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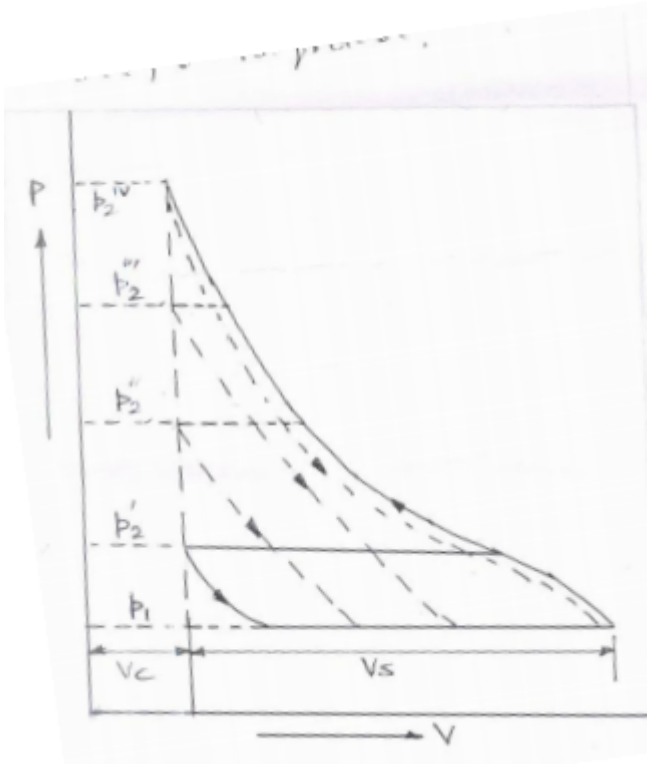
Show the effect of increase of compression ratio in a single.....

Question:
Show the effect of increase of compression ratio in a single stage reciprocating compresor on PV diagram and give its physical significance.

Answer:
Effect of Compression ratio in a single stage reciprocating compressor on PV diagram



Physical Significance:-

If compression in increased (usually it varies from 5 to 8) the final temperature increases and volumetric efficiency decreases flow and it compression ratio increases beyond usual value, compression ratio P2/P1 becomes zero as it can be observed from the figure. Increment in compression ratio will increase leakage past the piston and will need robust cylinder. If will also affect the operation of delivery valve and if will reduce lubricating properties of oil. It may increase the risk of ignition in piping and receiver.