

A U T O T E C H

Installation Instructions

Sport Tuning

Part Number: 10.109.01.109

Description: AUTOTECH Sport 270° Hydraulic Camshaft

Note: If the job seems to be beyond your abilities, we recommend that you refer this installation to a qualified mechanic. Please read through the instructions before starting your installation to ensure that you have the tools and understanding of the task.

Procedure for Golf 2 and Jetta 2 models only:

- 1.** Remove the valve cover by removing the eight 10mm valve cover nuts and reinforcing strips. Remove idle stabilizer and bracket (if your car has one) by removing the 10mm bolts from the valve cover and manifold, and then taking off the hoses at the throttle body and intake manifold. Lift off valve cover. Remove the retaining nut on the side of the camshaft drive belt cover with a 6mm allen wrench and lift off the cover.
- 2.** Move camshaft sprocket to cylinder number one TDC mark by turning crankshaft clockwise with a 19mm socket until the dot on the camshaft pulley lines up with the upper edge of the camshaft drive belt inner cover (fig. 1). Check TDC by removing the distributor cap and making sure the rotor lines up with the notch on the distributor (fig. 2), and that the flywheel is at TDC (fig. 3). If these marks do not line up, you will need to continue to rotate the crankshaft until they do.
- 3.** Loosen belt tensioner with a 15mm open end wrench and slide off the camshaft drive belt, while keeping the belt tension on the lower sprockets so that they don't move or slip. If they do, you will probably have to re-align them in a procedure described later. By tying the belt via a bungee or other cord to the hood or laying the belt towards the rear using a weight (wrench etc...) to keep the belt tension, you can install the cam without having to re-align all of the sprockets.
- 4.** Remove bearing caps one and three, in that order. Take note of which end of each cap is pointing towards you. **Caution:** *The bearing caps are offset, and will break if re-installed backwards and tightened down.* Next, remove the nuts from bearing caps two and five a little at a time and crosswise so that the spring tension is evenly relieved. Lift cam with attached sprocket out of the head.
- 5.** Loosen the camshaft sprocket bolt 1/2 to 3/4 turn and tap the sprocket loose using a soft faced hammer. Remove the bolt completely and remove the sprocket, woodruff key, and cam seal. Lightly coat the cam seal with oil and place on the new camshaft. Install the woodruff key and sprocket onto the new camshaft and torque the cam sprocket mounting bolt to 59 ft/lb.

6. Apply oil to the bearing surfaces, and a small amount of assembly lube to the lobes of the new camshaft. Lay the camshaft in the head with the lobes for the number one cylinder facing up. Install bearing caps two and five, tightening down gradually and crosswise until the camshaft is pushed completely into the bearing saddles. Install the remaining bearing caps and torque all nuts to 15 ft/lb.
7. Check to see if the dot on the inside of the cam sprocket lines up with the upper edge of the camshaft drive belt inner cover (fig. 1). If not, rotate cam slightly until it does.
8. Re-install the valve cover and reinforcing strips, tightening the nuts to 7 ft/lb.
9. Slide camshaft drive belt over cam sprocket.
10. Using a special spanner wrench (AST P/N 10.012.86400 or equiv.), tighten the drive belt by rotating the tension pulley in the direction of the arrow (fig. 4). The belt should feel tight when twisted 90 degrees with the thumb and forefinger, halfway between the camshaft and intermediate shaft pulleys. Tighten the pulley retaining nut to 33 ft/lb.
11. **Caution!** Before starting engine, turn crankshaft two complete revolutions and check belt tension, camshaft alignment, crankshaft alignment, and distributor alignment. If everything checks out, re-install distributor cap, timing belt cover, and idle stabilizer valve if so equipped.
12. Start engine and run it at around 2000 RPM for twenty minutes. This is the crucial break-in period for a new cam. It is important that the cam has good oil pressure at this time! Once twenty minutes are up, you're ready to run.

Fig. 1

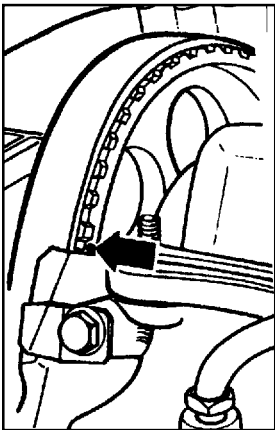


Fig. 2

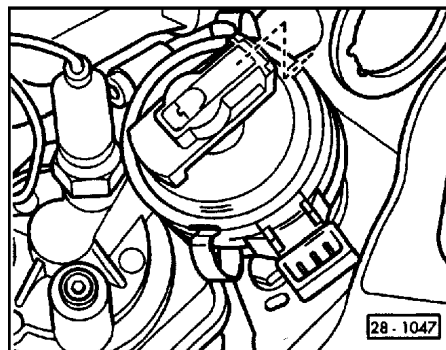


Fig. 3

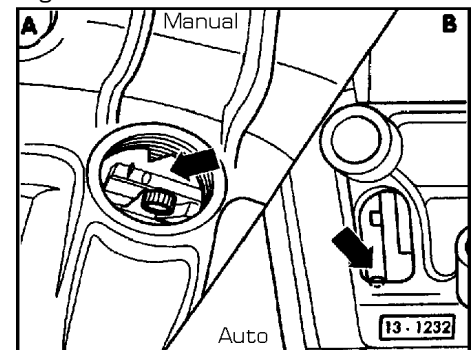
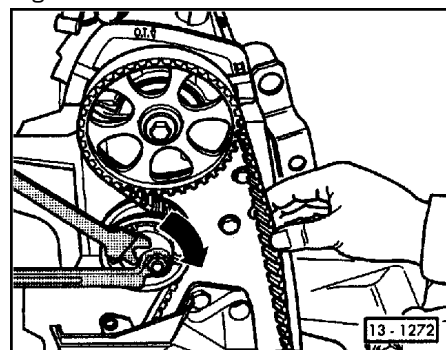


Fig. 4



Installation Instructions

SPORT Tuning

Camshaft Drive Belt Alignment Procedure, Golf 2, Jetta 2, Fox

1. Loosen, but do not remove the lug nuts on the of passenger side road wheel. Jack up the passenger side of the car and support it with a jackstand. Remove road wheel. Remove plastic inner wheel housing liner/splash shield with a 8mm socket.
2. Loosen the water pump pulley bolts. Loosen the A/C and alternator mounting bolts. Loosen adjusting screws to provide the slack required to remove the belts. The tensioning mechanism for the A/C compressor is in the form of a bolt that is part of the mounting bracket itself. Remove belts and the water pump pulley. Loosen tension pulley and slide off the camshaft drive belt
3. Remove the lower drive belt cover by removing the two nuts and bolt that hold it to the water pump and front of the motor. Remove all four spark plugs to allow the crankshaft to turn easier when you adjust it. Set motor to TDC (see step 2 of instructions).
4. Your crankshaft vs. intermediate shaft timing should already be close if you put the motor at TDC before beginning your cam install. Rotate crankshaft (by hand using a wrench or socket on the end of the crank) and intermediate shaft until the dot from the intermediate shaft is visible through the "V" in the crankshaft pulley (fig.1). **Caution:** *Rotate the crankshaft the least amount necessary align the marks. Since the drive belt is not installed, there may be piston to valve interference if you try to rotate the crankshaft too much.*
5. Check camshaft timing mark, make sure that the dot on the inside of the cam sprocket is lined up with the camshaft drive belt inner cover (fig 1).
6. Install the camshaft drive belt by sliding it over the sprockets. Start at the crankshaft, then the intermediate shaft, and finally the camshaft. Try to keep the belt as tight as possible between the crankshaft and the intermediate shaft, and between the intermediate shaft and the camshaft sprockets.
7. Using a special spanner wrench (AST P/N 10.012.86400 or equiv.), tighten the drive belt by rotating the tension pulley in the direction of the arrow (fig. 2). The belt should feel tight when twisted 90 degrees with the thumb and forefinger, halfway between the camshaft and intermediate shaft pulleys. Tighten the pulley retaining nut to 33 ft/lb.

fig 1

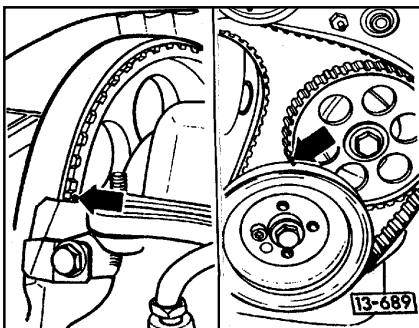
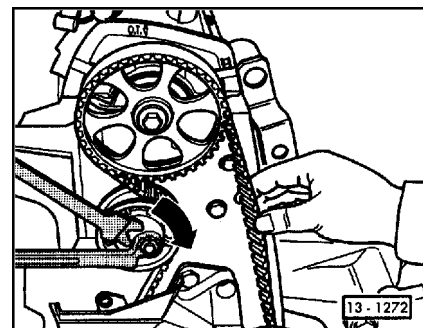


fig 2



A U T O T E C H

Installation Instructions

sport tuning

Part Number: 10.109.01.109

Description: AUTOTECH Sport 270° Hydraulic Camshaft

Note: If the job seems to be beyond your abilities, we recommend that you refer this installation to a qualified mechanic. Please read through the instructions before starting your installation to ensure that you have the tools and understanding of the task.

Procedure for Golf 3 and Jetta 3 models only:

1. Remove upper drive belt cover by unsnapping the bands fastening it to the head.
2. Move camshaft sprocket to cylinder number one TDC mark by turning crankshaft clockwise with a 19mm socket until the dot on the camshaft pulley lines up with the arrow on the drive belt cover (fig. 1). Check TDC by removing the distributor cap and making sure the rotor lines up with the notch on the distributor (fig. 2), and that the flywheel is at TDC (fig. 3). If these marks do not line up, you will need to continue to rotate the crankshaft until they do.
3. Remove upper intake manifold. Remove all connected vacuum hoses, electrical connections (i.e. throttle body, etc...), and throttle cable from the upper manifold. Remove the five socket head bolts (located near the fuel rail) and remove the manifold. **Note:** *It is a good idea to either tape over, or place clean rags in the lower intake manifold to prevent foreign objects from falling in.*
4. Loosen belt tensioner with a 15mm open end wrench and slide off the camshaft drive belt, while keeping the belt tension on the lower sprockets so that they don't move or slip. If they do, you will probably have to re-align them in a procedure described later. By tying the belt via a bungee or other cord to the hood or laying the belt towards the rear using a weight (wrench etc...) to keep the belt tension, you can install the cam without having to re-align all of the sprockets.
5. Remove valve cover by removing the eight 10mm nuts and reinforcing strips.
6. Remove bearing caps one, three and five, noting which end of each cap is pointing towards you. **Caution:** *The bearing caps are offset, and will break if re-installed backwards and tightened down.* Next, remove the nuts from bearing caps two and four a little at a time and crosswise so that the spring tension is evenly relieved. Lift cam with attached sprocket out of the head.
7. Loosen the camshaft sprocket bolt 1/2 to 3/4 turn and tap the sprocket loose using a soft faced hammer. Remove the bolt completely and remove the sprocket, woodruff key, and cam seal. Lightly coat the cam seal with oil and place on the new camshaft. Install the woodruff key and sprocket onto the new camshaft and torque the cam sprocket mounting bolt to 59 ft/lb.

8. Apply oil to the bearing surfaces, and a small amount of assembly lube to the lobes of the new camshaft. Lay the camshaft in the head with the lobes for the number one cylinder facing up. Install bearing caps two and four and tighten down gradually and crosswise until the camshaft is pushed completely into the bearing saddles. Install the remaining bearing caps and torque all nuts to 15 ft/lb.
9. Check to see if the arrow on the drive belt cover is pointing directly to the dot between the "O" and the "T" on the camshaft sprocket (Fig 1). If not, rotate cam slightly until it does.
10. Re-install the valve cover and reinforcing strips, tightening the nuts to 7 ft/lb.
11. Slide camshaft drive belt over cam sprocket.
12. Using a special spanner wrench (AST P/N 10.012.86400 or equiv.), tighten the drive belt by rotating the tension pulley in the direction of the arrow (fig. 4). The belt should feel tight when twisted 90 degrees with the thumb and forefinger, halfway between the camshaft and intermediate shaft pulleys. Tighten the pulley retaining nut to 33 ft/lb.
13. **Caution!** Turn crankshaft two complete revolutions and check belt tension, camshaft alignment, crankshaft alignment, and distributor alignment. If everything checks out, re-install distributor cap and timing belt cover.
14. Re-install the upper intake manifold and tighten the five manifold bolts to 15 ft/lb. Re-install all the vacuum and electrical connections that were disconnected earlier.
15. Start engine and run it at around 2000 RPM for twenty minutes. This is the crucial break-in period for a new cam. It is important that the cam has good oil pressure at this time! Once twenty minutes are up, you're ready to run.

fig. 1

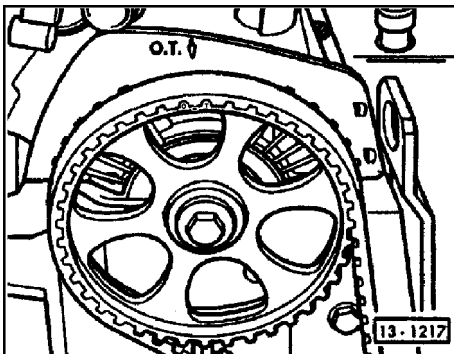


fig. 2

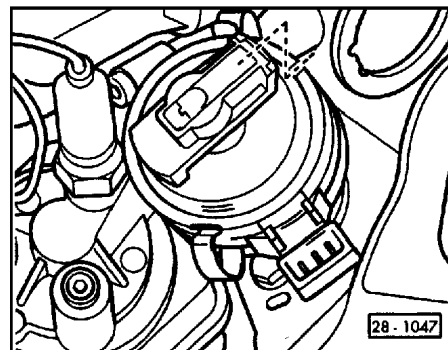


fig. 3

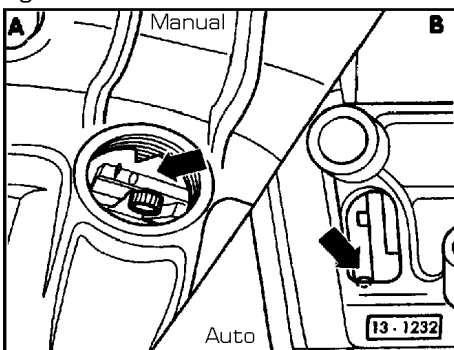
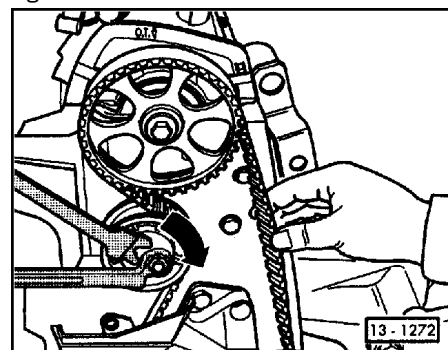


fig. 4



A U T O T E C H

Installation Instructions

SPORT TUNING

Alignment procedure for 4 cylinder Golf 3, Jetta 3, and Passat models

Caution: Use the least amount of rotation necessary to align the crank/camshaft to their respective markings. Since the drive belt is not installed, there may be piston to valve interference if you try to rotate them too much. If you have to rotate the camshaft a great deal, make sure that there are no pistons at TDC before doing so.

1. Set motor to TDC (see step 2 on instruction sheet).
2. Loosen tension pulley and slide off camshaft drive belt.
3. Align dot between the "O" and the "T" of the camshaft sprocket with the arrow on the drive belt cover (fig. 1).
4. Rotate crankshaft by hand until the TDC mark on the flywheel lines up with the pointer in the bellhousing (fig 2).
5. Turn the intermediate shaft sprocket using the camshaft drive belt in direction of the arrow (fig 3) until the distributor rotor lines up with the cylinder 1 marking on the distributor (fig 4).
6. Slide camshaft drive belt over tension pulley and camshaft sprocket.
7. Using a special spanner wrench (AST P/N 10.012.86400 or equiv.), tighten the drive belt by rotating the tension pulley in the direction of the arrow (fig. 5). The belt should feel tight when twisted 90 degrees with the thumb and forefinger; halfway between the camshaft and intermediate shaft pulleys. Tighten the pulley retaining nut to 33 ft/lb.

