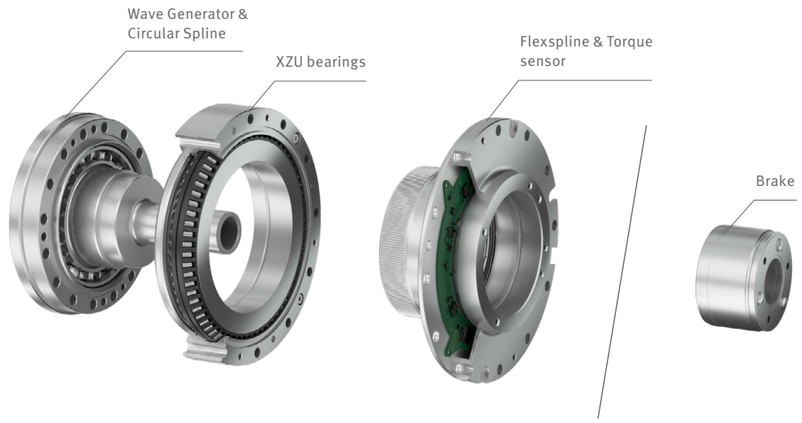
SCHAEFFLER

We pioneer motion

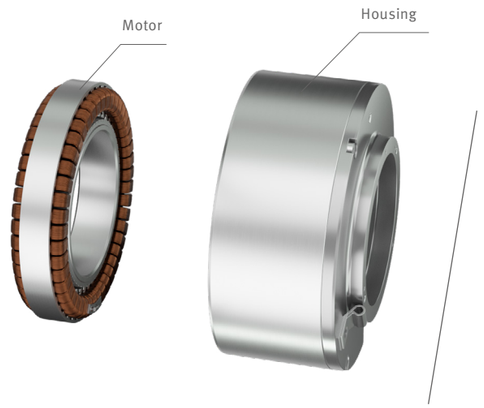
Modular Precision Drive System

BASIC – CLASSIC – PREMIUM – PREMIUM+

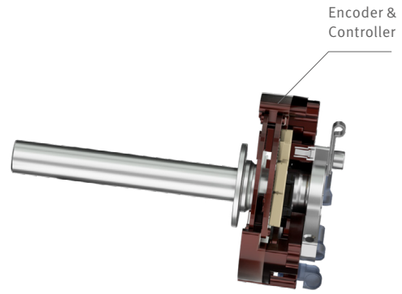
Sensorized precision strain wave gear (RT1-T)



Drive unit



Electronic evaluation system



Our modular precision drive lets you get straight down to work

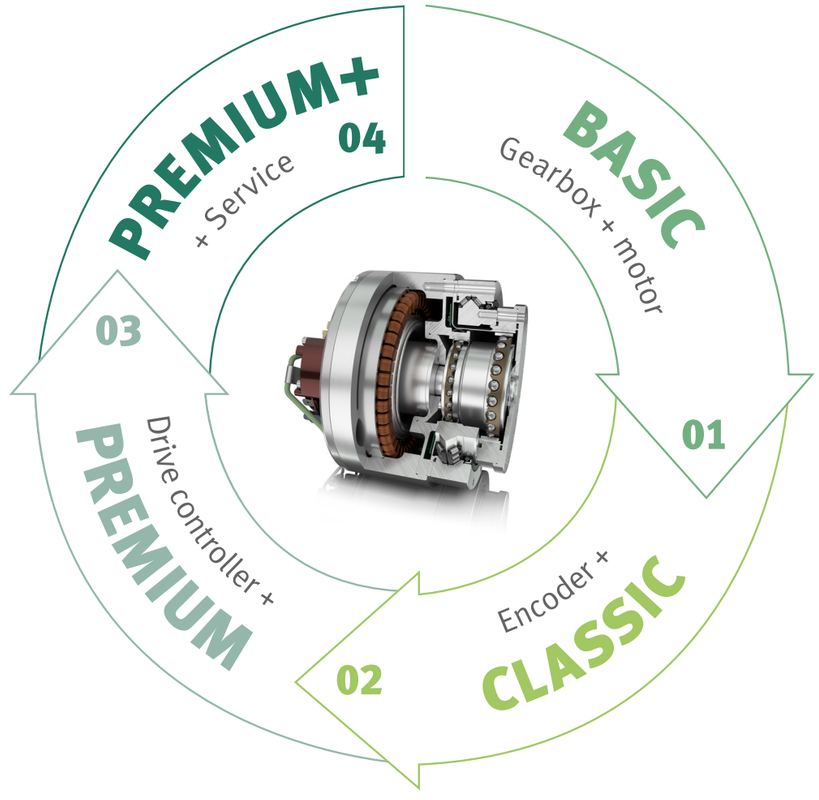
Individual, plug-and-play-ready servo drive and positioning systems

Precision drives for industrial automation are usually configured from catalog products such as gearboxes, motors, encoders, brakes, and controllers for example. Integration into a suitable housing or machine calls for a considerable amount of customized design work, with expensive in-house development often presenting the only available option.

We can offer you an alternative to this in the form of our modular precision drives

Aside from catalog solutions, this gives you the option to design and configure your drives in a flexible manner without any design, development, and validation effort on your part – a task that we take on and which culminates in us supplying you with an individually configured drive system. Your design effort is confined to the design of the adjacent geometry and to the framework data connected with the drive or application.

The key components of this system are our two High Torque RT1 and Standard Torque RT2 precision strain wave gear series, which are available in a wide variety of designs. Frameless motors that have been tailored perfectly to your application and feature a high power density serve as the drive. Options such as a brake, Hall sensors, encoders, temperature sensors and controller largely free to select as required. We offer an integrated torque sensor for the RT1 precision strain wave gears, which is capable of handling even the most demanding control tasks in automation.



BASIC

The modular precision drives are available as basic versions with the High Torque RT1 or Standard Torque RT2 precision strain wave gears, as well as a motor, matched to the transmission performance. Optional extras include a Hall sensor, temperature sensor, and enabled brake in a housing. This enables us to realize drives which are matched to both your needs and the respective application.

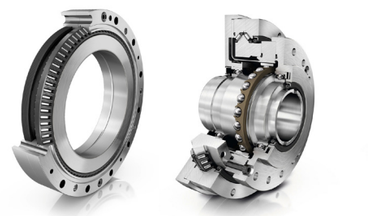
Precision strain wave gears RT1 and RT2
Precision strain wave gears of the High Torque RT1 and Standard Torque RT2 series have comparable sizes. On average, the High Torque RT1 variants offer 30% more torque and a 40% longer life than the Standard Torque RT2 variants. The Standard Torque RT2 series features a particularly extensive range of variants.

Basic Unit Hollow Shaft (BHS)

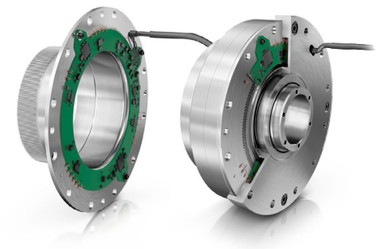
	Sizes	Transmission ratios	Maximum torque	Variant	Version
Standard Torque RT2	14, 17, 20, 25, 32	50, 80, 100, 120, 160	18 to 372 Nm	HAT type	with hollow shaft to 36 mm
High Torque RT1	14, 17, 20, 25, 32	50, 80, 100, 120, 160	36 to 484 Nm	HAT type	with hollow shaft 14 to 36 mm
High Torque RT1-T with integrated torque sensor	14, 17, 25, 32	100, 160	36 to 484 Nm	HAT type	with hollow shaft 14 to 36 mm

▷ **For further information on the technical data, please refer to Schaeffler publication TPI 275**

Tilt-resistant output bearing arrangement
We also offer our precision strain wave gears exclusively with the tilt-resistant double row angular contact ball bearing XZU, which outperforms crossed roller bearings of the same size by around 30% in terms of tilting rigidity.



Integrated torque sensor
Strain wave gear RT1-T with Sensotect thin-layer technology optionally available with an integrated torque sensor. Unlike commercially available solutions, our torque sensor has absolutely no adverse effect on system rigidity and measures accurately, with drift stability, and with adjustments for temperature. Application examples of this sensor-based drive include force and collision defection in force-controlled processes (grinding, polishing, force feedback, teaching, etc.).



	Structure	Resolution	Accuracy	Characteristics
Sensor with Sensotect thin-layer technology	Strain-sensitive metal coating with thickness in the submicro-meter range	16 Bit	Sensor element: ‹0.5% (full scale) System accuracy Sensor + gearbox: ‹1.5% (full scale)	• No use of adhesives and transfer polymers • No aging effects,very long life • High degree of sensitivity with minimal deviation in hysteresis and linearity • Minimal temperature drift, very high measurement dynamics

Drive motors
Machines with a high power density serve as the drive motor, which makes optimum use of the design envelope, reduces the system weight, and keeps the mass moment of inertia to a minimum. Our motors use a supply voltage of 48 V.

	Voltage	Options
Frameless motor	48 Volt	Hall sensors Temperature sensor

CLASSIC

The CLASSIC configuration level delivers a ready-to-fit drive with absolute encoder. There are two solutions to choose from: Single-sided for an encoder at the gear input or double-sided for an encoder at the gear input and output.

	Mounting position	Interface	Resolution	Accuracy	Voltage supply
Single-sided	Motor shaft at gear input	EnDat 2.2	19 bit	± 90”	5 V
Double-sided	Motor shaft at gear input; gear output	EnDat 2.2	19 bit (motor) and 20 bit (output)	± 120” (motor) / ± 40” (gear output)	5 V

PREMIUM

The premium package not only includes an integrated drive controller but also comes with a drive that is already preconfigured with the appropriate parameter set and can be put into operation as soon as the power supply and controller are connected.

Communi-cation interface	Variant	Brake output	Max. conti-nuous output power	Continuous phase current	Max. phase current RMS	Voltage supply	Max. DC input
EtherCAT® FSoE (Fail Safe over EtherCAT®) CoE (CANopen over EtherCAT®)	C7	1A @48V, peak 4A	250 W	8 arms	24 arms	24-48 V	18 A
	C9	1A @48V, peak 4A	630 W	20 arms	60 arms	24-48 V	45 A

PREMIUM+

With PREMIUM+ we offer you the option of using one of our digital services – where necessary in conjunction with additional sensors such as vibration transducers – allowing questions about the current and future condition of the drivetrain or process to be answered on the basis of operating data.

Our engineering expertise in your drive solution

As a global and automotive supplier with around 200 locations in over 50 countries and an extensive sales organization, our customers have been benefiting from our expertise for 75 years. We manage the CAE-aided design process in all levels of detail from the component through to the complete drive system. We manufacture to a high level of precision using an extensive range of state-of-the-art production technology. Set in many applications our mechatronic solutions with rotary and linear electric motors, direct drives and sensors set the standards.

We follow the highest quality standards in our development, validation, and production activities and, with our modular precision drives, we now offer you the option of focusing on your core areas of expertise and reducing your development and production outlay to a minimum.

Have we aroused your interest?

Please feel free to contact one of our engineering offices or national companies to obtain further advance information on the Schaeffler Modular Precision Drive System.
Contact: robotics@schaeffler.com

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