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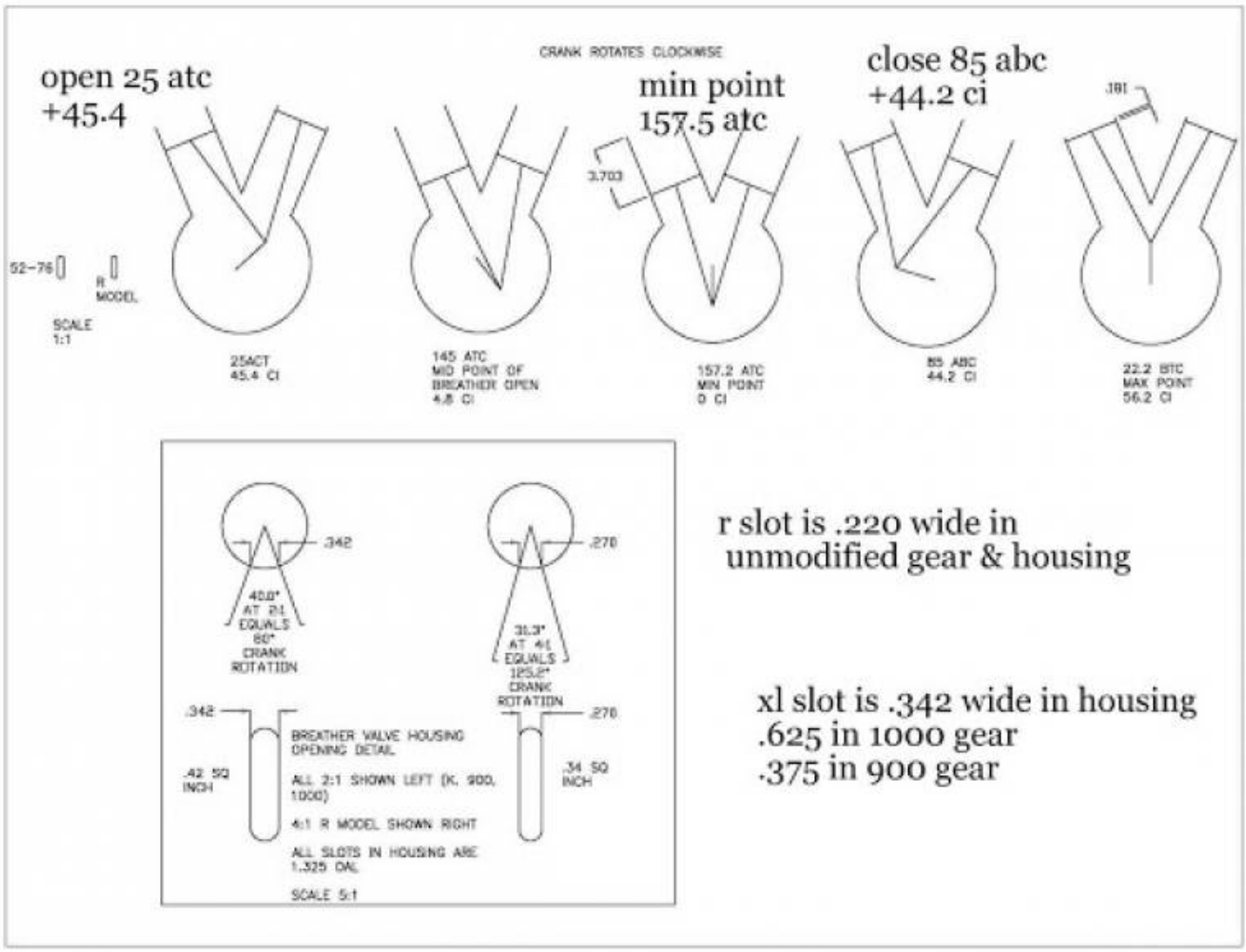
REF: Engine Mechanicals - Sub-07L

How Piston Swept Volume Compares When the Breather Opens as to When It Closes

How the volume compares when the breather opens as to when it closes: [1)]
If we knew that, we'd have a much clearer picture of what actually happens.
This diagram shows the volume swept by piston action in a 1000cc motor.
It shows how much displacement is changed from min volume (0 cubic inches) to max volume(56.2 ci more than min).



[2)]

There's only 1.2 cubic inches of net outward flow per revolution.
(ignoring the dynamics of the inertia that the moving column imparts to the actual net movement)
So the actual movement is great but the net change is small.
How much actual movement?
About 45 ci on down stroke and about another 45 on the up for a total of app. 90 ci per rev trying to squeeze thru the open breather.
(which is fully open for exactly 1/2 the time of the 'just open' to 'just close' total time.

90 ci per revolution is about 1-1/2 quarts per revolution.
Multiply that by 5000 rpm and you get 7500 quarts per min.
That's almost 2000 gallons per min trying to get thru the breather.
Obviously that ain't happening and the highly revered 1/4 speed (R) pump has a way smaller opening yet than the street pump.

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1)
Dr Dick of the XLFORUM
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/ironhead-sportster-motorcycle-talk-1957-1985/122424-breather-diagrams/page3?t=1204854&page=3
2)
drawing by Dr Dick of the XLFORUM
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/ironhead-sportster-motorcycle-talk-1957-1985/122424-breather-diagrams/page3?t=1204854&page=3

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