

## 4. Offset angle

On drivelines with three-dimensional deflection angles, in- and output shaft are not located in one plane. This results, if no special measures are taken, in a non-uniform output motion. The constantly repeating acceleration and deceleration unleashes inertia forces which can greatly reduce the life of the joints.

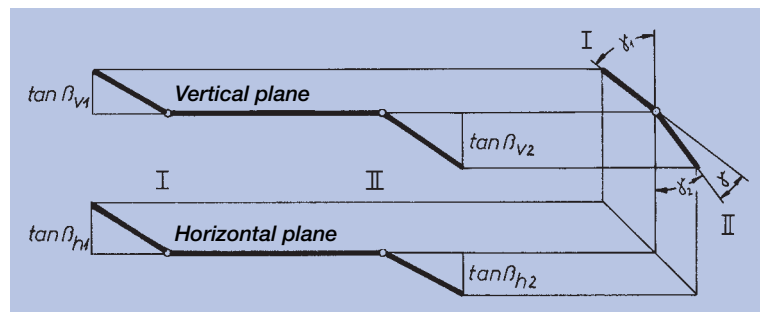
However, not only the driveline, the driven equipment also is subjected to these forces and vibration caused by them. To avoid this, the inner forks must be offset relative to each other such that each fork ends up in the plane of deflection of its joint. The angle between both deflection planes is called offset angle  $\gamma$

and it can be obtained as follows.

### Example 1

$$\tan \gamma_1 = \frac{\tan \beta_{h1}}{\tan \beta_{v1}} ; \tan \gamma_2 = \frac{\tan \beta_{h2}}{\tan \beta_{v2}}$$

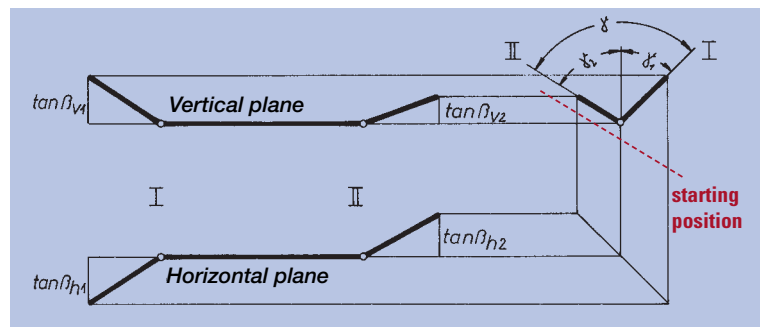
Offset angle  $\gamma = \gamma_1 - \gamma_2$



### Example 2

$$\tan \gamma_1 = \frac{\tan \beta_{h1}}{\tan \beta_{v1}} ; \tan \gamma_2 = \frac{\tan \beta_{h2}}{\tan \beta_{v2}}$$

Offset angle  $\gamma = \gamma_1 + \gamma_2$



As shown by the graphic illustrations, on both examples two directions of rotation are possible:

#### Example 1:

- Rotate joint 1 counter clockwise by the offset angle
- Rotate joint 2 clockwise by the offset angle.

The direction for viewing is, in both cases, from joint 1 to joint 2.

#### Example 2:

- Rotate joint 1 counter clockwise by the offset angle
- Rotate joint 2 clockwise by the offset angle.

The direction for viewing is, in both case, from joint 1 to joint 2.

By researching the offset angle, you always have to take the graphic illustration. Only in this way it is possible to find the right direction of rotation and to determine whether the offset angle  $\gamma_1$  and  $\gamma_2$  have to be summed or have to be subtracted