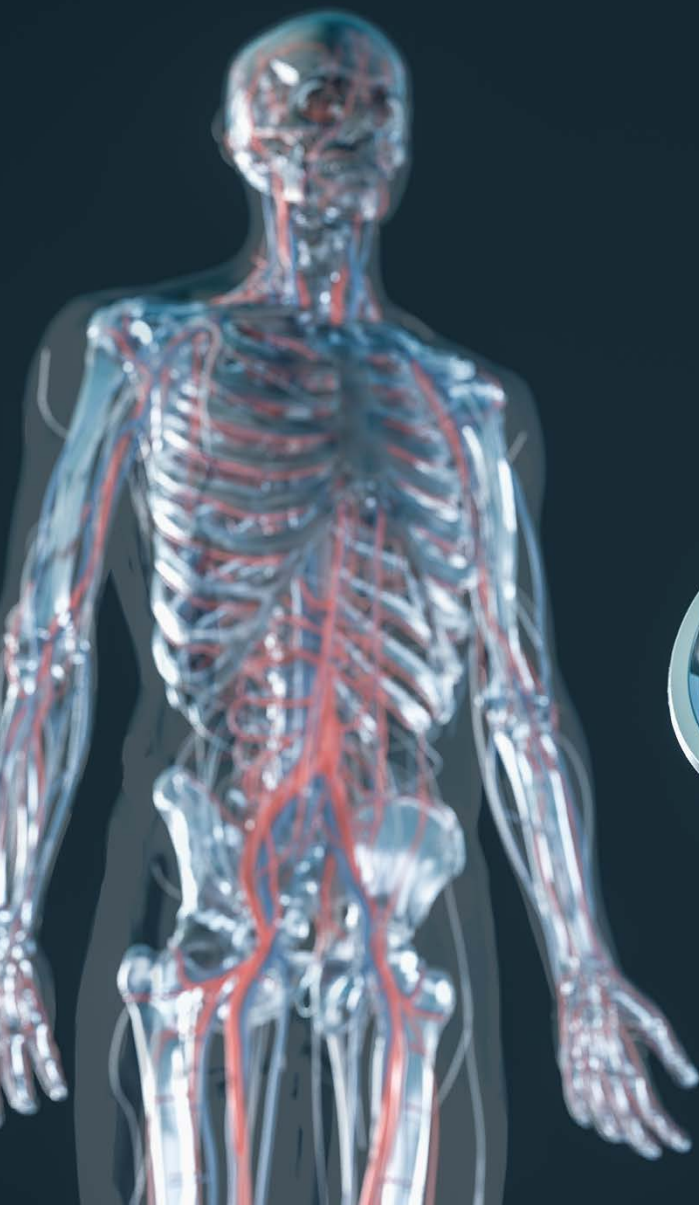
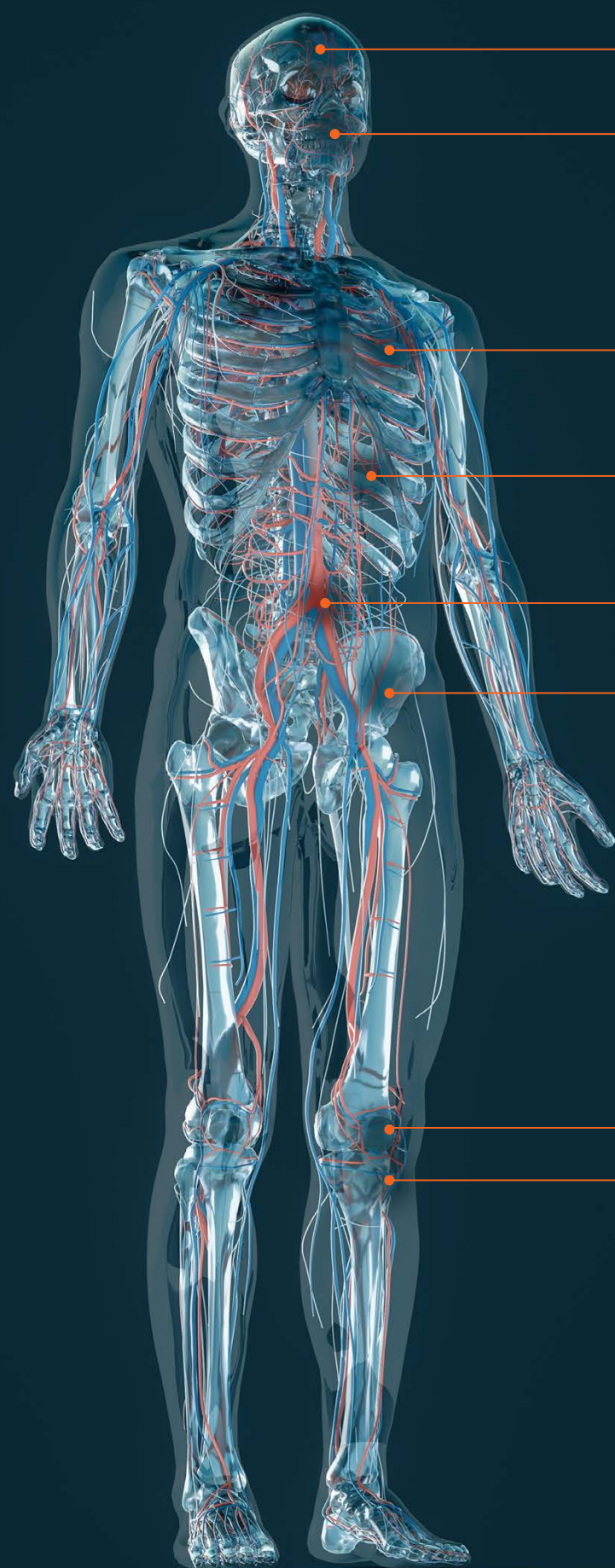




GRW
HEALTHCARE
BALL
BEARINGS





Surgical Power Tools
Page 6

Dental Technology
Page 12

Cardiovascular
Page 4 / 5

Life Support
Page 9

Medical Robotics
Page 7

Surgical Power Tools
Page 6

Orthopedics & Prosthetics
Page 10

Diagnostics & Laboratory
Page 8

Radiotherapy
Page 11

Medical Drive Systems
Page 13

CARDIOVASCULAR

Life-saving reliability under extreme conditions

Cardiovascular devices place the highest demands on precision components. Bearings must operate reliably at very high speeds in blood-contacting environments while minimizing heat generation, vibration and wear. GRW develops customized bearing solutions with outstanding running accuracy, corrosion-resistant materials and optimized lubrication concepts for long service life and maximum patient safety.

Typical applications

- Cardiac assist devices (LVAD, RVAD, PCI)
- Lymphatic pump systems

Challenges

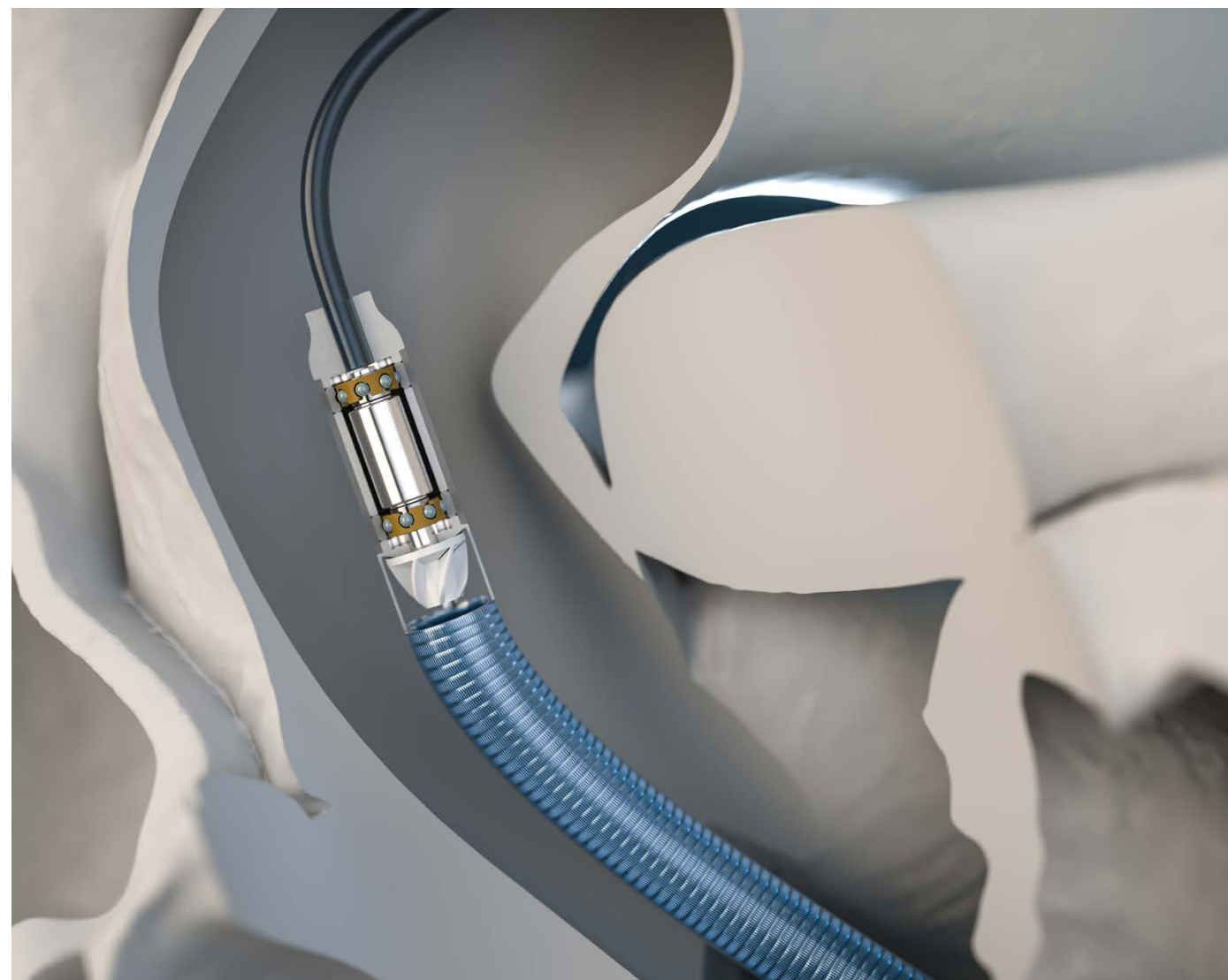
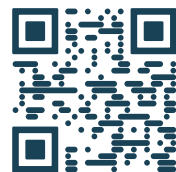
- Maximum product safety
- Minimal heat generation during operation
- Biocompatibility of materials
- Extremely corrosive environmental conditions
- Miniaturization and integration of assemblies

GRW solutions

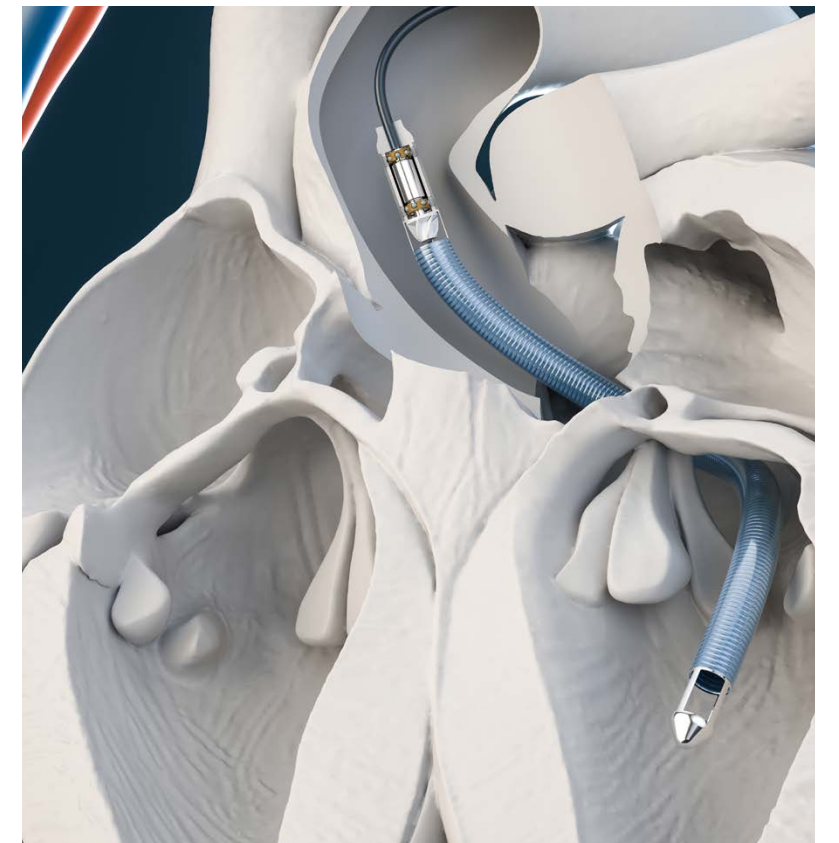
- Corrosion-resistant materials (SV30)
- Biocompatible materials
- Customized designs
- Miniaturization (Q21nano)
- Reliable quality and traceability

Q21  **NANO™**

More information
about Q21nano



Blood pump to support heart function →



← GRW ball bearings used in a blood pump

← Human heart

Q21  **NANO™**

true to scale



SURGICAL POWER TOOLS

Precision for demanding surgical procedures

Surgical power tools are used in numerous medical disciplines—from orthopedics and traumatology to highly dynamic applications in neurosurgery, spinal surgery, and ENT surgery. Whether bone drills, saws, or high-speed handpieces: they must operate with consistent precision and reliability even under high rotational speeds, dynamic loads, and repeated sterilization cycles. GRW develops robust miniature ball bearings that ensure maximum concentricity, low vibration, and a long service life even under the most demanding surgical conditions.

Typical applications

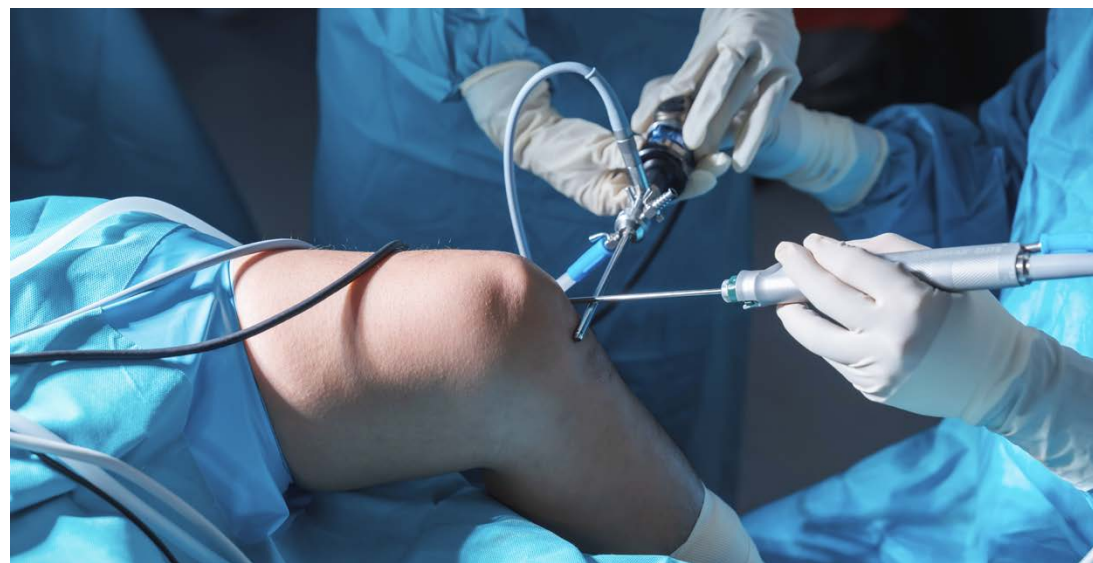
- Surgical handpieces
- Bone drills and saws
- Neurosurgery
- Spine surgery
- ENT surgery
- Orthopedics & Traumatology

Challenges

- High speeds and dynamic load cycles
- High radial and axial loads during operation
- Precise, low-vibration operation for maximum cutting and drilling accuracy
- Resistance to repeated sterilization and cleaning cycles
- Long service life despite high mechanical stress
- Compact design with high power density
- High reliability for safety-critical applications

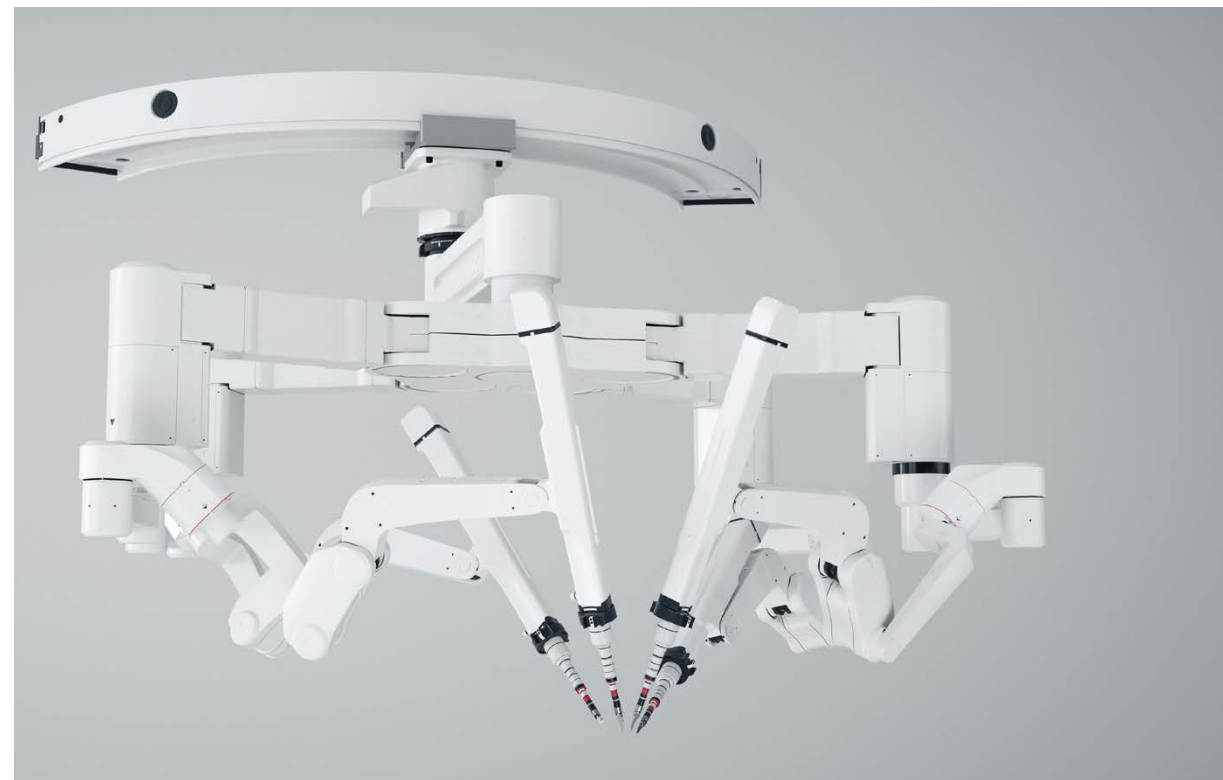
GRW solutions

- Low-friction designs and materials
- Customized bearing designs
- Biocompatible materials
- Corrosion-resistant materials (SV30)
- Medically approved lubricants
- Sterilization-resistant bearing solutions



MEDICAL ROBOTICS

Precision in every movement



↑ Robot-assisted surgery system

Robot-assisted surgery demands absolute positioning accuracy, smooth motion and long-term reliability. GRW supports manufacturers with customized bearing solutions offering minimal runout, low torque and optimized designs for compact, lightweight robotic systems where every micron matters.

Typical applications

- Microsurgery
- Endoscopic instruments
- Knee and hip surgery

Challenges

- Maximum positioning accuracy and repeatability
- Dynamic motion sequences in a compact design
- Low friction torque for precise control
- High speeds with minimal vibration
- Long service life despite frequent load cycles
- Reliability throughout the entire product life cycle

GRW solutions

- Maximum concentricity accuracy
- Low friction torque
- Custom bearing designs
- High rotational speeds
- Maximum reliability

← Surgical power tools for bone cutting and small surgical handpieces for ENT and spine surgery



DIAGNOSTICS & LABORATORY

Reliable performance for accurate results

Diagnostic and laboratory equipment relies on highly precise motion to ensure repeatable and accurate measurements. GRW bearings provide exceptionally smooth running characteristics, low noise and excellent durability, supporting reliable operation in automated analyzers, centrifuges and laboratory systems.

Typical applications

- Centrifuges
- Laboratory automation
- Packaging and handling machines

Challenges

- High cycle rates with consistently precise motion
- Precise dosing and positioning
- Reliable continuous operation
- Low maintenance requirements
- Consistent performance over long operating periods

GRW solutions

- High process reliability
- Precision at high cycle rates
- Low-maintenance solutions
- Optimized sealing (Viton) and lubrication solutions
- Corrosion-resistant materials (SV30)



← Ventilation system for intensive care

Automated laboratory analysis system ↓



LIFE SUPPORT

Reliability when every second counts

Ventilators, infusion systems and other life-support devices must operate continuously and safely over long periods. GRW develops customized bearing solutions with low operating torque, high durability and validated manufacturing processes, ensuring dependable performance in critical healthcare applications.

Typical applications

- Ventilation systems
- Infusion pumps
- Dialysis systems
- Medication pumps

Challenges

- Smooth and highly precise feeding motions
- Low starting torque for precise dosing
- Quiet operation in patient-care environments
- High reliability in safety-critical applications

GRW solutions

- Customized bearing designs
- Highest running accuracy
- Low outgassing materials
- Low friction and low noise

ORTHOPEDICS & PROSTHETICS

Precise motion sequences with maximum reliability and a long service life

Modern prosthetics and orthopedic systems help patients regain mobility and quality of life. Whether microprocessor-controlled knee joints, bionic hand prostheses, or smart orthoses, compact and high-precision bearing solutions play a key role in enabling natural movement patterns, high reliability, and a long service life for these systems.

Typical applications

- Microprocessor-controlled knee joints
- Active and passive ankle joints
- Prosthetic joint systems
- Electric hand prostheses
- Exoprostheses

Challenges

- High dynamic load capacity over millions of load cycles
- High load-carrying capacity within minimal installation space
- Precise, backlash-free joint movements
- Low friction torque for natural motion patterns
- High reliability under varying environmental conditions
- Long service life with minimal maintenance

GRW solutions

- High-precision miniature ball bearings for compact joint systems
- High load-carrying capacity with small dimensions
- Low friction torque for efficient motion
- Custom bearing solutions for biomechanical applications
- Long service life and wear resistance
- Corrosion resistant materials (SV30)
- Reliable quality and traceability



Microprocessor-controlled knee joints



Radiation therapy system



AI-generated image

RADIO-THERAPY

Precision that saves lives

Precise radiation therapy systems enable the targeted treatment of tumors while providing maximum protection for surrounding tissue. Movable collimators, positioning axes, and gantry systems require high-precision bearing solutions that ensure the highest accuracy and reliability even after millions of motion cycles.

Typical applications

- Linear accelerators (LINAC)
- Multi-leaf collimators (MLC)
- Gantry systems
- Patient positioning systems
- Precision motion axes

Challenges

- Micrometer-precise positioning of collimator leaves
- Maximum repeatability over millions of motion cycles
- Backlash-free bearing arrangements for precise beam guidance
- Low-vibration and low-noise operation
- High reliability in 24/7 hospital operations
- Compact design for limited installation space

GRW solutions

- Highest concentricity and positioning accuracy
- Backlash-free precision bearings
- Radiation-resistant materials
- Low friction torque for highly dynamic movements
- Custom bearing solutions for positioning systems
- Long service life and process reliability
- Reliable quality and traceability



DENTAL TECHNOLOGY

Maximum speed. Minimum friction.

Dental handpieces require exceptional rotational accuracy at speeds of up to 500,000 rpm while withstanding repeated sterilization cycles and aggressive cleaning processes. GRW bearings combine ultra-high precision, low friction and excellent corrosion resistance to deliver smooth operation, a long service life and consistent clinical performance.

Typical applications

- Dental turbines
- Contra-angle handpieces
- Implantology handpieces
- Endodontics

Challenges

- Extremely high rotational speeds of up to 500,000 rpm
- Minimal noise and vibration
- Resistance to sterilization cycles and thermal disinfection
- Corrosion resistance to cleaning and disinfecting agents
- Long service life despite varying loads and harsh conditions

GRW solutions

- Customized and standard designs
- Low friction bearing designs (Q21irac)
- Noise optimization (Q21speed)
- Corrosion-resistant materials (SV30)
- Sterilization-resistant bearing solutions (XTRAlon, XTRApæk)
- Dry running solutions (XTRAlon)
- PFAS-free solution (XTRATon)

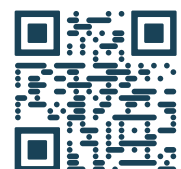
Q21 ⚡ IRAC®

Q21 ⚡ SPEED®

XTRA ⚡ LON®

XTRA ⚡ PAEK®

XTRA ⚡ TON™



More information
about our new products



← Dental low- and high-speed handpieces



AI-generated image

Autoclavable motors
for Dental and
Medical use →

Dental contra-angle high-speed handpiece ↓



MEDICAL DRIVE SYSTEMS

Maximum dynamics and precision for efficient drive systems

Medical drive systems are at the heart of numerous diagnostic, therapeutic, and laboratory devices. Whether it's highly dynamic BLDC motors, precise positioning systems, or compact actuators, GRW's miniature ball bearings ensure smooth operation, maximum precision, and reliable performance. With custom-tailored bearing solutions, GRW supports the development of high-performance, compact, and durable drive systems for demanding medical technology applications.

Typical applications

- BLDC motors
- Servo drives
- Positioning systems
- Pump drives
- Precision actuators

Challenges

- Maximum dynamics and acceleration
- Low friction losses
- High rotational speeds with a compact design
- Precise rotational movements
- Energy-efficient operation

GRW solutions

- Optimized for high-performance motors
- High rotational speeds
- Low friction torque
- Compact sizes
- Custom bearing solutions
- Autoclavable solutions

GRW TESTING AND ANALYSIS CAPABILITIES





Gebr. Reinfurt GmbH & Co. KG
Niederhoferstraße 105
97222 Rimpf
Germany
Phone: +49 (0) 9365 819-0

GRW High-Precision Bearings LP
1330 Blue Hills Avenue
Bloomfield, Connecticut 06002
USA
Phone: +1 (860) 243-97 04

Kaman Specialty Bearings Pte. Ltd.
C/O SPACES
111 Somerset Road
Level 3, TripleOne Somerset
Singapore 238164
Phone: +65 9179 7452

Digital version



info@grw.de
www.grw.de