Stepped cylinder and perpendicularity

Perpendicularity of a plane

Datum A(M)

Datum B(M)

gage #1

gage #2

workpiece

CMM-probing:
3x n points

Stepped cylinder and perpendicularity

Datum rotation within the limits of MM-Boundary

MM-Boundary

MM-Boundary

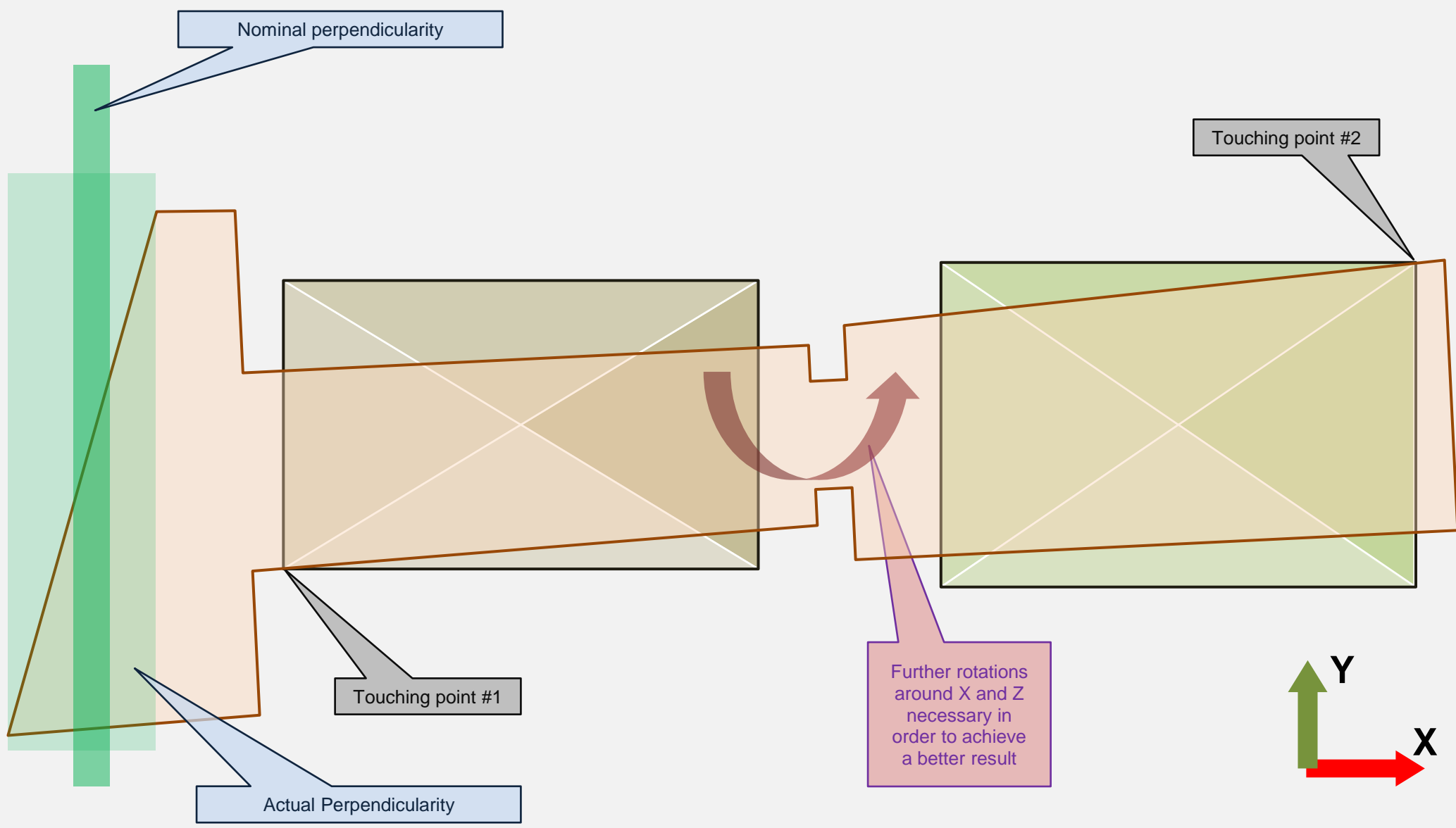actual geometry

actual geometry

actual geometry
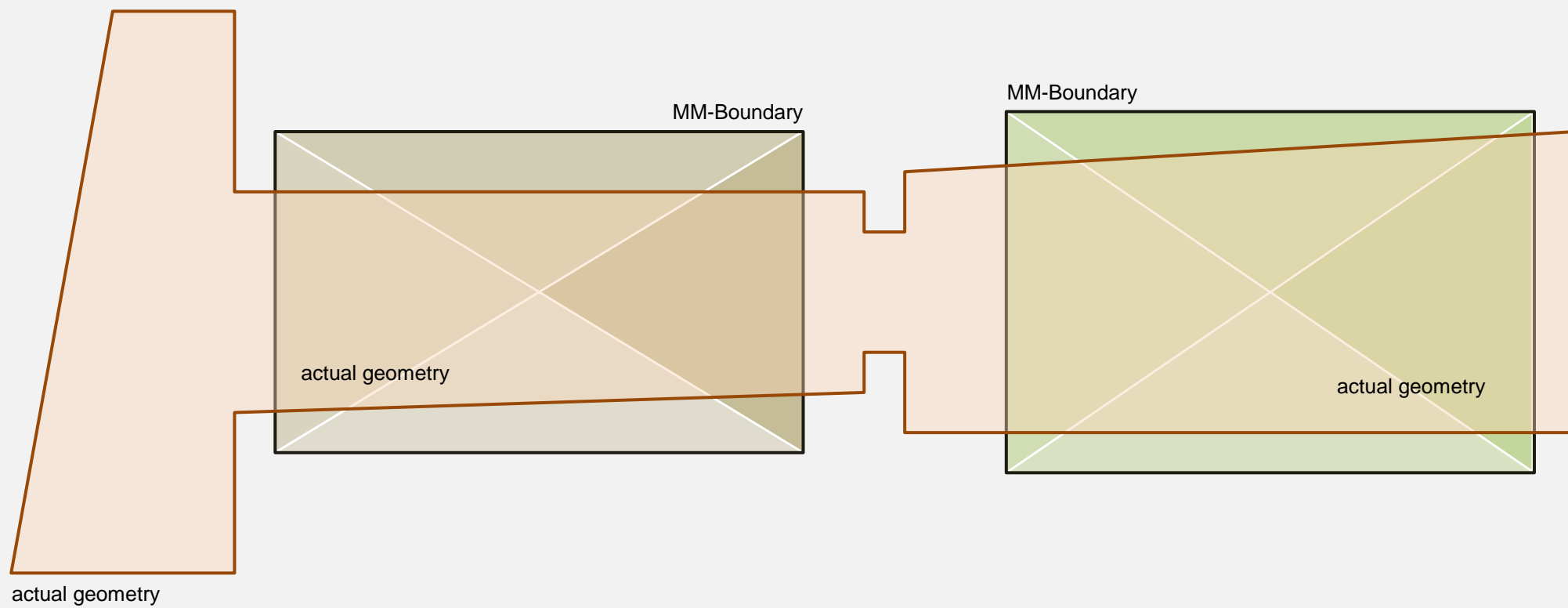
Stepped cylinder and perpendicularity

Datum rotation #1 in order to achieve the "best result"

Nominal perpendicularity

Touching point #2

Touching point #1

Further rotations around X and Z necessary in order to achieve a better result

Actual Perpendicularity

Y

X

Stepped cylinder and perpendicularity

Datum rotation #2 in order to achieve the "best result"

Nominal perpendicularity

Touching point #2

Touching point #1

Further rotations around X and Z necessary in order to achieve a better result
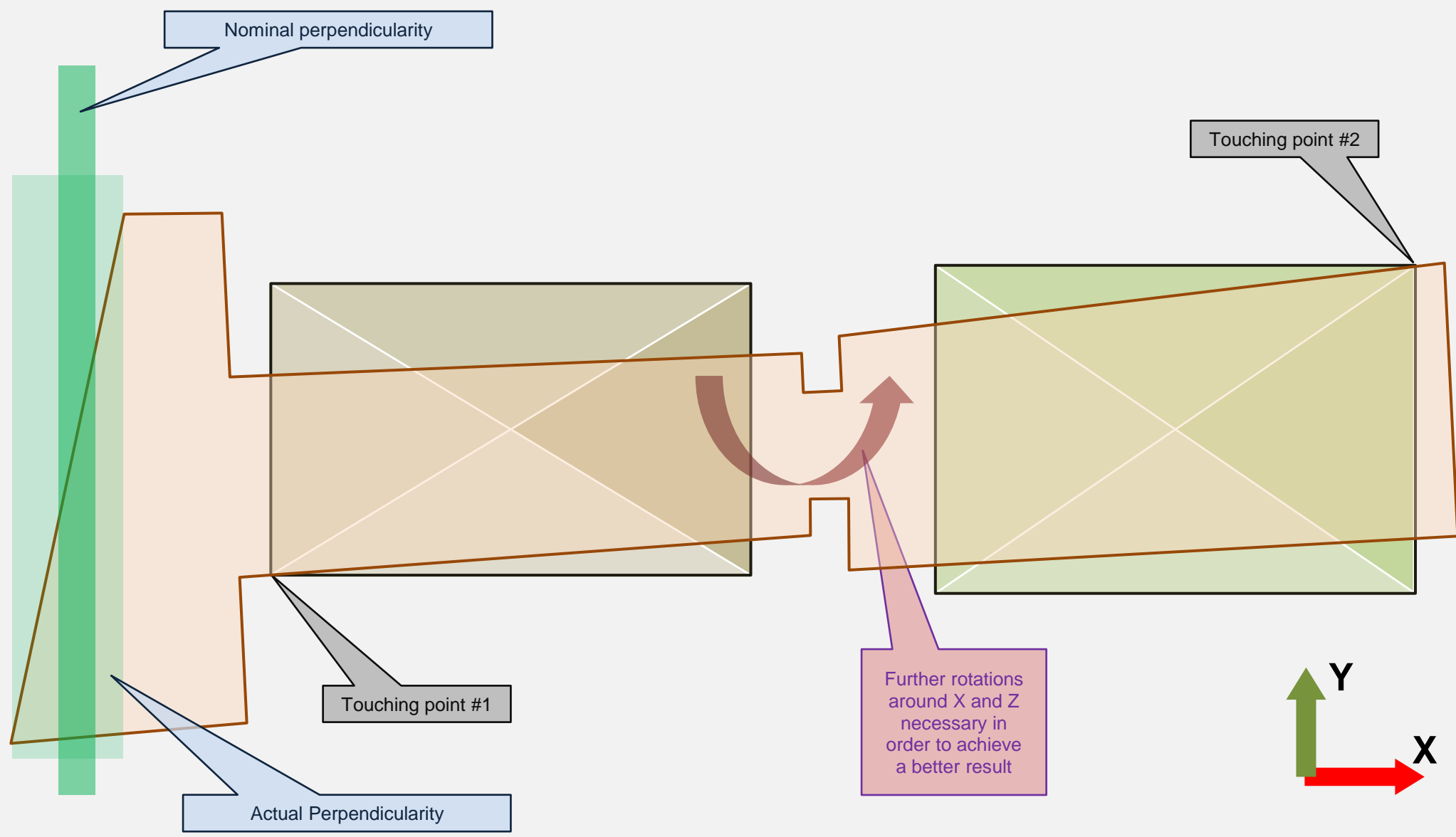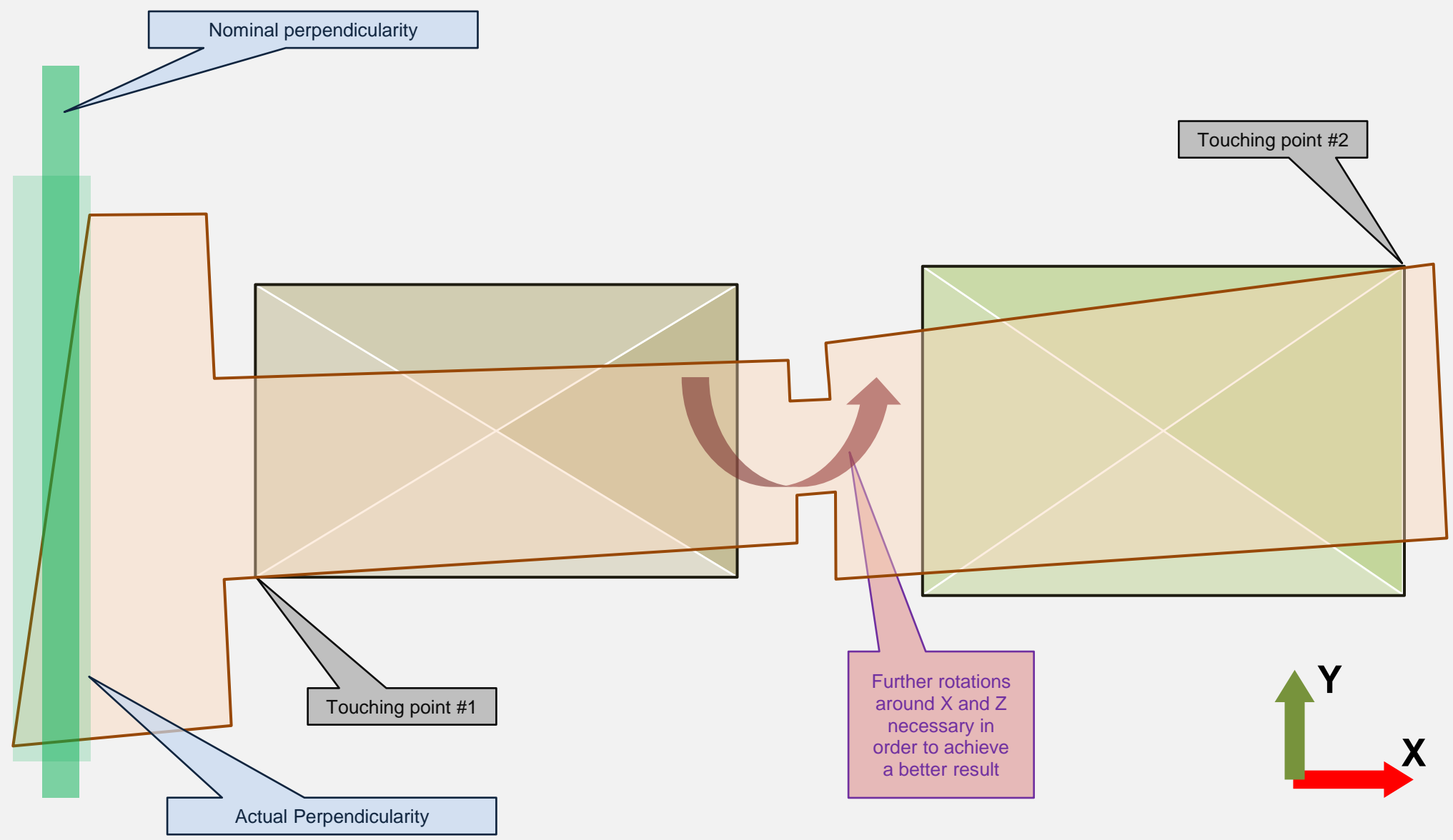
Actual Perpendicularity

Y

X

Stepped cylinder and perpendicularity

Datum rotation #3 in order to achieve the "best result"

Stepped cylinder and perpendicularity

Datum rotation #164 in order to achieve the "best result"