

Timing a Puch 175 or 250 Twin Single

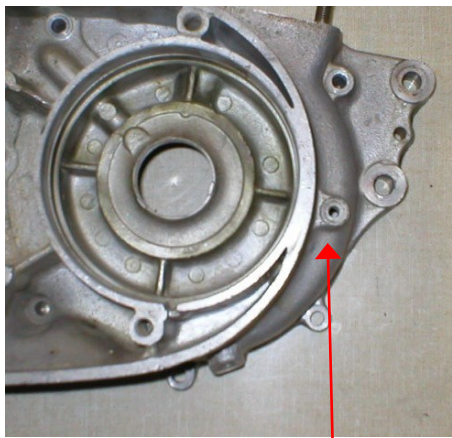
We all know that the book does not do a great job explaining this process. This is really a shame because NOTHING is more important to a Puch twingle engine than proper ignition timing. These are static-timed engines that hate timing advance. The one thing that will kill a Puch is overheating due to bad timing. This process isn't hard, and doesn't take very long. Once you get good at it -15 minutes start to finish. I must also say that the 250 and 175 both give the ability to set the timing spot-on with little difficulty. I highly recommend that everyone check, or reset the timing on their engines. A happily timed Puch starts first or second kick every time, and that is part of what makes these bikes such a delight.

Tools you will need:

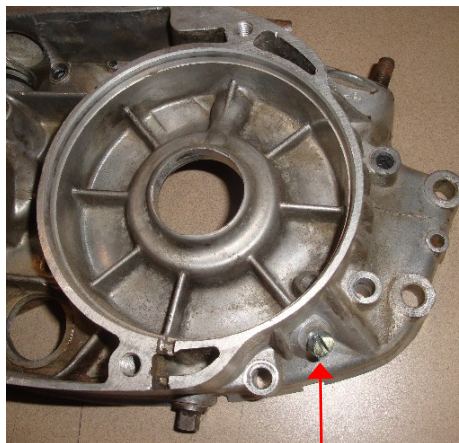
1. A good Ohm Meter, or basic continuity tester .
2. A feeler gauge of .015-.017 inches (for setting point gap)
3. A timing Pin (see picture #3) 5/32 inch diameter
4. Armature removal tool (if required to reset cam lobe position)
5. An 11 mm wrench
6. A Smallish-standard Screwdriver
7. 15 minutes

Step 1: Locate the Timing hole (see image below). On RHS engine case-just forward of the generator.

Step 2: Disconnect Battery



250 Timing Hole



175 Timing Hole with Screw

Step 3: Remove Generator Cover

Step 4: Disconnect the Blue wire from terminal # 1 on your generator plate. Each Puch has three wires at the generator; a Blue (# 1), a Red (# 30/51), and a Violet (# 15). These are in this order Left to right on the terminal board of the generator.

Step 5: Connect your Ohm meter Black wire to the engine case, and the red wire to the small bolt that secures the flat spring blade of the points, and which connects the condenser. Set meter to Ohms and test for correct reading of points open/closed by pushing points open with your finger. If your meter is set and reading the open and closed states of your points then great-move on. If not you have a problem. Usually it is that you didn't disconnect the blue wire before starting, or that the insulators on the small, points spring bolt are not assembled properly and need to be checked. You must have an accurate open close reading on your meter to proceed successfully from here!

Step 6: Remove One spark plug (175's have only 1 plug)

Step 7: With your Ohmmeter turned on; take your 11mm wrench and turn the engine COUNTERCLOCKWISE using the 11mm bolt head of the Armature Fixing Bolt (dead Center). You should be able to freely turn the engine with the sparkplug out, and you should see the points opening and closing on the meter as you do. It is important to note that these engines are timed COUNTERCLOCKWISE.

Step8: If you are not installing new points you should take the time to at least sand the faces of the contacts with a high grit sandpaper like 400 grit, and inspect them for pitting or beveling. Bad points can make you crazy. If your bike won't run well it can often be the points.

Step 9: Rotate the engine so that points are at their Full open position.. Remember COUNTERCLOCKWISE!

Step 10: Set Your point gap to .015-.017". Rotate the engine over several times after you make the adjustment, and recheck that it hasn't changed. These things do happen.

Step 11: Now Refer to the picture of the timing pins below. The one on the Left is the Puch Original, the one on the right is a Craftsman 5/32" round punch easily found at Sears. NOTE the picture of the slot in the crankshaft on the left. This is what you can't see. This slot is what will be passing by the timing hole window (Picture #1) as you rotate the crankshaft. It is also the slot into which you will stick your 5/32" punch in order to lock the engine at its Pre-determined point of optimal timing. NOTE in the photo to the right how snugly the punch diameter fits into the width of the slot-this is important to understand. That slot goes past that little window pretty fast so you have to go slowly, and use a flashlight to see into the timing hole.



Step 12: Now with your point gap all set at about .015", turn on you Ohm meter if it's not on, and begin to turn the engine counterclockwise until you reach the point where the cam lobe on the generator armature is just about to open the points. Now using your flashlight look through the timing hole while SLOWLY turning the engine until the Ohm Meter shows a break in continuity, or an open circuit at the points. It is EXACTLY at this point that you should see the slot squarely line up with the timing hole window. If you see the slot before the points open then your timing is Retarded. If you see the points open before you see the slot in the timing window then your timing is Advanced. This is BAD!

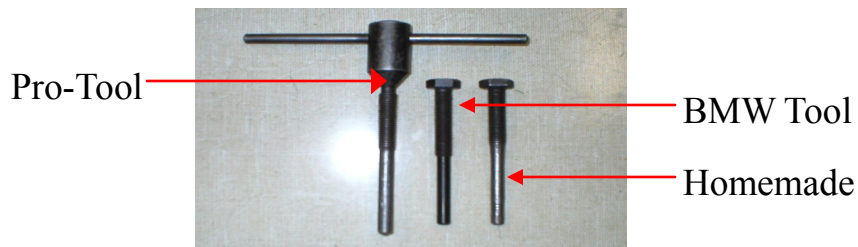
Step 13: In some cases you will see part, but not all of the slot appear in the window with half either being above or below the window. In cases like these a minor adjustment of the point gap will bring the engine into perfect time, and you will soon be done. If you need to advance the timing make the point gap .001-.002” larger, and if you need to retard the timing make the point gap .001-.002” smaller.

If this is your case; make the necessary adjustment to the point gap, recheck the timing point and make sure the slot aligns with the hole perfectly (so that the punch can slide in). Install the screw and fiber washer into the timing hole and secure. Install your blue generator wire, install the generator cover, reconnect the battery and install your spark plug and you're Done!

If this is not your case, and you find that you need to make a major adjustment to the timing to get the slot to align properly then... Read On.

Step 14: This is where the punch tool comes into play. What you have to do is lock up the engine so that you can pop the armature off it's taper on the crankshaft, and thus re-orient the cam lobe to set the timing spot-on. NOTE that there is not a keyway that positions the armature on the crankshaft. This is a taper-to-taper fit, and these armatures can rotate if the bolt is allowed to run loose. By turning the engine over and inserting the punch into the crankshaft slot your will stop the engine from rotating. By doing this you can then remove the bolt (that you have been using to turn the engine all this time) by turning it counterclockwise. Fully remove the bolt from the end of the armature.

Now refer to the photo below. It is a picture of three tools. The one on the Left is Original type Pro quality tool for the serious mechanic, these fit BMW, and Moto Guzzi models as well. We do sell these tools in a plated finish if you would like one. The tool in the middle is a BMW standard armature tool costing about half of the Pro-tool, and it is very simple. Which leads to the tool on the right. This is homemade. It is simple; a 8mm x1.25 pitch bolt, 85mm (about 3.375”) in length, with the last 50mm (about 2 inches) of thread ground away to make a pin. The concept is that the armature threads catch the top of the puller and then the puller bottoms out safely, and thus pops the armature off the taper easily. This is a very easy tool to make at home.



PLEASE NOTE that the BMW tool and the homemade versions in the picture are just a bit short. The dimensions I have given to make a tool are correct, but in the case of a short tool a small ball bearing is inserted into the end of the crankshaft before threading in the tool to compensate for the length difference. A 5mm-6mm ball is suggested for this purpose, as it will not lodge in the end of the crank.

Step 15: Keep the timing lock-up punch in the timing hole, and firmly engaged in the slot. Now; run in you armature popping tool, and pop of that armature. With the armature popped off the end of the crankshaft you can easily rotate the armature to the exact point where the cam lobe just begins to break open the points. Watch your Ohm meter, and when exactly at the point where the cam breaks open the points, SET the armature onto its taper with a light tap of a brass or leather faced mallet. Now carefully reinstall the armature fixing bolt and tighten hand tight for now.

Remove the timing lock-up punch.

Rotate the engine counterclockwise, and recheck the timing point. The timing is spot on when the points open exactly when the slot is fully visible in the window, and when you can easily slide the puch into the slot. This may take some time to get a real feel for it, but I assure you it is easy. If you don't like the spot where you set the timing-go back and pop the armature off the crankshaft again, and reposition the armature once more. It is worth getting it right.

That's it! Once you get it set right be sure to crank down that Armature Bolt to set the armature in place firmly. Puch does not give a torque specification for this bolt. From my experience about 15 Ft. lbs. of torque is sufficient.

Don't forget to reconnect the blue wire, and install your generator cover before reconnecting the battery.

I hope that this is understandable. It appears long, but is really quite easy and simple. I wanted to be detailed as I get asked this question about twice a week! Good luck and enjoy your well-timed Puch!