

NACHI
NACHI EUROPE GmbH
**OUR SYNERGY
YOUR PERFORMANCE**

COMPANY PROFILE



BEARINGS



TOOLS



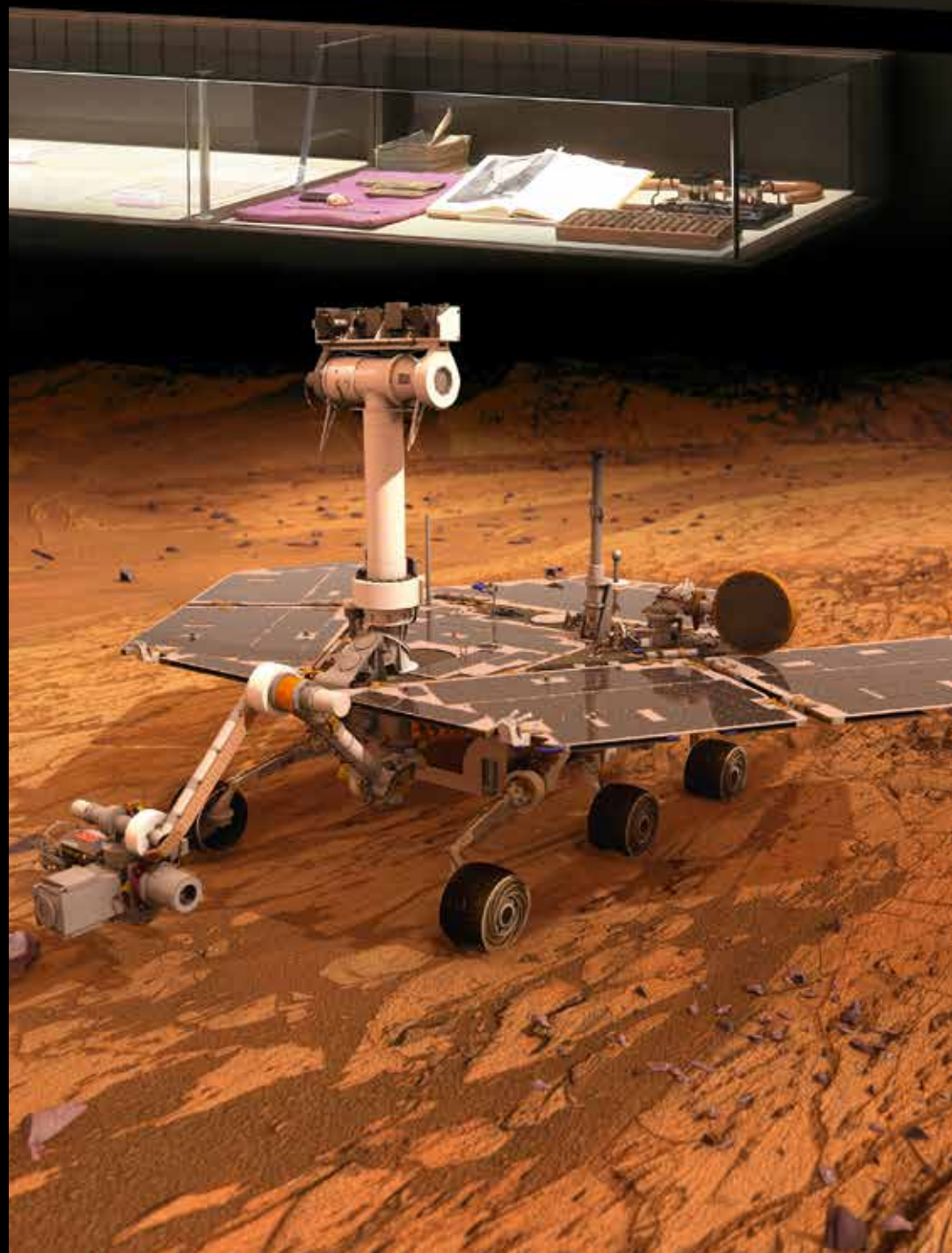
ROBOTICS



HYDRAULICS

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Traditionally focused on trend-setting innovations

Since over 50 years the European branch of the Japanese technology-trust NACHI is established. Employed in today's company NACHI Europe GmbH, located in Germany (Krefeld), over 80 mechanical engineers, technicians, businessmen and salesmen provide customer care for prospective buyers and customers mainly in Germany but also in all other European countries.

The worldwide acting trust NACHI-FUJIKOSHI has achieved a leading market position with a number of outstanding advances. Altogether the company has more than 50 production and sales locations with more than 7000 employees.

**NO.1
IN THE
WORLD**

**TOP
QUALITY
LEADER**

The product range covers cutting tools, rolling bearings, hydraulic components, industrial robots and machine tools. The Japanese manufacturer is supplier for the industrial sectors automotive, mechanical engineering, automation, railway rolling stock and industrial trucks, material exploration and mining, energy production as well as aerospace.

Concerning the strategy given by the founder in the year of 1928 the Japanese specialist in mechanical engineering integrates all the production steps in its plants. This relates to the crude steel production, the forming of blanks, the machining, the heat treatment, the coating as well as to the assembly and mounting of complete components and machines. Therefore the manufacturer can test and qualify the manufactured products, e.g. rolling bearings, hydraulic components and cutting tools, in its own plants. Thus the company can assure the highest quality and reliability for its components and machines.

Today's strategy of the integrated technology trust NACHI-FUJIKOSHI focusses on achieving a better global market presence, on gaining access to new markets and branches through innovations and on convincing customers with reliable and skilled service.

The company creates the framework conditions by targeted promotion, apprenticeship and in-service training of its employees. The results are productive and creative peak performances. Moreover, the mutual exchange of information and experiences among the company's various divisions care for effective synergies. This gives rise to trendsetting innovations.

Based on them the integrated technology trust NACHI-FUJIKOSHI plans to expand its worldwide market presence and to gain a leading market position in a great variety of industrial sectors and countries.

50 YEARS
NACHI
NACHI EUROPE GmbH
**OUR SYNERGY
YOUR PERFORMANCE**



50 YEARS

NACHI

NACHI EUROPE GmbH

OUR SYNERGY
YOUR PERFORMANCE



BEARINGS



TOOLS



ROBOTICS



HYDRAULICS

Synergy and Innovation

In Europe the company NACHI EUROPE GmbH in the German town of Krefeld concentrates its sales and service business on rolling bearings, cutting tools, hydraulic components and industrial robots. The specialists support users in the automotive industry and in the branches machine tool, automation, heavy mechanical engineering and construction vehicles.

Strong rolling bearings for use in rough conditions

Thus NACHI presents itself as a premium supplier for high-quality rolling bearings especially for applications in power-train, in construction machinery, in cranes and in electric drives for automation and robotics.

Already in the year of 1941 the Japanese company – as the first manufacturer in the world –

introduced spherical roller bearings for applications on oil rigs. Today NACHI manufactures a range of spherical roller bearings which have substantially higher load rates at similar size compared to competitors' devices. Particularly strong types of NACHI's spherical roller bearings operate very reliably even in conditions with severe vibration. Therefore they are preferred in crane and construction machinery applications and in mining machines.



**No. 1
IN THE
WORLD**

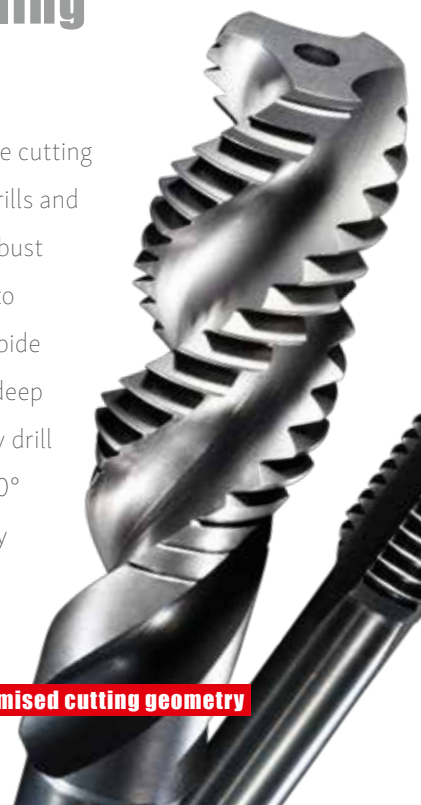
The highest load ratings in the world

Universal, profitable Drilling and Tapping Tools

NACHI is the all around competent partner for innovative cutting tools. The company focuses on reliable and profitable drills and taps. The production program ranges from universal, robust HSS-drills for craftsmanship and general industrial use to high-quality specific tools made of carbide and with carbide inserts. The latter include e. g. especially long drills for deep hole drilling up to 12 x D. These drills are used to reliably drill oil holes in crankshafts. This also includes drills with 180° tip angle and double guiding chamfers which drill exactly centring and aligned holes especially on uneven and inclined surfaces and in crossing holes.

**TOP
QUALITY
LEADER**

Optimised cutting geometry



For Your Success

Energy-Efficient Hydraulic Equipment

For mobile and stationary hydraulic systems, NACHI manufactures high-grade hydraulic equipment. They convince with their compact design and highest energy-efficiency.

For example, NACHI is the worldwide market leader in the field of mobile hydraulics due to its complete range of components for applications in compact excavators. NACHI supplies the full range of components, carefully matched, which are necessary for compact excavators. This includes controllable piston pumps with separable flow, strong rotary centre joints, high-torque slew drives, sophisticated track drives and load-sensitive valve units. To operate cutting and forming machine tools NACHI has developed highly energy-efficient hydraulic units with frequency-controlled motors. With their very compact design, they are useful to retrofit established machines. The hydraulic units convince with highest reliability and long service life.



**TOP
ECO
LEADER**

Energy-efficient. Save up to 69% electricity

NACHI's up-to-date taps convince with outstanding features, too. With their optimised tips and cutting edges, sophisticated coatings and their particularly smooth flute surface they cut considerably more reliable and profitable. These tools are suitable for a wide range of applications, e.g. when machining low carbon steel and frequently changing materials and work-pieces. These taps enable job-shops and manufacturers in metal and steel construction as well as semi-industrial craftsman to work more flexible and profitable.



Robots Automate and Assemble

For the automation of machine tool and assembly lines in the electric equipment and electronics industry NACHI, supplies a wide range of industrial robots including six-axis-robots and SCARA-type robots. To achieve the highest productivity NACHI aims at high operational speed. NACHI's industrial robots are known as the fastest of the compact class with payloads up to 12kg.

For applications in machine tool these robots convince with their compact and slim design avoiding interference. Moreover, they are sealed against fluids, dust and chips and their outer shell is resistant against oil and cooling lubricants.

In assembly lines and in pick-and-place applications manufacturer of electric appliance and electronic devices gain from the minimised footprint and the upside-down concept of NACHI's new SCARA-type robots. Due to the innovative design, the axes of these robots are slim from the first axis to the gripper. Thus the robots are easily able to reach very closely positioned points to place and assemble small components. Due to their special kinematics, the axes reach a significantly larger working envelope.



**No. 1
WORLD'S
FASTEST**

**World's fastest
compact robot**



**OUR SYNERGY
YOUR PERFORMANCE**

NACHI Chronicle



1938

Higashi-Toyama Steel Mill started operation

The steel mill was established as an integrated manufacturing system covering materials through to final production.



1958

Beginning of production of hydraulic equipment

Furthermore, in the period of the 1950's and 1960's NACHI-FUJIKOSHI attained the position of a totally machinery manufacturer.



1979

NACHI presented an electrically driven welding robot

With this invention, NACHI was said to be a pioneer in automation.



1928

Kohki Imura founded NACHI-FUJIKOSHI

The founder's intention was to become a domestic manufacturer of cutting tools and machine tools in the trend towards industrial modernisation.



1943

NACHI manufactured its first vane pump

During the following years NACHI achieved a leading position in the hydraulics market.



1967

NACHI-FUJIKOSHI (Europe) was founded

Based in Düsseldorf the subsidiary had 5 employees and an office area of 160m². A European warehouse was established to have NACHI's products available on stock.

NACHI MILESTONES

NACHI began to manufacture hacksaw blades

The NACHI hacksaw blades were chosen as a superior example of Japanese manufacturing technology and were personally inspected by the Emperor Showa.

1929



NACHI developed fir-tree type broaches

Broaching is one of NACHI's core skills. In the field of helical broaches, NACHI holds up to 55% of the world market. In Japan NACHI has established the world's largest production line for broaches.

1953



NACHI-FUJIKOSHI (Europe) expanded

In 1973 NACHI-FUJIKOSHI (Europe) moved to a much larger office together with NACHI (Deutschland) GmbH, the later company NACHI Germany.

1973



NACHI started the production of bearings

Machine Tools Dept. intended to supply own company plants with internally manufactured components.

1939



NACHI developed roller bearings for the Bullet Train "Shinkansen"

Since the 1960's NACHI-FUJIKOSHI has aimed to become a leading manufacturer of mechatronic systems based on technical innovation and internationalisation.

1963



NACHI-FUJIKOSHI (Europe) moved to Neuss

A much larger warehouse with a total space of 3755m² is established to have rolling bearings and cutting tools on stock to ensure fast delivery on short notice.

1982





2003

NACHI began producing roller bearings in Czech

NACHI CZECH S.R.O. was founded in Louny, Czech. A Czech branch of NACHI Europe GmbH was founded in Kollin, Czech, in 2004.



2005

NACHI UK changed to NACHI Europe GmbH

The Birmingham based company is focusing on the sales of robots, hydraulics and cuttings tools, mainly within aerospace, the construction machine and automotive markets.



2015

NACHI launched 3-Flute drills

Aqua Drill EX series is expanded with 3-flute drills for highly accurate hole drilling even on uneven surfaces.



1990

NACHI launched its handling robots

As of 1993 NACHI-FUJIKOSHI has been steadily promoting the NACHI business in keeping with globalisation and changes in the industrial structure.



2005

NACHI Europe GmbH moved to its current location

The new building has a total space of 3000m². The divisions hydraulics and robots are mingled under one roof. All together NACHI Europe GmbH now has 50 employees.



2011

NACHI Europe GmbH started Turkey branch

NACHI Turkey branch is focused to expand sales of NACHI robots with the vision of Industry 4.0, simultaneously working on promoting NACHI's highly efficient cutting tools.

50 YEARS NACHI EUROPE

NACHI Europe GmbH was established

To express the meaning of the subsidiary for the whole European market the company name was changed.

1999



The Czech branch of NACHI Europe GmbH moved to Prague

NACHI aims for long-term growth with new markets, business areas and management structures in today's era of fast changes.

2009



NACHI presented the world's fastest compact robot MZ07

Another time NACHI proves to be one of the worldwide leading manufacturers of high-tech mechatronics producing all the necessary components in its own factories.

2013



NACHI's rolling bearings conquered space

In March 2004, the NASA / JPL Mars Rover safely landed on Mars. The rover's strain wave gears were equipped with NACHI-FUJIKOSHI's ultra-thin bearings.

2004



NACHI presented major improvements for cutting tools

A transparent conductive oxide coating has been developed to improve the wear resistance and reliability of drills and mills. The AQUA EX Flat drill is established.

2010



NACHI Europe celebrates 50 years in Europe


Over the last 50 years, NACHI Europe has enjoyed international recognition for the production of world-class materials and products.

2017




Our Synergy – Your Performance

[T O O L S]




HSS Drills & Carbide Drills
HSS End Mills & Carbide End Drills
Taps and Metal Band Saws




Skiving Cutter



Broaches, Hobs, Shaving Cutters
and Forming Racks



Regrinding/Re-coating
for Cutting Tools
Tool Engineering Services



Integrated
Gear Skiving Machine
GMS450


CUTTING TOOLS

MACHINE TOOLS




SPECIAL STEEL


[M A T E R I A L S]



Fine Multi-Controlled ALLOY
Hardened Rods, Micron Hard



Vacuum Carburizing Furnace
Vacuum Degreasing Washer
Coating Equipment
Coating Process



Maintenance of Industrial Furnaces,
Heat Treatment and Coating on Consignment

BEARINGS

[B E A R I N G S]



High-Function Bearings for Industrial Machines

Contributing to the Process of Manufacturing

ROBOTICS

Enhanced system response capabilities



Wing Slicer Type Robots



Lightweight Compact Robots



Seven-axis Articulated robot



Welding and General Handling Robots, Heavy Duty / Payload Handling Robots



Clean Robots

ROBOTICS

Grinding
Ultra Precision Machining

Essential
Components

Assembly, Welding
Transfer

HYDRAULIC EQUIPMENT

AUTOMOTIVE HYDRAULICS

HYDRAULICS



High-Function Bearings for Automobiles



High-Function Hydraulic Equipment for Construction Machines and Industrial Machines



Solenoid Valves for Automobiles
3-way Solenoid Valves
Linear Solenoid Valves
Automotive Hydraulic Units



PZH high-pressure variable piston pump

Automobiles

ENGINES

Contributing to higher energy efficiency and green processes.



MQL Power Cell
MQL Machining System



High-efficiency, non step deep hole drilling.



Power Finisher
Crankshaft and camshaft lapping.



No. 1
IN THE
WORLD

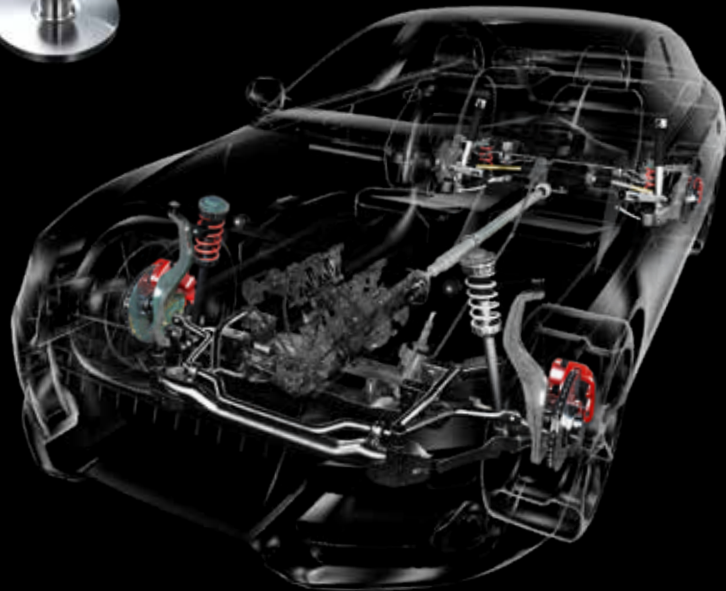
Double-Row Angular Contact Ball Bearings for automobile air conditioners.



Exhaust Valve Material, Wastegate Valve Material EXEO-E900
Demonstrates durability at temperatures exceeding 900°C. Withstands high temperatures reached by exhaust system components of turbochargers.



AQUA Drill EX Flat Series



CONSTANT VELOCITY JOINTS

Quiet and smooth rotary transfer.



Forming Rack
Keeping precision high in super efficient production.



Precision rolling

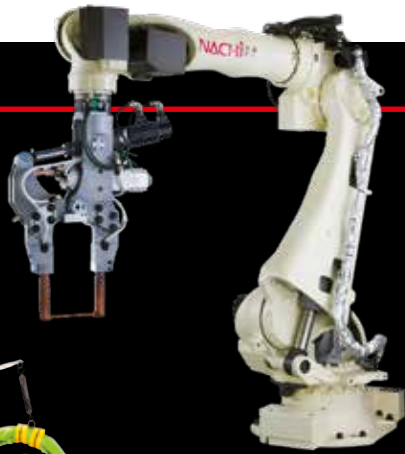
No. 1
IN THE
WORLD



Roller Bearings for Constant Velocity Joints



BODY



SRA133HL
IN-Trac Cable
Management System



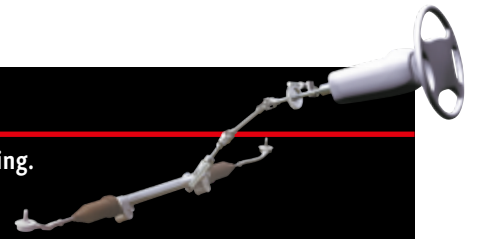
High-speed seam welding robots



Spot Welding System

STEERING

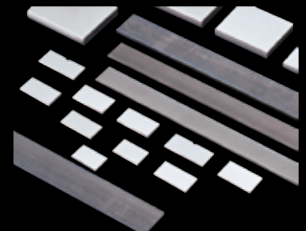
Safe and stable steering.



Broaching of steering racks.



4-point Contact
Ball Bearings BX Series



Vane Material in
Power Steering Pumps
Made from HSS

TRANSMISSIONS

For responsive and comfortable driving.



Solenoid Valves for Automobiles
Direct control of transmission clutch with valves.



MT21 Steel Bearings for transmissions

Helical
Broach

**No. 1
IN THE
WORLD**



Vacuum Carburizing Furnace "En-Carbo"
Performs highly accurate carburizing that is
environmentally friendly and low in cost.



Vacuum carburizing
of transmission gears.



High-speed hob cutting



NC Helical Broaching Machine
Performs highly efficient machining of helical gears
for automatic transmission.

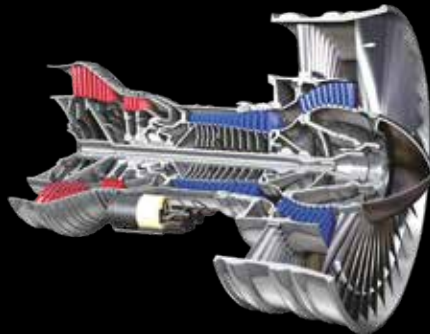
Energy, Infrastructure

POWER GENERATION, AIRCRAFT



**No.1
IN THE
WORLD**

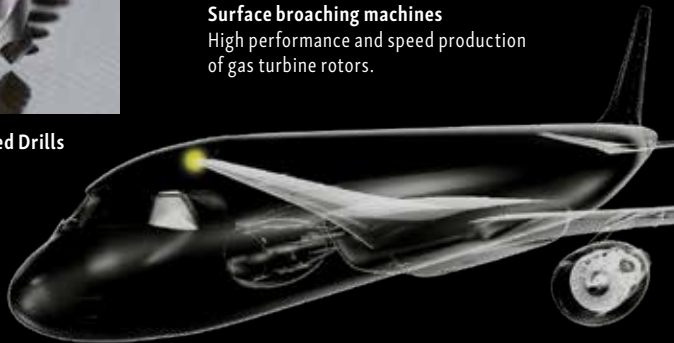
Broaches for turbine discs (Fir-tree geometry):
Perfect shape for reliable assembly of blades and turbine discs.



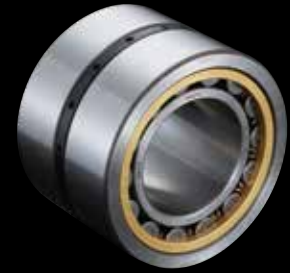
Crystal Diamond Coated Drills
Helping improve the productivity of aircraft.



Surface broaching machines
High performance and speed production of gas turbine rotors.



RAILROADS



Bearings for Wheels
Lightweight and compact bearings for axles capable of withstanding the high speed of the bullet train "Shinkansen".



LOGISTICS



Palletising Robot "LP130/180"
Enable high-speed/high-precision palletisation of cardboard boxes, bags, bottles, and metal products.

CONSTRUCTION MACHINES



Large Module Hob
High-performance machining of large size gears.



Spherical Roller Bearings
Boasts the world's highest load capacity and service life.



**No.1
IN THE
WORLD**

Wheel Drive Motors and Swing Motors for small Excavators
Integrated required functions into a compact unit.



Industrial Machines, Electrics, Electronics

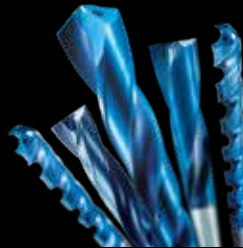
INDUSTRIAL MACHINES



Provides a robot integrated system to respond to the demands of production line automation.



Hyper-Z Tap Series
Exhibits superior performance in low to medium speed drilling, boasts double to triple the tool life of conventional non-coated taps and even surpasses the tool life of coated taps.



AQUA Drill EX Power Feed
Enables high accuracy and longer tool life in ultra-high-speed drilling in machining centres or turning machines.



Precision bearings
Improves precision in machinery.



TAF-X Series
High load capacity ball screw support bearing

PZH high-pressure variable piston pump
Enables high power and downsizing of machines.



NPR-FX25
Materials for functional components

NRP Series Power Package
Provides energy savings, minimum noise, and low heat output for machinery.

ELECTRICS, ELECTRONICS

Fulfilling the need for automated manual labour.



Expanded compact robot series
Help improve productivity in every workplace with picking, wrapping, and assembling.



MZ07
The World's Fastest, Lightweight Compact Robot



MZ04
Compact and super fast robot



EZ03
Wing Slicer Type Robot

ROBOTICS



"Since the development of our first fully electric-driven robot for spot welding NACHI is known as a pioneer in robot automation."

With the development of the first powerful industrial robots in the 1960s, NACHI has proven its strong innovation power in the field of industrial automation. Since then NACHI has continuously increased its product range of industrial robots.

Today NACHI delivers customised automation solutions with robots. That applies to a wide range of applications, whether loading and unloading of machine tools or injection moulding machines, or picking, packaging and palletising of every kind of work-piece. Furthermore, as spot welding or path welding in the automotive industry and in steel work as well as positioning and assembly of smaller parts in electronics.

Automation at the Highest Level

NACHI's robots offer optimised solutions for industrial automation. They save energy and have a reduced footprint due to their lightweight and compact design. They operate extremely precisely and reliably due to their sophisticated drives, measuring systems and controls.

Programming and operating the robots is clear and easy to understand. Thus they can utilise a broad range of applications in all industrial fields.

New Swing in the Automation of Assembly: The EZ-series

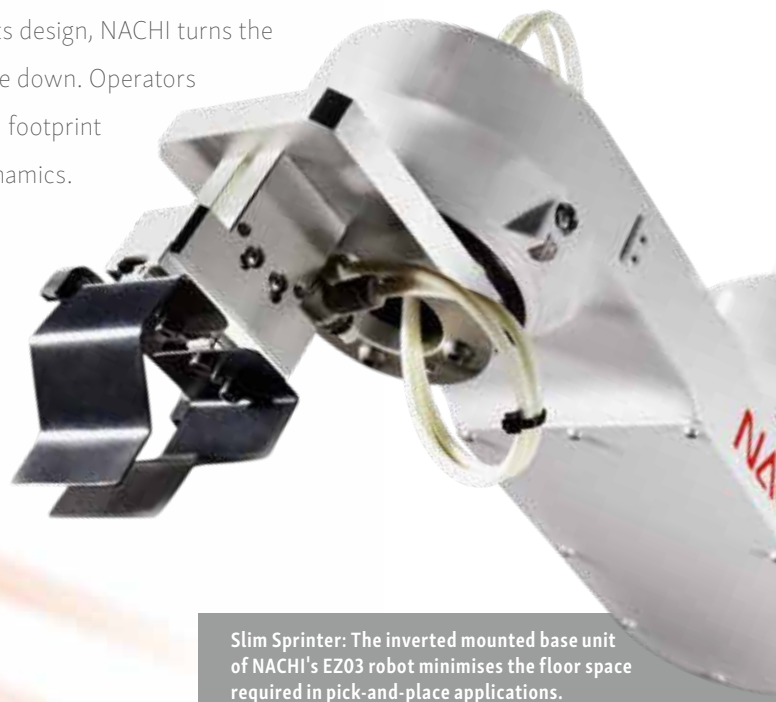
NACHI's innovative robot EZ03 opens up a new dimension in productivity. With its design, NACHI turns the SCARA-concept upside down. Operators benefit from minimum footprint along with highest dynamics.

Slim Sprinter: The inverted mounted base unit of NACHI's EZ03 robot minimises the floor space required in pick-and-place applications.



**No. 1
WORLD'S
FASTEST**

World's fastest compact robot with load capacity up to 7 kg: NACHI's MZ07.



"NACHI -
Always a Step Ahead"

Robots for Industrial Automation

Innovative concepts and sophisticated kinematics allow operation in every situation and condition. NACHI's robots contribute the highest productivity in production enterprises of any industrial field.

The MZ-Series with payload up to 7kg:

The compact robots of NACHI's MZ-series combine the proven 6-axis-concept with innovative solutions in detail, like hollow joints and wrist, intelligent wiring and high IP-protection at all axes. Highly dynamic drives achieve a failure-free operation at maximum productivity.

Applications:

- ▶ Load and unload of machine tools
- ▶ Linking processing stations in production lines

Main Advantages:

- ▶ Protection class IP67 utilises applications in harsh industrial environments
- ▶ Compact design for minimum space requirement
- ▶ High repeating accuracy due to optimised drives and measuring systems
- ▶ Internal valves | intelligent wiring | hollow wrist



Force sensor:
This option controls the robot depending on the force at the gripper. Sensitive controlled the robot can assemble e.g. bearing bushes, sealings or roller bearings.



Applications:

- ▶ Palletising
- ▶ Assembly and control
- ▶ Handling of work-pieces and packaging
- ▶ Spot and path welding

Main Advantages:

- ▶ High payloads up to 700kg
- ▶ Coverage up to 4000mm
- ▶ Highly dynamic
- ▶ Wiring through the joints prevents interferences
- ▶ Wide operating envelope due to minimum inner interference

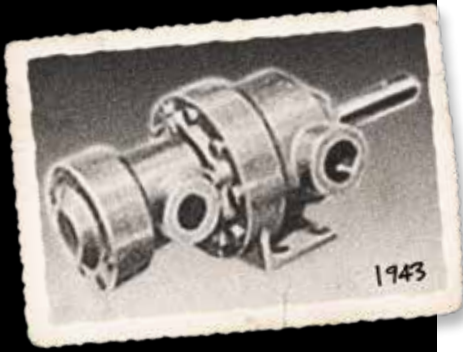
In Asia, NACHI is the leading manufacturer of spot welding robots for the automotive industry.

The Series LP-, MC-/MR- and SRA- robots with payloads up to 700kg:

NACHI's medium and heavy-duty robots provide worker-friendly conditions. They are able to handle payloads from 10kg to 700kg. Thanks to their 7-axis-structure they are extremely agile. Due to their sophisticated kinematics, they have full access to their working area and provide the highest dynamic for all working processes. All users that have to handle medium to high payloads have outstanding benefits: for example the food and beverages industry, the pharmaceutical industry, metalworking and plastics processing.



HYDRAULICS



“With the invention of its first vane pump in the year of 1943 NACHI started to capture the hydraulics sector.”



Slew Drive PCR



Piston Pump PVD



Rotary Centre Joint RCJ



Track Drive PHV

**No.1
IN THE
WORLD**

Track drives for compact excavators.

NACHI's hydraulic track drives excel in compact excavators world wide.



Since the invention of NACHI's first vane pump in the year of 1943, NACHI gained an outstanding position within the hydraulics market and continues to secure its solid market position through continuous research and development.

For many years we have been a strong partner in the field of industrial and mobile hydraulics. Compact, reliable and efficient solutions are the result of our long-term and interdisciplinary application knowledge.

Our strong market position involves a high degree of automation and a comprehensive manufacturing know-how. This success is based on our access to unique company-wide synergies.

Hydraulic Solutions for Construction Machinery

NACHI-FUJIKOSHI is the worldwide leader and most well-known manufacturer of efficient, reliable and compact hydraulic equipment for use in compact excavators

- ▶ **Slew Drive PCR:** Reliable, maintenance-free, compact unit with outstanding performance
- ▶ **Piston Pump PVD:** Proven combination of piston pump and gear pumps to operate all hydraulic functions of a compact excavator
- ▶ **Rotary Centre Joint RCJ:** Leakage- and maintenance-free hydraulic connection between upper structure and undercarriage
- ▶ **Track Drive PHV:** The tailor-made reference solution for crawler-driven machines



Applications in Industry and Automation

Worldwide NACHI offers industrial hydraulics for a broad range of applications:

Sheet Metal Forming:

- ▶ Servo hydraulics for bending presses
- ▶ Press bar units
- ▶ Energy on demand: operates only when the press is active

Main Advantages:

- ▶ Energy-saving
- ▶ Low noise
- ▶ Reduced maintenance and service support
- ▶ High accuracy in bending



Machine Tool:

- ▶ Clamping of work-pieces
- ▶ Clamping of tools
- ▶ Clamping of steady rest and tailstock
- ▶ Clamping of different axes in various applications

Main Advantages:

- ▶ Energy-saving operation of units and valves
- ▶ Very low internal leakage, thereby low heating
- ▶ Low noise (53dB)
- ▶ Extended maintenance intervals
- ▶ High power density
- ▶ Reduced costs



Components for Customised Applications:

- ▶ Pumps
- ▶ Valves
- ▶ Accessories

Main Advantages:

- ▶ Extended lifetime
- ▶ Less internal leakage for high efficiency
- ▶ Low operating costs



PVD Pump Rotary Assembly



“We maintain a team spirit with our partners to realize customised projects and solutions.”



“NACHI has been developing rolling bearings since 1939. These durable allrounders have solved many problems in a wide variety of applications all over the world.”



Deep Groove Ball Bearings



Spherical Roller Bearings



Cylindrical Roller Bearings



NACHI's spherical roller bearings prove their high quality in cranes all over the world.

BEARINGS

Since 1939 NACHI has been developing rolling bearings of the highest calibre.

Each production step is made and controlled in NACHI's own plants, from the steel plant and the heat treatment to the machining of the components and assembly of the bearings.

Today NACHI delivers a wide range of ball-, roller-, spherical-roller- and precision-roller-bearings for applications in general machinery, agriculture, transmission, fluid, aerospace and the demanding automotive industry.

Deep Groove Ball Bearings

Sophisticated sealing technology and innovative lubrication technology allow a long-term operation at temperatures from -40°C to +140°C as standard. The deep groove ball bearing series Quest offers double the lifetime when operated at +120°C compared to standard deep groove ball bearings.

Spherical Roller Bearings

NACHI's spherical roller bearings have the highest load ratings worldwide. Innovations like the optimised curvature of the raceways and the general heat resistance up to +200°C have proved that NACHI is a worldwide leader in bearing technology. Customers rely on the narrow tolerances and the long lifetime of NACHI bearings while operating with high axial loads. Various shapes of rollers and cages enable a wide range of applications.

Precision Roller Bearings

Due to highest precision, rigidity and optimised lubrication, as well as sturdiness and excellent sealing technology, NACHI's precision bearings are the best possible choice. Customers appreciate the simple mounting and the pre-assembled bearing units.



**No.1
IN THE
WORLD**

Spherical roller bearings with the highest load rating in the world.

Applications in General and Automotive Industry

NACHI's rolling bearings stand for highest quality. The comprehensive product range satisfies the needs of customers all over the world. Innovations and all-out quality – **Made in Japan**. NACHI's rolling bearings provide longevity and easy installation in a broad range of applications.

Industrial Applications:

With its wide product range and extensive services, NACHI Europe is a preferred partner of mechanical engineering, machine tool builders, gearbox manufacturers, manufacturers of cranes, grippers and electric drives.

Customers obtain the highest reliability in their individual applications by using NACHI's rolling bearings.



Spherical Roller Bearing

Main Advantages: Deep Groove Ball Bearings

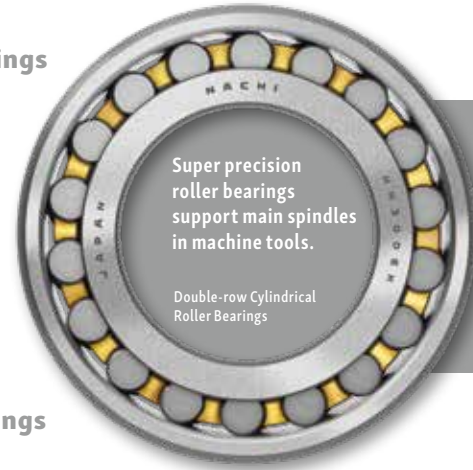
- ▶ Long service time provides low operation and maintenance costs
- ▶ Higher speeds at lower operation temperatures
- ▶ Proven lubrication technology
- ▶ 100% noise tested



Last twice as long under demanding circumstances: NACHI deep groove ball bearings Quest-series.
Deep Groove Ball Bearings

Main Advantages: Spherical Roller Bearings

- ▶ Highest load ratings worldwide due to larger rolling elements
- ▶ Compact design
- ▶ Long lifetime and cost efficiency due to pure high-quality steel



Super precision roller bearings support main spindles in machine tools.

Double-row Cylindrical Roller Bearings

Main Advantages: Precision Roller Bearings

- ▶ High precision for excellent running accuracy
- ▶ High-performance lubrication provides sufficient lubrication even at low speeds
- ▶ Innovative, low-friction sealings reduce the initial torque
- ▶ Profitable and extremely durable



NACHI's ultrathin bearings find application in the strain wave gear of the famous JPL Mars Rover.

Mars Rover
© Courtesy NASA/JPL-Caltech

Automotive Applications:

The high level of NACHI's rolling bearings is pushed to the highest standards by the quality management of the automotive industry. At NACHI, industrial products have to meet equal quality criteria. Installed in joint shafts NACHI's roller bearings provide stable and safe traction. In addition, NACHI is the market leader for ball bearings in mobile air-conditioning systems.

No. 1
IN THE
WORLD

Double-Row Angular Contact Ball Bearings for automobile air conditioners.

No. 1
IN THE
WORLD

Roller Bearings for Constant Velocity Joints.

T O O L S



"Early in the 1920s, NACHI had founded its reputation as a tool manufacturer with its hacksaw blades."

**No. 1
IN THE
WORLD**

Broaches for turbine discs (Fir-tree geometry): Perfect shape for reliable assembly of blades and turbine discs.



**No. 1
IN THE
WORLD**

Helical broach: Highly efficient manufacturing of precise internal gears.



Broaching is one of NACHI's core areas. In Japan, NACHI runs the world's largest production line for broaches.

Renowned manufacturers trust in NACHI's broaches.



NACHI delivers high-level tools for industrial applications. The high quality and process reliability of NACHI's drills, milling, threading and gear cutters as well as broaches are based on NACHI's extended production level. Melting of steel, metallurgical powder production, pressing, sintering, tempering, coating, grinding – NACHI's experts master all the necessary processes. With its in-house developed and continuously optimised sintering processes, grinding and coating technology, NACHI drives the innovation. With regard to technology, NACHI's cutting tools are always up-to-date: **Quality and precision made in Japan.**

Solid Carbide and HSS-PM-Tools

The wide range of drilling and milling tools, from 0.2 up to 32mm in diameter includes a broad variety of different types for all industrial applications. High-quality substrates, optimised designs and innovative coatings care for highest cutting speeds and feed rates along with long tool life and best process reliability.

Taps

In-house material and original surface treatment combined with optimised designs of cutting edges and spirals provide long tool life. With the current product line Hyper-Z, NACHI drives the innovation in tapping forward.

Drills with Cutting Inserts

Drills of the series Aquadrill EX VF are used most effectively when drilling larger diameters. Their fast and easily changeable cutting inserts substantially reduce the costs.

Broaches

In the challenging field of turbine discs manufacturing, NACHI is known as the market leader for Fir-tree broaches. Renowned manufacturers of turbine discs for power generation and the aerospace engine industry trust in NACHI's broaches.



For Tool and Mould-making, Automotive and Aerospace Industry

NACHI's cutting tools cope extremely well with difficult processing conditions. They demonstrate the highest reliability in all situations.

Aquadrill EX Series:

All over the world, the high-performance drills series Aquadrill EX has proven its value. Thanks to their innovative multi-layer coatings based on high-level substrates these drills are extremely wear-resistant and achieve longer tool life.

For highest precision in hole accuracy and best surface quality, the type Aquadrill EX 3 Flute with oil holes is available. These drills perfectly centre on uneven surfaces. The Aquadrill EX Flat with flat point (180° point angle) achieves best results when pilot drilling on inclined or convex surfaces or drilling crossing holes.

Aquadrill EX VF:

These drills with changeable cutting inserts work highly efficiently when diameters are larger than 14mm in various cutting depths.

Main Advantages:

- ▶ Rigid, well dampening body
- ▶ In V-shaped mounting slots rigidly and precisely clamped inserts
- ▶ Inserts with flat point (180° tip angle) available for pilot drilling on uneven and convex work-piece surfaces

Applications:

- ▶ Shop floor manufacturing various materials and work-pieces
- ▶ Series production under pressure to reduce costs

Universal Drill SG made of HSS-PM:

The universal drills, available in diameters >0.5mm, made of tough substrates coated with multi-layer coatings machine all materials reliably and precisely, from mild steel to high-alloyed stainless steel. Drill diameters stepped 0.01mm as a standard.

Hyper-Z TAP:

High-grade substrates and innovative surface treatment double or triple tool life.

Main Advantages:

- ▶ Extremely long tool life
- ▶ Realize stable tapping
- ▶ Supremely efficient machining

Applications:

- ▶ Series and one-off production on machining centres
- ▶ When machining at highest process reliability is required
- ▶ Best performance from low to mid speed tapping



Highly cost-effective drilling of large holes.
Aquadrill EX VF



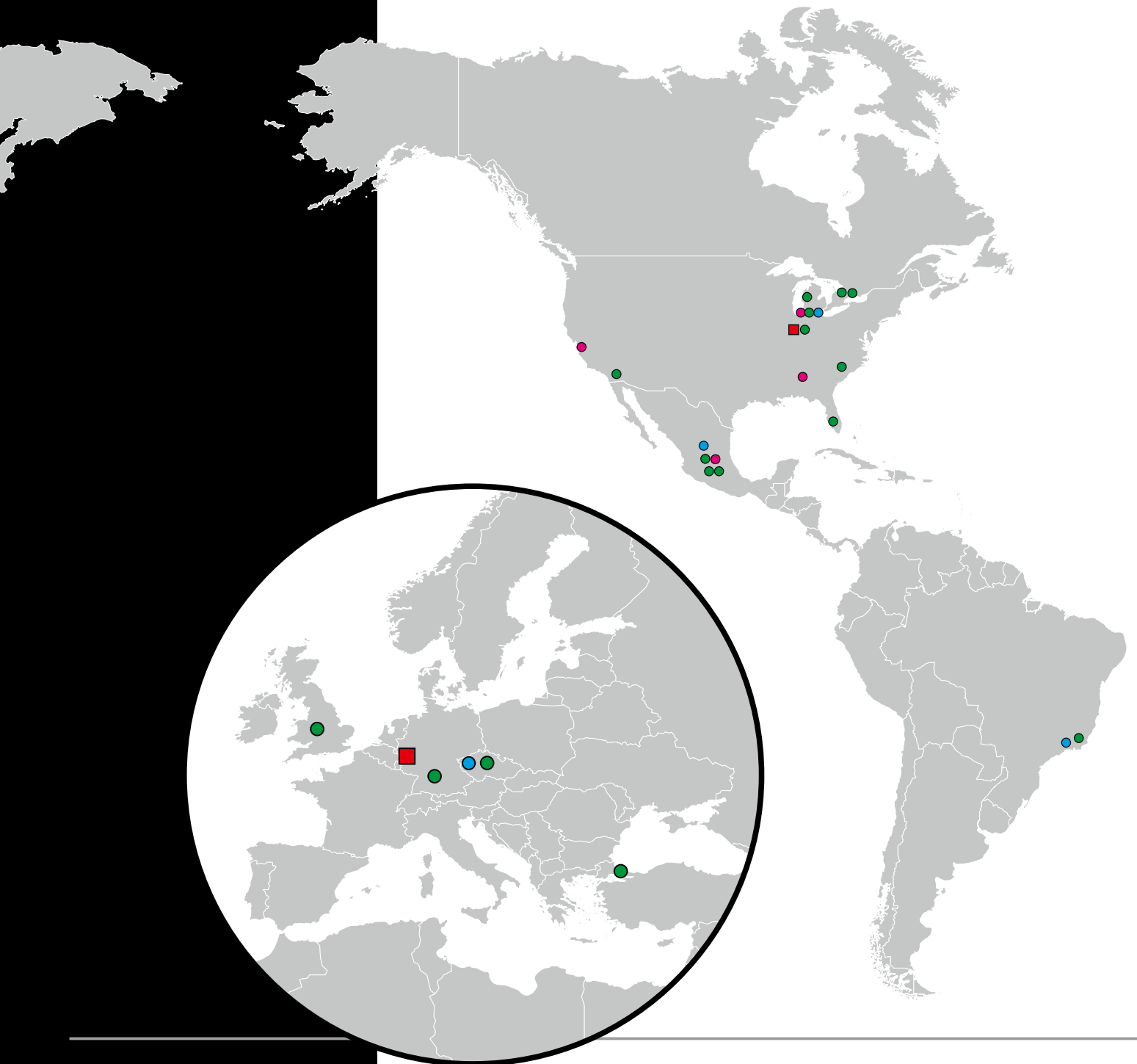
New tool tip geometry reduces cutting force and improves chip removal.
Aquadrill EX-Hole Long



Suitable for a wide range of applications.
HSS-PM-Drill SG



Stable and rigid operation due to optimised cutting edges.
Tap Hyper-Z



NACHI EUROPE GmbH
CENTRAL OFFICE GERMANY

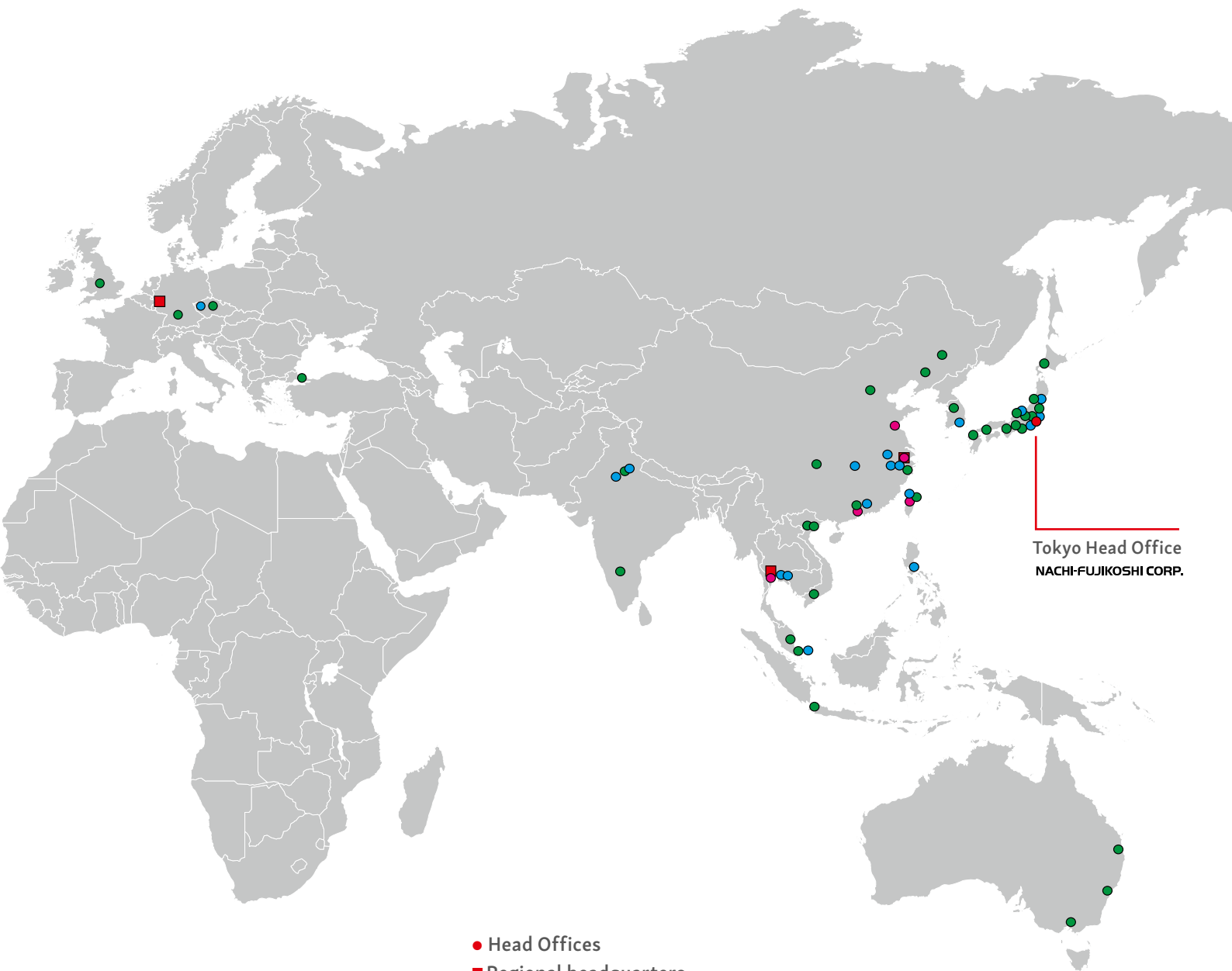
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**OUR SYNERGY
YOUR PERFORMANCE**



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