

## Kinematics Example

### Calculation Methods

Gears: ISO 6336      SHmin = 1.1      SFmin = 1.6  
 Shafts: DIN 743      SSmin = 1.2      SDmin = 1.2  
 Bearings: ISO 16281      Hmin = 5000h

### Materials

Gears: 18 CrNiMo7-6 Case Hardened  
 Shafts: C45  
 Housing: Aluminium

### Lubrication

Oil Injection, ISO VG 46, 80°

$$i = \frac{n_{motor} \cdot D \cdot \pi}{v}$$

$i$ ... Transmission ratio,  $n_{motor}$ ... Optimal motor RPM [1/min],  
 $D$ ... Outer tire diameter [m],  $v$ ... Average vehicle speed [m/min]

Example:  $i = \frac{6000 \text{ rpm} \cdot 0.632 \text{ m} \cdot 3.14}{1333 \cdot \frac{\text{m}}{\text{min}}} = 8.9$

