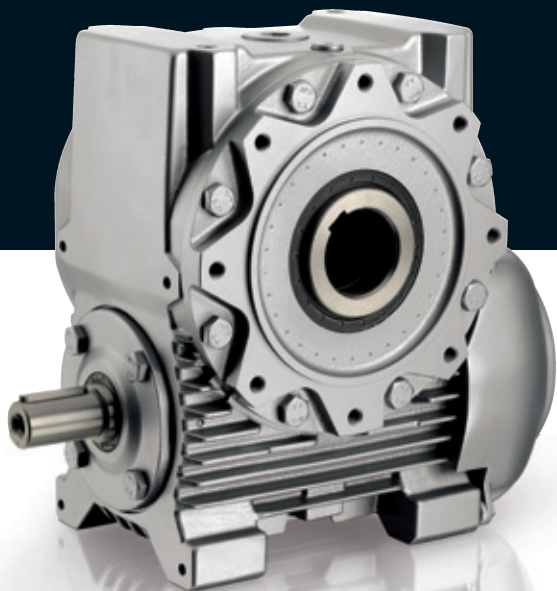


Worm gears Wheel sets

Unique level of effectiveness,
torque and lifespan



CAVEX[®]
German Drive Technology



www.CAVEX-GmbH.de

7 Convincing Arguments:

Technology - Made in Germany

1 Intelligent gear geometry

Worm gears are unique. CAVEX® has been proving this time and again. For over 50 years. In different industrial branches worldwide. The decisive advantage over conventional worm gears: the unique gear geometry. The name CAVEX® says it all, made up of the Latin word concavus, the worm profile, and convexus, the worm wheel profile. Thanks to the worm teeth with concave flank profile (hollow flank worm), paired with the convex-shaped worm wheels, CAVEX®-worm gears are far superior to comparable gear units of the same size.

This pairing of the gear teeth ensures an extremely low specific gear flank pressure (Herzian pressure) and better lubrication build up. The result: higher torques of up to 360.000 Nm, the best efficiencies of up to 95%, as well as a significantly longer lifetime as a result of the reduced wear. Especially the CAVEX®-gear geometry that is based on the ZC-geometry according to DIN 3975 enables ideal adaptation to every customer-specific application due to the adequate variation of the gear flank meshing.

2 Universal range

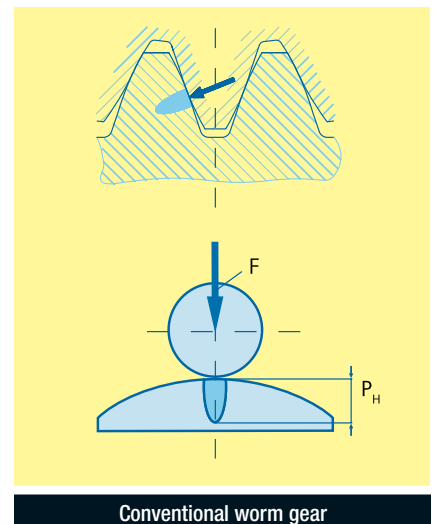
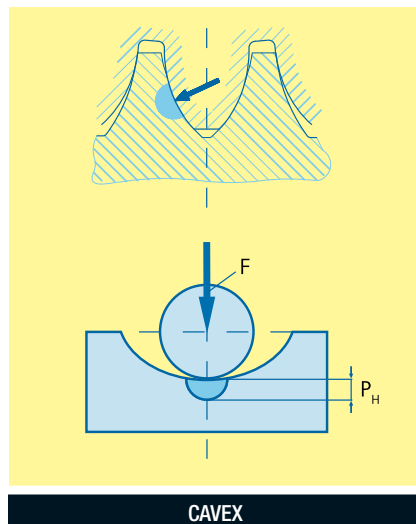
CAVEX®-gear units – Industrial gear unit in modular construction:

- Single level basic gear for 18 sizes with the centre distances $a = 63$ mm to $a = 630$ mm
- Single level basic gear with transmission ratios of 5 to 70
- Basic gear with solid shaft on the output with one or two shaft ends
- Assembly of the gear on the casing or on the flange of the output shaft
- Basic gear with hollow shaft on the output
- Assembly of the gear on the casing, as shaft-mounted casing with flange on the output shaft or with torque support on the output shaft



German Drive

- Input shaft with one free shaft end, optional lantern and coupling on the drive side for simple assembly of the motor on the gear, drive shaft with second free shaft end, for example for power splitting or for synchronisation with a second CAVEX®-gear
- Simple expansion of the basic gear with a helical prestage with the transmissions from 2 to 5 or with a worm gear prestage with the transmissions from 5 to 70 for the total transmission up to approximately 5.000, thus adaptation to the desired output torque usually possible without frequency converter





e Technology

3 High transmissions possible

- Single level CAVEX®-gear for standard transmission up to 70
- Optional customer specific transmissions over 100 are possible for the single level CAVEX®-gear
- Medium transmission up to 350 can be done with a helical prestage
- With two worm gear levels, the high standard transmissions up to 5.000 can be realized, customer specific over 10.000

4 High overload capacity

- The lower specific flank pressure results in a high overload capacity for the CAVEX®-standard geometry for the modular structure range.
- Optional customer specific design for especially high overload capacity due to the modification of the flank gear geometry.
- Reduction of the reaction from the output on the drive with adequate selection of the transmission and design of the geometry.

5 Robust design

- Over 20 years of operational experience with the current design, over 50 years operating experience with CAVEX®-gears.
- Structural design as an industrial gear with a consistent reduction of the components even for high transmissions.
- CAVEX®-worm gear teeth as most important component for the CAVEX®-gear.
- Casing in monoblock construction.
- Application of taper roller bearings and cylinder roller bearing on the drive shaft.
- Optional application of reinforced bearing on the output shaft.
- Lubrication using synthetic oil.
- Reduced length for the static seals.
- Optional labyrinth sealing system on the output shaft and on the drive shaft.
- High degree of reliability of the CAVEX®-gear due to the robust design.

6 Low noise generation

- Usage of the CAVEX®-teething with good lubrication build up.
- Casing made of grey cast iron.
- Bearing of the drive shaft with taper roller bearings and cylinder roller bearing.
- Reduction of the number of gear levels and thus of the gear tolerance.

7 Individual and branch specific solutions

- Project planning for the CAVEX®-standard gear possible for numerous applications by using the catalogue.
- Individual project planning with usage of the own research and calculation procedures according to recognized DIN-standards for the selection of a standard gear.
- Optional adaptation of the catalogue gear for the individual application.
- Branch specific adaptation of the catalogue gear.
- Special gear for your individual application.
- Serial special gears for the branch specific application.

CAVEX – It is your choice:

Individual or standard

Typical versions:

- Solid and hollow shaft on the output
- Drive or output shaft on both sides
- Output with reinforced bearing
- Hollow shaft with keyway or shrink disc
- Labyrinth-shaft sealing
- Casing in grey cast iron (GG-20) or spheroidal graphite iron (GGG-40)
- Worm wheel sets with increased accuracy (e.g. DUPLEX-teething)

Always the right solution

CAVEX®-worm gear units have been continually developed for more than 50 years. And one thing has been consistent over this time: your requirements. In addition to the standard CAVEX® range that is always up-to-date – in close cooperation with customers and partners –, a whole range of individual solutions has been created. Both for customer-specific applications as well as for individual sectors.

Full range

CAVEX® offers you the full range of CAVEX®-worm gear units in 18 sizes from 100 to 360.000 Nm. From single to multi level. In different standard variants, as branch specific solution or individually attuned to your needs.





CAVEX® - Worm gear units in detail:

Product description	
Typical application examples	<ul style="list-style-type: none"> • Steel industry • Elevator drives • Solar technology • Mixers • Escalators • Paper industry
Versions of multi-level gears	Gear combination CAVEX helical prestage module Gear combination CAVEX as double worm gear unit
Torque	Up to 360.000 Nm
Number of gear sizes	Can be combined with prestages
Gear transmission single level	5 - 75
Gear transmission multi-level	20 - 5.250

Solutions for:

- Packaging machines
- Food machines
- Rolling mills (scissors, coilers, roller tables)
- Mixing units and agitators
- Ship construction
- and many more

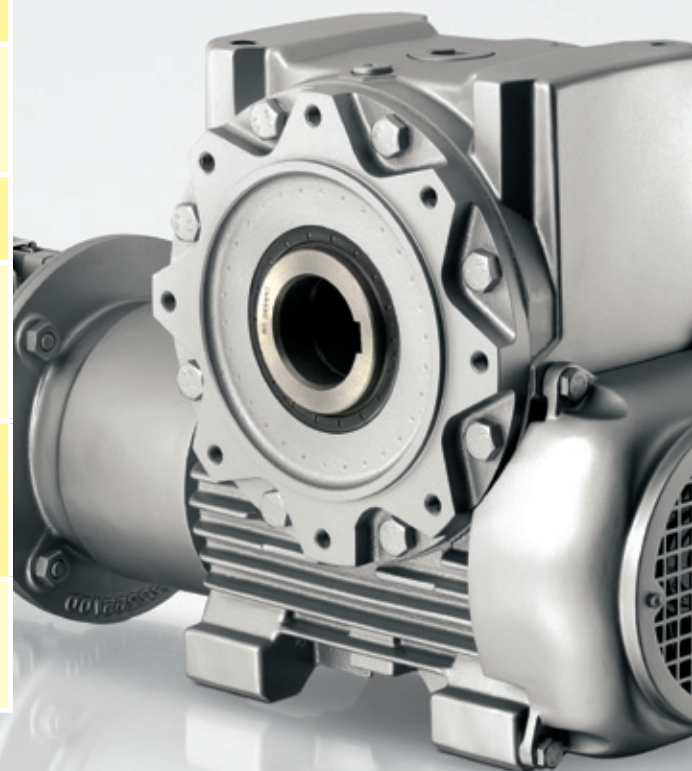
Further branches and solutions are listed in the table below.

CAVEX®

German Drive Technology

Tried and tested in many branches:

Branches	Examples	Advantages
People transport	<ul style="list-style-type: none"> • Escalator drives • Elevator drives 	<ul style="list-style-type: none"> • High system attenuation • Low noise generation • High power density • Special robust design
Mixers	<ul style="list-style-type: none"> • Cement mixers • Bitumen mixers 	<ul style="list-style-type: none"> • Structure optimised for construction space • Robust design • High overload capacity
Conveying technology	<ul style="list-style-type: none"> • Belt drives 	<ul style="list-style-type: none"> • High transmissions • High overload capacity
Rotation gears	<ul style="list-style-type: none"> • Wastewater processing • Ventilation gears • Coffee roasters • Drum filters • Paper processing 	<ul style="list-style-type: none"> • High reliability • Overload capacity • High transmissions
Steel industry	<ul style="list-style-type: none"> • Actuators and part turn actuators • Roller gear drives • Slab drives • Crank drives 	<ul style="list-style-type: none"> • Special design for heavy-duty environment • Maximum overload capacity • High reliability
Solar technology	<ul style="list-style-type: none"> • Rotary actuators 	<ul style="list-style-type: none"> • High transmissions • Overload capacity • Positioning accuracy • Automatic interlock



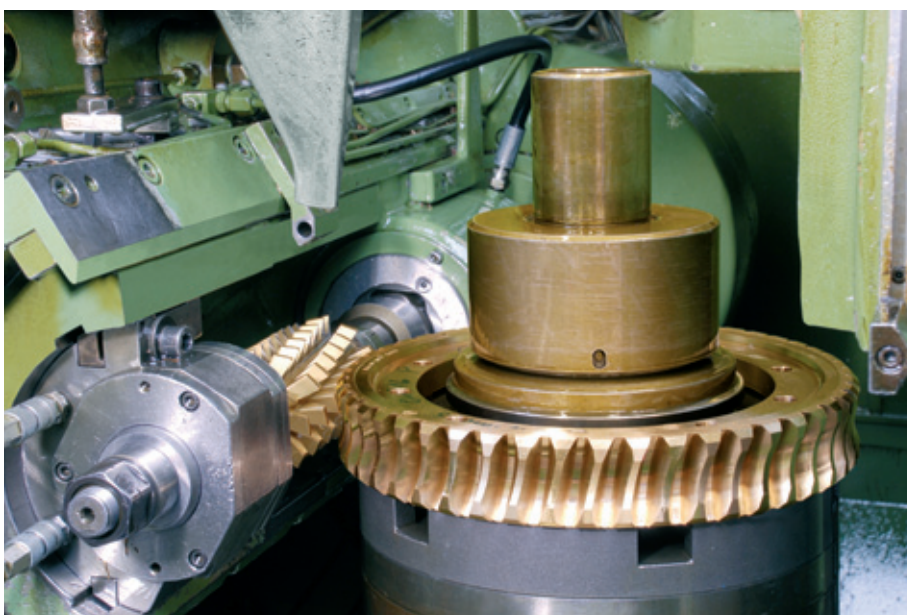
Worm gear production

Standard wheel sets or customer specific solutions

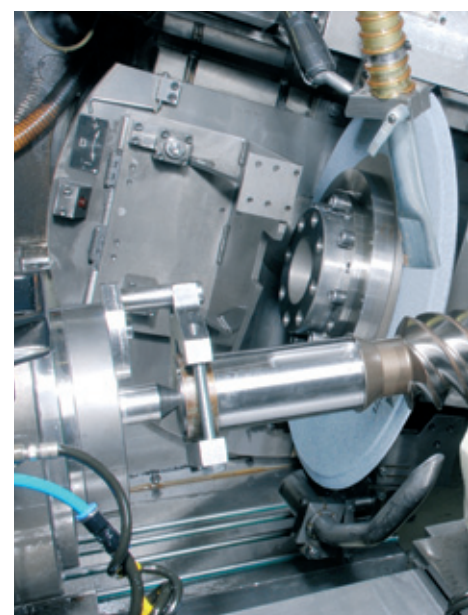
We produce worm wheel sets in versatile designs according to customer drawings. With the new CAVEX GmbH & Co. KG we offer our customers the CAVEX®- wheel set range that has proven itself over decades. Due to their power density and the long lifetime CAVEX®-wheel sets are always number 1 among experienced constructors of sophisticated machines and units like

- Packaging machines
- Food machines
- Rolling mills (scissors, coilers, roller tables)
- Mixing units and agitators
- Ship construction

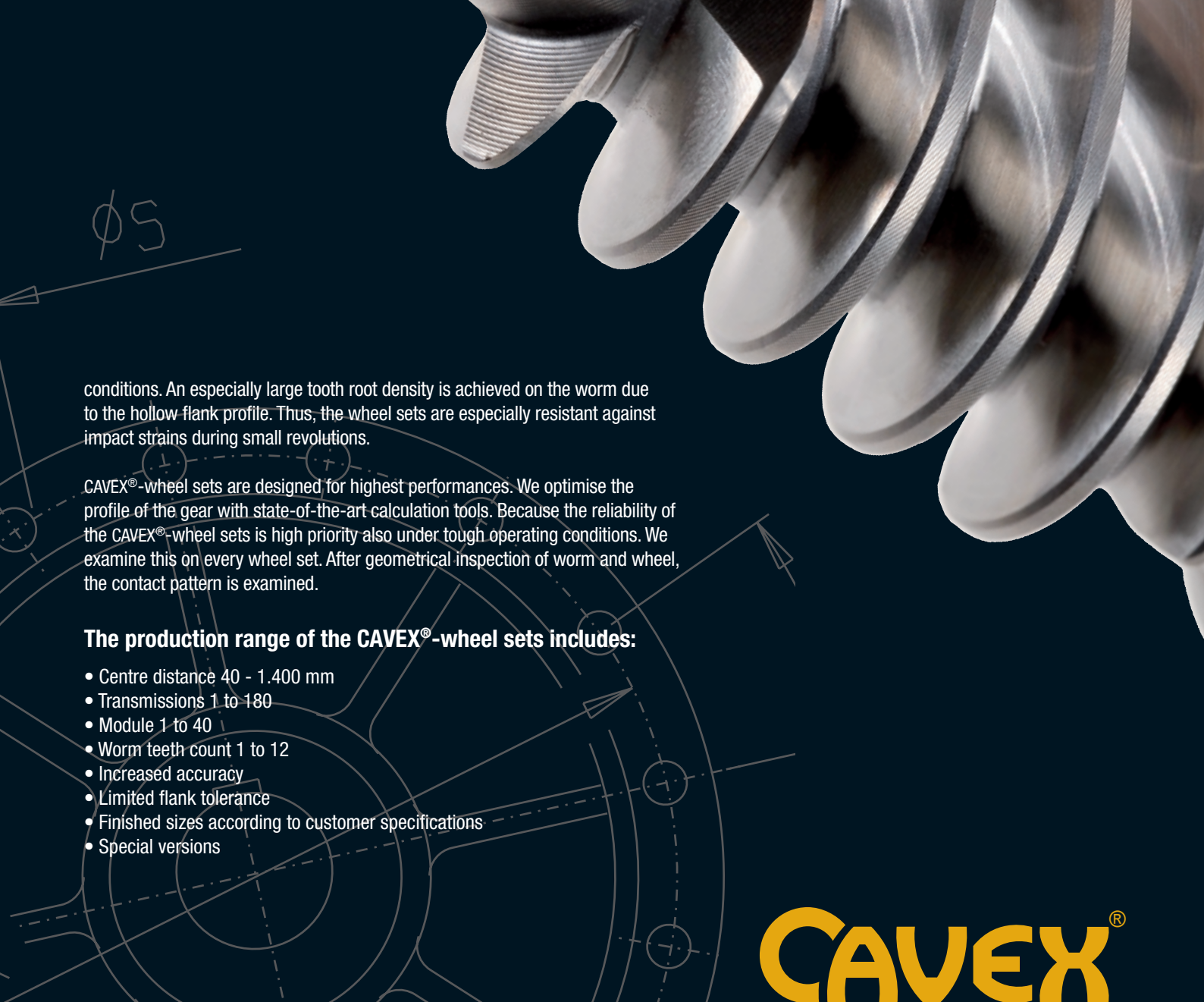
In case of tool machines with increased demands towards accuracy and rigidity the DUPLEX wheel set is usually the set of choice for many applications. In this wheel set the worm is designed with an adjustable incline, thus allowing an exact setting of the wheel set. This provides the ground for high precision production. The geometry profile of the CAVEX®-wheel set is decisive for the long standing time and the high load capacity of the wheel sets. Due to the hollow flank profile, the material characteristics of the high quality bronze of the wheel and the case hardened worm can be fully exploited because flank pressures are significantly reduced and the lubrication of the teething is clearly improved under all operating



Worm gear milling machines



Worm gear grinders



conditions. An especially large tooth root density is achieved on the worm due to the hollow flank profile. Thus, the wheel sets are especially resistant against impact strains during small revolutions.

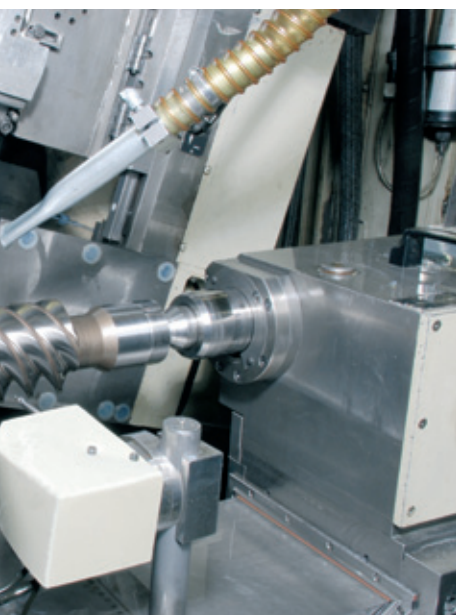
CAVEX®-wheel sets are designed for highest performances. We optimise the profile of the gear with state-of-the-art calculation tools. Because the reliability of the CAVEX®-wheel sets is high priority also under tough operating conditions. We examine this on every wheel set. After geometrical inspection of worm and wheel, the contact pattern is examined.

The production range of the CAVEX®-wheel sets includes:

- Centre distance 40 - 1.400 mm
- Transmissions 1 to 180
- Module 1 to 40
- Worm teeth count 1 to 12
- Increased accuracy
- Limited flank tolerance
- Finished sizes according to customer specifications
- Special versions

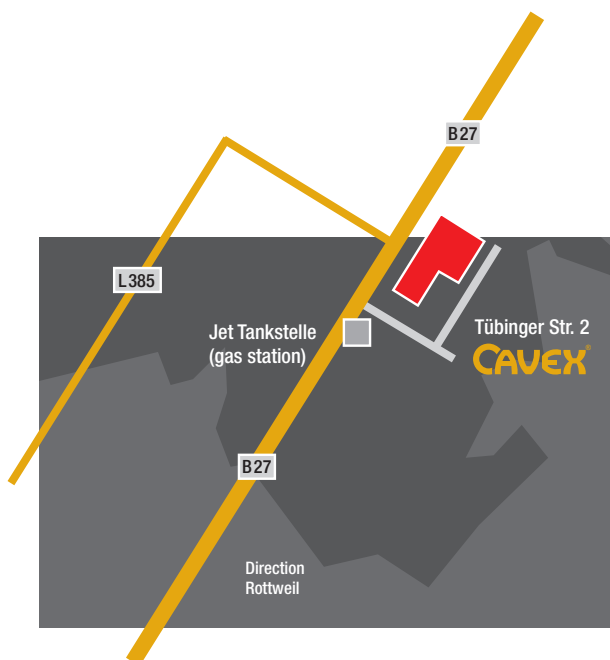
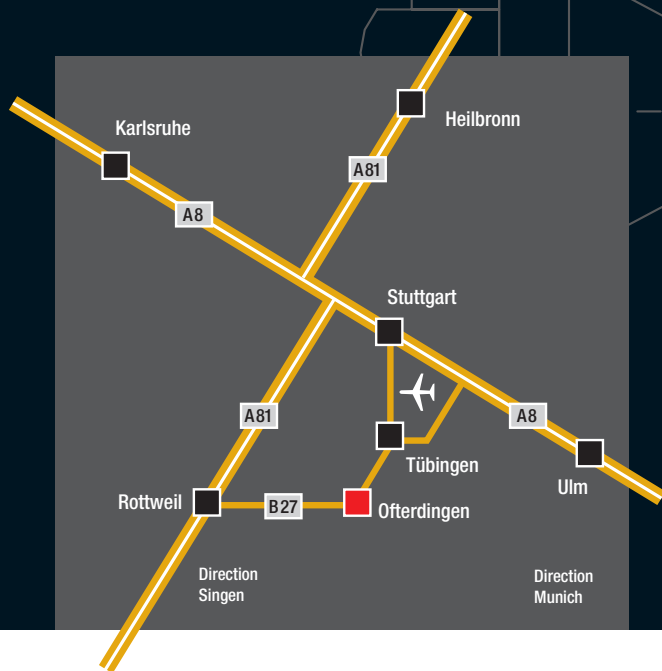
CAVEX®

German Drive Technology



Worm gear inspection

We are looking forward to your visit



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