

TECH BULLETIN # 3

MODEL - 924S,944/S/T

SUBJECT - OIL COOLER AND OIL PRESSURE RELIEF VALVE

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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

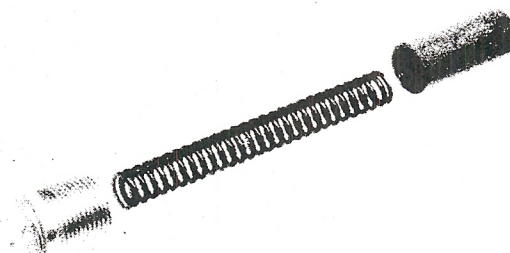
Group 1 8803 dated April 22, 1988

Group 1 8813 dated June 10, 1988

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

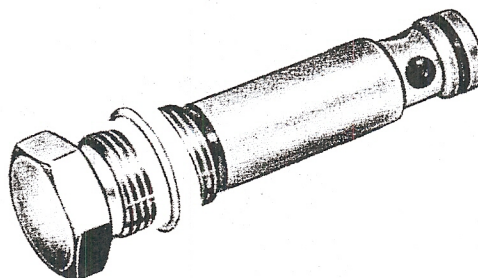
Section 1 - Oil Pressure Relief Valve

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

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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.

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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 01ss 999 707 144 40 |
| 3. Seal Ring | N 043 815 3 |

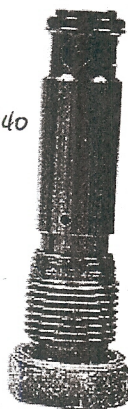


Fig. A



Fig. B

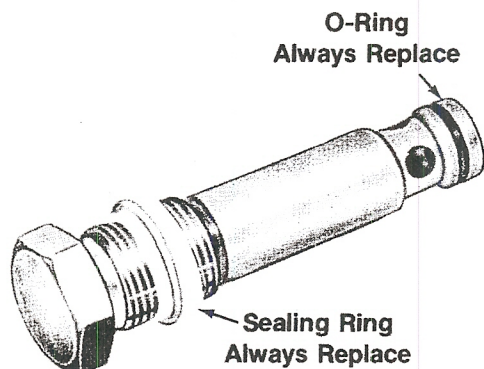
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Important Repair Hints

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:

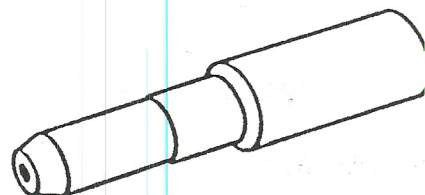
Where valve PN 944 107 035 01 is to be installed, use special tool 9262/1 (this tool replaces special tool 9262).



000 721 926 21

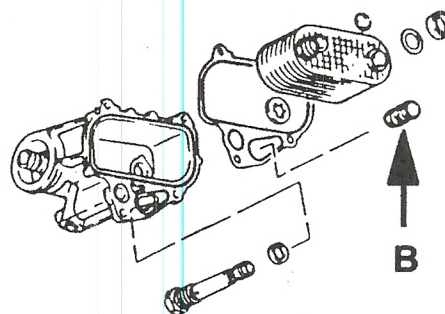
9262/1

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.



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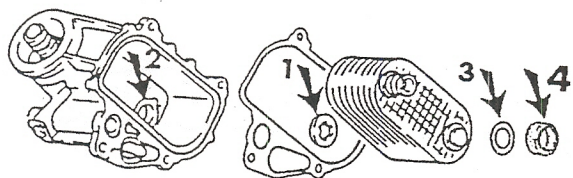
Section 2 — Oil Cooler Repairs

From Model '87 engine numbers:

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

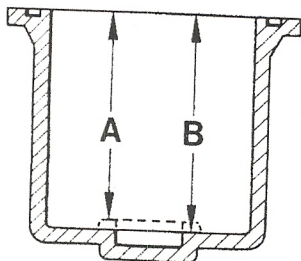
the oil cooler mounting was modified as follows:

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

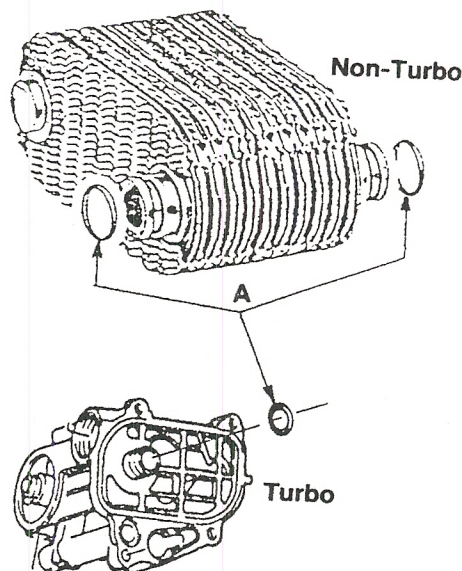


Figure 1

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.

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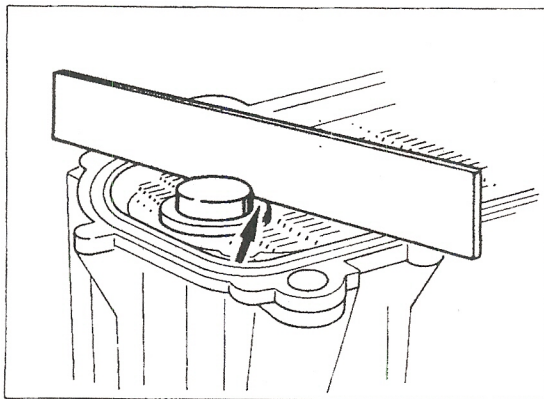
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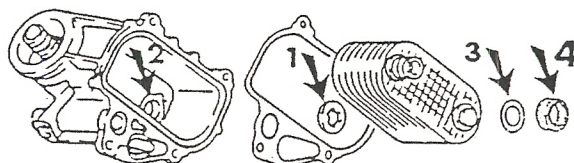
Repair Hints

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 $0 \pm 0.25\text{mm}$. 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.

IMPORTANT NOTE:

This tech bulletin is a copy of an original factory bulletin, some of the the part numbers listed have been superseded. Use the information from this bulletin for repair, for the latest part numbers, refer to our catalog.