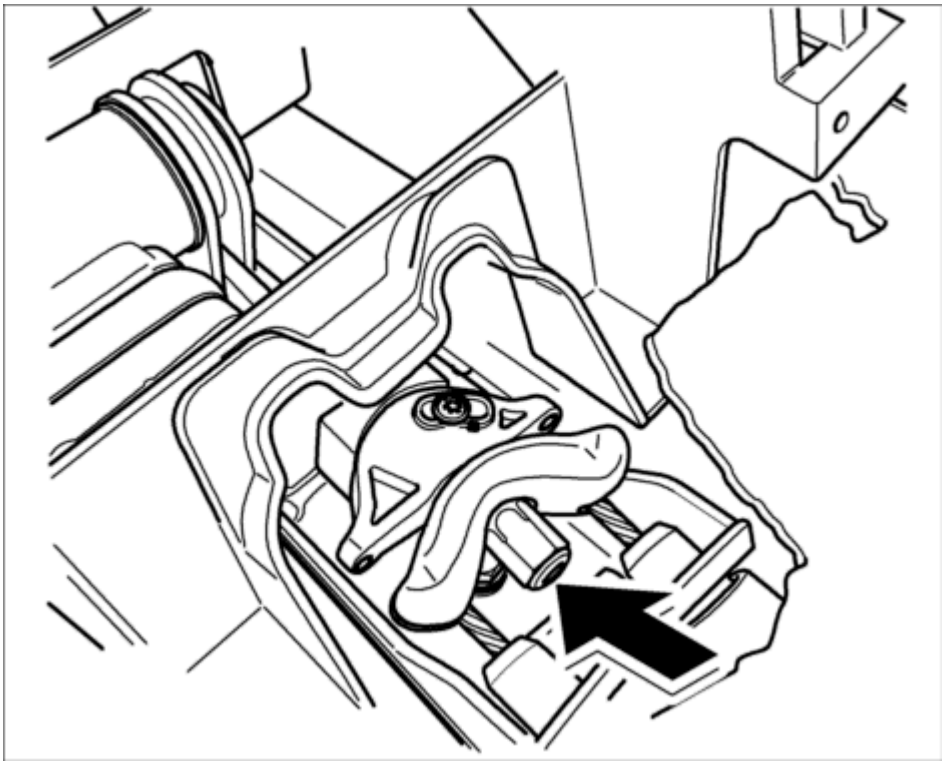


Fig. 92: Identifying threaded rod and nut
Courtesy of PORSCHE OF NORTH AMERICA, INC.

6. To remove and disengage the ball head(s) of the cables, the nut on the threaded rod **-arrow-** can be loosened by a few turns. (Note the number of turns! Mark the nut, if necessary). See **Fig. 92**.

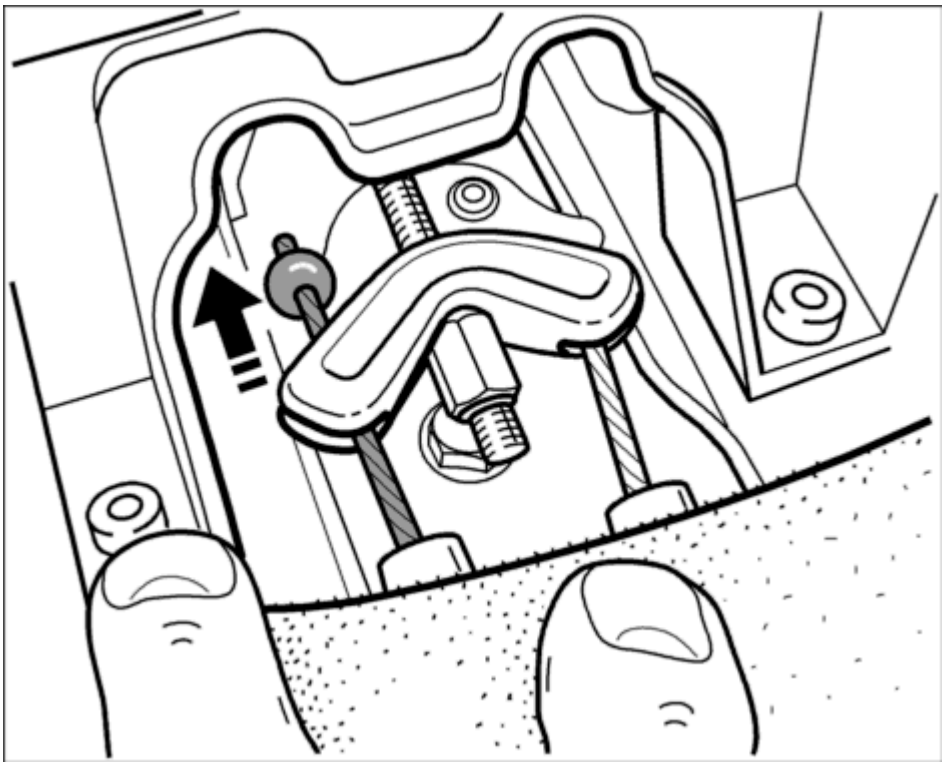


Fig. 93: Removing cable from balancing clip of deflector
Courtesy of PORSCHE OF NORTH AMERICA, INC.

7. Push the ball head out of the balancing clip of the deflector in **-direction of arrow-** and remove it sideways. Press the sleeve of the cable in the interior (two plastic lugs) gently together and push through to the rear, against the direction of travel. See **Fig. 93**.

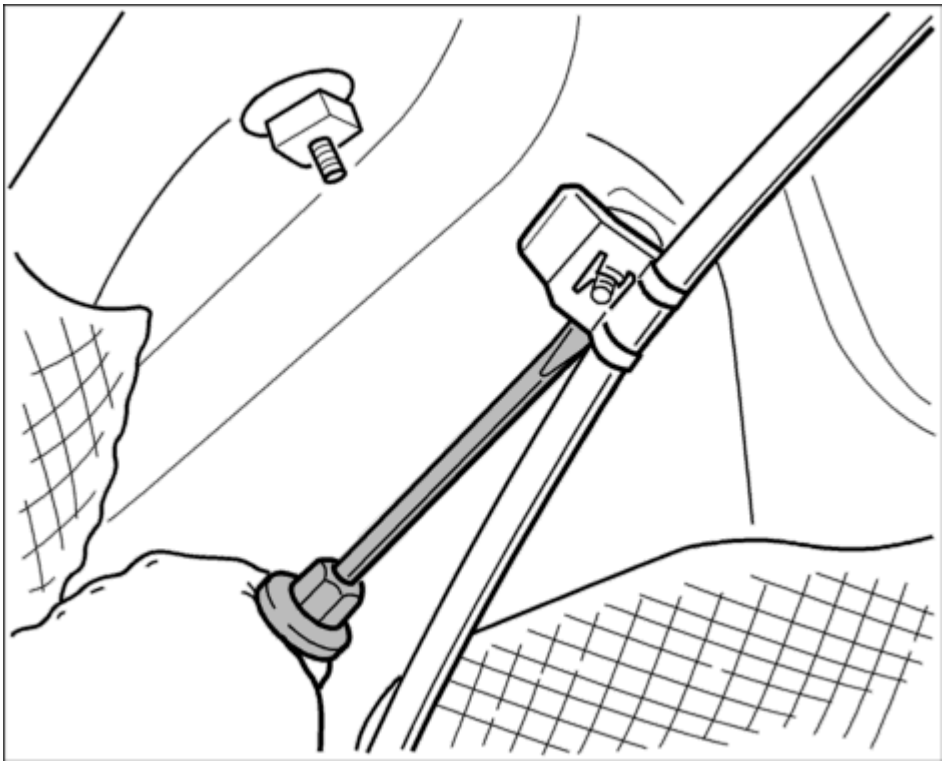


Fig. 94: Removing sheetmetal clips of hand brake cables
Courtesy of PORSCHE OF NORTH AMERICA, INC.

8. Remove the sheetmetal clips of the hand brake cables at the fuel tank (underbody) with a screwdriver. See **Fig. 94**.

9. Pull the relevant cable out to the rear.

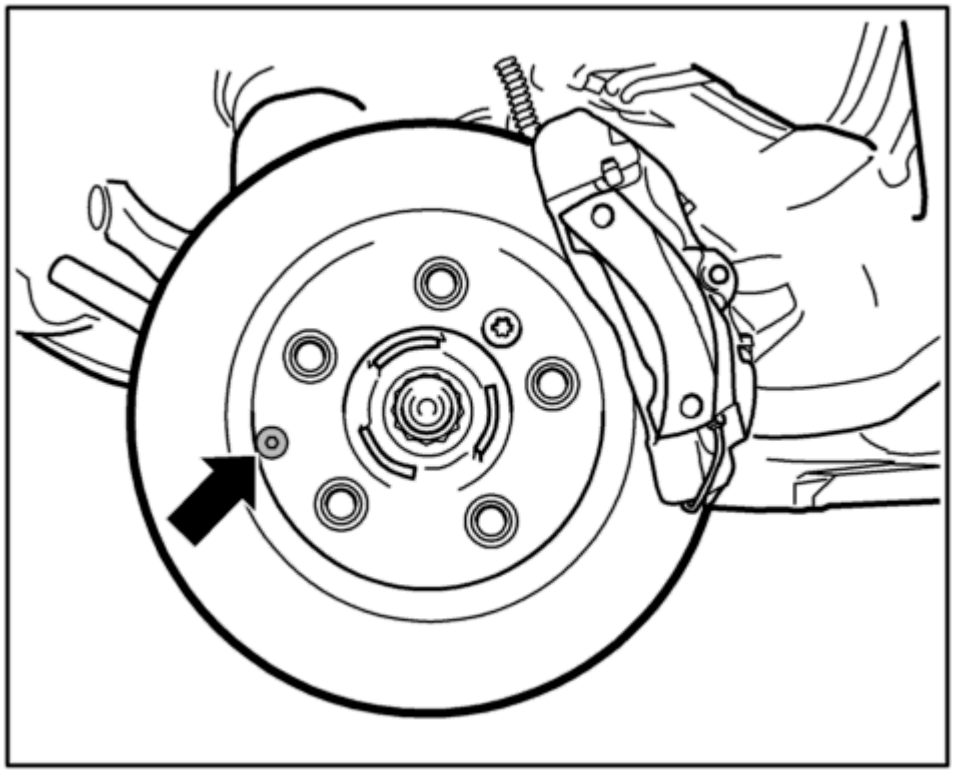


Fig. 95: Identifying screw plug
Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- **The screw plug -arrow- of the brake disc obscures the view of the Quickfit. The Quickfit is positioned at approx. 3 o'clock to the right and approx. 9 o'clock to the left. See Fig. 95.**
- ***The brake discs do not have to be removed to disengage the brake cables.***

10. Remove the screw plug **-arrow-** on the brake disc. See **Fig. 95**.

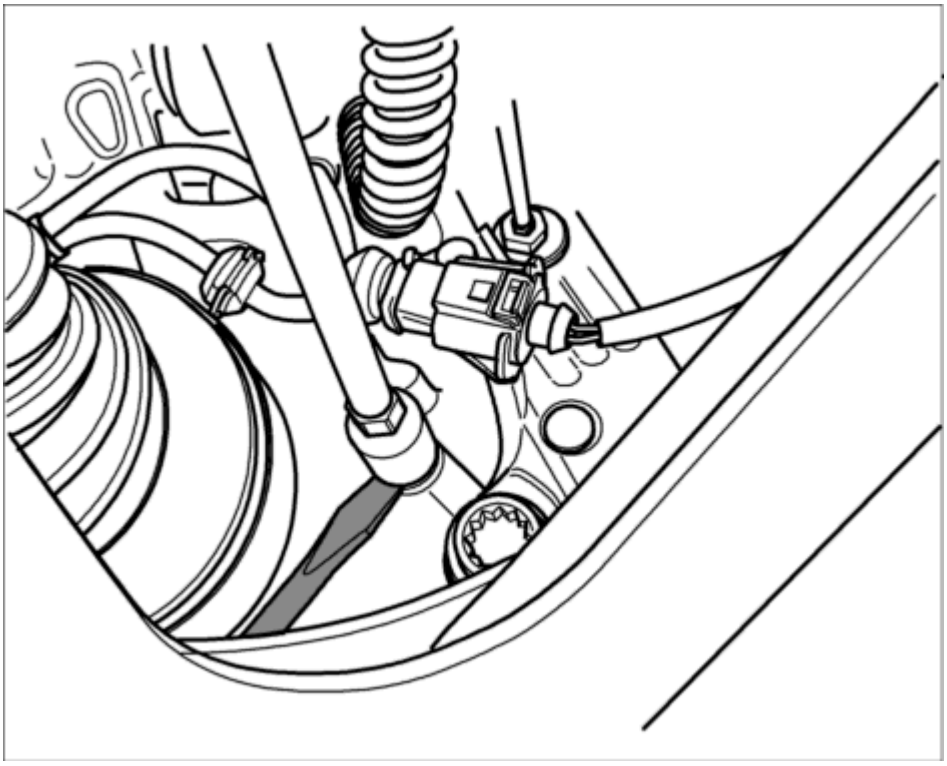


Fig. 96: Removing brake cable
Courtesy of PORSCHE OF NORTH AMERICA, INC.

11. Remove the brake cable. Do not loosen the circlip! To do this, insert a screwdriver between the sleeve of the brake cable and the wheel bearing housing.

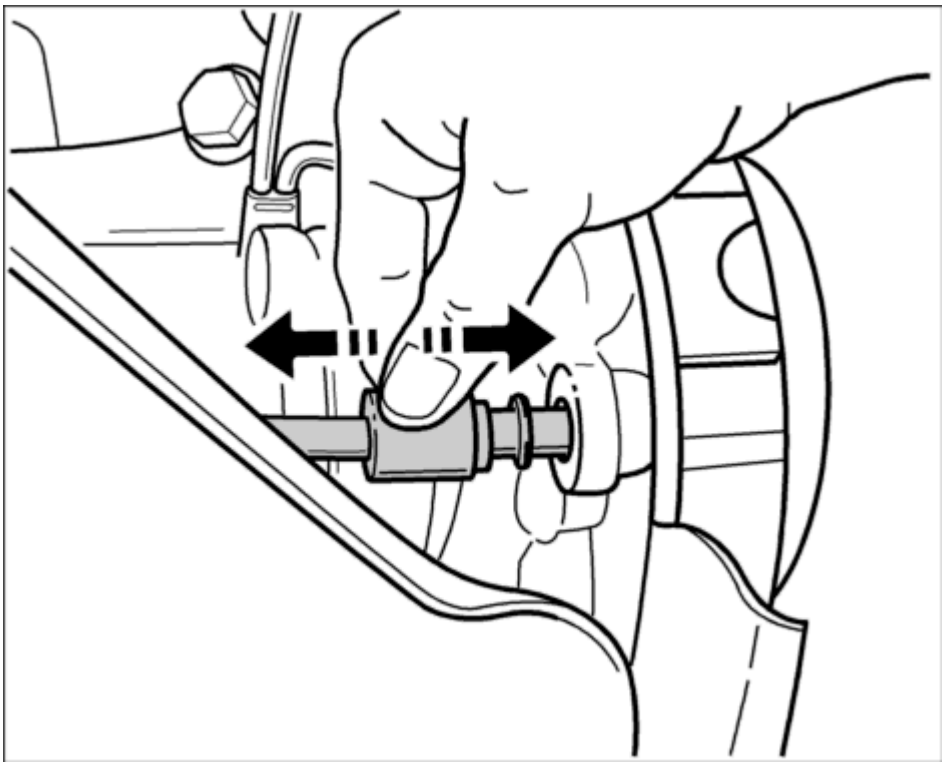


Fig. 97: Pulling sleeve of cable out of the wheel bearing housing
Courtesy of PORSCHE OF NORTH AMERICA, INC.

12. Pull the sleeve of the cable **-arrow-** as far as possible out of the wheel bearing housing. See **Fig. 97**.

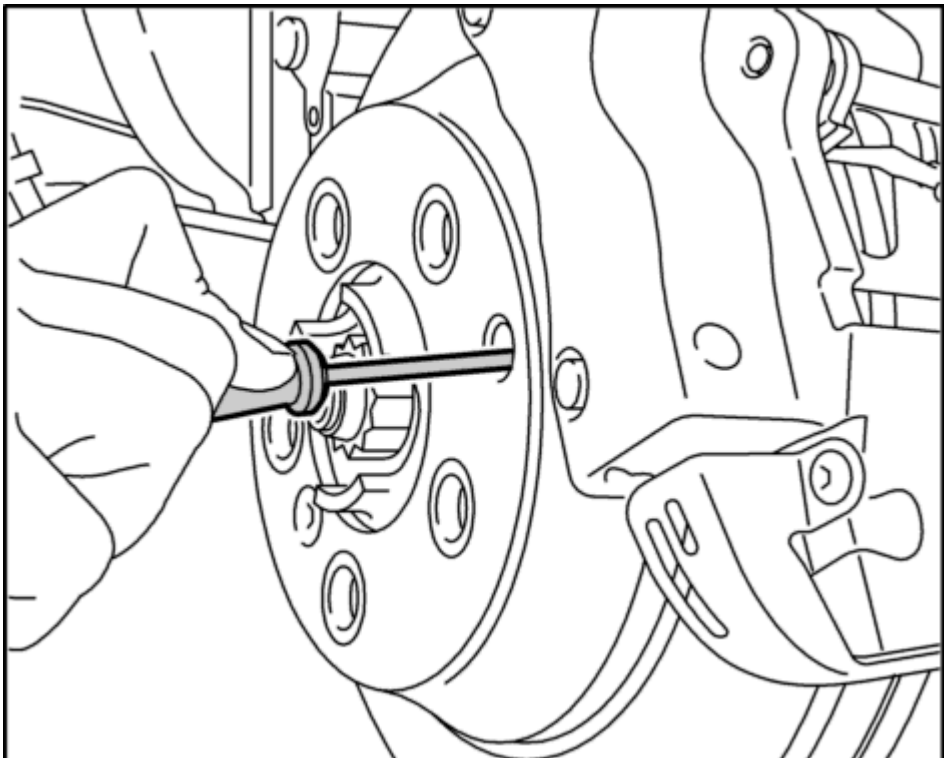


Fig. 98: Pressing retaining spring using small screwdriver
Courtesy of PORSCHE OF NORTH AMERICA, INC.

13. Push the cable gently into the brake drum. Use a small screwdriver inserted through the brake disc opening to press the retaining spring and hexagon on the expander lever upwards and at the same time pull the brake cable out of the brake drum.

Installing rear brake cable

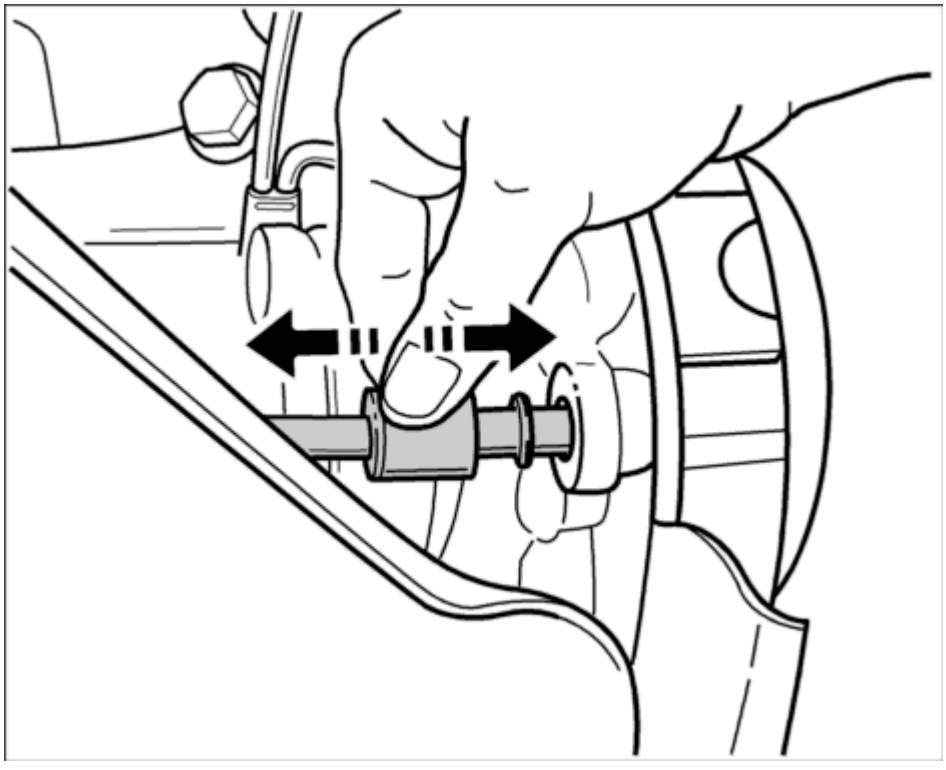


Fig. 99: Installing rear brake cable
Courtesy of PORSCHE OF NORTH AMERICA, INC.

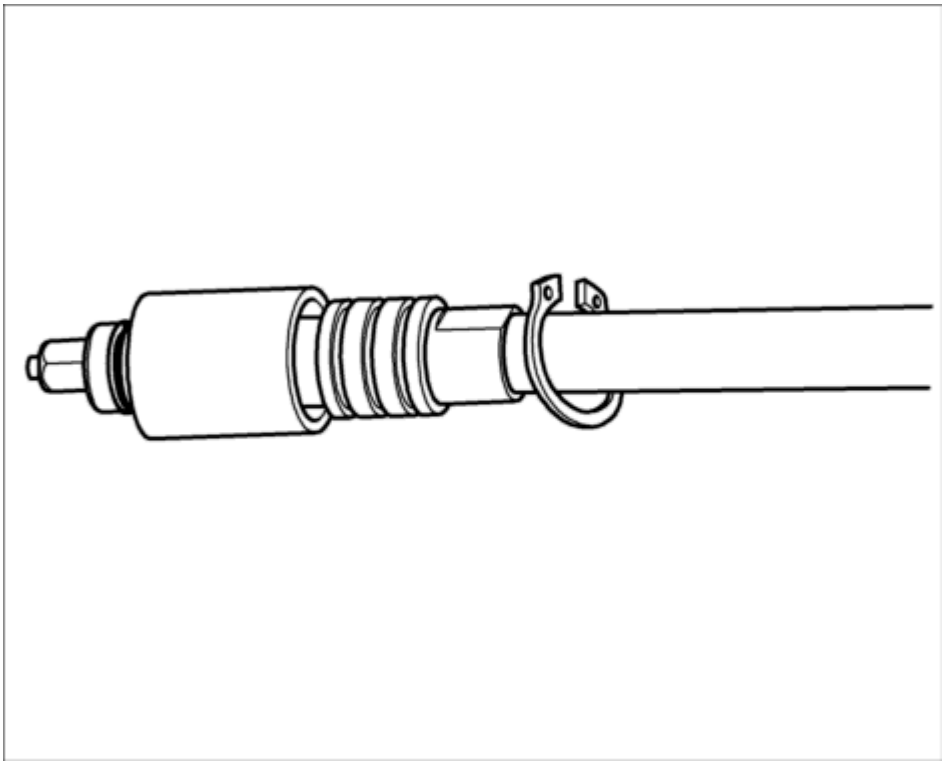


Fig. 100: Stretched cable adjustment ring groves
Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- **On vehicles whose cables are still good but stretched, the -3- ring grooves of the circlip can be used as compensation. See Fig. 100.**
- ***In this case, loosen the circlip carefully (do not remove from brake cable!) and move by one ring groove. The circlip and cable are only available as an assembly. The settings should be the same on both sides.* See Fig. 101.**
- ***If the circlip has been damaged during removal/fitting (e. g. bent out of shape, circlip bent up), the entire cable must be replaced.***
- ***Use new sheetmetal clips. Pay attention to the installation position.***

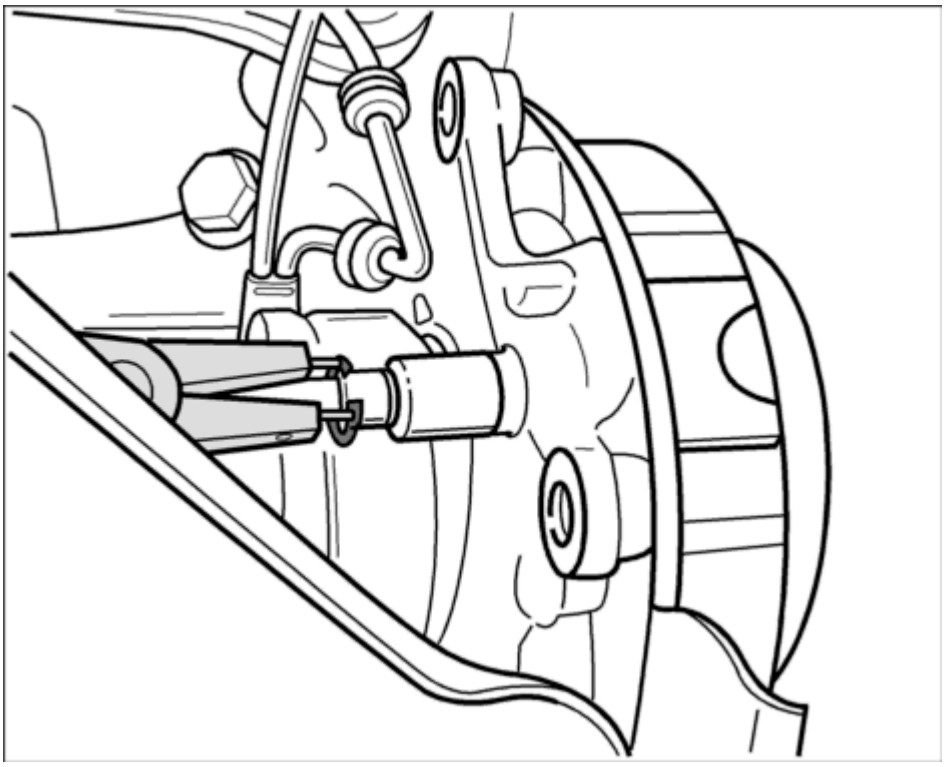


Fig. 101: Removing/Installing circlip at brake cable
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Insert the end of the cable with the hexagon into the Quickfit on the wheel bearing housing. Push the cable at the other end (ball head) towards the wheel bearing housing until the hexagon engages audibly in the Quickfit. Ensure a good seal.

2. Look through the brake disc opening with a small lamp to check that the end of the cable (hexagon) is seated correctly in the Quickfit.

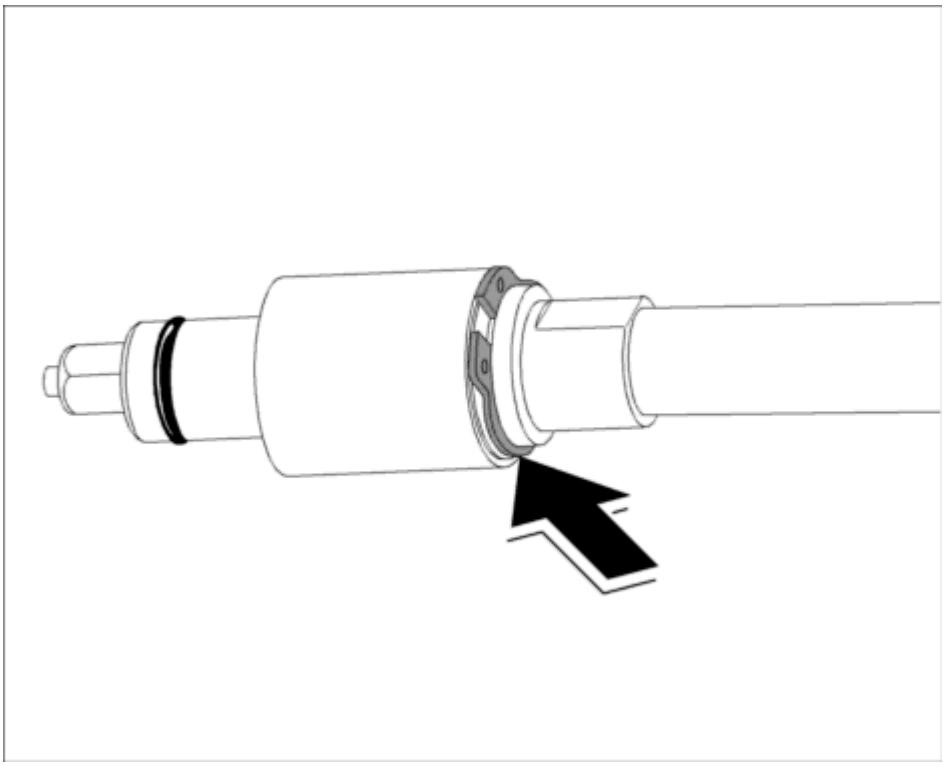


Fig. 102: Ensuring circlip is seated correctly
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Make sure that the circlip is seated correctly **-arrow-** . (Shown here on the removed cable). See **Fig. 102**.

4. Push the end of the cable with the ball head through the underbody and clip in the two plastic tabs. Mount the ball head in balancing clip in the passenger compartment. Fit the nut on the threaded rod using the number of turns noted previously. Ensure correct cable routing.

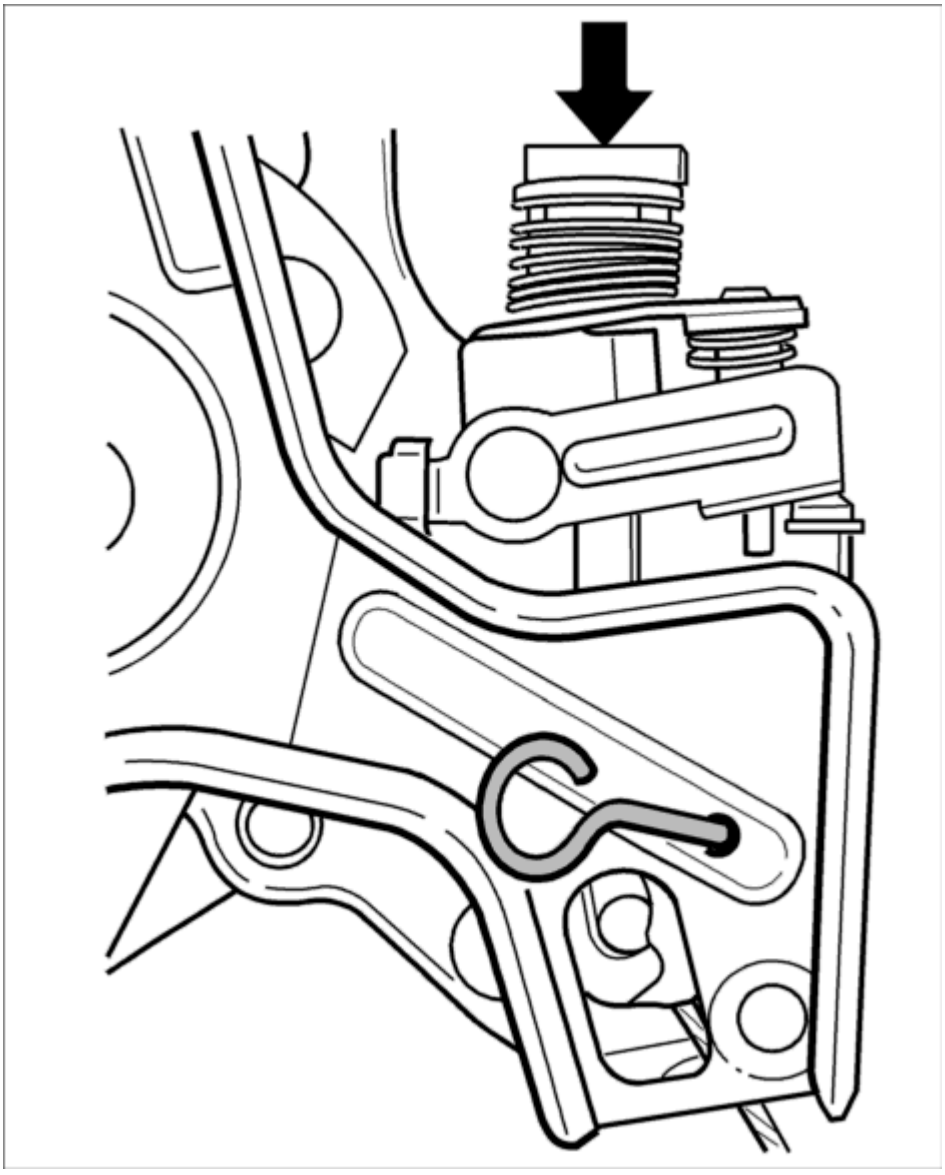


Fig. 103: Auxiliary pin inserted in actuator of foot-operated parking brake
Courtesy of PORSCHE OF NORTH AMERICA, INC.

5. Remove the auxiliary pin from the FPB pedal. See **Fig. 103**.

6. Perform a function test. If necessary set the brake shoes to the basic setting **--> 468316 Adjusting foot-operated parking brake - "adjusting"**.

NOTE:

- ***Tolerances in the cables (different length right to left) can cause the balancing clip to be out of line when the foot-operated parking brake (FPB) is actuated. Press the FPB pedal gently until the cables are tensioned. Only then should you tighten the small screw (Torx T15) on the balancing clip by hand.***
- ***Perform a function test.***

7. Install center console. Refer to **68 17 19 Removing and installing center console - as of MY 2003 (All Models)** .

8. Install cover in the footwell. Refer to **70 22 19 Removing and installing cover under dashboard - as of MY 2003 (All Models)** .

9. Fit the screw plug on the brake disc.

10. To fit the brake cable correctly into the guides on the underbody and on the rear axle carrier, the brake cable must be taut. To do this, tug on the brake cable, against the direction of travel, in the cable sleeve area (thickening) on the rear axle carrier. This gives clearance between the brake cable and the cardan shaft.

RELEASING BRAKE CABLE AT WHEEL BEARING HOUSING

Removing brake cable

Installation Location:

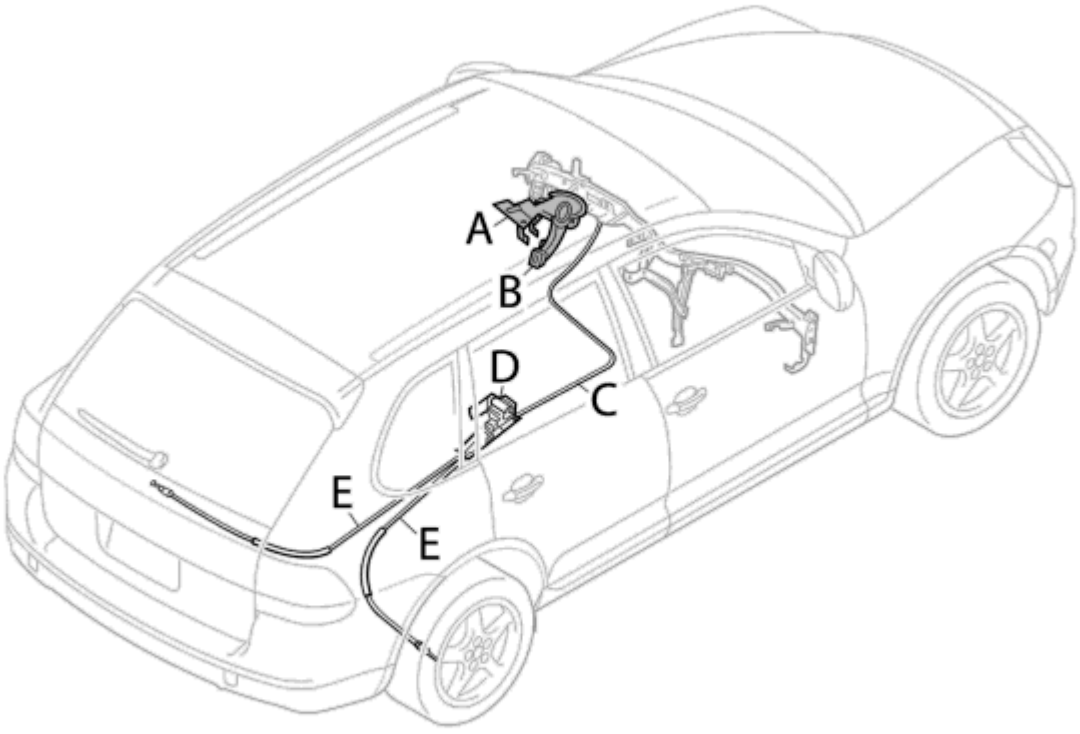


Fig. 104: Parking brake components
Courtesy of PORSCHE OF NORTH AMERICA, INC.

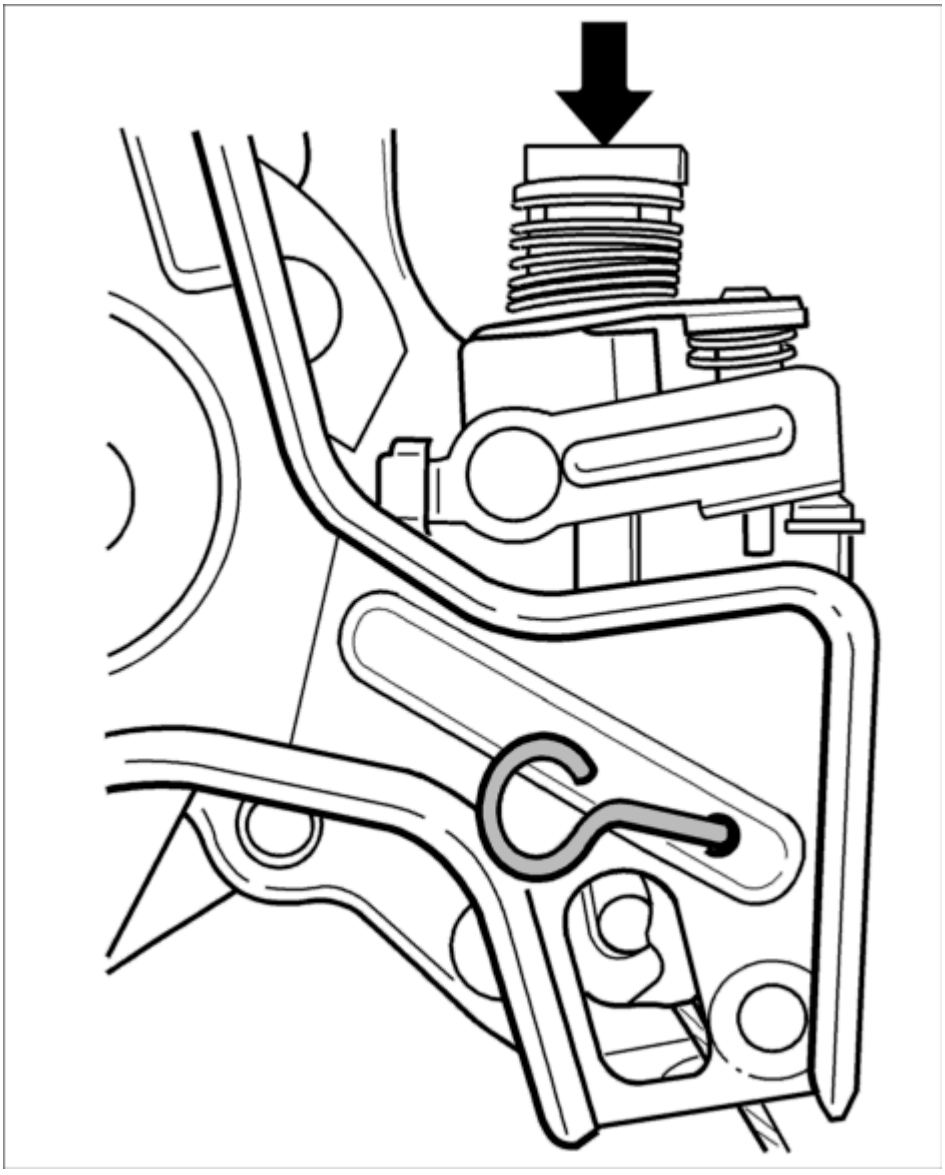


Fig. 105: Auxiliary pin inserted in actuator of foot-operated parking brake
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Fix the adjustment device using an auxiliary pin (max. 3.5 mm Ø). In other words: press the adjustment device together **-arrow-** until the assembly bores are covered and the auxiliary pin can be inserted **--> 466019 Removing and installing pedal for foot-operated parking brake - "removing"**. See **Fig. 105**.

2. Raise the vehicle. Refer to **40 V0 LIFTING THE VEHICLE - AS OF MY 2003 (CAYENNE TURBO S, CAYENNE S TIO TITAN)** or **40 V0 LIFTING THE VEHICLE - AS OF MY 2003 (CAYENNE TIP, CAYENNE MAN, CAYENNE S TIP, CAYENNE S MAN, CAYENNE TURBO)** .

3. Remove the relevant rear wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

4. Remove the brake cable from the guide of the rear axle housing and loosen it by moving it to and fro.

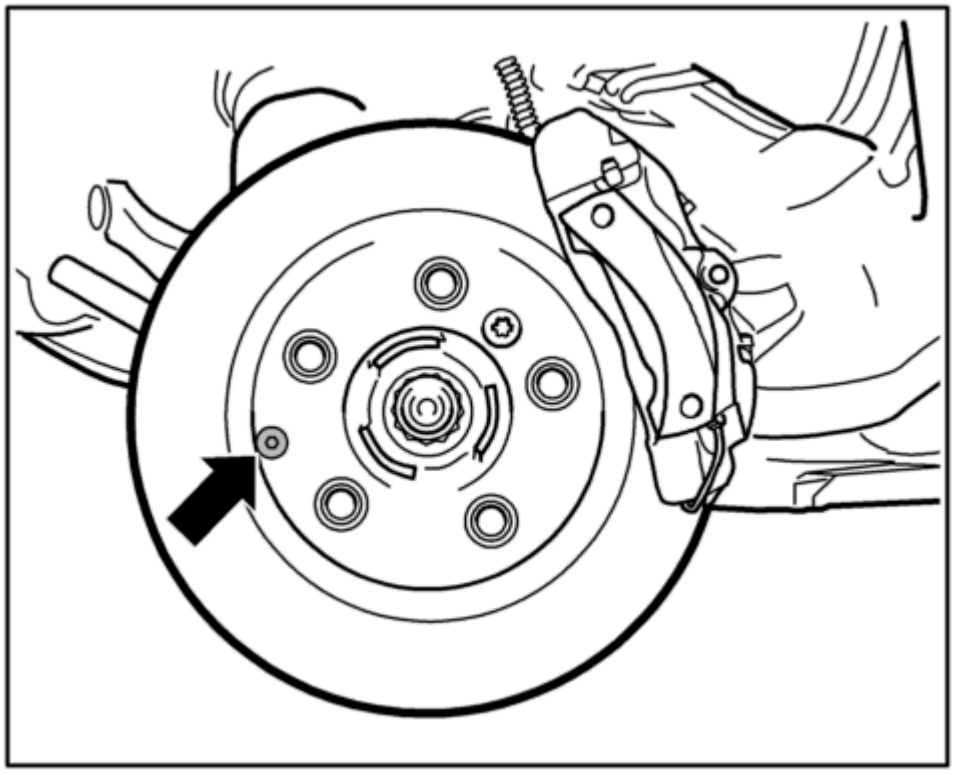


Fig. 106: Identifying screw plug
Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- **The screw plug -arrow- of the brake disc obscures the view of the Quickfit. The Quickfit is positioned at approx. 3 o'clock to the right and approx. 9 o'clock to the left. See Fig. 106.**
- ***The brake discs do not have to be removed to disengage the brake cables.***

5. Remove the screw plug **-arrow-** on the brake disc. See **Fig. 106**.

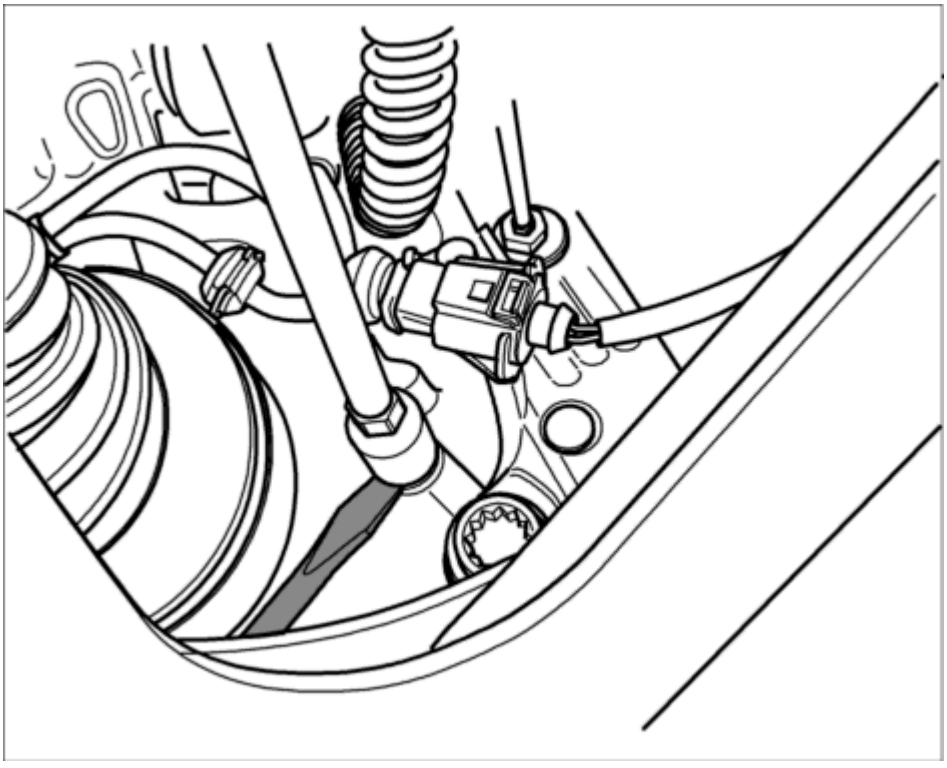


Fig. 107: Removing brake cable
Courtesy of PORSCHE OF NORTH AMERICA, INC.

6. Remove the brake cable. Do not loosen the circlip! To do this, insert a screwdriver between the sleeve of the brake cable and the wheel bearing housing.

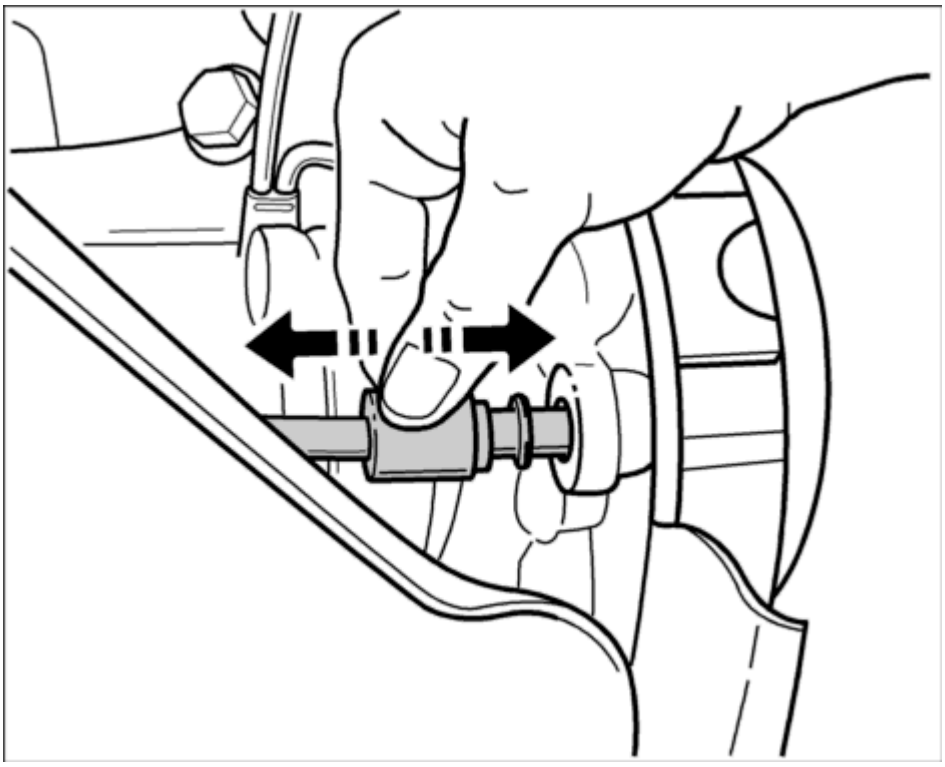


Fig. 108: Pulling sleeve of cable out of the wheel bearing housing
Courtesy of PORSCHE OF NORTH AMERICA, INC.

7. Pull the sleeve of the cable as far as possible out of the wheel bearing housing.

8. Push the cable gently into the brake drum. Use a small screwdriver inserted through the brake disc opening to press the retaining spring and hexagon on the expander lever upwards and at the same time pull the brake cable out of the brake drum.

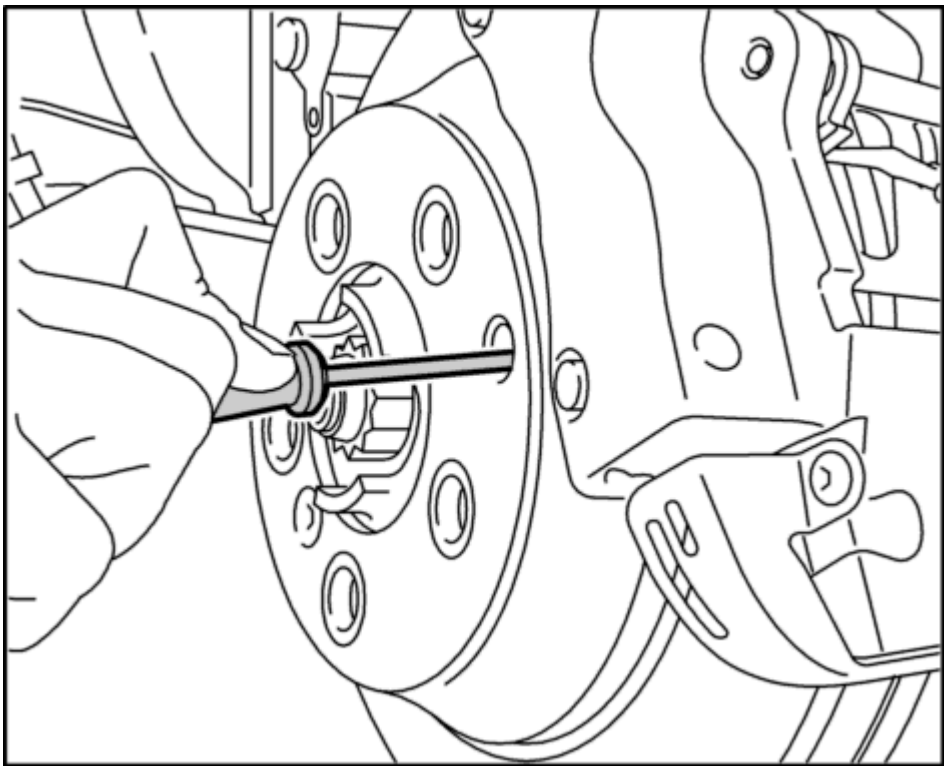


Fig. 109: Pressing retaining spring using small screwdriver
Courtesy of PORSCHE OF NORTH AMERICA, INC.

Installing brake cable

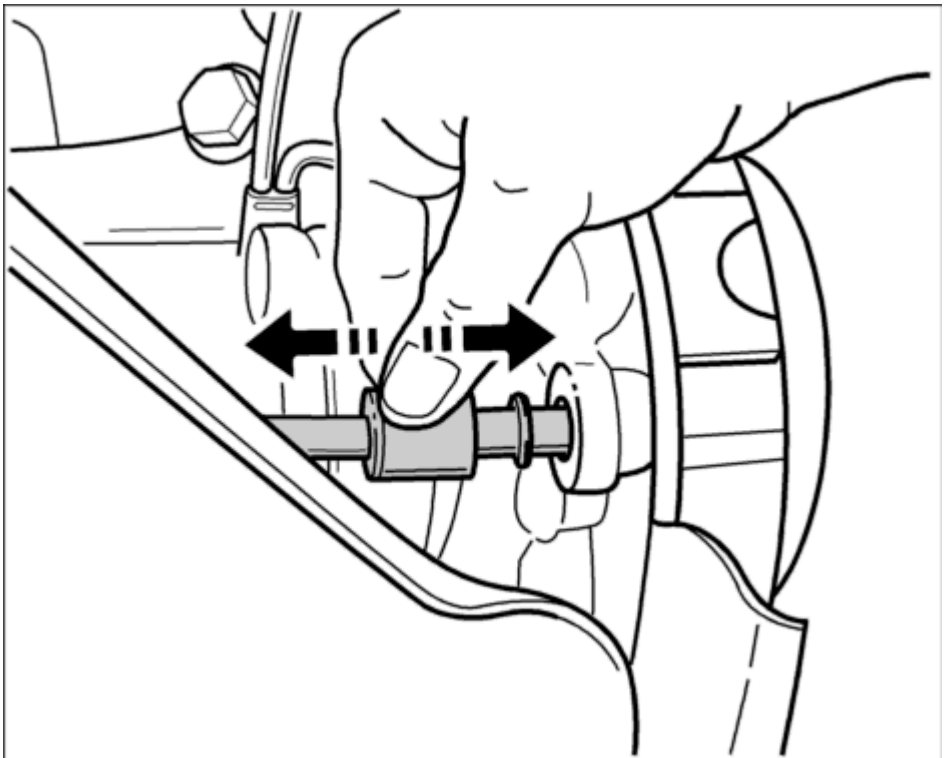


Fig. 110: Installing rear brake cable
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Insert the end of the cable with the hexagon into the Quickfit on the wheel bearing housing. The hexagon in the Quickfit must engage audibly. Ensure a good seal. See **Fig. 110**.

2. Look through the brake disc opening with a small lamp to check that the end of the cable (hexagon) is seated correctly in the Quickfit.

3. Fit the screw plug on the brake disc.

4. To fit the brake cable correctly into the guides on the underbody and on the rear axle carrier, the brake cable must be taut. To do this, tug on the brake cable, against the direction of travel, in the cable sleeve area (thickening) on the rear axle carrier. This gives clearance between the brake cable and the cardan shaft.

5. Perform a function test.

6. Install cover in the footwell. Refer to **70 22 19 Removing and installing cover under dashboard - as of MY 2003 (All Models)** .

SUBSEQUENT WORK

Mount the wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** and tighten to the specified tightening torque.

46 83 15 ADJUSTING THE FOOT-OPERATED PARKING BRAKE - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE TURBO S)

TOOLS

Designation	Type	Number	Explanation	
piston resetting fixture (replaces P83)	commercially available tool	NR.144		

CHECKING

Foot-operated parking brake: Checking free play

The foot-operated parking brake, hereafter referred to as the FPB, is equipped with asbestos-free brake pads. The FPB pedal module is located on the left in the driver's footwell.

1. Lift vehicle. --> **40 V0 LIFTING THE VEHICLE - AS OF MY 2003 (CAYENNE TURBO S, CAYENNE S TIO TITAN)** or **40 V0 LIFTING THE VEHICLE - AS OF MY 2003 (CAYENNE TIP,**

CAYENNE MAN, CAYENNE S TIP, CAYENNE S MAN, CAYENNE TURBO) .

NOTE:

- ***An FPB that is equipped with asbestos-free brake pads must never be adjusted in such a way that the pad has to grind free during operation!***
- ***Adjustments must only be carried out at the two rear wheel adjustment devices. No adjustment may be made on the pedal module or on the Z deflector on the center console.***
- ***Ensure that the FPB cables are routed correctly.***

Check free play at the pedal module:

To do this, measure from the left seat rail up to the lower edge of the pedal plate of the FPB!

2. Depress pedal 40 mm (+ 5 mm). When this dimension is reached, the wheels must be able to turn without grinding the brake pads.

3. Depress pedal 75 mm (+ 5 mm). When this dimension is reached, the wheels must be fixed. If the wheels can still turn, the FPB must be adjusted!

ADJUSTING

Adjusting the foot-operated parking brake

The rear wheels must be removed to gain access to the adjustment device. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

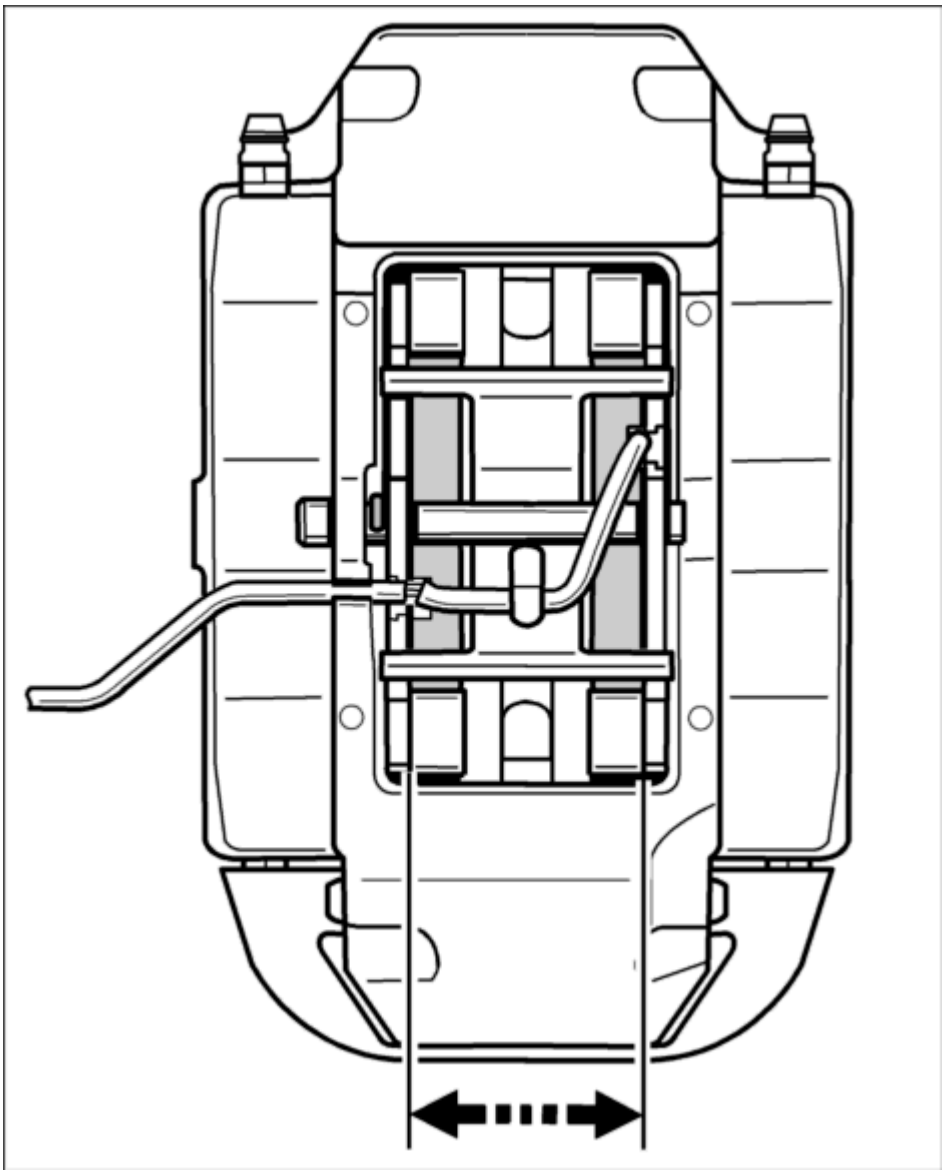


Fig. 111: Pushing pads back using piston resetting fixture
Courtesy of PORSCHE OF NORTH AMERICA, INC.

In the event of unfavorable tolerances, the brake pads may prevent the brake disc from turning freely. If this happens, the brake pads must be (evenly) pressed back a little with the **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4 **-direction arrow-** . See **Fig. 111**.

1. Release the FPB pedal so that the wheels and brake discs can turn freely.

The wheels may still grind slightly even then! If this happens, loosen the rear brake cables by moving them to and fro gently!

2. Remove rear wheels. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

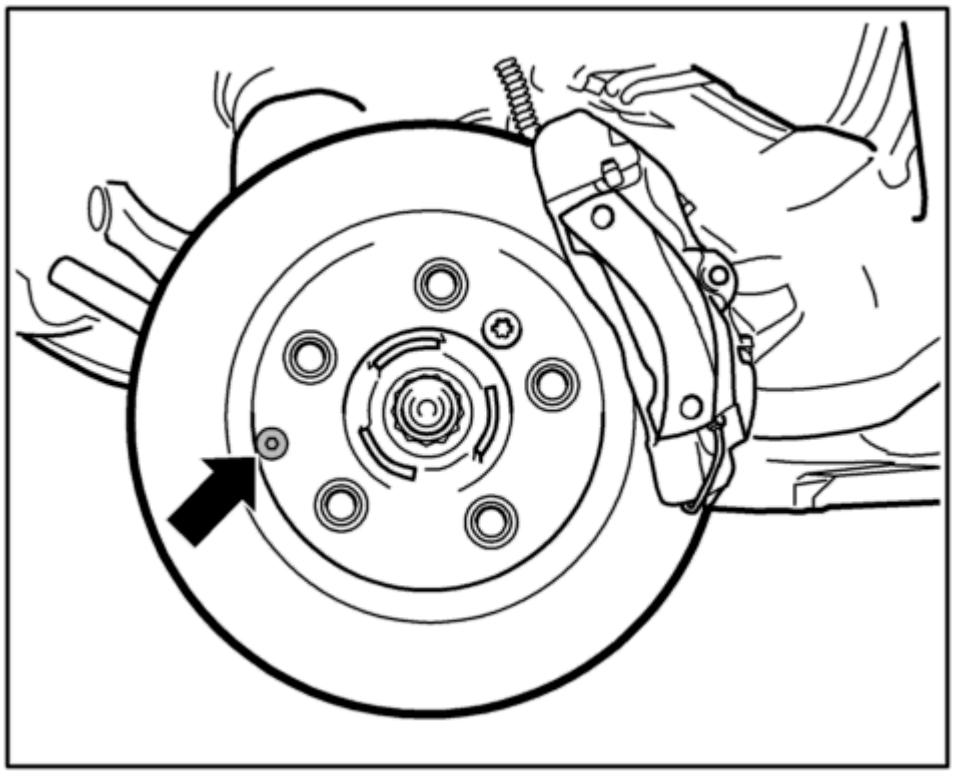


Fig. 112: Identifying screw plug
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Adjust brake shoes (on both wheels). To do this, unscrew the plug **-arrow-** and turn the brake disc with the opening towards the adjustment device position. Using a screwdriver, adjust the adjustment device until the wheel can no longer be turned. Then unscrew by 6 teeth (wheels must be free to turn). See **Fig. 112**.

4. Check the free play on the pedal module once again.

5. Position disc brake pads by operating the brake several times.

6. Fit rear wheels. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

46 83 16 ADJUSTING THE FOOT-OPERATED PARKING BRAKE - AS OF MY 2003 (ALL MODELS EXCEPT CAYENNE S TIO TITAN)

TOOLS

Designation	Type	Number	Explanation	
piston resetting fixture (replaces P83)	commercially available tool	NR.144		

PRELIMINARY WORK

Raise vehicle. --> **40 V0 LIFTING THE VEHICLE - AS OF MY 2003 (CAYENNE TURBO S, CAYENNE S TIO TITAN)** or **40 V0 LIFTING THE VEHICLE - AS OF MY 2003 (CAYENNE TIP, CAYENNE MAN, CAYENNE S TIP, CAYENNE S MAN, CAYENNE TURBO)** .

FOOT-OPERATED PARKING BRAKE: CHECKING FREE PLAY

The foot-operated parking brake, hereafter referred to as the FPB, is equipped with asbestos-free brake pads. The FPB pedal module is located on the left in the driver's footwell.

NOTE:

- ***An FPB that is equipped with asbestos-free brake pads must never be adjusted in such a way that the pad has to grind free during operation!***
- ***Adjustments must only be carried out at the two rear wheel adjustment devices. No adjustment may be made on the pedal module or on the Z deflector on the center console.***
- ***Ensure that the FPB cables are routed correctly.***

Check free play on the pedal module:

To do this, measure from the left seat rail up to the lower edge of the pedal plate of the FPB!

1. Depress --> **Adjustment value: 40 mm +5 mm** . If this dimension is reached, the wheels must be able to turn without grinding the brake pads.

2. Depress --> **Adjustment value: 75 mm +5 mm** . If this dimension is reached, the wheels must be fixed. If the wheels can still turn, the FPB must be adjusted!

Adjusting the foot-operated parking brake

The rear wheels must be removed so that the adjustment device can be accessed! Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

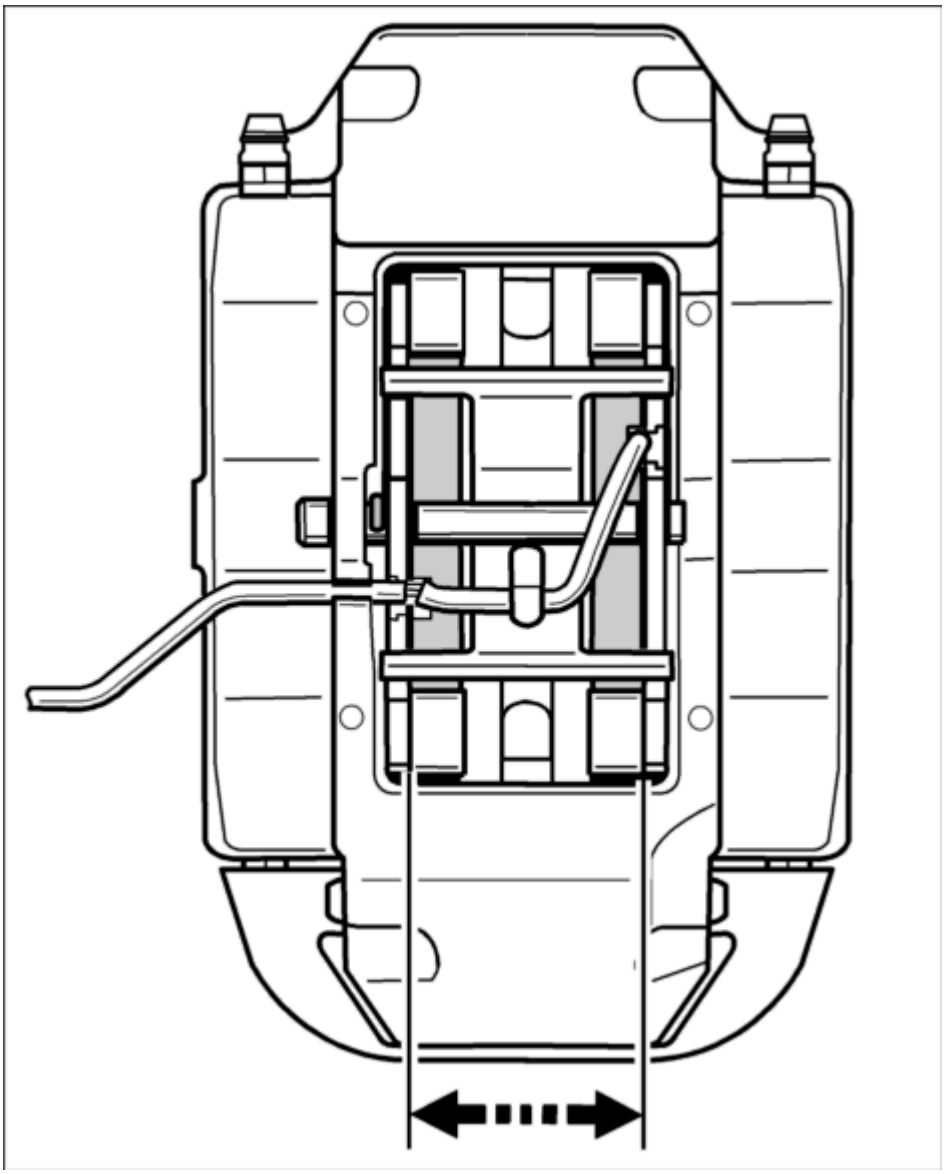


Fig. 113: Pushing pads back using piston resetting fixture
Courtesy of PORSCHE OF NORTH AMERICA, INC.

In the event of unfavorable tolerances, the brake pads may prevent the brake disc from turning freely. If this happens, the brake pads must be pressed back slightly and evenly with the **piston resetting fixture (replaces P83) NR.144**, see Workshop Equipment Manual, Chapter 2.4 **-direction arrow-** ! See **Fig. 113**.

1. Release the FPB pedal so that the wheels and brake discs can turn freely.

The wheels may still grind slightly even then! If this happens, loosen the rear brake cables by moving them to and fro gently!

2. Remove rear wheels. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

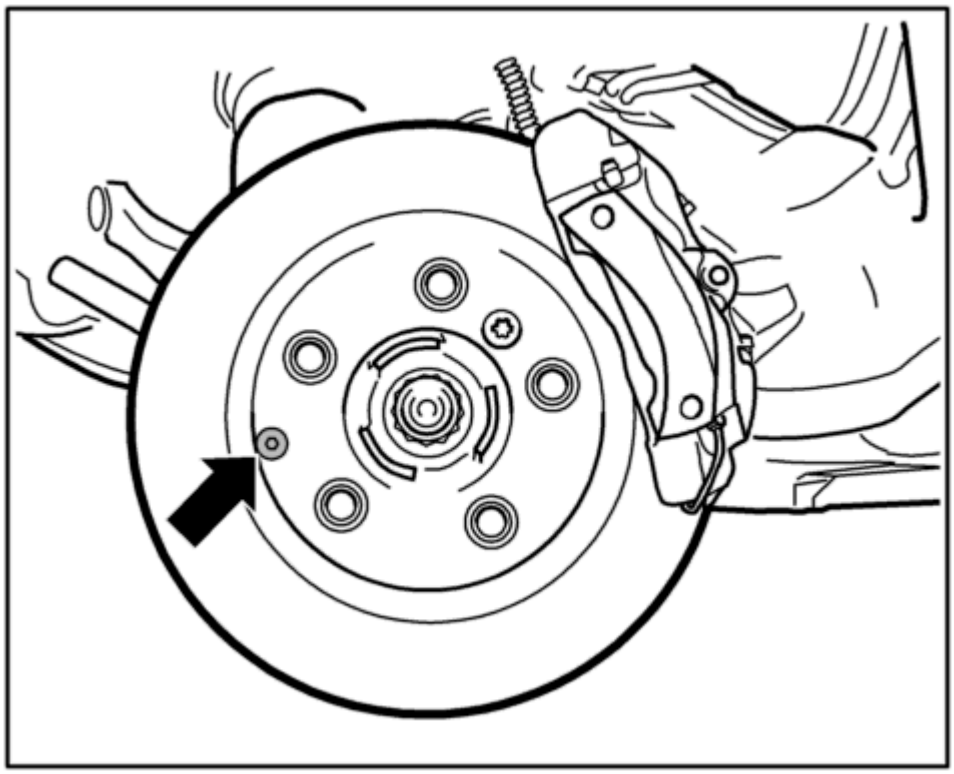


Fig. 114: Identifying screw plug
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Adjust brake shoes (on both wheels). To do this, unscrew the plug **-arrow-** and turn the brake disc with the opening towards the adjustment device position. Using a screwdriver, modify the adjustment device until the wheel can no longer be turned. Then unscrew 6 teeth (wheels must be free to turn). See **Fig. 114**.

4. Check the free play on the pedal module once again.

5. Position disc brake pads by operating the brake several times.

SUBSEQUENT WORK

Mount rear wheels. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

46 83 56 REPLACING BRAKE SHOES - AS OF MY 2003 (ALL MODELS)

Preliminary work

1. Remove wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

2. Remove brake calliper and brake disc. Refer to **--> 465319 Removing and installing rear brake disc [9PAAD1 9PAAD7 9PAAE1 9PAAE7 9PAAF1 9PAAJ1]**.

REPLACING

Removing

NOTE: **The cover (grille) on the actuating mechanism of the foot-operated parking brake (FPB) does not need to be removed. The auxiliary pin can be inserted through the cover (grille).**

Wear protective gloves.

- ***Watch out for sharp edges in the area of the actuating mechanism for the foot-operated parking brake (FPB).***

Loosen and secure operating cable.

1. Remove cover over actuating mechanism for foot-operated parking brake (FPB).

2. Move pedal of foot-operated parking brake (FPB) into zero position. To do this, pull the release lever on the dashboard.

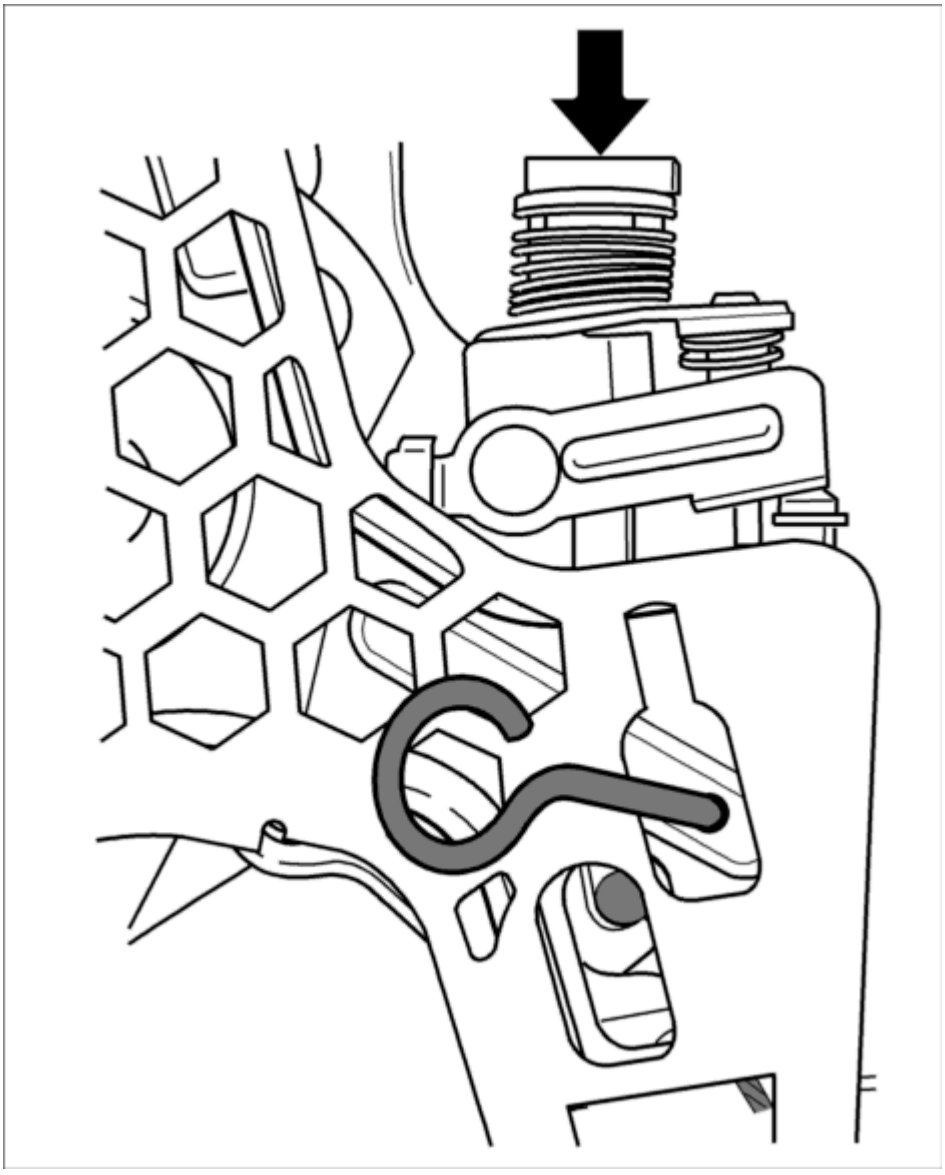


Fig. 115: Adjustment device for foot-operated parking brake
Courtesy of PORSCHE OF NORTH AMERICA, INC.

3. Fix the adjustment device using an **-auxiliary pin with diameter of max. 3.5 mm-** . In other words: press the adjustment device together **-Arrow-** until the assembly bores are covered and the auxiliary pin can be inserted **--> 467955 Replacing rear brake cable for foot-operated parking brake [9PAAD1 9PAAD7 9PAAE1 9PAAE7 9PAAF1 9PAAJ1]**. See **Fig. 115**.

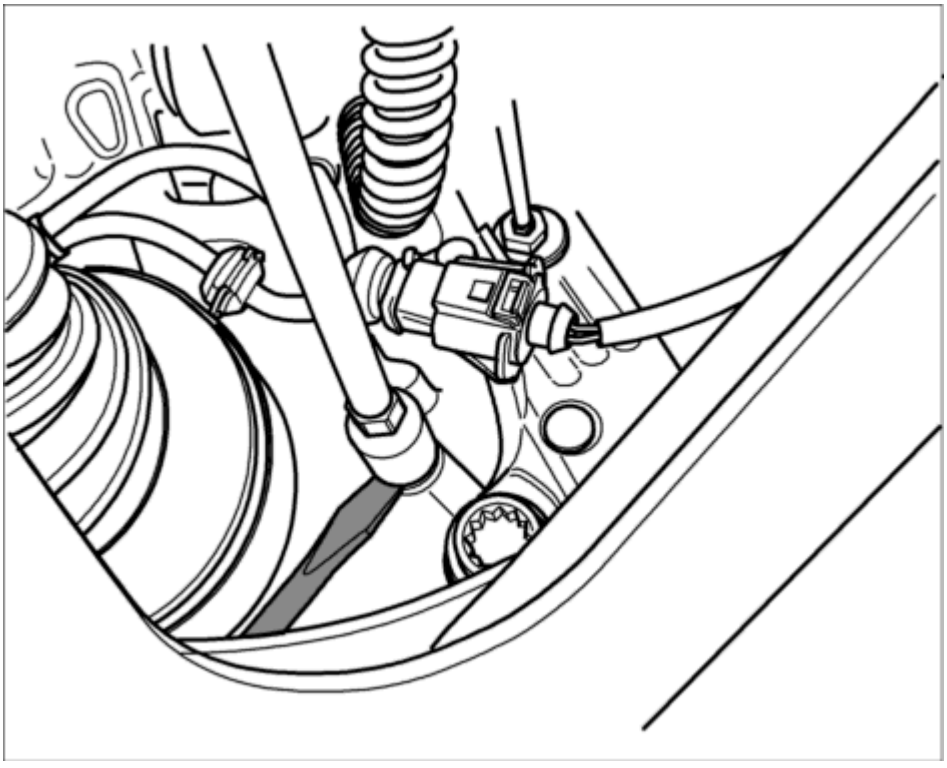


Fig. 116: Removing brake cable
Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Remove some of the brake cable. Do not loosen the circlip! To do this, insert a **-screwdriver-** between the sleeve of the brake cable and the wheel bearing housing. See **Fig. 116**.

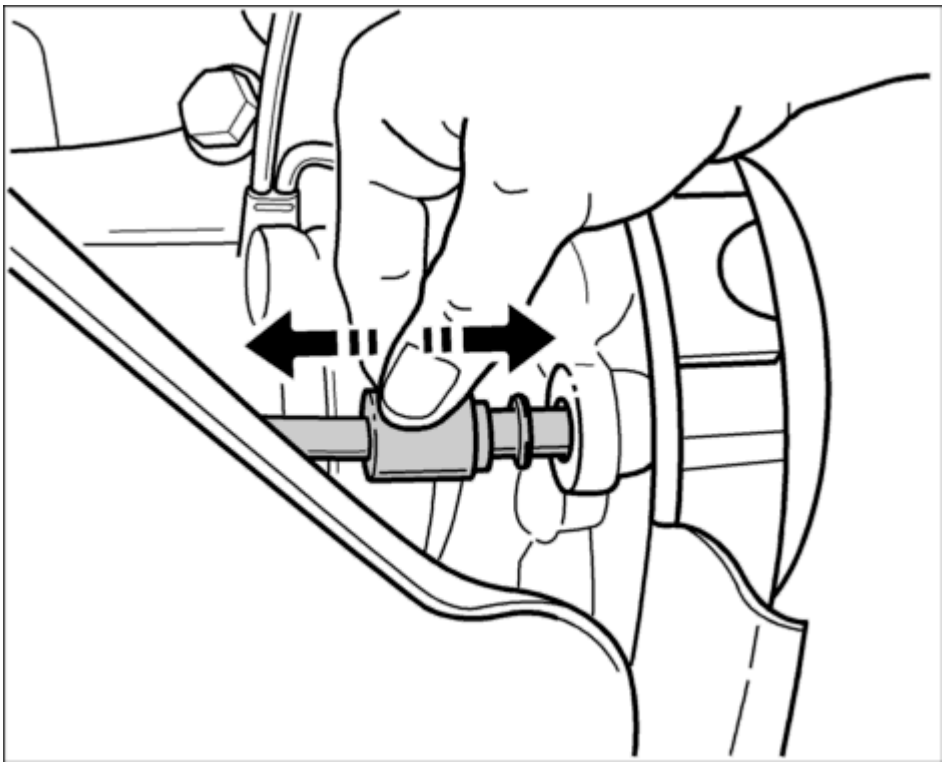


Fig. 117: Pulling sleeve of cable out of the wheel bearing housing
Courtesy of PORSCHE OF NORTH AMERICA, INC.

5. Pull the **-sleeve of the cable-** as far as possible out of the wheel bearing housing. See **Fig. 117**.

6. Then push the cable gently into the expanding-lock. Use a small screwdriver to press the retaining spring and hexagon down at the expander lever and at the same time pull the brake cable out of the expanding-lock.

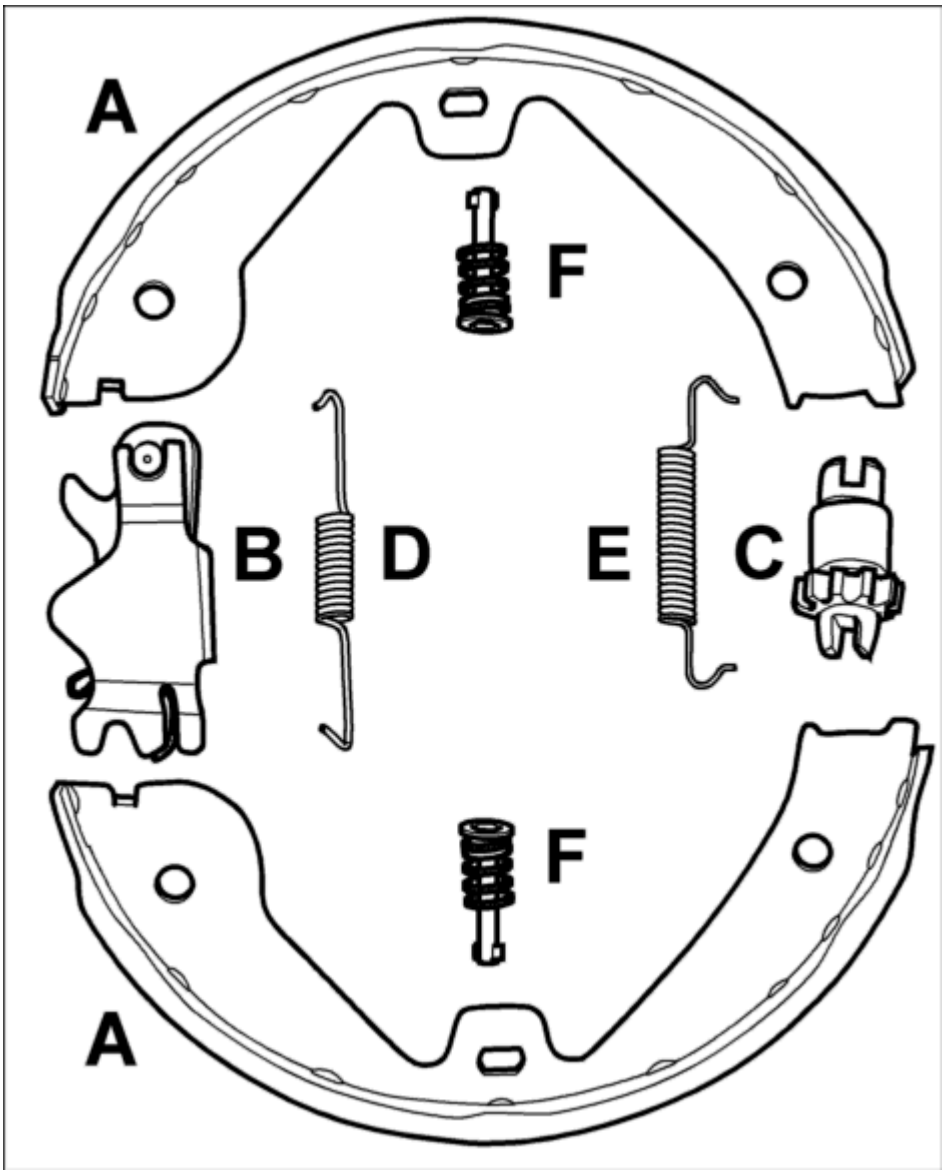


Fig. 118: Component overview for parking brake
Courtesy of PORSCHE OF NORTH AMERICA, INC.

7. Loosen the adjustment device **-C-** with a screwdriver. See **Fig. 118**.

8. Remove pressure pieces with tensioning springs **-F-** . See **Fig. 118**.

CAUTION: Risk of injury (e. g. crushing) when removing and installing springs.

- **Danger of injury and damage.**
- **Springs can pop out.**
- **The edges of springs may be sharp.**

--> Wear protective gloves and goggles.

--> Be very careful when working on the brake system.

9. Disengage the two tension springs **-D and E-** . See **Fig. 118**.

10. Remove brake shoes with adjustment device and expanding-lock **-A, B and C-** . See **Fig. 118**.

Installing

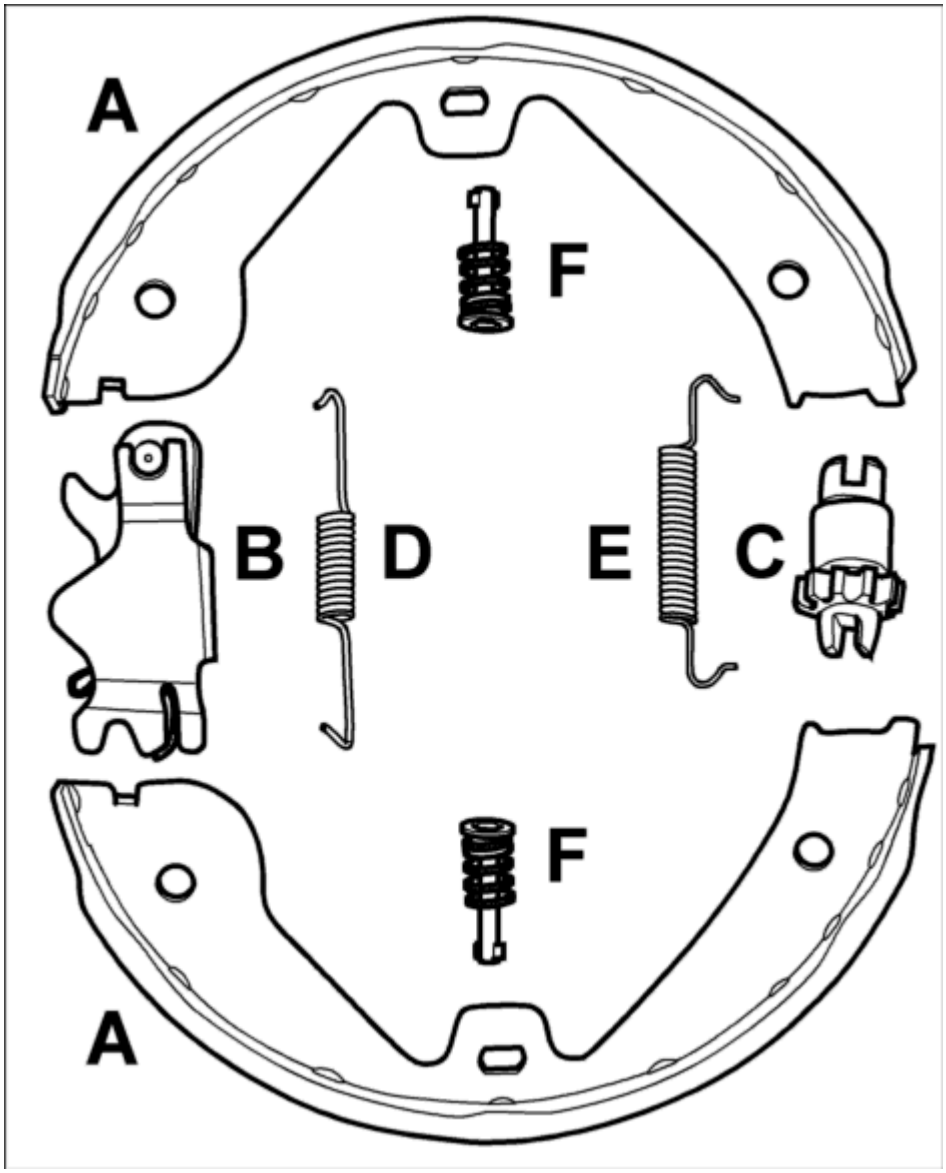


Fig. 119: Component overview for parking brake
Courtesy of PORSCHE OF NORTH AMERICA, INC.

CAUTION: Risk of injury (e. g. crushing) when removing and installing springs.

- **Danger of injury and damage.**
- **Springs can pop out.**
- **The edges of springs may be sharp.**

--> Wear protective gloves and goggles.

--> Be very careful when working on the brake system.

Installation is performed in reverse order.

Align the entire unit in the middle.

Observe correct tightening torques.

Subsequent work

1. Install brake disc and brake calliper. Refer to **465319 Removing and installing rear brake disc [9PAAD1 9PAAD7 9PAAE1 9PAAE7 9PAAF1 9PAAJ1]**.

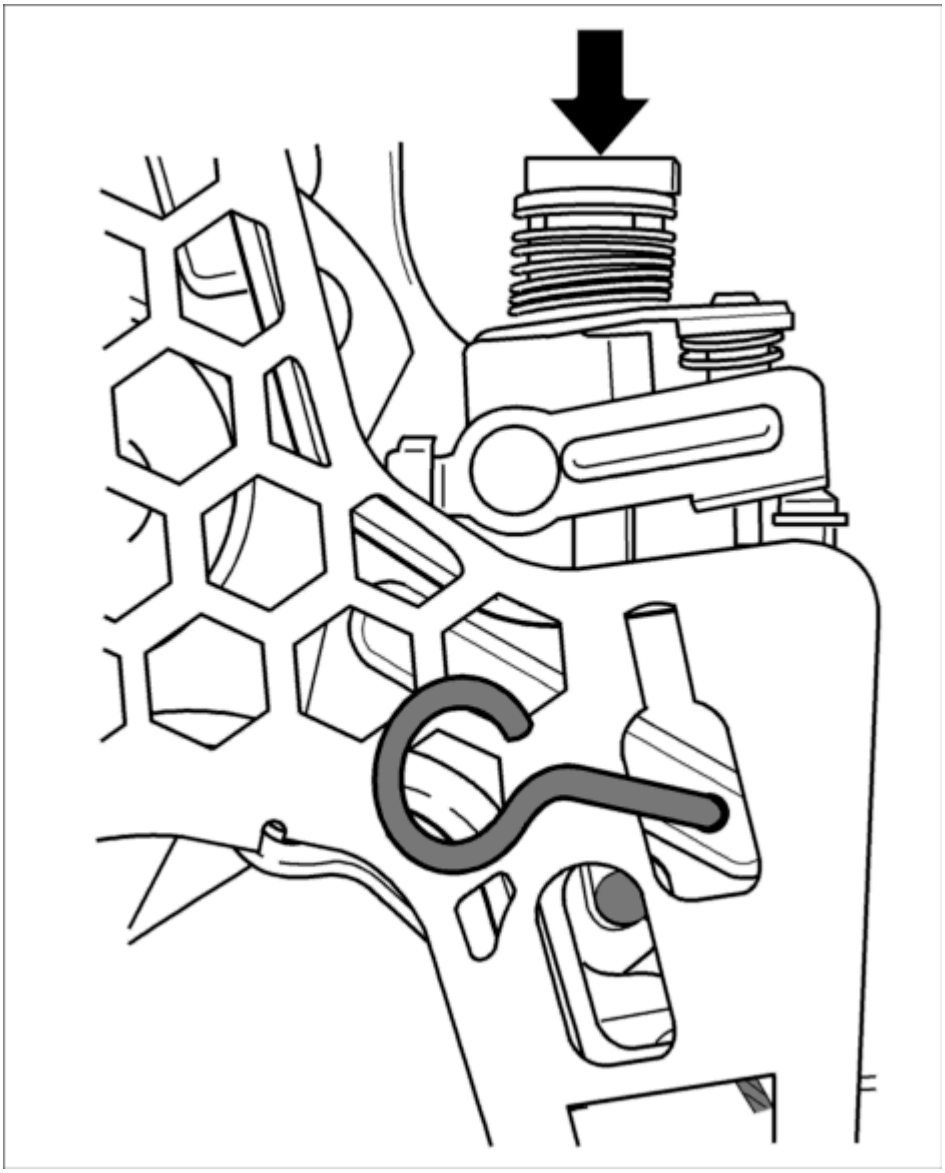


Fig. 120: Adjustment device for foot-operated parking brake
Courtesy of PORSCHE OF NORTH AMERICA, INC.

2. Pull the auxiliary pin out of the adjustment device.

3. Adjust the foot-operated parking brake. Refer to **468316 Adjusting the foot-operated parking brake [9PAAD1 9PAAD7 9PAAE1 9PAAE7 9PAAF1 9PAAJ1]**.

4. Fit wheel. Refer to **44 05 19 Removing and installing wheel - as of MY 2003 (All Models)** .

5. Install trim under instrument panel on driver's side. Refer to **70 19 19 Removing and installing trim under dashboard - as of MY 2003 (All Models)** .

6. Install cover in the footwell. Refer to **70 22 19 Removing and installing cover under dashboard - as of**

MY 2003 (All Models) .