

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:23PM

ARTICLE BEGINNING

GENERAL INFORMATION

Engine Maintenance & Performance

Uniform Inspection Guidelines

All Makes & Models

Last Updated: December, 1994

MAP UNIFORM INSPECTION GENERAL GUIDELINES

OVERVIEW OF MOTORIST ASSURANCE PROGRAM

The Motorist Assurance Program (MAP) is the consumer outreach effort of the Automotive Maintenance and Repair Association, Inc. (AMRA). Participation in the Motorist Assurance Program is drawn from retailers, suppliers, independent repair facilities, vehicle manufacturers and industry associations.

The Motorist Assurance Program was established as an industry-wide effort to address concerns raised by regulators, the media and consumers questioning our ethics and methods of doing business. The automotive repair industry had been bombarded by months of negative stories in the media and scrutiny from state and federal regulators who focused on how the need for repairs is determined. MAP was formed as an industry response to this issue.

Our mission is to strengthen the relationship between the consumer and the auto repair industry. We produce materials that give motorists the information and encouragement to take responsibility for their vehicles - through proper, manufacturer-recommended, maintenance. We encourage participating service and repair shops (including franchisees and dealers) to adopt a Pledge to their Customers and the Motorist Assurance Program developed Standards of Service. All participating service providers have agreed to subscribe to this Pledge and to adhere to the promulgated Standards of Service which demonstrates to their customers that they are serious about customer satisfaction.

These Standards of Service require that an inspection of the vehicle's (problem) system be made according to industry guidelines. After learning that neither the car manufacturers nor any other source had complete guidelines, leading industry organizations, along with other industry participants banded together to address this challenging task. During the past two and a half years, they successfully developed industry inspection guidelines for the following systems: Exhaust, Brakes, ABS, Steering and Suspension, Engine Maintenance and Performance, HVAC, and Electrical systems. Guidelines for Drive Train and Transmission are currently being promulgated. Revisions to the inspection guidelines for Exhaust, Brakes/ABS and Steering and Suspension Systems, which were issued two years ago, are now being published for implementation beginning spring 1997. Participating shops utilize these Uniform Inspection Guidelines

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 2)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:23PM

as part of the inspection process and for communicating their findings to their customers.

The Motorist Assurance Program continues to work cooperatively and proactively with government agencies and consumer groups toward solutions that both benefit the customer and are mutually acceptable to both regulators and industry. We maintain the belief that industry must retain control over how we conduct our business, and we must be viewed as part of the solution and not part of the problem. Meetings with state and other government officials concerned with auto repair and/or consumer protection are conducted. Feedback from these representatives are brought back to members, and the program adjusted as needed.

To assure auto repair customers recourse if they were not satisfied with a repair transaction, the Motorist Assurance Program offers arbitration through MAP/BBB-CARE in cooperation with the Council of Better Business Bureaus and individual participating Bureaus. MAP "piloted" in Indianapolis and Pittsburgh during spring, 1996 - and publicized "roll-outs" in New Jersey, Detroit (MI), Chicago (IL) and Richmond (VA) were conducted. To put some "teeth" in the program, and accreditation requirement for shops was initiated. The requirements are stringent and a self-policing method has been incorporated which includes the "mystery shopping" of outlets. In addition, a committee of service providers had been working diligently developing standards for newspaper, television and Internet advertising.

We welcome you to join us as we continue our outreach ... with your support, both the automotive repair industry and your customers will reap the benefits. Please visit MAP at our Internet site: www.hunter.com/map.htm or contact us at:

808 17th Street, NW Suite 200

Washington, D. C. 20006

Ph. (202) 466-7050 Fax (202) 223-9569

OVERVIEW OF SERVICE REQUIREMENTS & SUGGESTIONS

It is MAP policy that all exhaust, brake, ABS, steering and suspension, wheel alignment, tires and wheels, driveline, engine performance and maintenance and heating, ventilation and air conditioning services be offered and performed under the guidelines and procedures specified in these sections.

Before any service is performed on a vehicle, an inspection of the appropriate system must be performed. The results of this inspection must be explained to the customer and documented on an inspection form. The condition of the vehicle and its components will indicate what services/part replacements may be required or suggested. In addition, suggestions may be made to satisfy the needs expressed by the customer.

This section lists the various parts and conditions that indicate required or suggested service or part replacement. Although this list is extensive, it is not inclusive. In addition to this list, a technician may make a suggestion. This suggestion must be based on

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 3)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:23PM

substantial and informed experience or the vehicle manufacturer's recommended service interval.

Some conditions indicate that service or part replacement is required because the part in question is no longer providing the function for which it is intended, does not meet a vehicle manufacturer's design specification or is missing.

- * Example: An exhaust pipe has corroded severely and has a hole in it through which exhaust gases are leaking. Replacement of the exhaust pipe in this case is required due to functional failure.
- * Example: A brake rotor has been worn to the point where it measures less than the vehicle manufacturer's specifications. Replacement of the rotor is required because it does not meet design specifications.

Some conditions indicate that a service or part replacement is suggested because the part is close to the end of its useful life or to address a customer's need, convenience or request. If a customer's vehicle has one of these conditions, the procedure may only be to suggest service.

- * Example: An exhaust pipe is rusted, corroded or weak, but no leaks are present. In this case, the exhaust pipe has not failed. However, there is evidence that the pipe may need replacement in the near future. Replacement of the pipe may be suggested for the customer's convenience in avoiding a future problem.
- * Example: The customer desires improved ride and/or handling, but the vehicle's shocks or struts have not failed. In this case, replacement may be suggested to satisfy the customer's wishes. In this case, replacement of the shocks or struts may not be sold as a requirement.

A customer, of course, has the choice of whether or not a shop will service his or her vehicle. He or she may decide not to follow some of your suggestions. When a customer declines to authorize a service or repair indicated in the MAP Uniform Inspection Guidelines as "required," a MAP shop may refuse service on that system, if proceeding with the work could create or continue an unsafe or unsatisfactory condition.

The following reasons may be used for required and suggested services. These codes are shown in the "Code" column of the Uniform Inspection Guidelines that follow.

ENGINE PERFORMANCE & MAINTENANCE

ENGINE: MISCELLANEOUS

ENGINE OIL

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 4)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:23PM

AA	
Condition	³ Procedure
AA	
Contaminated	³ Require replacement of oil and filter.
	³ See NOTE: (1) below.
AA	
High level	³ Determine source of incorrect level and
	suggest correction.
AA	
Low level	³
AA	
Maintenance intervals	³ Suggest replacement to comply with vehicles
	³ OEM recommended service intervals.
AA	
NOTE: (1) Determine source of contamination, i.e., engine coolant,	
fuel, metal particles, when changing oil.	
AA	

ENGINE OIL FILTER/CANISTER

AA	
Condition	³ Procedure
AA	
Contaminated	³ Require replacement of oil and filter.
	³ See NOTE: (1) below.
AA	
Damaged	³ Suggest replacement. Further inspection
	required. See NOTE: (2) below.
AA	
Leaking	³ Require repair or replacement.
AA	
Maintenance intervals	³ Suggest replacement to comply with vehicles
	³ OEM recommended service intervals.
AA	
NOTE: (1) Determine cause of contamination, i.e., engine coolant,	
fuel, metal particles, when changing oil.	
(2) Determine cause, i.e., broken motor mount.	
AA	

ENGINE GASKETS/SEALS

AA	
Condition	³ Procedure
AA	
Leaking	³ Tighten or suggest replacement as necessary.
AA	

ENGINE OIL DRAIN PLUG/GASKET

AA	
Condition	³ Procedure
AA	
Leaking	³ Require repair or replacement.
AA	
Damaged threads	³ Require repair or replacement.
AA	

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 5)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:23PM

NOTE: Some OEMs require replacement of drain plug gasket. Inspect threads in oil pan for damage.

ENGINE OIL WARNING LIGHTS

Condition	³	Procedure
-----------	--------------	-----------

Light not on during bulb check	³	Further inspection required. See
	³	NOTE: below.

Light stays on or intermittent while engine is running	³	Further inspection required. See
	³	NOTE: below.

NOTE: Light may indicate problem with contaminated oil, level, pressure, temperature or problem with circuit.

ENGINE OIL PRESSURE GAUGE

Condition	³	Procedure
-----------	--------------	-----------

Inoperative	³	Further inspection required. See note.
-------------	--------------	--

Indicates out of range	³	Further inspection required. See note.
------------------------	--------------	--

NOTE: Gauge may indicate problem with contaminated oil, level, pressure, temperature or problem with gauge.

OIL PRESSURE SENDING UNIT

Condition	³	Procedure
-----------	--------------	-----------

Leaking	³	Require replacement.
---------	--------------	----------------------

Connector or terminal bent, broken, or loose	³	Require repair or replacement.
--	--------------	--------------------------------

Inoperative/inaccurate	³	Require repair or replacement.
------------------------	--------------	--------------------------------

POWER STEERING FLUID

Condition	³	Procedure
-----------	--------------	-----------

See Steering and Suspension Uniform Inspection Guidelines

TIMING BELT

Condition	³	Procedure
-----------	--------------	-----------

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 6)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:23PM

AA
Missing³ Require replacement. See note.
AA
Damaged³ Suggest replacement. See note.
AA
Maintenance intervals³ Suggest replacement to comply with vehicle OEM
³ recommended service intervals.
AA
Oil soaked³ Suggest replacement. Further inspection
³ required.
AA
Improper adjustment/³ Suggest adjustment. See note.
noisy³
AA
NOTE: Inspect belt tensioners, pulleys and cover.
AA

TIMING BELT TENSIONERS

AA
Condition³ Procedure
AA
Missing³ Require replacement.
AA
Noisy³ Suggest replacement.
AA
Damaged³ Require replacement.
AA
Improper adjustment³ Adjust to OEM specifications.
AA

MOTOR MOUNTS

AA
Condition³ Procedure
AA
Broken³ Require replacement.
AA
Oil soaked (rubber mount)³ Suggest replacement.
AA
Leaking (hydraulic mount)³ Require replacement.
AA
Missing or broken fasteners³ Require repair or replacement of
³ fasteners
AA

TORQUE STRUT

AA
Condition³ Procedure
AA
Worn or damaged bushings³ Requirement replacement.
AA
Damaged or missing fasteners³ Require repair or replacement of
³ fasteners.

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 8)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:23PM

Internal restrictions	³ Require repair or replacement.
Missing/by- passed	³ Further inspection required.
Air flow restriction	³ Suggest repair.
Missing, damaged, deteriorated	³ Require repair or replacement of mounting hardware and bushings ³ hardware and/or bushings.

ENGINE COOLING SYSTEM

RADIATOR & RADIATOR CAP

Condition - Radiator	³ Procedure
Leaking	³ Require repair or replacement.
Damaged fins, tubes or fittings	³ Suggest repair or replacement.
Internal restrictions	³ Require repair or replacement.
Air flow restriction	³ Suggest repair.
Missing, damaged, deteriorated	³ Require repair or replacement of mounting hardware and bushings ³ hardware and/or bushings.
Leaking internal trans cooler	³ Require repair or replacement.
Corroded	³ Suggest repair or replacement.
Condition - Radiator Cap	³ Procedure
Missing	³ Require replacement.
Fails to maintain proper pressure	³ Require replacement.
Damaged/bent or corroded	³ Suggest replacement.
Missing gaskets/seals	³ Require replacement.
Coolant recovery check valve inoperative	³ Require replacement.
Improper application	³ Require replacement.

THERMOSTAT/HOUSING

Condition	³ Procedure
Improper installation	³ Require repair or replacement.

Monday, August 23, 1999 11:23PM

[illegible][illegible][illegible][illegible]

Monday, August 23, 1999 11:23PM

Condition	Procedure
Missing/damaged	Require replacement.
Missing/damaged mounting hardware	Require replacement of hardware.

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 11)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

RADIATOR FAN BLADE & FAN CLUTCH

AA

Condition - Fan Blade ³ Procedure

AA

Damaged ³ Require replacement.

AA

Loose ³ Require repair or replacement.

AA

Condition - Fan Clutch ³ Procedure

AA

Seized ³ Require replacement.

AA

Noisy/worn bearing ³ Suggest replacement.

AA

Leaking ³ Suggest replacement.

AA

Slips (insufficient fan speed) ³ Require replacement.

AA

Damaged ³ Suggest replacement.

AA

Loose fasteners ³ Require repair or replacement of

³ fasteners.

AA

NOTE: Some lateral movement, measured at the fan blade tip, is normal.

AA

RADIATOR FAN MOTOR

AA

Condition ³ Procedure

AA

Vibration/noisy ³ Suggest replacement.

AA

Intermittent/inoperative ³ Require replacement. See note.

AA

Missing ³ Require replacement.

AA

Missing, damaged mounting hardware ³ Require replacement of hardware.

AA

NOTE: Check fan motor/controls.

AA

RADIATOR FAN MOTOR RELAY/MODULE & FAN MOTOR RESISTOR

AA

Condition - Fan Motor Relay/Module ³ Procedure

AA

Missing ³ Require replacement.

AA

Damaged ³ Suggest replacement.

AA

Intermittent/inoperative ³ Require replacement.

AA

Missing, damaged mounting hardware ³ Require replacement of hardware.

Monday, August 23, 1999 11:24PM

GASKETS

Monday, August 23, 1999 11:24PM

Condition	3	Procedure
-----------	---	-----------

* ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES *

Article Text (p. 14)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

Leaking	³ Require replacement.
Improper type	³ Suggest replacement.

AIR INDUCTION SYSTEM

AIR DUCT/TUBES

Condition	Procedure
Missing	Require replacement.
Damaged	Suggest repair or replacement.
Leaking	Require repair or replacement.

AIR FILTER HOUSING/GASKETS

Condition	Procedure
Missing	Require replacement.
Damaged	Suggest repair or replacement.
Leaking	Require repair or replacement.
Missing/damaged mounting hardware	Require repair or replacement of hardware.

AIR FILTER ELEMENT

Condition	Procedure
Missing	Require replacement.
Damaged	Suggest replacement.
Restricted	Suggest replacement.
Maintenance intervals	Suggest replacement to comply with vehicle's OEM recommended service intervals.

PCV BREATHER ELEMENT

Condition		Procedure
Missing	3	Require replacement.

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 15)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

AAA
Damaged³ Suggest replacement.
AAA
Restricted³ Suggest replacement.
AAA
Maintenance intervals³ Suggest replacement to comply with vehicle's
³ OEM recommended service intervals.
AAA

THERMOSTATIC AIR DOOR ASSEMBLY

AAA
Condition³ Procedure
AAA
Missing³ Require replacement.
AAA
Damaged³ Suggest repair or replacement.
AAA
Inoperative³ Require repair or replacement.
AAA

SUPER CHARGER

AAA
Condition³ Procedure
AAA
Inoperative³ Require repair or replacement.
AAA
Noisy³ Suggest repair or replacement.
AAA

TURBO CHARGER

AAA
Condition³ Procedure
AAA
Missing³ Require repair or replacement.
AAA
Damaged³ Suggest repair or replacement.
AAA
Leaking³ Require repair or replacement.
AAA
Missing/damaged mounting hardware³ Require repair or replacement of
³ hardware.
AAA

WASTE GATE/CONTROL MECHANISM & CONTROL SOLENOID

AAA
Condition - Control³
Mechanism³ Procedure
AAA
Inoperative³ Require repair or replacement. Further
³ inspection required. See NOTE: below.
AAA
Leaking³ Require repair or replacement.

Monday, August 23, 1999 11:24PM

[illegible]

[illegible]

Monday, August 23, 1999 11:24PM

[illegible]

3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 10

[illegible]

Learning, Assessment, and Reporting Requirements:

[illegible]

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 19)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

POWERTRAIN CONTROL MODULE (PCM)

AA		
Condition	³	Procedure
AA		
Inoperative	³	Require repair or replacement.
AA		
Damaged	³	Suggest repair or replacement.
AA		

SENSORS/ACTUATORS DEFINITIONS

NOTE: The conditions and procedures apply to, but are not limited to the following list of components (SAE J1930 Terminology).

SENSORS/ACTUATORS DEFINITIONS

AA	
Sensor	Abbreviation

02 Sensor	02S
Intake Air Temperature Sensor	IAT
Manifold Absolute Pressure Sensor	MAP
Engine Coolant Temperature Sensor	ECT
Barometric Pressure Sensor	BARO
Crankshaft Position Sensor	CKP
Throttle Position Sensor	TPS
Camshaft Position Sensor	CMP
Park Neutral Position	PNP
Clutch Pedal Position Switch	CPP
Wide Open Throttle Switch	WOT Switch
Exhaust Gas Recirculation Valve Position Sensor	EGR Valve Position Sensor
Mass Air Flow Sensor	MAF
Volume Air Flow Sensor	VAF
Power Steering Pressure Sensor	PSP
Vehicle Speed Sensor	VSS
Fan Control Sensor	FS
Knock Sensor	KS
Air Conditioning Cycling Switch	AC
Exhaust Gas Recirculating Temperature Sensor	EGRT
Transmission Range Switch	TR Switch

Actuators	Abbreviation
-----------	--------------

Idle Speed Control Actuator	ISC
Idle Air Control	IAC
Exhaust Gas Recirculation Solenoid	EGR Solenoid
Vacuum Regulator Solenoid
Mix Control Solenoid	MC Solenoid
Torque Converter Clutch	TCC

[illegible]

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 21)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

TUBES, HOSES, CLAMPS & GROMMETS

AA		
Condition	³	Procedure
AA		
Missing	³	Require replacement.
AA		
Damaged	³	Require repair or replacement.
AA		
Leaking	³	Require repair or replacement.
AA		
Restricted	³	Require repair or replacement.
AA		

ORIFICE

AA		
Condition	³	Procedure
AA		
Missing	³	Require replacement.
AA		
Restricted	³	Require repair or replacement.
AA		
Maintenance intervals	³	Suggest replacement to comply with vehicle's
	³	OEM recommended service intervals.
AA		

OIL SEPARATOR/FILTER

AA		
Condition	³	Procedure
AA		
Missing	³	Require replacement.
AA		
Restricted	³	Require repair or replacement.
AA		
Damaged	³	Suggest repair or replacement.
AA		
Maintenance intervals	³	Suggest replacement to comply with vehicle's
	³	OEM recommended service intervals.
AA		

IGNITION SYSTEM

BATTERY

AA		
Condition	³	Procedure
AA		
Refer to Starting/Charging System information.		
AA		

BATTERY CABLES/WIRES/CONNECTORS (SEE NOTE:)

AA		
Condition	³	Procedure

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 22)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

AA
Damaged³ Suggest repair or replacement.
AA
Corroded³ Suggest repair or replacement.
AA
High resistance³ Require repair or replacement.
AA
Loose³ Require repair or replacement.
AA
Missing, damaged, deteriorated³ Require repair or replacement.
mounting hardware³
AA
NOTE: Cable/wires includes all wires and terminals connected to the
battery.
AA

BATTERY TRAY/HOLD DOWN HARDWARE

AA
Condition³ Procedure
AA
Missing³ Require replacement.
AA
Damaged/corroded³ Suggest repair or replacement. See NOTE:
³ below.
AA
NOTE: If battery tray/hold down hardware no longer performs
intended purpose, require repair or replacement.
AA

FUSIBLE LINK

AA
Condition³ Procedure
AA
Damaged³ Suggest repair or replacement.
AA
Open³ Require replacement.
AA

IGNITION SWITCH

AA
Condition³ Procedure
AA
Damaged³ Suggest replacement.
AA
Inoperable/intermittent³ Require replacement.
AA

PARK NEUTRAL SWITCH (PNP)

AA
Condition³ Procedure
AA
Inoperable/intermittent³ Require replacement.

Monday, August 23, 1999 11:24PM

Condition	3	Procedure
-----------	---	-----------

Condition		Procedure
Missing	3	Require replacement.
Inoperative	3	Require repair or replacement. Further inspection required. See NOTE: below.
Damaged	3	Suggest replacement.
Missing/damaged mounting hardware	3	Require repair or replacement of hardware.

Monday, August 23, 1999 11:24PM

AÄÅÄÖÅ

[illegible][illegible][illegible][illegible][illegible]

AAAAAA

(bent, broken, corroded or loose) ³

Excessive resistance ³ Require repair or replacement.

Poor ground ³ Require repair.

[illegible][illegible]

and/or cam lobe ³ below.

Damaged ³ Suggest repair or replacement.

Missing, damaged mounting ³ Require repair or replacement of hardware.

[illegible]

AAAAA

French gear requires replacement of gear:

³ below.

NOTE: Refer to OEM recommended service procedures.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1

[illegible][illegible]

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 26)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

Corroded/eroded terminals ³ Suggest replacement.

AA

Burned/carbon tracked/arcing ³ Require replacement.

AA

Missing carbon button ³ Require replacement.

AA

AA

Loose ³ Suggest repair or replacement.

AA

DISTRIBUTOR ROTOR

AA

Condition	³	Procedure
-----------	--------------	-----------

AA

Damaged ³ Suggest replacement.

AA

Corroded/eroded ³ Require replacement.

AA

Loose ³ Suggest repair or replacement.

AA

Missing, damaged hold down ³ Require repair or replacement of fastener
fastener ³

AA

Burned/carbon tracked ³ Require replacement.

AA

IGNITION WIRES/BOOTS/TERMINAL (SECONDARY - SEE NOTE: (1))

AA

Condition	³	Procedure
-----------	--------------	-----------

AA

Damaged ³ Suggest repair or replacement.

AA

Oil soaked ³ Suggest replacement.

AA

Open/shorted ³ Require repair or replacement.

AA

Mis-routed ³ Suggest repair. See NOTE: (2).

AA

Missing/damaged mounting ³ Suggest repair or replacement of hardware.

³ See NOTE: (2).

AA

Loose terminal ³ Suggest repair or replacement.

AA

Corroded ³ Suggest repair or replacement.

AA

High/Low resistance ³ Require repair or replacement.

AA

NOTE: (1) It is not required to replace ignition wires in sets.

However, you may suggest replacement of the entire secondary wire set for preventive maintenance.

(2) Proper routing, hardware, heat shields, etc. are intended to prevent premature failure of secondary ignition components.

[illegible]

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 28)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

Condition	³	Procedure
Missing	³	Require replacement.
Leaking	³	Require replacement.
Damaged	³	Suggest replacement.

FUEL FILLER NECK/HOSES/CLAMPS/RESTRICTOR

Condition	³	Procedure
Missing	³	Require replacement.
Leaking	³	Require repair or replacement.
Damaged	³	Suggest repair or replacement.
Missing, damaged mounting hardware	³	Require repair or replacement of hardware.

FUEL TANK/CELL

Condition	³	Procedure
Leaking	³	Require repair or replacement.
Loose baffles	³	Require repair or replacement.
Damaged	³	Suggest repair or replacement.
Missing, damaged mounting hardware	³	Require repair or replacement of hardware.
Contaminated	³	Suggest repair. Further inspection required. See NOTE: below.

NOTE: Some components may be serviceable; check for accepted cleaning procedure.

FUEL LEVEL SENDER

Condition	³	Procedure
Inoperative	³	Suggest repair or replacement.
Leaking	³	Require repair or replacement.
Damaged	³	Suggest repair or replacement.

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 29)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

AA

FUEL PUMP (IN TANK/EXTERNAL - ELECTRICAL OR MECHANICAL)

AA

Condition ³ Procedure

AA

Inoperative ³ Require repair or replacement.

AA

Noisy ³ Suggest replacement.

AA

Leaking ³ Require repair or replacement.

AA

Damaged ³ Suggest repair or replacement.

AA

Missing, damaged mounting ³ Requires repair or replacement of hardware
hardware ³

AA

ELECTRIC FUEL PUMP CONTROL CIRCUIT

AA

Condition ³ Procedure

AA

See Electrical Uniform Inspection Guidelines.

AA

LIQUID VAPOR SEPARATOR

AA

Condition ³ Procedure

AA

Missing ³ Require replacement.

AA

Leaking ³ Require replacement.

AA

Damaged ³ Suggest repair or replacement.

AA

Inoperative ³ Require repair or replacement

AA

ROLL-OVER VALVE

AA

Condition ³ Procedure

AA

Missing ³ Require replacement.

AA

Damaged ³ Suggest repair or replacement.

AA

Inoperative ³ Require replacement.

AA

Leaking ³ Require replacement.

AA

INERTIA FUEL SHUT OFF SWITCH

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 30)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

AA		
Condition	³	Procedure
AA		
Inoperative	³	Require repair or replacement.
AA		
Missing	³	Require replacement.
AA		
Damaged	³	Suggest replacement.
AA		

FUEL LINES/CLAMPS/O-RINGS/CONNECTORS (SEE NOTE)

AA		
Condition	³	Procedure
AA		
Missing	³	Require replacement.
AA		
Leaking	³	Require repair or replacement.
AA		
Restricted	³	Require repair or replacement.
AA		
Routed incorrectly	³	Suggest repair.
AA		
Damaged	³	Suggest repair or replacement.
AA		

NOTE: When replacing fuel lines/hoses, replace with products that meet(s) or exceed(s) OEM design specifications.

FUEL FILTER & IN-TANK FUEL STRAINER

AA		
Condition - External Filter ³		Procedure
AA		
Missing	³	Require replacement.
AA		
Restricted/contaminated	³	Require replacement.
AA		
Leaking	³	Require repair or replacement.
AA		
Damaged	³	Suggest replacement.
AA		
Maintenance interval	³	Suggest replacement to comply with OEM recommended service interval.
AA		
Missing, damaged mounting hardware	³	Suggest repair. Further inspection required.
AA		
Condition - In-Tank ³		Procedure
AA		
Missing	³	Require replacement.
AA		
Damaged	³	Require replacement.
AA		

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 31)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

Restricted³ Require repair or replacement.

AA

FUEL ACCUMULATOR/DAMPENER

AA

Condition³ Procedure

AA

Inoperative³ Require replacement.

AA

Leaking³ Require replacement.

AA

Damaged³ Suggest replacement.

AA

FUEL PRESSURE REGULATOR

AA

Condition³ Procedure

AA

Inoperative³ Require repair or replacement.

AA

Leaking³ Require repair or replacement.

AA

Damaged³ Suggest replacement.

AA

Restricted/contaminated³ Suggest repair. Further inspection required.

³ See NOTE: below.

AA

NOTE: Some components may be serviceable; check for accepted
cleaning procedure.

AA

FUEL RAIL

AA

Condition³ Procedure

AA

Restricted³ Require repair or replacement.

AA

Leaking³ Require repair or replacement.

AA

Damaged³ Suggest replacement.

AA

FUEL DISTRIBUTOR

AA

Condition³ Procedure

AA

Inoperative³ Require repair or replacement. Further

³ inspection required. See NOTE: below.

AA

Out of specification³ Require repair or replacement.

AA

Leaking³ Requires repair or replacement.

Monday, August 23, 1999 11:24PM

A

Damaged _____ suggest repair or replacement.

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 34)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:24PM

Maintenance interval ³ Suggest repair or replacement to comply with
 ³ OEM recommended service intervals.

AA

EGR PIPE/PLATE/COOLER

AA

Condition	³	Procedure
-----------	--------------	-----------

AA

Missing	³	Require replacement.
---------	--------------	----------------------

AA

Leaking	³	Require repair or replacement.
---------	--------------	--------------------------------

AA

Restricted	³	Require repair or replacement.
------------	--------------	--------------------------------

AA

Damaged	³	Suggest repair or replacement.
---------	--------------	--------------------------------

AA

EGR CONTROLS (ELECTRICAL/VACUUM)

AA

Condition	³	Procedure
-----------	--------------	-----------

AA

Missing	³	Require replacement.
---------	--------------	----------------------

AA

Inoperative	³	Require repair or replacement.
-------------	--------------	--------------------------------

AA

Damaged	³	Suggest repair or replacement.
---------	--------------	--------------------------------

AA

Leaking	³	Require repair or replacement.
---------	--------------	--------------------------------

AA

Restricted	³	Require repair or replacement.
------------	--------------	--------------------------------

AA

EGR INTAKE/EXHAUST MANIFOLD PASSAGES

AA

Condition	³	Procedure
-----------	--------------	-----------

AA

Leaking	³	Require repair or replacement.
---------	--------------	--------------------------------

AA

Restricted	³	Require repair or replacement.
------------	--------------	--------------------------------

AA

AIR INJECTION SYSTEM

AIR PUMP

AA

Condition	³	Procedure
-----------	--------------	-----------

AA

Missing	³	Require replacement.
---------	--------------	----------------------

AA

Damaged	³	Suggest repair or replacement.
---------	--------------	--------------------------------

AA

Inoperative	³	Require repair or replacement.
-------------	--------------	--------------------------------

Monday, August 23, 1999 11:25PM

HOSES/CLAMPS/TUBES

*** ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES ***

Article Text (p. 37)

1989 Volkswagen Golf

For Volkswagen Technical Site

Copyright © 1998 Mitchell Repair Information Company, LLC

Monday, August 23, 1999 11:25PM

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condi tion          3                      Procedure
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Missing             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Damaged             3  Suggest replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Leaking             3  Require repair or replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Restricted          3  Require repair or replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

EVAPORATIVE EMISSION CANISTER PURGE VALVE (ELECTRICAL/VACUUM)

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condi tion          3                      Procedure
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Missing             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Damaged             3  Suggest replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Inoperative         3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Leaking             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

GAS CAP

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condi tion          3                      Procedure
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Missing             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Leaking             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Damaged             3  Suggest replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

LIQUID/VAPOR SEPARATOR

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condi tion          3                      Procedure
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Missing             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Leaking             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Damaged             3  Suggest repair or replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Inoperative         3  Require repair or replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

ROLL OVER VALVE

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condi tion          3                      Procedure

```

