

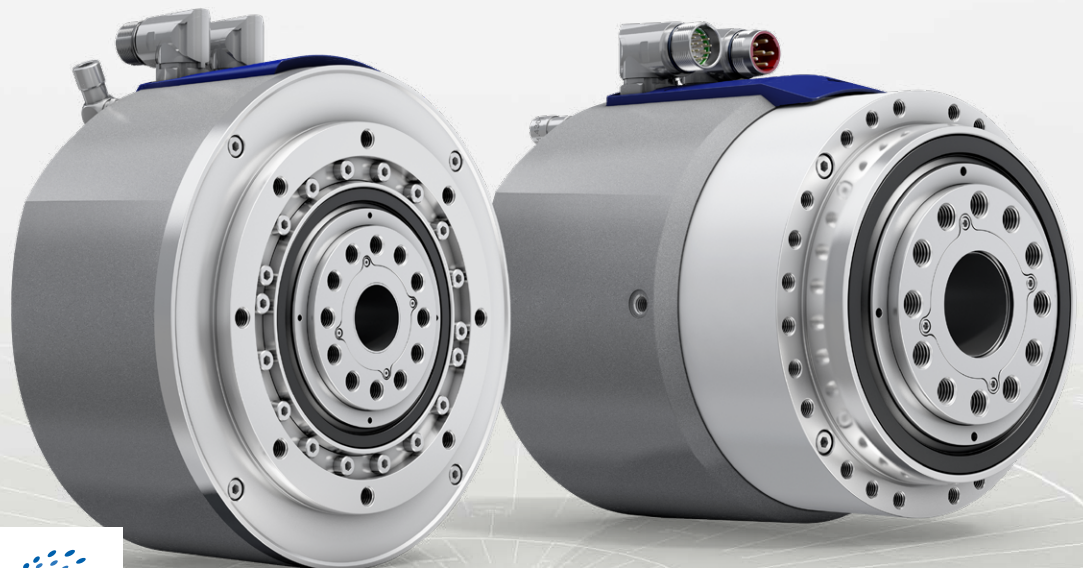


WITTENSTEIN

Galaxie®

Superior on principle

Very high torque
Very high torsional rigidity
Absolute zero backlash
Industry 4.0 Connectivity



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INNOVATIONSPREIS
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Nominee 2018
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GALAXIE®

SUPERIOR ON PRINCIPLE

$$F_1 = \sin(\theta) + NS \cdot \cos\theta$$

$$a(10 \text{ Zahn}) \cdot \frac{\pi}{10}$$

$$A=1$$

$$A=5$$

$$a(10 \text{ Zahn}) \cdot \frac{\pi}{10}$$

$$\omega = 2\pi$$

$$a(10 \text{ Zahn}) \cdot \frac{\pi}{10}$$

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11:19:49.07

$$F_1 = \sin(\theta) + NS \cdot \cos\theta$$

$$A=5.5$$

$$A=1$$

$$F_1 = \sin(\theta) + NS \cdot \cos\theta$$

Fundamentally new overall concept

When we developed the Galaxie®, we subjected drive concepts to a fundamental reassessment. The result: a brand new gearbox type. Its unique kinematics enable virtually full surface contact during power transmission. This means that the compact Galaxie® Drive Systems and gearboxes with hollow shaft achieve previously inconceivable performance data. These include extremely high torque density, torsional rigidity, smooth running, positioning accuracy and completely backlash-free operation.

From Linear to Surface Contact

The innovative core of the new Galaxie® Drive System is the almost full surface contact during power transmission. This gives a tooth contact surface which is 6 1/2 times larger compared to conventional involute teeth with typical linear contact. The kinematics are fundamentally new: the gearbox is the only one of its kind in the world to guide a large number of individual teeth along an internal ring gear. The tooth geometry corresponds to a logarithmic spiral which allows power to be transmitted by the multiple teeth in surface contact.

Next Technology Drive

The Galaxie® Drive System leads to a combination of specifications that were previously unattainable: the gearbox boasts zero backlash – even at the zero crossing – while retaining full stiffness. Since the teeth follow a logarithmic spiral, optimal synchronization accuracy is ensured. The system's performance features are all significantly better than those of traditional hollow-shaft drives with the same outer diameter.



A new dimension in power

The Galaxie® Drive System sets a new benchmark for extreme compactness and very high dynamic precision with alternating loads. It creates totally new productivity opportunities for high performance engineering. Engineers and designers now have the opportunity to make real developmental leaps.

Compared to similar sized hollow shaft drives, the Galaxie® Drive System offers the following advantages:

3 times higher nominal torque

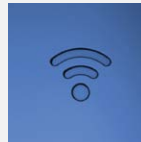
250 to 870 % better torsional rigidity

Exceptional repeatability:
4 arcsec

Up to 250 % higher maximum torque

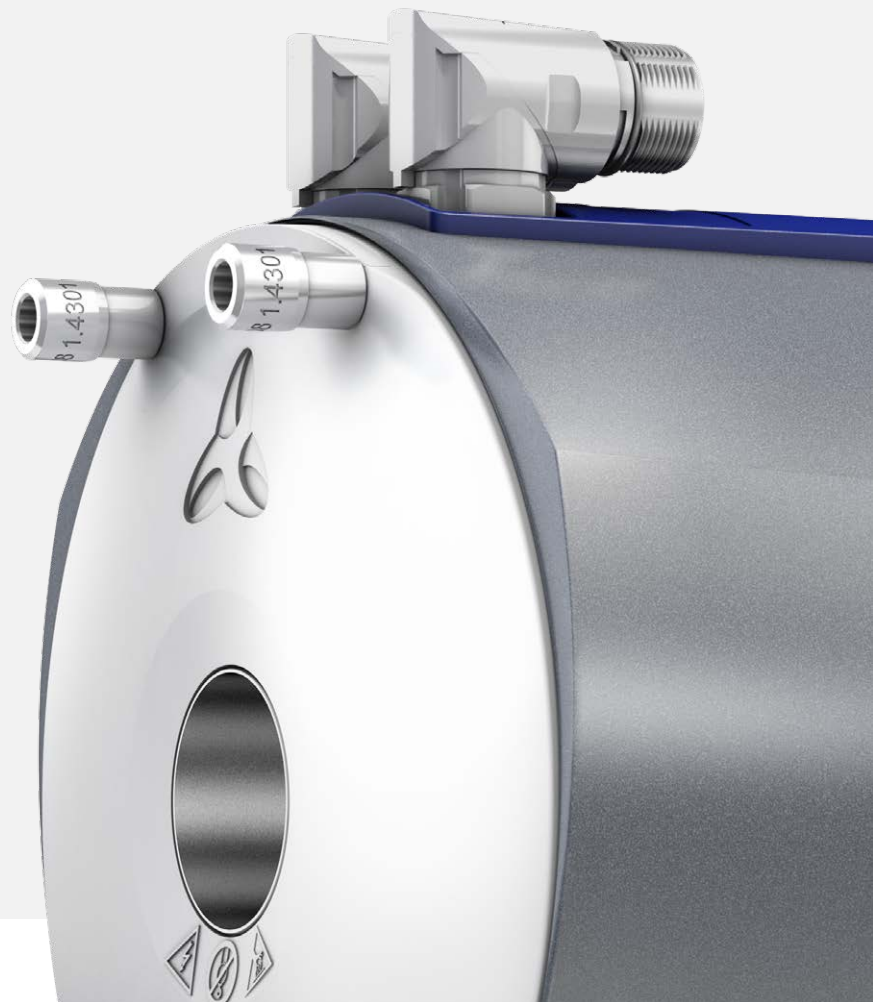
Up to 440 % higher overload capacity

Absolute zero backlash



Ready for Industry 4.0

Transmission of operating data throughout the drive lifecycle – regardless of the control system



Totally new opportunities for high performance engineering



„Hysteresis measurements during operation
due to extensive sensor technology”

STAMA Maschinenfabrik, Mill-Turn Center, B-Axis

„Highest manufacturing quality
because 10 % more dynamics”

Electroimpact, Automated Fiber Placement (AFP), Primary Rotary Axis

„40 % increase in productivity
due to low vibration”

Profiroll Technologies, Spline Rolling machine, Tool Axis

„50 % shorter cycle time
through higher rigidity”

Dreiling Maschinenbau, Rotary Table

„Zero backlash unchanged
after 5 years of use”

Profiroll Technologies, Spline Rolling machine, Tool Axis

„Ultra-precise positioning:
Repeatability of 4 arcsec”

Prototype, Mill-Turn Center

An ingenious concept in 4 variants and 5 sizes



Galaxie® D

Hollow-shaft compact drive, axially integrated permanently excited synchronous motor with standard sensor systems

Galaxie® DF

Ultra-flat hollow-shaft compact drive, radially integrated permanently excited synchronous motor with standard sensor systems

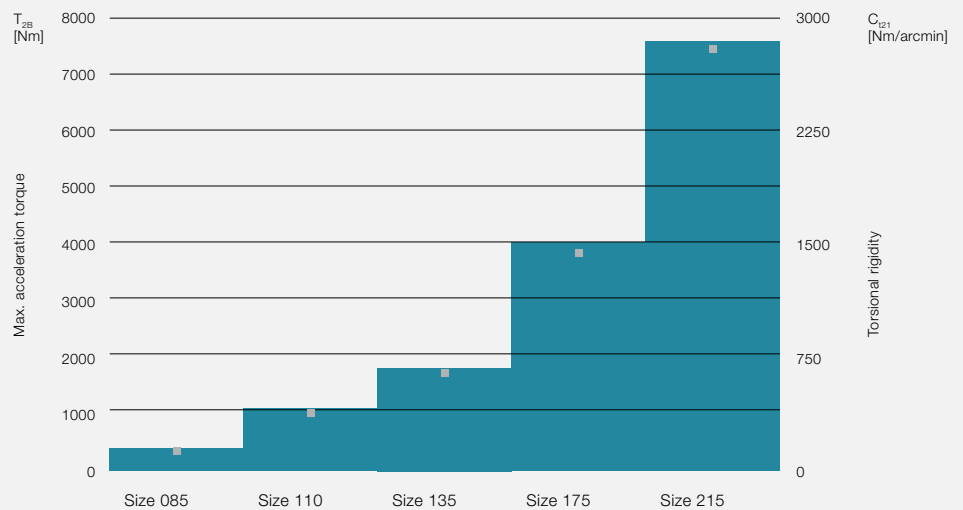
Galaxie® G

Backlash-free gearbox with optional coaxial planetary input stage and adapter plate for mounting on standard industrial servo motors

Galaxie® GH

Galaxie® right-angle gearbox with hypoid input stage and adapter plate for mounting on standard industrial servo motors

Max. acceleration torque and torsional rigidity of different Galaxie® sizes





WITTENSTEIN SE · Walter-Wittenstein-Straße 1 · 97999 Igersheim · Phone +49 7931 493-18860 · sales-galaxie@wittenstein.de

WITTENSTEIN – one with the future

www.wittenstein-galaxie.com