

14-A-20 Otto cycle cut-off ratio

What is the formula for the cutoff ratio (r_c) for the Diesel cycle? (2 answers possible)

$r_c = \text{Volume of the cylinder at the end of heat addition} / \text{Volume of the cylinder at the beginning of heat addition}$

and

$r_c = \text{Volume of the cylinder at the end of isobaric process} / \text{Volume of the cylinder at the beginning of isobaric process}$

r_c will be equal with the volume after the heat addition/ volume before heat addition. This does not exist in Otto cycle.

In the Diesel cycle, during the compression phase, only air is compressed (therefore we eliminate the risk of auto-ignition) and the combustible is added when the cylinder is fully compressed (piston approaches TDC). The compression ratio for diesel can be higher because now we do not deal with auto-ignition problem anymore (it varies from 12 to 24).