TECHNICAL BULLETINS

JANUARY 1989 - DECEMBER 1989

SERVICE INFORMATION

PORSCHE CARS NORTH AMERICA, INC.

Technical Bulletin

Model	Group
928 S4, 944S	0

Subject:	Part Identifier	Number
Performing System Adaption If Battery was Disconnected	0300	8901

0

Vehicles from Model Year 1988 with self diagnosis capability.

Each time the battery or the DME/LH control unit plugs are disconnected, system adaption **must** be performed. This is done after reconnecting the battery or the DME/LH control units. If adaption is not performed, the engine idle RPM could drop too low and cause the engine to stall with closed throttle.

For system adaption procedures refer to 944 Workshop Manual, Volume 1-A or 928 Workshop Manual, Volume 1, page 03-15.

Technical Bulletin

Model	Group
911 Carrera 4	0

Subject: Rear Spring Shipping Blocks and Transportation Hooks

Part Identifier	Number
0100	8903

Spring blocks are installed on the rear axle to avoid damage when loading and unloading cars. Tranportation hooks are installed to facilitate tie-down while in transit.

The spring blocks (Figure 1) and transportation hooks (Figure 2) must be removed after the dealer receives the car.

Removal Instructions

— lift car on hoist, do not remove wheels.

— cut nylon strap (arrow in Figure 1) and remove spring blocks.

— remove transportation hooks (arrow in Figure 2) and close the threaded holes using the plugs supplied with the vehicle.

Caution!

Driving a car with spring blocks and/or transportation hooks still installed impairs handling and operating safety.

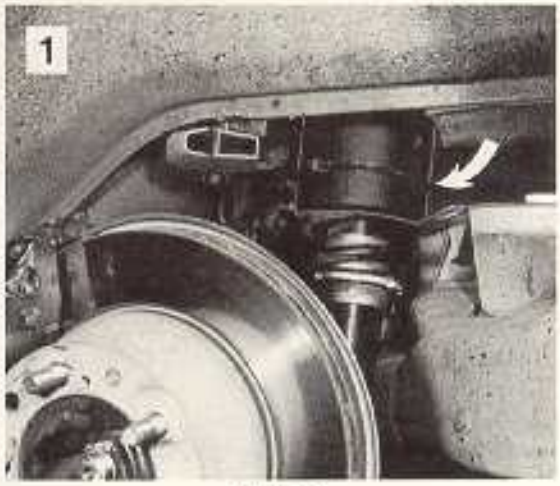

Figure 1

Figure 2

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Technical Bulletin

Model	Group
944S	1

Subject: Checking Camshaft Drive for Damage

Part Identifier	Number
1507	8901

1

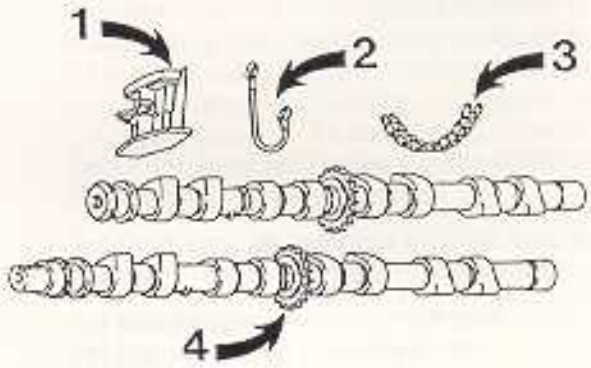
In the event of camshaft drive belt failure, the following parts must be checked and replaced where necessary.

Arrow 1— Cam chain tensioner:
Replace the tensioner if the chain pad is damaged from contact with the cam chain, i.e., scoring or heavy indentations.

Arrow 2— Oil supply pipe:
Always replace with new type "J" shaped pipe Part Number 944 105 167 03.

Arrow 3— Cam chain:
Replace whenever pistons have contacted valves.

Arrow 4— Camshaft gear teeth:
Carefully inspect teeth of camshaft gears for wear or cracks.



Technical Bulletin

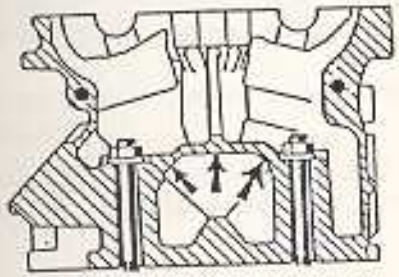
Model	Group
944S, 928 S4	1

Subject: Coolant Loss/Coolant in Oil

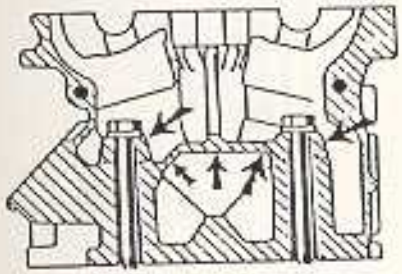
Part Identifier	Number
1570	8902

1

Loss of coolant or coolant in the engine oil may, among other reasons, be caused by cracks in the cylinder head cooling jacket. These cracks may begin in the area of the exhaust valve and extend toward the cylinder head mounting bolt holes. The following figures show possible fracture locations.



944S 87–88 Models
2.5 liter Engine



928 S4

If coolant loss with no visible external leaks is found, the cylinder head should be checked. To test an installed cylinder head, remove the cylinder head cover and apply 1 bar maximum (14.7 psi) pressure to the cooling system. Check for leakage of coolant in the areas of the arrows and/or pressure loss.

For 944S cars, an improved cylinder head is available. The part number is unchanged.

For 928 S4 cars, a new cylinder head PN 928 104 014 03 is installed from Engine No.:

81K00121 Manual Transmission
81K05240 Automatic Transmission

Refer to Technical Bulletin Group 1, No. 8821, for mounting bolt information.

The previous version cylinder head, PN 928 104 014 02 should not be used.

Technical Bulletin	Model	Group
	All 4 Cyl.	1
Subject: Improved Radiator Fan Switch	Part Identifier	Number
	1913	8903

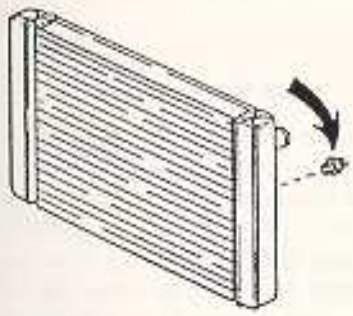
1

High engine temperature gauge readings (upper third of gauge) can be caused by a fan switch which switches at a higher temperature than desired. Improved switches are installed as of Model 89. They can be identified by a production date of 2/8 (Feb. 88) stamped on the switch housing.

Switch PN 944 606 481 00: 924S, 944 up to 85/2
Switch PN 951 606 481 00: 944 85/2 up, 944S, and all 944 Turbo

The switch part numbers have remained unchanged.

Radiator fan switches with a production date prior to 2/8 (Feb. 1988) should not be used.



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Technical Bulletin

Model	Group
924S, 944, 944S, 944 Turbo	1

Subject: Oil Cooler/Oil Pressure Relief Valve Repair Guide

Part Identifier	Number
1726/1740	8904

1

The purpose of this bulletin is to bring together existing information on oil pressure relief valve replacement and oil cooler repairs. The information is arranged in two sections.

Section 1 - Oil Pressure Relief Valve
Section 2 - Oil Cooler Repairs

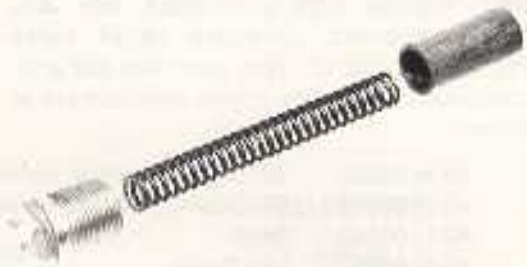
This information is compiled from the following technical bulletins:

Group 1 8704 dated Feb. 20, 1987
Group 1 8707 dated May 6, 1987
Group 1 8716 dated July 23, 1987
Group 1 8803 dated April 22, 1988
Group 1 8813 dated June 10, 1988

Use this information whenever repairs to the oil cooler or oil pressure relief valve are performed.

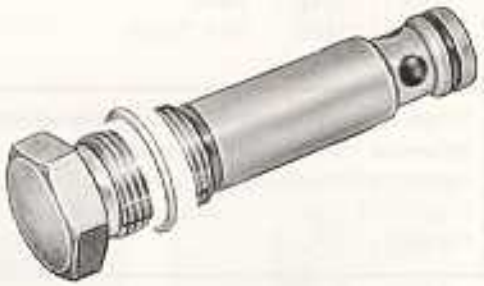
Section 1 - Oil Pressure Relief Valve

From start of production 1983, 944 cars came equipped with a spring and piston oil pressure relief valve (figure 1). This was used in all 944 and 944 Turbo up to the end of 1986 production. Also early 1987 924S used this system. In 1987 production of 944, 944S and 944 Turbo, a new type one-piece oil pressure relief valve PN 944 107 035 01 was installed (figure 2). Later production 1987 924S also received this valve. At around the same time a new type one-piece pressure relief valve, PN 944 107 035 11 was introduced as a retrofit to repair earlier engines from 1983 to 1986 along with the early 924S. With this, the old type spring and piston was discontinued as a spare part.



Up to and including 1986 Model Year original equipment. Three piece oil pressure relief valve.

Figure 1



From July 1986 (1987 Model year). One piece oil pressure relief valve.

Figure 2

PORSCHE CARS NORTH AMERICA, INC.

1987 engines from production date July 1986, received pressure relief valve PN 944 107 035 01. This valve was not anti-corrosion treated. The engine numbers are as follows:

43 H 01920	924S/944	Manual transmission
43 H 60385	924S/944	Automatic transmission
42 H 00140	944S	
45 H 00086	944 Turbo	

1987 engines from production date October 1986, the oil pressure relief valve PN 944 107 035 01 received an anti-corrosion treatment. Installation in production began with the following engine numbers:

43 H 05373	924S/944	Standard transmission
43 H 61268	924S/944	Automatic transmission
42 H 02847	944S	
45 H 01256	944 Turbo	

When repairs are made to engines which fall between the above mentioned engine numbers, the oil pressure relief valve must be replaced with pressure relief valve PN 944 107 035 01.

Since these new type valves are similar in design, the following information will aid in determining the correct oil pressure relief valve application.

Valve Application

YEAR	MODEL(S)	QUALIFIER	VALVE TYPE
1987	924S	Up to engine # 43 H 01919-std. trans. 43 H 60384-auto. trans.	Fig. A
1987	924S	From engine # 43 H 01920-std. trans. 43 H 60385-auto. trans.	Fig. B
1983-86	944, 944 Turbo	All	Fig. A
1987	944, 944S 944 Turbo	All	Fig. B

Part Number Information

Figure A Valve	
1. Valve	944 107 035 11
2. O-Ring	944 107 935 11
3. Seal Ring	N 043 815 3
Figure B Valve	
1. Valve	944 107 035 01
2. O-Ring	944 107 935 01
3. Seal Ring	N 043 815 3

Fig. A

Fig. B

Important Repair Hints

If the pressure relief valve is removed, always replace the aluminum sealing ring, PN N 043 815 3 and install a new O-ring.

For valve PN 944 107 035 11 use O-ring PN 944 107 935 11.
For valve PN 944 107 035 01 use O-ring PN 944 107 935 01.

Coat the relief valve O-ring and outer surface with oil to prevent binding during installation.

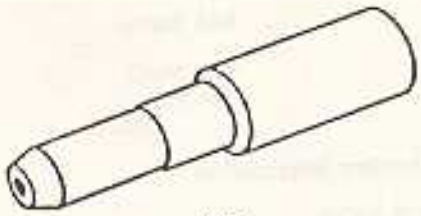
It is imperative that the oil cooler housing and the oil pressure relief valve bore in the engine block be perfectly aligned. If they are not, the oil pressure relief valve can be improperly loaded and may bind internally, causing excessively high or low oil pressure. Binding during removal of a misaligned one-piece pressure relief valve will cause the valve to come apart. If this occurs, the valve must not be reassembled and used. Instead, a new valve should be installed. This unit is considered a NON-servicable part and must not be disassembled.

Alignment of the pressure relief valve bore is accomplished by using the following tools:

Where valve PN 944 107 035 01 is to be installed, use special tool 9262/1 (this tool replaces special tool 9262).

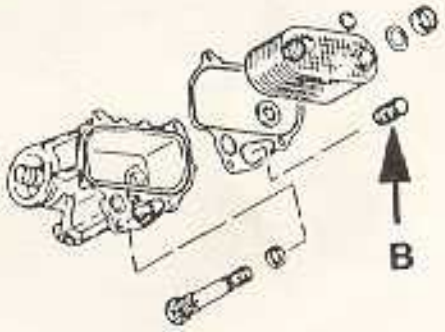
9262/1

Where valve PN 944 107 035 11 is to be installed, use special tool 9215.



9215

NOTE: Special tool 9215 is only used in engines having a steel sleeve installed in the oil pressure relief valve passage (1983-1986). It is important that the sleeve (arrow B below) be firmly installed in the crankcase. If loose, the oil cooler housing must be removed and the sleeve secured with loctite 648 or 638. Drive the sleeve to stop with special tool 9215. Consult the 944 Workshop Manual Vol. I, page 17-22 for additional instruction.



Section 2 — Oil Cooler Repairs

From Model '87 engine numbers:

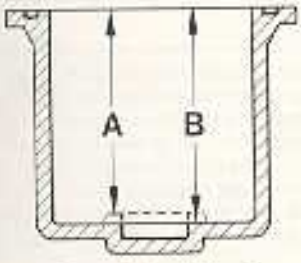
43 H 02505	924S, 944 manual transmission
43 H 60517	924S, 944 automatic transmission
42 H 00522	944S

the oil cooler mounting was modified as follows:

1. Plastic washer installed between housing and oil cooler.
2. Housing - Guide drilling reworked.
3. Adjustment shims between cooler and crankcase installed.
4. Rubber ring (always replace when servicing).

When repairing earlier cars, the new type housing, plastic washer, and adjusting shims must be used.

To determine if the oil cooler housing is the latest version, and to help prevent needless housing replacement, inspect as shown.



A - original design
B - new design

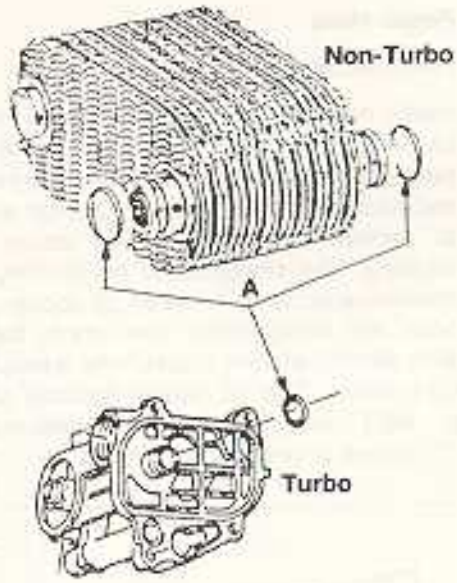


Figure 1

New Oil Cooler O-Rings

The sealing O-rings (A, figure 1) located on the oil cooler of normally aspirated cars and on the connecting pipe of the oil thermostat housing of Turbo cars, have been changed. The new version O-ring is now green in color (formerly red). When repairing, use ONLY the new version green O-rings PN 999 707 043 40.

The new version O-rings are installed from the following engine number .

46 J 06772	924S, 944 manual trans.
46 J 61599	924S, 944 auto trans.
42 J 01420	944S
45 J 01753	944 Turbo
47 J 00899	944 Turbo S

Please note that the O-ring "A" in Fig. 1, is also installed in 944 Turbo cars. There are two O-rings on a short connecting pipe in the same place as they are found on normally aspirated cars.

Technical Bulletin

Model	Group
924S, 944, 944S, 944 Turbo	1

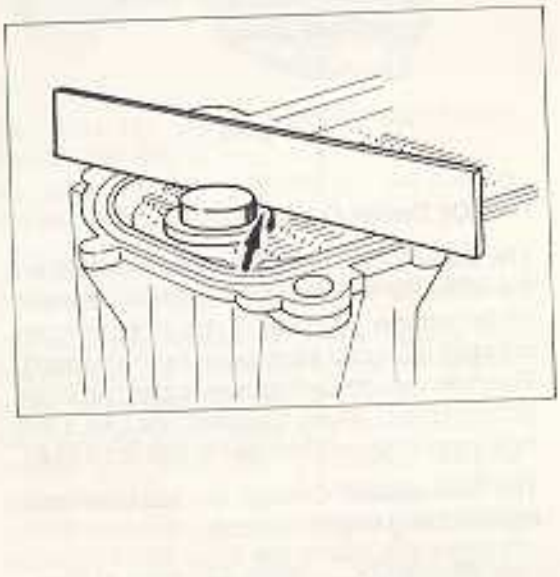
Subject: Oil Cooler/Oil Pressure Relief Valve Repair Guide

Part Identifier	Number
1726/1740	8904

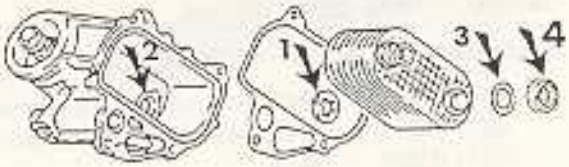
Repair Hints

Pre-assemble Oil Cooler:

Install new version O-rings onto oil cooler. Install plastic washer onto cooler guide boss (use light grease to hold washer in place if necessary). Lubricate cooler O-rings with oil to prevent rolling and insert cooler into housing. Use straightedge on housing and determine distance between oil cooler guide boss and straightedge (see photo below). With shims installed, measurement should be 0±0.25mm. The oil cooler housing gasket is **NOT** included in the measurement. Thickness of one shim is 0.5mm.



Before installing cooler assembly, mount a new rubber ring (arrow 4) onto crankcase and hold in place with light grease or Curil.



Position preassembled oil cooler housing onto crankcase and center the housing with the appropriate centering tool 9215 83-86 944, 944 Turbo and early 87 924S; 9262/1 87 on 924S, 944, 944S, 944 Turbo. Refer to the oil pressure relief valve application information on page 4 of this bulletin for centering tool information.

Coat the pressure relief valve O-ring and outer surface with oil to prevent binding during installation.

Important Note:

In case of leaks at the oil cooler, the cooling system needs to be flushed. If there is engine oil in the coolant or if coolant has entered the engine lubrication system, the connecting rod bearings must be replaced. Always replace connecting rod nuts at each repair also.

Technical Bulletin

Model	Group
928 S4	1

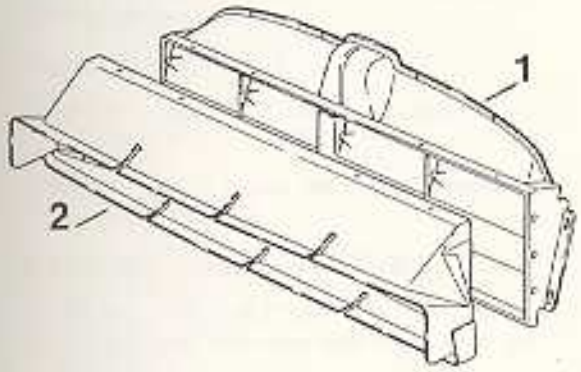
Subject: Cooling Flaps/Air Duct

Part Identifier	Number
1924/1935	8906

1

The cooling flaps (1 in figure) and the air duct (2 in figure) are now available as separate parts.

Cooling flaps	PN 928 575 951 00
Air duct	PN 928 575 521 00
Complete 1 & 2	PN 928 575 051 00



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Technical Bulletin

Model	Group
911 Carrera 4 911/Turbo	1

Subject: Modified Oil Return Tube Sealing Ring

Part Identifier	Number
1545	8908

1

The material of the oil return tube seal has been changed.
From production date: November 17, 1988

Engine Number:
- 64 K 03054 - Carrera
- 68 K 00659 - Turbo
- 62 K 00204 - Carrera 4

New seal ring: PN 999 707 112 40

New oil tube service kit: PN 930 107 040 01

Only the new seal, green color, should be installed when repairing engines. When using oil tube service kits or engine gasket kits containing red colored seals, obtain and use green seals.

Technical Bulletin

Model	Group
944 Turbo	1

Subject: Modified Exhaust Valves and Stem Seals

Part Identifier	Number
1562/63	8909

1

Prolonged high speed operation has caused seizing of exhaust valves in their guides in some countries other than the U.S. To reduce the possibility of this occurring, exhaust valves with a conical stem (0.01mm) and modified valve stem seals are installed in all 1988 model 944 Turbo S and 1989 model 944 Turbos including those for the U.S.

47 J 00529 — Exhaust valves
47 J 00777 — Valve stem seals

The new exhaust valve can be identified by PN 951 105 416 07 die stamped on the valve stem end. (Fig. 1)

The new version valve stem seal PN 951 104 195 01 can be recognized by a 45 degree chamfer on the sealing lip. (Fig. 2)

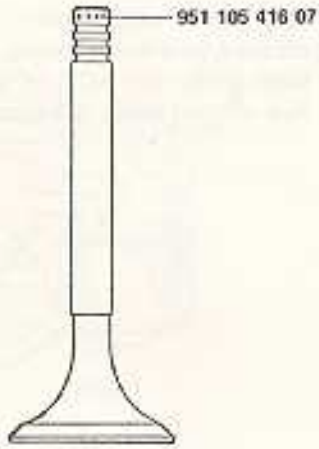

Figure 1

Repair Information

If, upon inspection, the hydraulic valve lifter is found to be disassembled, the exhaust valve may have seized. If it is suspected that a valve may have seized, the following parts must be replaced:

— exhaust valve
— valve stem seal
— hydraulic lifter
— valve spring set
— upper spring retainer
— valve keepers

The new version parts may be used for repairs, on 1988 Turbo S and 1989 Turbo only. Old type exhaust valves and stem seals may be used in earlier model engines until stock is depleted. Afterwards, new version parts may be used to repair older engines.

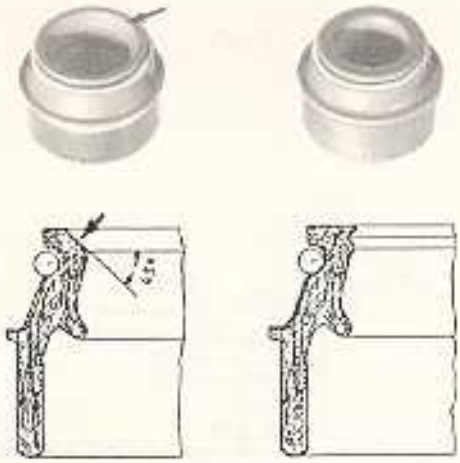

Figure 2

PORSCHE CARS NORTH AMERICA, INC.

Technical Bulletin

Model	Group
944 Turbo	1

Subject:	Part Identifier	Number
Modified Exhaust Valves and Stem Seals	1562/63	8909

New and former version stem seals can be used on old type exhaust valves. However, old type stem seals may **NOT** be used together with new version exhaust valves.

Technical Bulletin

Model	Group
924S, 944, 944 Turbo	1

Subject: Venting of Toothed Belt Cover

Part Identifier	Number
1531	8910

1

Venting of the toothed belt cover has been changed. This change occurred in two stages:

Stage 1 —

The belt Cover Opening is closed off (Fig. 1) but the hose connecting the belt cover to the air cleaner is still installed.

From Engine Numbers:

46 J 00709 924S, 944 manual trans.
46 J 61729 924S, 944 auto trans.
45 J 01865 944 Turbo
47 J 01159 944 Turbo S

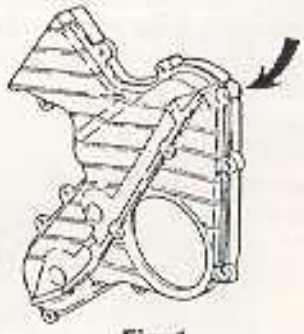

Fig. 1

Stage 2 —

The hose connecting the belt cover to the air cleaner is discontinued and a cap (Fig. 2) is installed on the air cleaner end.

From VIN Numbers:

94 KN451075 — 944
95 KN155059 — 944 Turbo

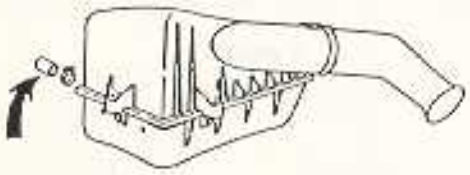

Fig. 2

Repair Information

Two valve engines from Model Year "87" only can be modified by installing caps (Fig. 3) on the belt cover **and** the air cleaner.

Parts Information

PN 944 106 103 03	Cap for air filter and belt cover 924S, 944, 944 Turbo belt cover only.
PN 944 106 103 00	Cap for air cleaner (Turbo only).

Discard the hose previously connecting the belt cover to the air cleaner.

Fig. 3

Technical Bulletin

Model	Group
924S, 944, 944 Turbo	1
Part Identifier	**Number**
1531	8910

Subject: Venting of Toothed Belt Cover

The rear part of the toothed belt cover PN 944 105 039 01, applicable to 87/88 models is superseded by belt cover PN 944 105 039 02. With this cover, the opening (Fig. 4) is closed off.

Important

When repairing, no attempt should be made to open the closure.

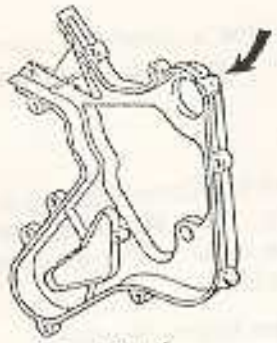

Fig. 4

Technical Bulletin

Model	Group
911 Carrera 911 Turbo	1

Subject: Sealing Crankcase Cast-on Oil Pipe

Part Identifier	Number
1010	8911

1

Oil leaks from the cast-in oil pipe in the right crankcase half (oil cooler area, Figure 1) can be repaired with engine removed or installed.

Work Procedure:

— Remove oil cooler

— Clean and degrease the crankcase thoroughly in the area of the pipe (circle in Figure 1) using acetone, alcohol or something similar.

— Apply a coat of Silastic 732 RTV sealing compound (Porsche PN 999 915 451 40) with light pressure uniformly until the depression (arrows in Figure 1) is filled. Smooth over the protruding sealing compound with a water coated putty knife or similar tool. Smoothing the compound is possible for a maximum of 5 minutes after application. Complete hardening time is 24 hours. Test running the engine will not disturb the hardening process.

Note: Replacement crankcases should be sealed in the same manner.

Sealed crankcases are installed from production date: March 1989.

Engine Number 64 K 04 691 911 Carrera
Engine Number 68 K 01 028 911 Turbo

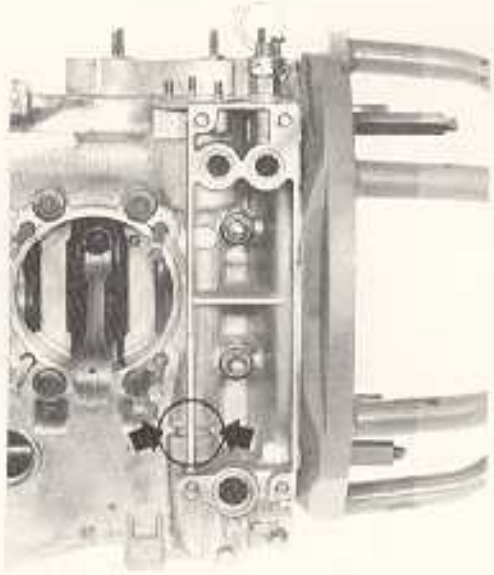

Figure 1

Technical Bulletin

Model	Group
928 S4 928 GT	1

Subject: Thermostat Housing Gasket

Part Identifier	Number
1955	8912

1

Model Year 1989

Manufacturing tolerances required installation of additional gaskets between the thermostat housing and cylinder heads (arrows in Fig. 1) on approximately 1500 engines.

The additional gaskets **must** be reinstalled during repairs.

Gasket PN 928 106 167 00

Affected engine numbers:

81K 00276 - 81K 00551	M28/41 Manual transmission
81K 05889 - 81K 07067	M28/42 Auto transmission
85K 00061 - 85K 00068	M28/47 GT

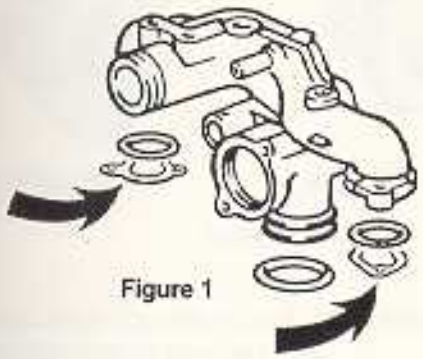

Figure 1

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ATTENTION: Service Manager/Service Technician

Chrome plated piston rings are installed in groove 1 (top).

From production date: December, 1988.

Engine numbers:

81 K 00464	M28.41	928 S4 Manual Transmission
81 K 06640	M28.42	928 S4 Automatic Transmission
85 K 00061	M28.47	928 GT

In production a three piece oil scraper ring is installed. Repair sets contain a bevelled edge ring with internal spring (Figure 1 and 2).

New piston ring sets, Part Number:

928 103 906 09	100 mm standard size
928 103 906 10	100.5 mm oversize

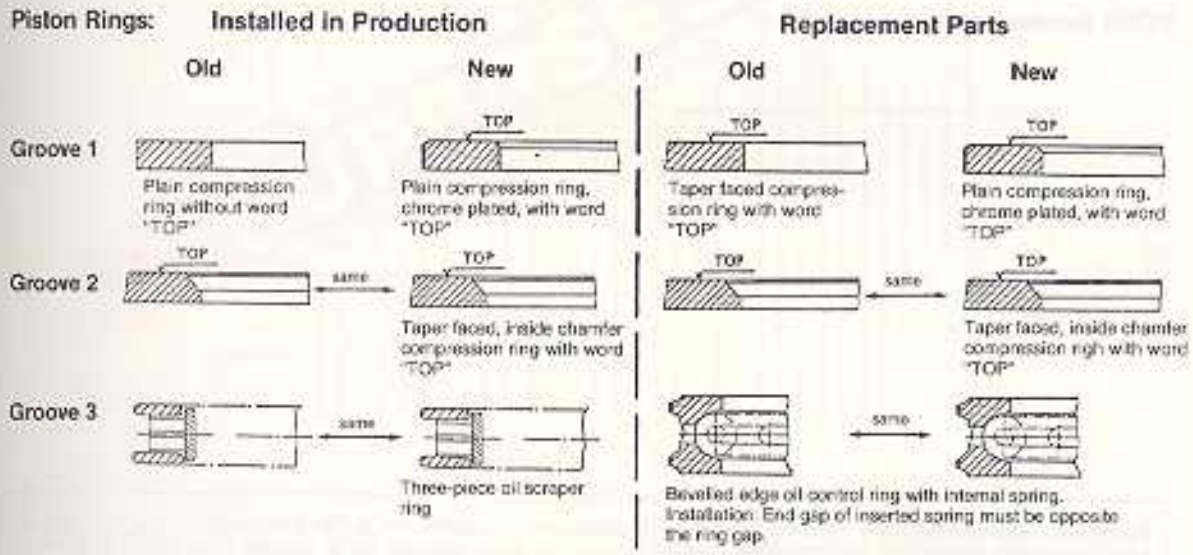

Figure 1

Figure 2

Technical Bulletin

Model	Group
928 S4/GT	1

Subject: Chrome Plated Piston Rings

Part Identifier	Number
1319	8915

Break-in Time:

A chrome plated piston ring surface is considerably harder than a ring surface without chrome plating. A break-in period is required before the piston ring surface takes the shape of the cylinder wall surface. Oil consumption of an engine with new piston rings can only be evaluated after the car has been driven at least 2,000 miles.

Important Repair Information

— Replace not only the piston rings, but also the pistons, in case of a complaint of "excessive oil consumption" from engines with a total operation of more than 40,000 miles.

This is necessary because of wear in the groove flanks of pistons. This wear cannot be determined with common workshop equipment and will continue to cause excessive oil consumption even after installation of new piston rings.

— Connecting rod bearing shells must always be replaced when repairing an engine, for which it is necessary to remove the connecting rods.

Thank you.

PCNA Service Department

Dealership Distribution Routing: Service manager ____ Shop foreman ____ Service technician ____ ____ ____ ____

Asst. manager ____ Warranty admin. ____ Service technician ____ ____ ____ ____

SERVICE

Technical Bulletin

Model	Group
911 Carrera	2

Subject: Poor Starter Engagement

Part Identifier	Number
2760/1361	8902

911 Carrera with G50 Transmission

To improve starter engagement a wider ring gear is installed beginning with Model Year 1989.

Engine number 64 K 01999 to 64 K 02208 and then from engine number 64 K 03112 on.

When repairing cars with starter engagement problems outside of the above engine number ranges, the ring gear should be checked for damage. If the ring gear is damaged, install the new wider ring gear PN 950 116 143 01. Also the starter gear should be checked for damage. If necessary replace starter.

Important
Make sure the ring gear is installed correctly:
Flat surface towards pressure plate
Recessed surface towards bolt head (Fig. 2)
Bolt torque: 24Nm (18 ft. lbs.)

For transmission case dimensions refer to Technical Bulletin Group 2, Number 8708, Book D, page 101. Correct as necessary.

Figure 1

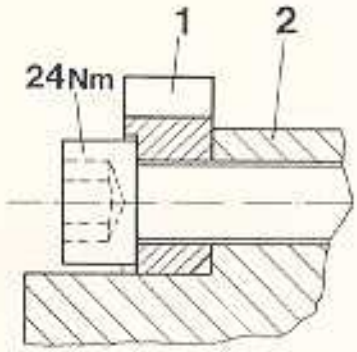

Figure 2

1-Ring Gear

2-Pressure Plate

Technical Bulletin

Model	Group
944S	2

Subject: Engine Misfire

Part Identifier	Number
2853	8903

The spark plug wires may touch the engine hood which could result in an engine miss. To prevent this, an insulation piece PN 944 556 772 01 can be installed.

Position the insulation piece on the right inside of the engine hood as shown.

2

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Technical Bulletin

Model	Group
911 Carrera 4	2

Subject: Erratic Warning Light Operation and/or Engine Performance

Part Identifier	Number
2853	8906

911 Carrera 4

Model Year 1989

Condition:

- Warning symbols in the instrument cluster light up (ABS, 4 wheel drive lock, central warning) and/or warning buzzer comes on separately or several simultaneously, sporadically or continuously.
- Various faults in DME control unit memory.
- Engine performance problems and/or incorrect tachometer display.

Cause:

- The cause could be arcing or jumping of ignition sparks because of incorrectly mounted, loose spark plug connectors or damaged ignition leads.

Repair Instructions:

The function of ignition circuits 1 (top) and 2 (bottom) should be checked as follows:

With the ignition turned off, pull off final stage plug for ignition circuit 2 and start engine. If engine performance is normal and no warning symbols light up in instrument cluster, ignition circuit 1 is okay

If engine performance is not okay and/or warning symbols light up, eliminate faults in ignition circuit 1.

When connecting spark plug connectors it is important to make sure that engagement is noticed while pressing on.

Repeat test for ignition circuit 2 by pulling off final stage plug for ignition circuit 1.

After repairs, cancel any faults stored in the DME memory according to the procedures in section 03 of the Workshop Manual.

Test drive car and read out fault memory again. If warning symbols light up again or faults are stored in the DME control unit, the displayed system should be checked and repaired.

Note: The function of ignition circuits 1 and 2 should be checked every time the ignition wires are pulled off during repair and maintenance work. Refer to 911 Carrera 4 Workshop Manual Volume 1, page 03-25 for ignition circuits checking instructions.

Also refer to Technical Bulletin Group 2, Number 8905, dated October 6, 1989.

Subject: Tapping Noise on Cold Starting	Part Identifier 2069	Number 8907

Models Affected: *944 S2 Model 89*

Condition: Rattling or tapping noise from right rear of vehicle occurring from 1 to 2 minutes after cold start.

Cause: Pulsations in returning fuel to the tank transmits noise in the rear of the car.

Repair Procedure: None. At this time, it is considered normal. However, the fuel return line should be checked for proper clearance to the body and corrected if necessary.

2

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Technical Bulletin	Model	Group
	911 Turbo	3
Subject: Reverse Idler Shaft Update	Part Identifier	Number
	3557	8901

Model Year 1989 with G50/50 Transmission

A modified reverse gear idler shaft was installed from transmission numbers:

G50/50 1K 0575
G50/50 2K 1113 (limited slip differential)

When repairing reverse gears before the above mentioned transmission numbers the following parts should be installed:

Reverse idler shaft:	PN 950 302 228 03 (arrow 1)
1 thrust washer:	PN 950 302 297 10 (arrow 2)
2 thrust washers:	PN 950 302 297 12 (arrows 3)

The early version idler shaft PN 950 302 228 02 must no longer be used.

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Technical Bulletin

Model	Group
928S/928 S4	4

Subject: Brake Vibration Dampers

Part Identifier	Number
4636	8902

Vibration dampers with adhesive surface are installed on the **front** axle brake caliper pistons.

From production date: November 1988

When replacing brake pads, the vibration dampers must be replaced.

Vibration damper installation instructions

1. Clean the contact surfaces piston/ vibration damper and vibration damper/brake pad with mineral spirits.

   Do not use lubricants on contact surfaces

2. Install vibration dampers on fully retracted pistons. (Fig. 1)
3. Peel off vibration damper protective foils. (Fig. 2)
4. Install brake pads.

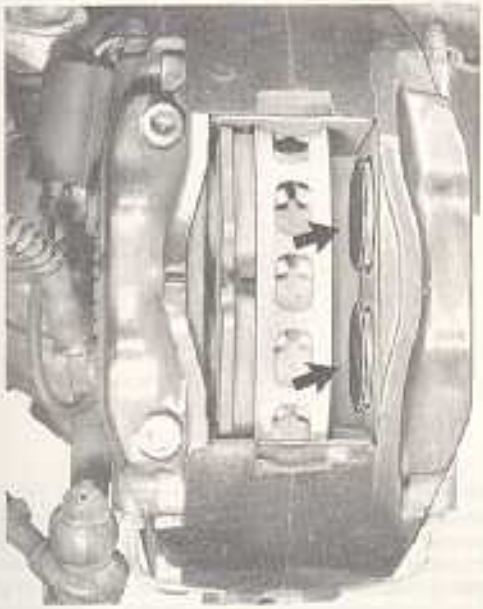


Figure 1

Figure 2

Front vibration damper applications

928S Model Year 1986	928 351 096 19* 928 351 096 18*
928 S4 Model years 1987–1989 Up to VIN: 92__KS 860 281	928 351 096 19* 928 351 096 17*
928 S4 Model year 1989 From VIN: 92__KS 860 282	928 351 096 16* 928 351 096 15*

*Four required per vehicle

For further information on vibration dampers and brake pad applications refer to Technical Bulletin Group 4, Number 8810, Book E, page 179.

Important:

When converting from brake pads with asbestos to asbestos-free brake pads, the brake disc surface area must be cleaned with sandpaper if they are not being machined.

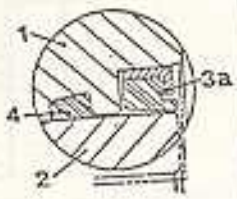
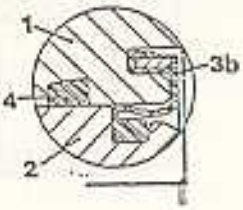
Technical Bulletin

Model	Group
944 Turbo 944 S2, 928 S4	4

Subject: Brake Calipers with Improved Piston Seals

Part Identifier	Number
4739/41	8907

The front and rear brake calipers of the 944 S2, 944 Turbo, and 928 S4 for Model 89 received modifications in the area of the pistons and dust seals (now similar to the two piston calipers). Refer to the chart below for identification.

Early Version with Scraper Ring	New Type with Dust Cap
	
	

1 — caliper housing
2 — piston
3a — scraper ring
3b — dust cap
4 — sealing ring (unchanged)

Replacement and repair procedures are different for each type of caliper and are detailed on the following pages.

Shaded area denotes new information

Repair Instructions

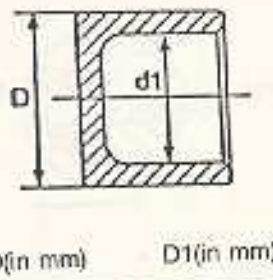
Caliper Replacement

New type calipers can be fitted to earlier cars. After stocks of early version calipers are used up, only the new type calipers (with dust caps and modified pistons) will be available. New version calipers (with dust caps) cannot be paired with early version calipers (with scraper rings). Measure the brake piston diameters to be certain the correct calipers are installed during repairs. Failure to install brake calipers with the correct piston sizes side to side will cause uneven braking. Use the following chart to determine piston diameter applications.

Caliper Repairs

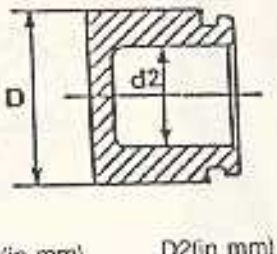
Repair sets for early version and new type calipers are available. New type pistons and dust caps **cannot** be installed on early version calipers. When rebuilding brake calipers, use only sliding lubricant PN 000 043 117 00 on the pistons and sealing rings during assembly. Refer to Technical Bulletin Group 4, Number 8901, dated April 21, 1989 for further information.

Early Version Piston



D(in mm)	D1(in mm)
44	34
42	32
40	30
38	28
36	26
30	22
28	20

New Version Piston



D(in mm)	D2(in mm)
44	27.5
—	—
40	23.5
—	—
36	20.5
30	15.5
28	13.5

Technical Bulletin

Model	Group
944 Turbo 944 S2, 928 S4	4

Subject: Brake Calipers with Improved Piston Seal

Part Identifier	Number
4739/41	8907

Brake Caliper and Repair Set Applications

944 Series

Front Axle

Model Type: Piston Dia. in mm	Brake Caliper with Scraper Ring	Repair Set (Piston Seal Ring, Scraper Ring)	Brake Caliper with Dust Cap	Repair Set (Piston seal ring, Dust Cap)
944 Turbo ('86) 36/38	* Left 951 351 421 00 Right 951 351 422 00	951 351 919 01 For 36mm Piston Dia. 951 351 919 00 For 38mm Piston Dia.	—	—
944 Turbo ('87/'88) 944 S2 ('89)**** 38/40	** Left 951 351 421 01 Right 951 351 422 01	951 351 919 01 For 36mm Piston Dia. 951 351 919 02 For 40mm Piston Dia.	Left 951 351 421 02 Right 951 351 422 02	951 351 919 10 For 36mm Piston Dia. 951 351 919 11 For 40mm Piston Dia.
944 Turbo S ('88) 36/44	** Left 951 351 093 00 Right 951 351 094 00	951 351 919 01 For 36mm Piston Dia. 928 351 919 01 For 44mm Piston Dia.	Left 928 351 421 02 Right 928 351 422 02	951 351 919 10 For 36mm Piston Dia. 928 351 919 10 For 44mm Piston Dia.
944 Turbo ('89) *** 36/44	** Left 951 351 093 00 Right 951 351 094 00	951 351 919 01 For 36mm Piston Dia. 928 351 919 01 For 44mm Piston Dia.	Left 928 351 421 02 Right 928 351 422 02	951 351 919 10 For 36mm Piston Dia. 928 351 919 10 For 44mm Piston Dia.

Rear Axle

944 Turbo all*** 944 S2 ('89)**** 28/30	** Left 951 352 421 00 Right 951 352 422 00	951 352 919 01 For 28mm Piston Dia. 951 352 919 00 For 30mm Piston Dia.	Left 951 352 421 01 Right 951 352 422 01	951 352 919 10 For 28mm Piston Dia. 951 352 919 11 For 30mm Piston Dia.

* After stocks are used up, calipers with 36 mm/38 mm piston diameter will no longer be available. When a 36 mm/38 mm diameter caliper must be replaced, use calipers with 36 mm/40 mm piston diameter and install in pairs. Repair sets remain available for 36 mm/38 mm piston diameter.

** When used up, brake calipers with scraper ring will no longer be available. When repairing, use calipers with dust caps and install only in pairs.

*** In production, brake calipers with dust caps were installed on the rear axle from VIN: 95 KN 150216. Visual inspection of front calipers is necessary for caliper type identification.

**** Front and rear calipers require visual inspection to determine caliper type identification.

Shaded area denotes new information

Technical Bulletin

Model	Group
944 Turbo 944 S2, 928 S4	4

Subject: Brake Calipers with Improved Piston Seals

Part Identifier	Number
4739/41	8907

Brake Caliper and Repair Set Applications

928 Series

Front Axle

Model Type: Piston Dia. in mm	Brake Caliper with Scraper Ring	Repair Set (Piston Seal Ring, Scraper Ring)	Brake Caliper with Dust Cap	Repair Set (Piston Seal Ring, Dust Cap)
928 S (86) 36/42	* Left 928 351 421 00 Right 928 351 422 00	951 351 919 01 36mm Piston Dia. 928 351 919 00 42mm Piston Dia.	—	—
928 S4 ('87/'88) 928 S4 ('89) ** 36/44	*** Left 928 351 421 01 Right 928 351 422 01	951 351 919 01 36mm Piston Dia. 928 351 919 01 44mm Piston Dia.	Left 928 351 421 02 Right 928 351 422 02	951 351 919 10 36mm Piston Dia. 928 351 919 10 44mm Piston Dia.

Rear Axle

928 S (86) 928 S4 ('87/'88) 928 S4 ('89) ** 28/30	*** Left 928 352 421 00 Right 928 352 422 00	951 352 919 01 28mm Piston Dia. 951 352 919 00 30mm Piston Dia.	Left 928 352 421 01 Right 928 352 422 01	951 352 919 10 28mm Piston Dia. 951 352 919 11 30mm Piston Dia.

* When used up, brake calipers with piston diameter 36/42mm will no longer be available. When repairing, use calipers with piston diameter 36/44mm and install in pairs.

** In production, brake calipers with dust caps were installed on front and rear axle from VIN: 92 KS 860282.

*** When used up, will no longer be available. When repairing, use brake calipers with dust caps and install only in pairs.

Technical Bulletin

Model	Group
All	4

Subject: Hand Brake Shoe Retaining System

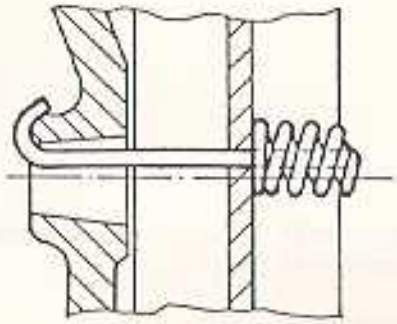
Part Identifier	Number
4683	8911

Models Affected: *944 Series, 911 Series, 928 Series*

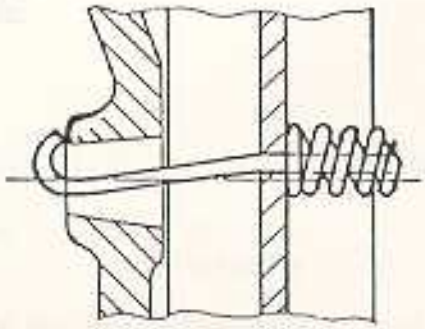
Concern: Correct installation of hand brake shoe retaining spring.

Repair Procedure: When installing hand brake shoes, be certain to correctly position the brake shoe retaining spring (Figure 1).

Incorrect installation (Figure 2) will result in breakage of the retaining spring and possible damage to the brake shoes and related components, which is not a warranty matter.



Correct
Figure 1



Incorrect
Figure 2

Technical Bulletin

Model	Group
944 Turbo	4

Subject: Stabilizer Bar Change

Part Identifier	Number
4290	8912

Models Affected: *944 Turbo Model 89 (K)*

Concern: To further optimize chassis balance, the rear stabilizer bar diameter has been changed from 18mm to 16mm.

This change occurred from the following VIN: 95 KN 150237

Parts Information:

16mm diameter stabilizer	PN 477 511 411
16mm stabilizer mount	PN 477 411 313 A

When existing stocks of the 18mm diameter bar are used up, only the 16mm bar will be available for repair replacement.

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SERVICE

Technical Bulletin

Model	Group
All	7

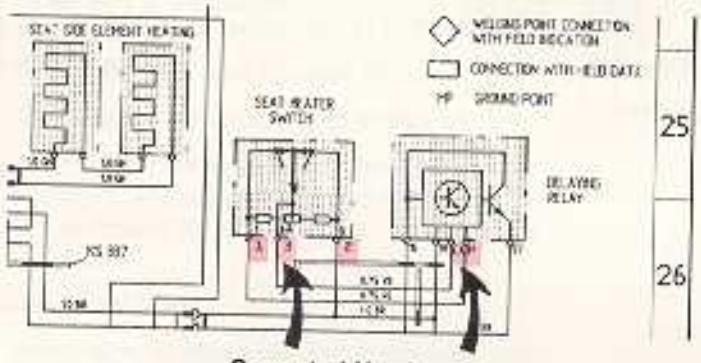
Subject: Seat Heating
Wiring Diagram Update

Part Identifier	Number
7272/7274	8901

Model Year 1989

The terminal designations for the seat heating delaying relay and the seat heating switch (4 and 8 cyl. only) are incorrect on the 1989 Wiring Diagrams. Please update your wiring diagrams as follows:

4 cyl. cars wiring diagram Sheet 6, Coordinates O,P 26

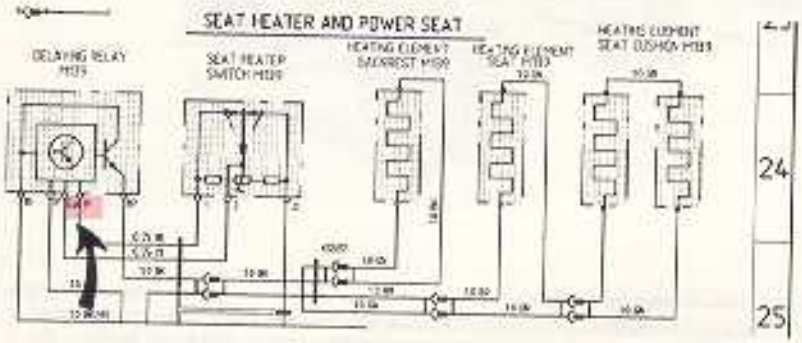


Corrected Version

Delaying Relay Terminal
E change to P
P change to EA

Seat Heater Switch Terminal
E change to 1
P change to 3
A change to 2

6 cyl. cars wiring diagram Sheet 3, Coordinates M24



Corrected Version

Delaying Relay Terminal
E change to P
P change to EA

Technical Bulletin

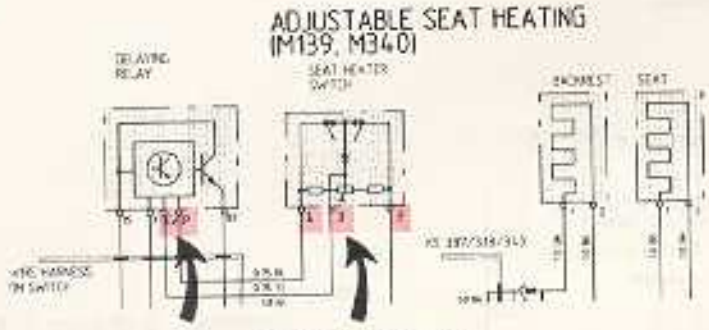
Model	Group
All	7

Subject: Seat Heating Wiring Diagram Update

Part Identifier	Number
7272/7274	8901

8 cyl. cars wiring diagram Sheet 6, Coordinates M,N 42

L	M	N	O



Corrected Version

Delaying Relay
Terminal
E change to P
P change to EA

Seat Heater Switch
Terminal
E change to 1
P change to 3
A change to 2

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Technical Bulletin

Model	Group
928, 928S, 928 S4	8

Subject: Replacing A/C Evaporator

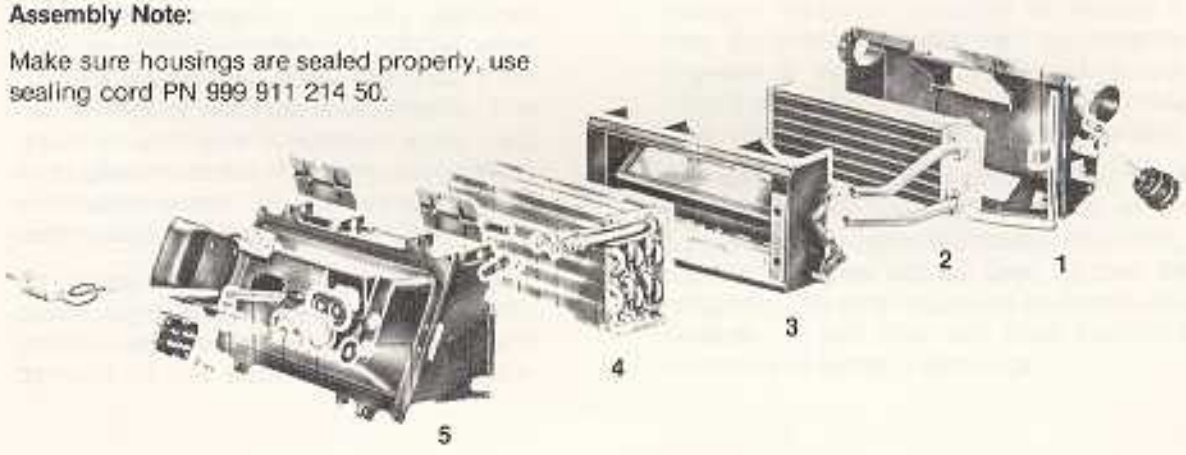
Part Identifier	Number
8760	8901

If it becomes necessary to remove or replace the A/C evaporator proceed as follows.

1. Remove heater-air conditioner housing. Refer to 926 Workshop Manual Volume IV, page 87-97.
2. Remove expansion valve and capillary tube.
3. Remove clamps from heat exchanger housing and pry off housing (1 in figure).
4. Pull out heat exchanger (2 in figure).
5. Disconnect vent housing flaps.
6. Remove vent housing (3 in figure).
7. Remove rubber grommet from evaporator pipes and carefully remove evaporator (4 in figure) from evaporator housing (5 in figure).

Assembly Note:

Make sure housings are sealed properly, use sealing cord PN 999 911 214 50.



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Technical Bulletin

Model	Group
911 Carrera 4	8

Subject: Wiring Diagram Update: Heater Fan Fuse in Engine Compartment

Part Identifier	Number
8018	8904

ATTENTION: Service Manager/Service Technician

911 Carrera 4, Model Year 1989

A 30A fuse is required for the heater fan in the engine compartment. This is fuse number 1 on the Fuse/Relay Board in the engine compartment.

Please correct your 911 Carrera 4, Model Year 1989 Wiring Diagrams Sheet 3, Field Coordinate L28 (Figure 1).

911 Carrera 4 Owner's Manual, page 90, should also be updated (Figure 2).

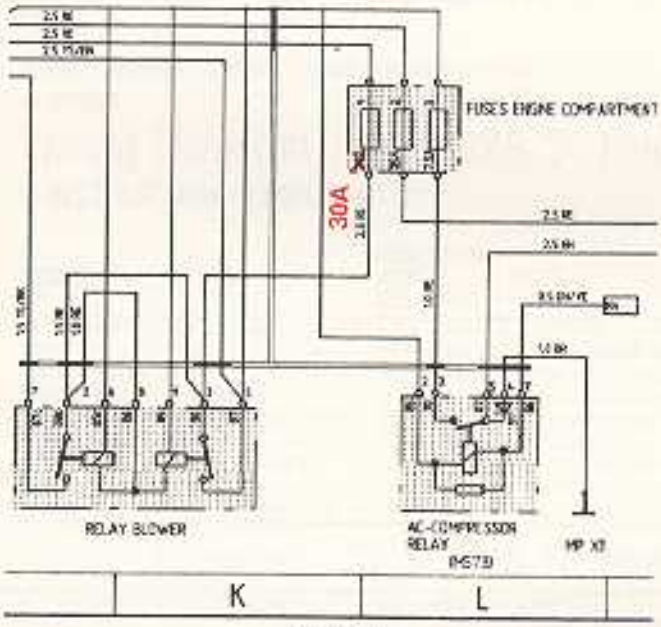

Figure 1

Engine compartment

Relays in engine compartment

Heater blower
Heated rear window

Fuses in engine compartment

Heated rear window . . 25 A
Heater blower . . . . . ~~25 A~~ 30A
AC compressor . . . . . 7,5 A

Figure 2

Thank you.

PCNA Service Department

Important Notice

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SERVICE

Technical Bulletin

Model	Group
928 S4	9

Subject: Wiring Diagram Update

Part Identifier	Number
9700	8901

Wiring Diagram Type 928S
Model 88 and 89 Sheet 12

The construction component designation "cooling water temperature switch" (marked with an asterisk) is incorrect. The correct designation is "cooling water level switch".

The cooling water temperature switch is located on the front left top of engine (4c0 position in vehicle). Field in wiring diagram is P26.

Please update your wiring diagrams with both changes.

Wiring Diagram Type 928 S Model 88 Sheet 12
CONSTRUCTION COMPONENTS

DESIGNATION, FUNCTION	POSITION IN VEHICLE LHD	RHD	NOTE	FIELD IN WIRE DIAGRAM
AIR CONDITIONING SYSTEM CONTROL UNIT	8(N-0	8(N-0	IN HEATER BOX	AB 34-36
COOLANT FAN FINAL STAGE	1kN	1kN	IN ENGINE COMPARTMENT ON FRONT RIGHT END PANEL	C 39 40
COOLANT FAN CONTROL UNIT	10aK	10aR	UNDER THE COVER ON PASSENGER'S SIDE SILL	MNO 39 40
COOLING WATER PRESSURE SWITCH	5cM	5cP	IN COOLANT HOSE BEFORE EXPANSION TANK	L 29,30
* COOLING WATER TEMPERATURE SWITCH	6cM	6cP	ON EXPANSION TANK	L 29
BULB CONTROL UNIT	7cL	7c0	ON PASSENGER'S PARCEL TRAY	NO 1
IDLE SPEED CO ADJUSTMENT POTENIOMETER	7dL	7d0	IN PASSENGER'S FOOTWELL ON CONTROL UNIT CONSOLE	OP 88
LH-JETRONIC CONTROL UNIT	7dL	7d0	IN PASSENGER'S FOOTWELL ON CONTROL UNIT CONSOLE	J 87-89
SOLENOID VALVE (ADDITIONAL AIR CONDITIONER)	10eM	10eM	UNDER THE RIGHT SEAT	F 39

Wiring Diagram Type 928 S Model 89 Sheet 12

AIR CONDITIONING SYSTEM CONTROL UNIT	8(N-0	8(N-0	IN HEATER BOX	AB 34-36
COOLANT FAN FINAL STAGE	1kN	1kN	IN ENGINE COMPARTMENT ON FRONT RIGHT END PANEL	C 39 40
COOLANT FAN CONTROL UNIT	10aS	10aR	UNDER THE COVER ON PASSENGER'S SIDE SILL	MNO 39,40
COOLING WATER PRESSURE SWITCH	5cM	5cP	IN COOLANT HOSE BEFORE EXPANSION TANK	MN 29,30
* COOLING WATER TEMPERATURE SWITCH	6cM	5cP	ON EXPANSION TANK	MN 29
BULB CONTROL UNIT	7cL	7c0	ON PASSENGER'S PARCEL TRAY	NO 1
IDLE SPEED CO ADJUSTMENT POTENIOMETER	7dL	7d0	IN PASSENGER'S FOOTWELL ON CONTROL UNIT CONSOLE	OP 88
LH-JETRONIC CONTROL UNIT	7dL	7d0	IN PASSENGER'S FOOTWELL ON CONTROL UNIT CONSOLE	J 87-89
SOLENOID VALVE LOCK DIFFERENTIAL	12dS	12dS	BEHIND THE LH REAR WHEEL	C 72

***Cooling water level switch**

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