A → B
Main sequence phase where star is H core-burning via CNO-cycle so core will be convective. Phase lasts for 3.7×10^6 yr. At B, the star will have a mass of 43 $M_\odot$ i.e. it will have lost 17 $M_\odot$ corresponding to a mass loss rate of 5×10^{-6} $M_\odot$/yr. It will be an O star with log $L/L_\odot$=5.9 and T_{eff} =40 000 K corresponding to a spectral type of O7 V (this is at point A). At point B, where H is exhausted in the core, the nuclear burning products of the CNO cycle will have been mixed by convection into the higher layers, and the removal of the outer layers by mass loss, will cause the CNO cycle products to appear at the surface. The star will now have a decreased H content ($X_s = 0.58$ compared to 0.70 at A), an increased He content ($Y_s = 0.40$ compared to 0.28 at A), and the N abundance will be increased and the C abundance will be decreased such that C/N will be 0.01 compared to 4.1 (=solar) at A.

B → C
The inert H core is now contracting and H-shell burning begins. The star moves to the right in the HRD and encounters the Humphreys-Davidson limit. The star becomes unstable and undergoes major eruptions resulting in $\sim 5\,M_\odot$ of material being lost in $\sim 10^4$ yr. This phase is identified as the Luminous Blue Variable (LBV) phase and examples include P Cygni and Eta Carinae. The high mass loss in this phase halts the redward evolution and the expansion of the outer layers. The star contracts and moves to the left in the HRD and left of the H-D limit. The star now has a mass of 38 $M_\odot$. The high mass loss in this phase has decreased the H content on the surface to $X_s = 0.32$ and the helium content is increased to $Y_s = 0.67$ as a result of the products of H-shell burning being exposed on the surface. The C/N ratio is at the equilibrium value of the CNO cycle of 0.01.

C → D
Core He-burning now commences and lasts for 600,000 yrs. The star is now stable and moving bluewards and is identified as a Wolf-Rayet star of the WN class. These are stars which are N and He rich and have little or no surface H ($X_s \leq 0.30$). They have massive stellar winds with high mass loss rates of 3×10^{-5} $M_\odot$/yr. WN stars are the evolved descendants of O stars which show products of CNO burning in their atmospheres with C/N=0.01. The WN phase lasts for 300,000 yrs until the heavy mass loss has removed all the products of H-burning. At the end of the WN phase (point D), the star has a mass of 28 $M_\odot$.

D → E
The star is still He core burning but the heavy mass loss in the WN phase has now revealed the products of He-burning at the stellar surface. The star now has no hydrogen or nitrogen at the surface, $Y_s = 0.47$, C=0.33 and O=0.18 i.e. C/He ~ 1. These abundances correspond to WC stars which have enhanced He, C and O abundances and no N or H. The WC phase lasts for 300,000 yr until the end of core-He burning when the star has a final mass of 21 $M_\odot$. The final stages occur very quickly — core contraction and core C-burning lasts for 2,000 yr, and then O-burning, Si-burning etc lasts for about 1 yr. The star then explodes as a supernova and the core will become a black hole. Total lifetime of a star with an initial mass of 60 $M_\odot$ is 4.3×10^6 yr.