Synthesis of Vitamin D analogues

Given below is a part of the synthesis of 1α -Fluoro A-Ring Phosphine Oxide, a useful building block for Vitamin D analogues, from (S)-Carvone via a highly selective Palladium-catalyzed isomerization of dieneoxide to dieneol.



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Questions:

- 1. Find out 2 to 9 and X.
- 2. Give a plausible mechanism for the formation of A and B. Give reason for the above mentioned selectivity in the presence or absence of the additive.