

J2 TECHNICAL ARTICLE

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From Octagon Heaven

CAMSHAFT TIMING

In all manuals where assembly of the bevel gears on the vertical drive and camshaft is discussed, they always tell you to match the two bevel gears so that the timing marks are together.

In the J2 INSTRUCTIONAL MANUAL it states that you can place the marked tooth on the camshaft bevel gear on either side of the marked tooth of the vertical drive bevel gear.

Question: One owner reports that his vertical shaft gear does not have markings and he is not sure how to put the camshaft in to assure proper timing.

NOTE A learning point for all of us is if we are ever going to take this assembly apart, it is wise to check first and if one does not have a mark, then mark it before disassembly!

So how do you get this thing back together correct? I guess I would have to think it back together based on what I know about the operation of an engine----- the Timing chart on page 18 of the INSTRUCTIONAL MANUAL helps!

1. The intake valve is going to be open basically on the first down stroke of the cylinder.piston.
2. Compression takes place on the first upward stroke of the piston
3. Ignition is just after dead center at the upper stroke and carries the piston down.
4. The exhaust valve is then going to be open on the upward stroke to exhaust the gasses to be ready to take on new raw gas. (point 1 abc

That is basic-- The chart on page two (from the INSTRUCTIONAL MANUAL) shows that the intake valve opens up 15° before dead center and stays open 55° after bottom dead center. The exhaust valve opens up 50° before bottom dead center and stays open 20° after top dead center.

That may complicate matters a little but still workable by trial and error attempts.

(OVER)

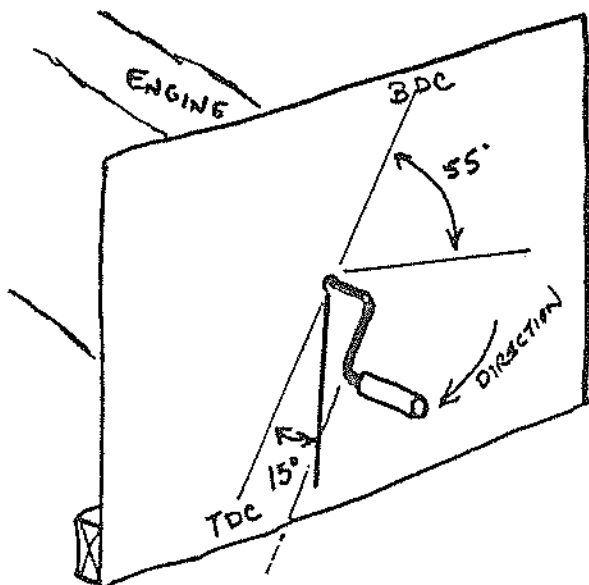
The process of assembly should proceed as follows:

1. If distributor is assembled, find top dead center after No. 1 has fired. (this is one cycle after firing).

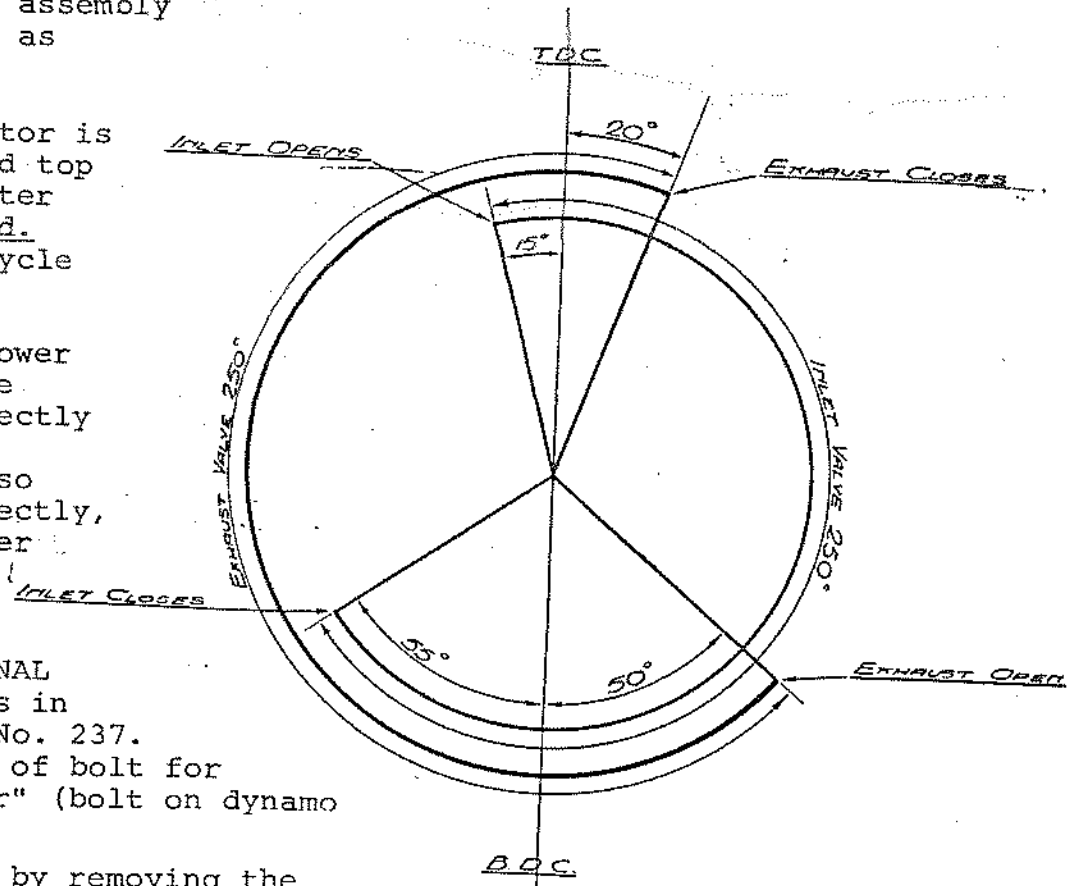
Note: If the lower bevel gears are assembled correctly and the Dynamo coupling is also assembled correctly, then dead center is easy to find. See the picture from the INSTRUCTIONAL MANUAL which is in Tech, Article No. 237. "Note position of bolt for top dead center" (bolt on dynamo coupling).

You can varify by removing the sparking plug and use a feeler for top dead center.

2. Now with a little ingenuity you can now construct a chart like above on the engine to find the points. I think I would use a piece of cardboard, a piece of wood for a base, and the engine crank as the pointer. (a) only worry about the intake valve at first but you can double check later with the angles of the exhaust valve. (b) a protractor will be needed to construct the chart. (c) where ever the crank handle is located is 0° degrees-- dead center



VALVE TIMING CHART.



- (d) 15° before dead center construct a base line for the intake valve ope
- (e) 55° after lower of bottom dead center construct a base line fore intake valve closing.

3. Now bring the crank around to the opening of the intake valve and try the camshaft.
4. Keep trying until you get the intake valve working from 15° before dead center to 55° after bottom dead center.

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Once you are satisfied that you have the assembly correct, then mark the teeth for future work.

You may try an alternate method---- use the bolt on the dynamo --- except I think it would be more difficult to mount, mark, and see a chart.

Once you are satisfied that the intake valve is functioning within the correct timing, I think I would double check by doing the same chart work for the exhaust valve. Then if for some reason that is not right, you can pick a point somewhere between.

If you make sure of top dead center ---- visually check the piston location, the process should work!

If you don't like the distributor location when you are all done, then just re locate the wires coming off of the distributor, keeping the firing order in the proper sequence.

If the above does not work, then I do not know how to do it!