

1982 Porsche 4 Tune-Up

TUNE-UP

924, 924 Turbo, 944

ENGINE IDENTIFICATION

Engine identification number is located on the left side of the engine crankcase next to the clutch housing.

ENGINE CODE

Applicaton	Code
924	VC
924 Turbo	M 31/04
944	43 C

ENGINE COMPRESSION

Check compression with engine at normal operating temperature, fully open throttle, all spark plugs removed and at normal cranking speed. Crank engine at least 12 "Puffs" per cylinder.

COMPRESSION SPECIFICATIONS

Compression Ratio	
924	9.0:1
924 Turbo	8.0:1
944	9.5:1
Compression Pressure	
924	
Normal (New Engine)	114-156 psi (8-11 kg/cm ²)
Minimum	85 psi (6 kg/cm ²)
Maximum Variation	42 psi (3 kg/cm ²)
All Other Models	¹

¹ — Information not available from manufacturer.

VALVE CLEARANCE

NOTE: 944 models use hydraulic valve lifters. Valve adjustment is not necessary.

1) Warm engine to normal operating temperature. Remove cylinder head cover. Rotate crankshaft until cam lobe of cylinder to be adjusted points upward. Check valve clearance.

2) Correct adjustment (if necessary) by using US 8005 adjusting tool and making complete turns of adjusting screw. See Fig. 1. Each turn changes clearance by .002" (.05 mm).

NOTE: Various adjusting screws are available. Camshaft must be removed to replace screws.

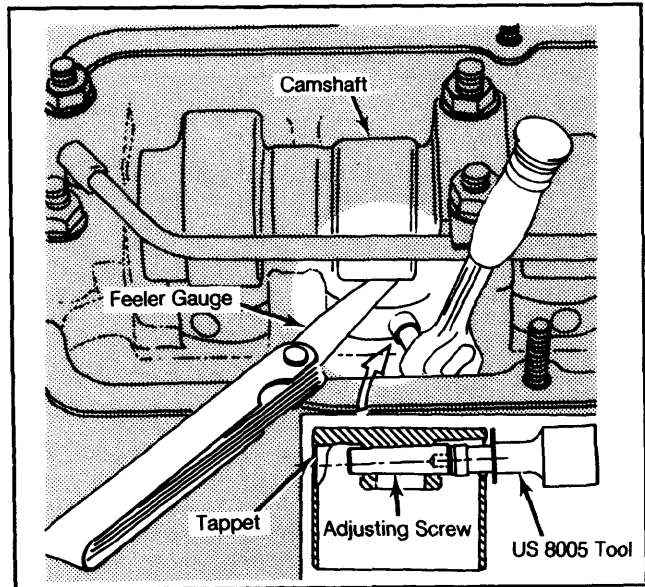
VALVE CLEARANCE SPECIFICATIONS

Application	Intake In. (mm)	Exhaust In. (mm)
924 and 924 Turbo		
Warm008 (.20)	.018 (.45)
Cold004 (.10)	.016 (.40)

VALVE ARRANGEMENT

I-E-I-E-I-E-I-E (Front-to-rear)

Fig. 1: Adjusting Valve Clearance



924 and 924 Turbo models only.

SPARK PLUGS

SPARK PLUG TYPE

Application	Bosch No.	Champion No.
924	WR6DS
924 Turbo	WR6DS	N7GY
944	WR8DS	RN10GY

SPARK PLUG SPECIFICATIONS

Application	Gap In. (mm)	Torque Ft. Lbs. (N.m)
924 & 924 Turbo	¹ .028 (0.7)	22 (30)
944028 (0.7)	20 (27)

¹ — Champion plugs on 924 Turbo .024" (.6 mm).

HIGH TENSION WIRE RESISTANCE

CAUTION: Procedure is for 924 and 924 Turbo models only. Resistances are not available for 944 models. DO NOT touch any part of ignition system on 944 while engine is running. Extremely high voltages could be fatal.

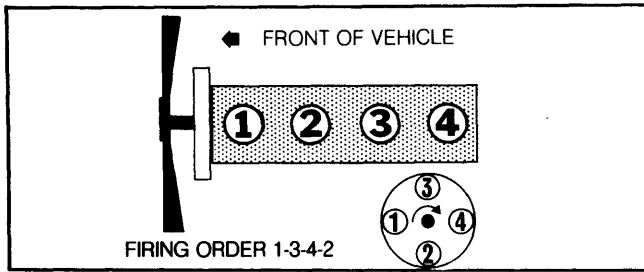
Carefully remove high tension wires from spark plugs and distributor cap. Using an ohmmeter, check resistance of high tension wires while gently twisting wire. If resistance is not to specification, or fluctuates from infinity to any value, replace high tension wire(s).

WIRE RESISTANCE

Application	Ohms
924 & 924 Turbo	6000

TUNE-UP (Cont.)

Fig. 2: Firing Order and Distributor Rotation



DISTRIBUTOR

All models are equipped with a breakerless electronic ignition system. On 924 models, Bosch Hall Effect distributor is used with an electronic idle stabilizer. 924 Turbo models have an electronic digital ignition timing control (DITC) system, using a flywheel sensor and a timing control unit.

944 models use a digital engine electronics (DME) system to control ignition and AFC fuel injection. DME system uses flywheel speed and reference sensors. Distributors on 924 Turbo and 944 models are used only to distribute the spark to the proper spark plug.

AIR GAP (Rotor-to-Stator)

Application	In. (mm)
924 Only010 (.25)

IGNITION TIMING

924

Check or adjust ignition timing with engine at normal operating temperature and RPM as specified in the following table. When timing engine, idle stabilizer connectors should be disconnected and plugged together, by-passing the idle stabilizer.

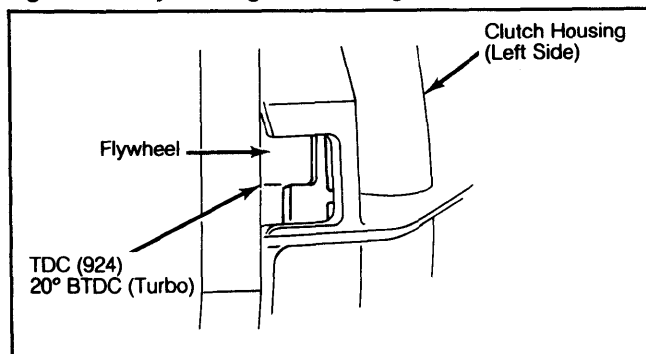
924 Turbo

The 924 Turbo uses a DITC (digital ignition timing control) system. With this system ignition timing is controlled electronically and no timing adjustment is necessary.

944

The 944 uses digital engine electronics (DME). With this system ignition timing is controlled electronically and no timing adjustment is necessary.

Fig. 3: 924 Flywheel Ignition Timing Marks



IGNITION TIMING SPECIFICATIONS

Application	Timing RPM	Setting
924	900-1000	¹ TDC
924 Turbo	900	² 6-10° BTDC
944	850-950	² 3-7° BTDC

¹ — With distributor vacuum hoses connected.

² — No adjustment necessary.

IDLE SPEED & MIXTURE

924 Models

1) Remove rubber cap from plug terminal for oxygen sensor and pull off plug. Connect exhaust probe line at test connection of catalytic converter. Connect CO tester and tachometer.

NOTE: All tests should be performed with engine at normal operating temperature and timing properly set.

2) With radiator fan switched OFF, turn control screw or by-pass screw on throttle housing until specified speed is reached. If mixture adjustment is required, remove mixture control unit. Remove plug between fuel distributor and venturi. Reinstall mixture control unit. Insert adjusting tool (P 377 or equivalent).

NOTE: Do not force or press down on adjusting tool during adjustment or engine will stall. Turn adjusting screw in very small increments as the slightest adjustment will change the CO level considerably.

3) Remove adjusting tool and install plug each time CO level is checked or adjustment is made or a false CO level will be indicated. Accelerate engine briefly and allow engine to return to stabilize idle. Recheck both CO level and idle speed. Adjust if necessary. Install plug terminal for oxygen sensor and install cap on probe connection at catalytic converter.

924 Turbo Models

1) Remove temperature sensor from intake manifold and plug hole with a plug (M 14 x 1.5). With wiring still connected to temperature sensor, place in fresh air tray behind firewall. Sensor temperature must be below 120°F (50°C).

2) Start engine and warm to normal operating temperature. Connect CO tester and timing light. Adjust idle control screw (by-pass air screw) until timing mark on flywheel is completely visible and jumps partially below reference mark.

3) Idle speed should now be below 900 RPM. Timing will vary slightly because it is being regulated. If mixture adjustment is necessary, remove plug from mixture control unit. Insert adjusting tool (P 377) and turn carefully to adjust mixture. Replace plug after each adjustment and remove test equipment.

944

1) Connect exhaust gas test line to test point on catalytic converter. Connect CO tester and tachometer. When engine is at operating temperature, turn regulating screw or by-pass screw in throttle until proper idle speed is reached.

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2) Pull off rubber cap on plug for oxygen sensor. Detach plug. If CO level is not correct, correct setting on air flow sensor. Connect plug for oxygen sensor. Coat threads of capped nut of test connection with molybdenum paste and install.

IDLE SPEED (RPM) & CO LEVEL

Application	Idle RPM	CO%
924	900-1000	0.6-1.0
924 Turbo	900	0.5-1.0
944	850-950	0.4-0.8

FUEL PUMP

FUEL PUMP PERFORMANCE

Application	Pressure psi (kg/cm ²)	Volume in 30 sec. Pints (Liters)
924	65-75 (4.6-5.3)	1.5 (.70)
924 Turbo	77-85 (5.4-6.0)	1.5 (.70)
944	33-39 (2.3-2.7)	1.8 (.85)

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

On 924 models, Bosch Hall Effect distributor is used with an electronic idle stabilizer. 924 Turbo and 944 models use computerized engine control systems. Distributors on 924 Turbo and 944 models are used only to distribute the spark to the proper spark plug.

IGNITION COIL

RESISTANCE Ohms@68°F (20°C)

Application	Primary	Secondary
924 and 924 Turbo ¹	1.0-1.35	5500-8000

¹ — Specifications for 944 not available.

FUEL SYSTEMS

FUEL INJECTION

924 and 924 Turbo models are equipped with Bosch Lambda CIS fuel injection with oxygen sensor. 944 models are equipped with Bosch AFC fuel injection with oxygen sensor.

ELECTRICAL

BATTERY

BATTERY SPECIFICATIONS

Application	Amp. Hr. Rating
All Models	63

ALTERNATOR

ALTERNATOR SPECIFICATIONS

Application	Rated Amp. Output
924 & 924 Turbo Models	75
944 Models	90

ALTERNATOR REGULATOR

All models are equipped with Bosch alternator regulators, integral with alternator. Test regulator with rear

window defogger and headlights turned on, and engine at about 2000 RPM.

REGULATOR OPERATING VOLTAGE@68°F (20°C)

Application	Voltage
924 & 924 Turbo ¹	13.5-14.5

¹ — Information on 944 not available.

SERVICE SPECIFICATIONS

BELT ADJUSTMENT

Application	Deflection In. (mm)
All Models	¹ .2-.4 (5-10)

¹ — Deflection is measured with firm thumb pressure in center of longest belt run.

REPLACEMENT INTERVALS

Component	Miles
Oil Filter	
924 & 944	15,000
924 Turbo	7500
Air Filter	30,000
Fuel Filter	60,000
Spark Plugs	30,000
Oxygen Sensor	30,000

CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	
924	5.3 qts. (5.0L)
924 Turbo & 944	5.8 qts. (5.5L)
Cooling System	
924 & 924 Turbo	7.4 qts. (7.0L)
944	8.2 qts. (7.8L)
Man. Trans. & Differential (Hypoid Gear Lube)	
924 & 924 Turbo	2.6 qts. (2.5L)
944	2.7 qts. (2.6L)
Auto. Trans. (Dexron II)	
Drain & Refill	3.0 qts. (2.8L)
Overhaul	6.4 qts. (6.4L)
Fuel Tank	17.4 gals. (66.0L)