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## Using the Cam Profile Tool to Time Intake and Exhaust Cams on the Porsche 928, 32 valve engines, all years

When installing new or re-installing stock camshafts in a 32v Porsche 928 head, the Workshop Manual asks you to count "7 links" of the camshaft drive chain from the exhaust cam to the Intake cam. This sets the cam-to-cam timing (also known as camshaft phasing). The penalty for getting the phasing off just one tooth (one half a link) will be that your valve overlap will be much too much, or much too little. The drop in HP for this error is very significant. Worse is the probability that your out-of-phase intake camshaft may cause the valves to interfere with the pistons, bending them and creating a very expensive repair.

**IMPORTANT:** The crankshaft must be set to 45 degrees timing before attempting to adjust the cams. See and follow all precautions in the Workshop manual.



As you will see in the pictures on the next pages, getting the cams phased wrong by counting links is surprisingly easy. The Camshaft Profile Tool was first developed by Porsche because of that fact. They offer a positive check on your cam phasing so you can correct it before you attempt to start the motor.

For this article, we have selected a set of 1988 heads and stock 1988 camshafts as being fairly representative of most stock 928 cams. Yours may be slightly different, but the tool will still work as described. Our photographs show the heads re-

moved from the engine so that we may easily show many iterations at one time, however you will be using this while the heads are still bolted to the engine block.

This photo shows proper placement of the cam profile tool. There are two of them, one marked for cylinder 1 (the front of the right head) and one marked for cylinder 5 (the front of the left head).



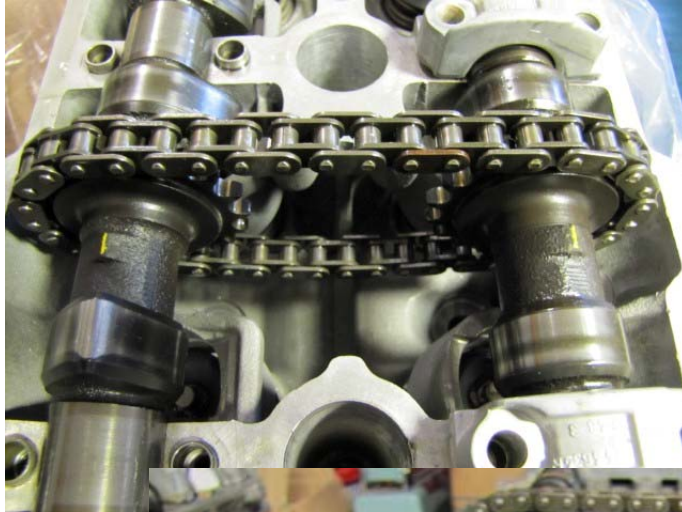
The German tools are marked "E" for the Intake cams, and "A" for the exhaust cams. 928 Motorsports makes these tools in English as well, and they are marked "Intake" and "Exhaust" for your ease of use.

Note the slight gap between the cam lobe and the cam profile tool in this picture. Depending on your cam grind and model, you may see a small gap also. This is normal, and does not change the effectiveness of the tool, as the following pages will show.





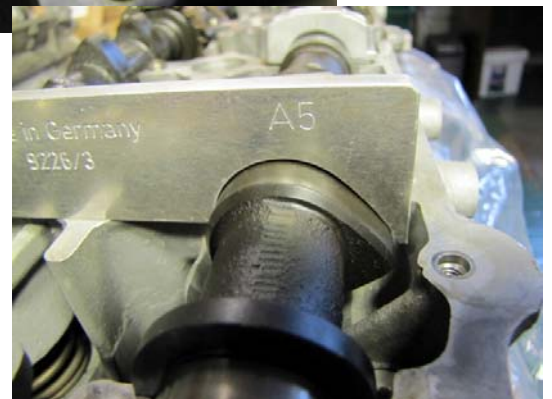
### Left Head, correct cam phasing



We painted the cast nib or "arrow" on the camshafts with a yellow line so it would be easier for you to see. Count the links from nib to nib.

These photos show 7 links of the cam drive chain, and how that appears when the cam profile tool is placed over the cam lobes at cylinder number 5.

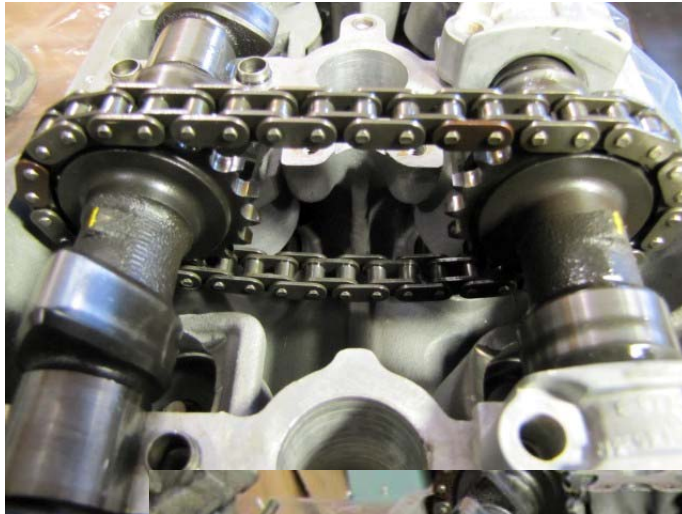
This is correct left bank camshaft phasing and what it looks like.







**Left Head, cams too far apart by half a link**



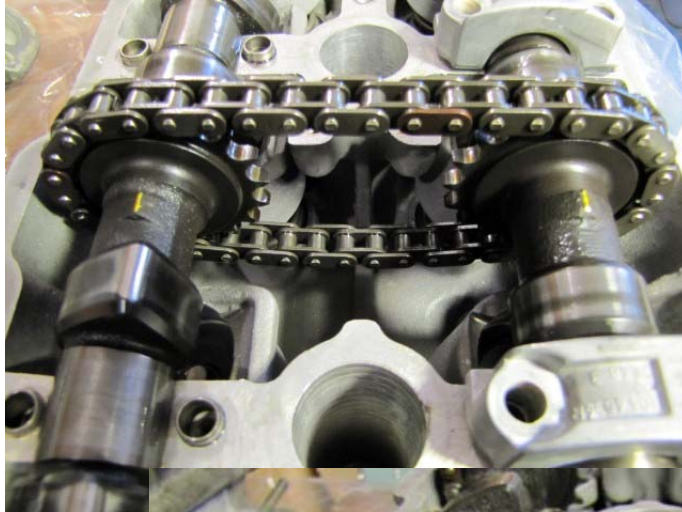
These photos show 7-and-a-half links of the cam drive chain, and how that appears when checked with the cam profile tool.

Note how easy it is to get the cam phasing wrong when counting links, yet how obvious it is when checked with the cam profile tool.



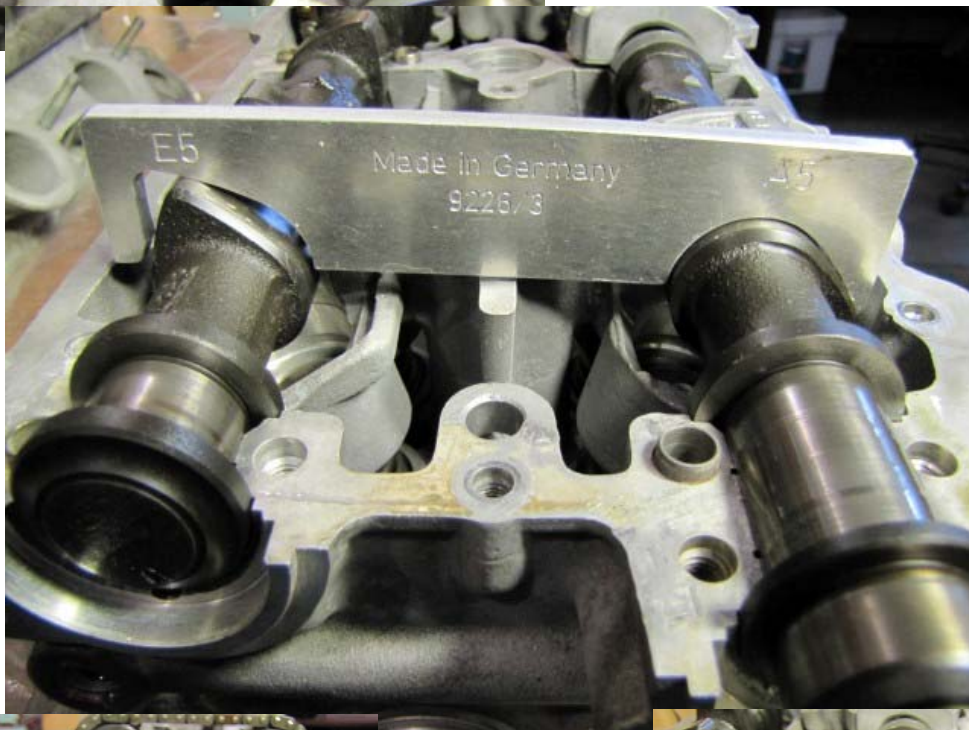


**Left Head, cams too close together by half a link**



These photos show 6-and-a-half links of the cam drive chain, and how that appears when checked with the cam profile tool.

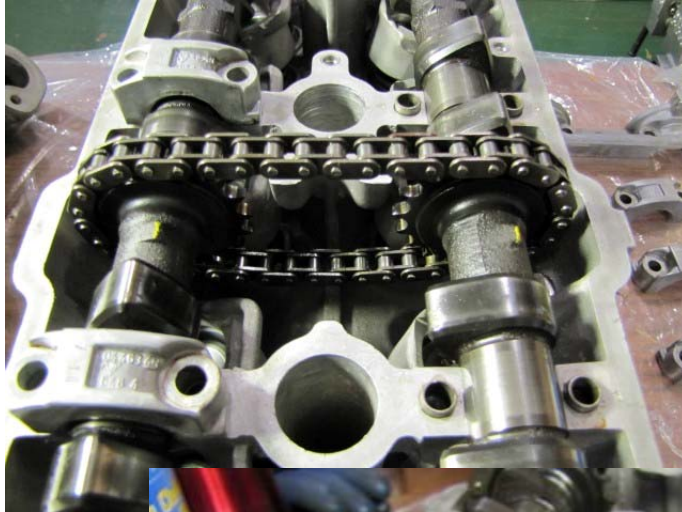
Note how easy it is to get the cam phasing wrong when counting links, yet how obvious it is when checked with the cam profile tool.







**Right Head, correct cam phasing**



These photos show 7 links of the cam drive chain, and how that appears when the cam profile tool is placed over the cam lobes at cylinder number 1.

This is correct right bank camshaft phasing and what it looks like.





**Right Head, cams too far apart by half a link**



These photos show 7-and-a-half links of the cam drive chain on the right head, and how that appears when checked with the cam profile tool.

Note how easy it is to get the cam phasing wrong when counting links, yet how obvious it is when checked with the cam profile tool.







**Right Head, cams too close together by half a link**



These photos show 6-and-a-half links of the cam drive chain on the right head, and how that appears when checked with the cam profile tool.

Note how easy it is to get the cam phasing wrong when counting links, yet how obvious it is when checked with the cam profile tool.

