

## Rexroth – Assembly Solutions for the Automotive and Automotive Supplier Industries

Economical. Reliable. Versatile.



# Comprehensive system solutions from an expert partner

Increasing cost pressures, a growing variety of models and variants as well as high logistical demands are current challenges facing the automobile industry. Thanks to our long-standing, intensive collaboration with well-known automobile manufacturers and suppliers throughout the world, we know the success factors in this industry like no other – and are thus able to offer fitting solutions for all assembly requirements.

## **Start with Rexroth for the best results**

Whether for automobile manufacturers or suppliers, whether in Europe, Asia or the Americas – we are the right system partner for innovative assembly technology. Our customers profit from the complete automotive know-how and one-of-a-kind service of a globally active technology leader and innovative solution provider.

Additionally, we offer professional planning tools that fit your CAD systems and make projects more efficient. FMSsoft and MTpro provide you with clear and fast access to our complete spectrum of services for assembly technology.





**Rexroth – the direct path to the best-possible solution**

No matter which philosophy directs production and how the production environment is set up, whether it concerns the body shop, powertrain, subassemblies or final assembly – you'll find the experts at Rexroth. As a system partner, we provide you with well-founded advice, develop customized assembly solutions and implement them within a short time – all based on outstanding industry expertise, as well as modular, state-of-the-art products which have been proven in thousands of customer applications.

**Rexroth – a match for all demands**

Rexroth system solutions fulfill the highest customer expectations with respect to:

- Zero-defect production
- Trouble-free process sequences
- Process tracking
- Lean production
- Reduction of changeover time
- Robustness
- Oil resistance
- ESD capability
- Cleanroom applications
- Ergonomics
- Low-noise operation
- Availability
- Services

**Rexroth – economic over the long-term**

Our products stand for high investment security due to favorable Total Cost of Ownership (TCO). That means: long-term, high productivity with low operating costs. We guarantee this through:

- Long system service life
- Short assembly and start-up times
- Standardization for easy re-use, quick set-up and changeover times
- Maintenance-free or low-maintenance designs
- Spare parts availability world-wide
- Low spare part and component costs
- Shorter planning and development times thanks to professional planning tools (FMSsoft and MTpro)



**Our services – as varied as your demands**



# Expertise for many processes – from parts manufacture to final assembly



Rexroth assembly technology can usually be found wherever parts and components for the automotive industry are manufactured or vehicles assembled. Our systems contribute decisively to the components arriving at the assembly line on time and in the right quantities, ensuring economical and reliable assembly. Only those manufacturers who can produce the best quality swiftly, reliably, and economically—all at the same time—can win the race. And Rexroth's assembly technology offers the best framework to achieve the pole position.

## Efficient solutions for the most varied tasks

Transport, handling, material supply, and occupational safety are important tasks that Rexroth systems take on during assembly. A few examples:

- Flexibly deployable transport and transfer systems for parts weighing up to 250 kg
- Innovative RFID identification systems for reliable recognition of workpieces and process tracking
- Customized camoLINE handling systems for complex tasks
- Manual Production Systems (MPS) with individually designed manual workstations and material supply
- Modular Desktop Factory (DTF) lines for lean, low-cost production
- Proven protective barrier systems made of pre-assembled modules for quick installation and reconfiguration



Chassis



Electronic components



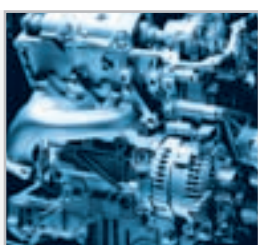
Seats



Cockpits



Doors



Engines



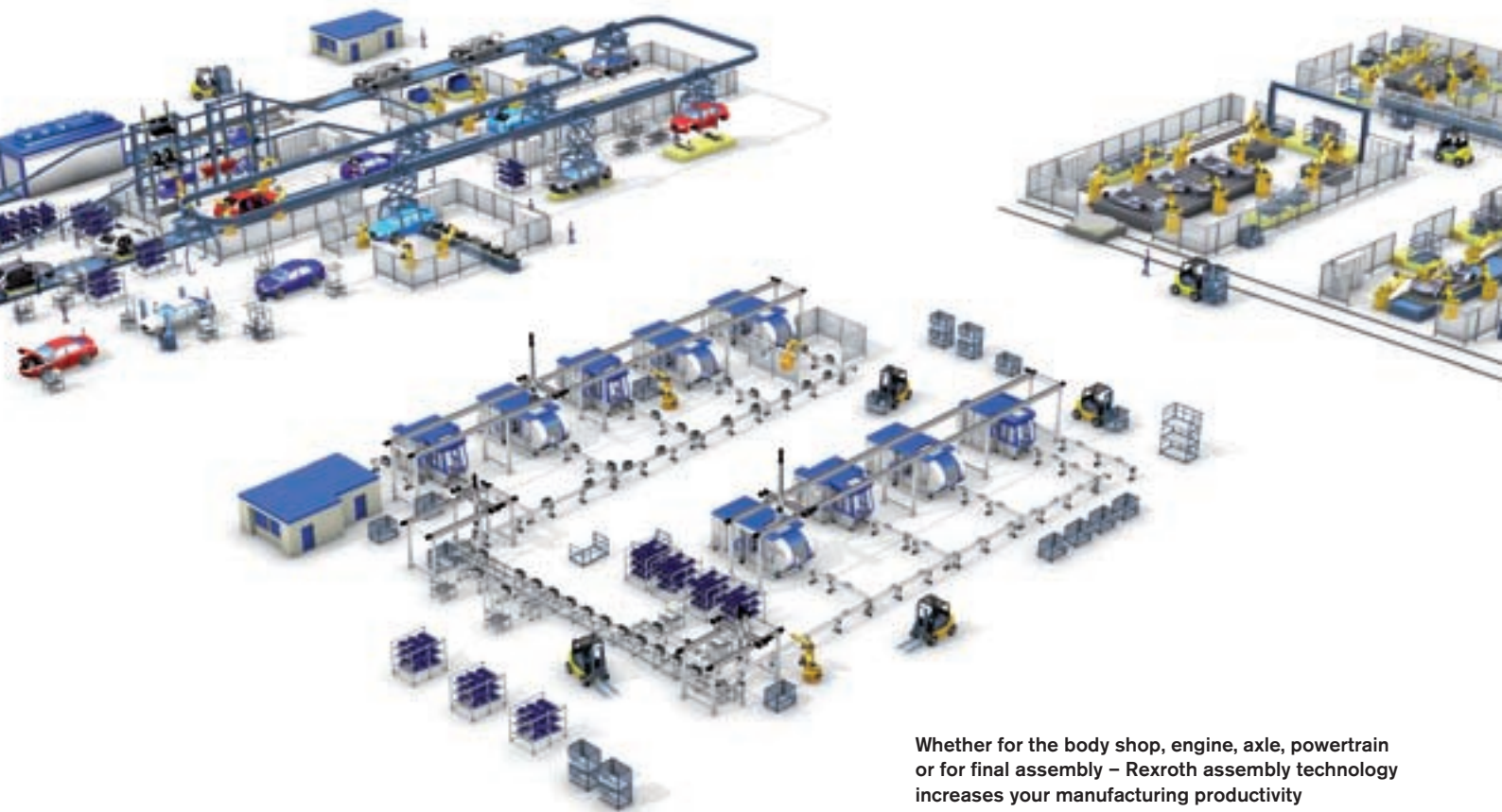
Drive shafts



Powertrains



Chassis parts



Whether for the body shop, engine, axle, powertrain  
or for final assembly – Rexroth assembly technology  
increases your manufacturing productivity



Assembly



Front end



Axle



The result of high-performance assembly technology:  
economically produced vehicles delivered on schedule



# Body shop: Rexroth – where safety has the right of way

Particularly high safety requirements are demanded for body shop production. Whether in the production of floor assemblies, engine compartments, or side walls, whether for roof automation, on the door lines or on the assembly and finishing lines: Large and heavy parts are moved, and unguarded

hazards in the work and transport areas can have severe consequences. Protective guarding from Rexroth minimizes these risks to make sure that employees and companies always remain on the safe side. We're everywhere: Rexroth also provides for the motion dynamics and safety in the manufacturing machines

used. Our linear technology, electric drives, controls and hydraulics are essential components in many powerful presses.

## **EcoSafe – economical and flexible for more safety**

The EcoSafe protective barrier system is the ideal solution for protection and safety in numerous body shop areas. The system complies with current European standards and consists of pre-assembled fence modules that can be combined in any manner.

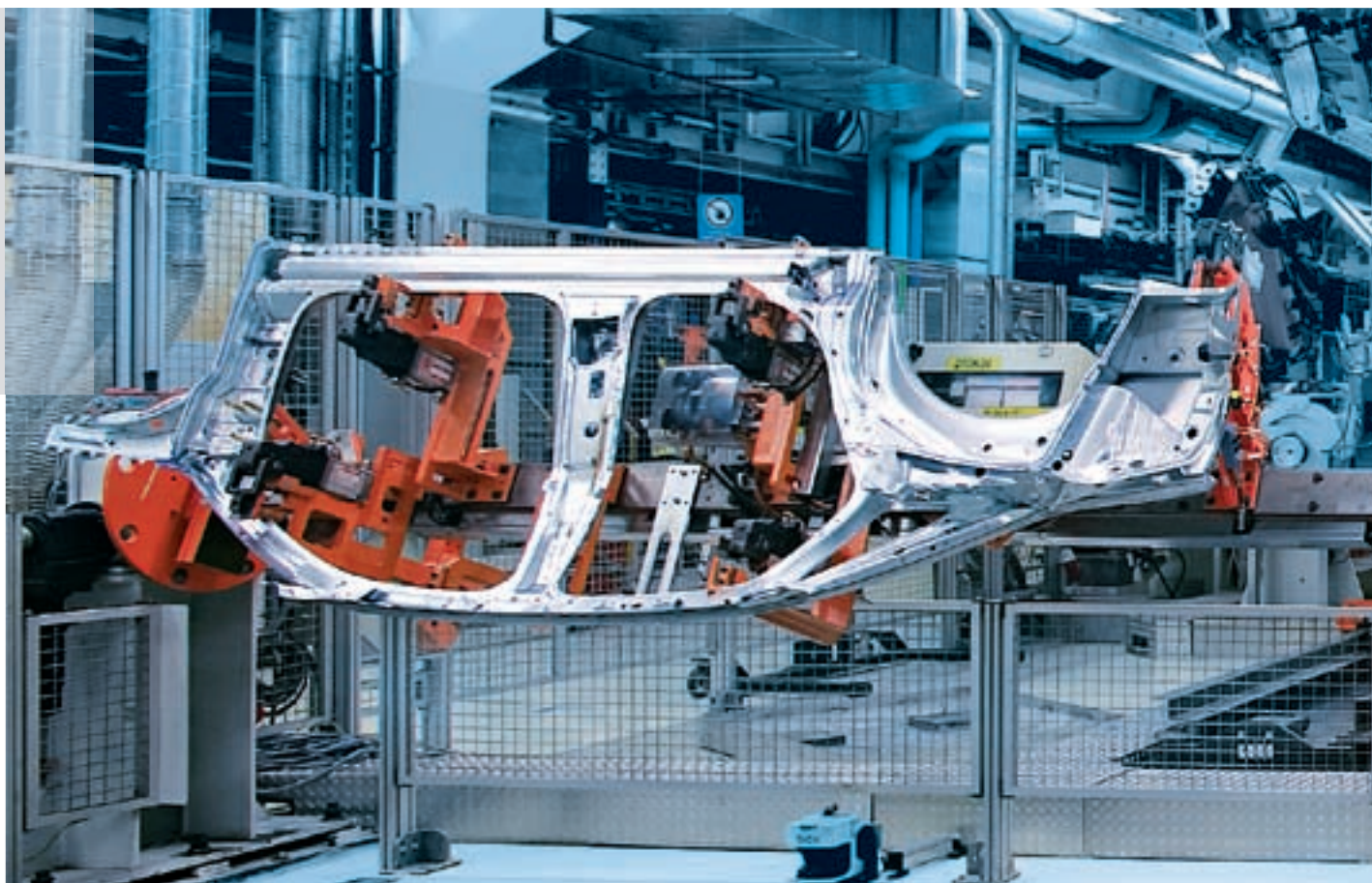
The advantages:

- Simple planning and quick assembly without special tools
- Flexible reconfiguration possibilities and simple adaptation to new demands
- Attractive design
- Easy to expand or accessorize through our aluminum modular profile system



**EcoSafe protective barriers: developed for maximum safety**





Rexroth inverted tooth conveyor chains help you to substantially increase the service life of your transport system, thus ensuring economical production

# Powertrain: Rexroth – for more power and higher efficiency

Robustness and a long service life for production equipment are the primary requirements during powertrain manufacture and assembly, along with dynamics and precision. A required service life of more than 15 years is the rule today. With more than 10,000 installed systems, Rexroth chain conveyors and transfer systems are the first choice, as they fulfill all these demands and are suitable for workpiece weights up to 250 kg. Rexroth identification systems are used to control workpieces in the system and to save quality data. Using identical parts and assemblies in the different conveyor systems also substantially cuts costs for spare parts.

## **VarioFlow chain conveyor systems: more transport capacity for less money**

VarioFlow is especially suitable for a variety of transport and linking tasks. Convincing features include its favorable price and impressive performance data:

- High load capability due to stable chains with chain tensile forces of up to 1250 N
- Versatile deployment thanks to seven sizes (up to 320 mm system width) and different chain variants
- Designed for harsh production conditions, resistant to oil, dirt and shavings
- Workpiece transport directly on the chain or on workpiece pallets
- Standardized, thoroughly proven solutions for stopping, separating and positioning

## **TS 2plus transfer systems: the multi-talent for a wide range of applications**

The TS 2plus is an especially versatile transfer solution for the most varied tasks and with a broad parts spectrum, based on a comprehensive modular system:

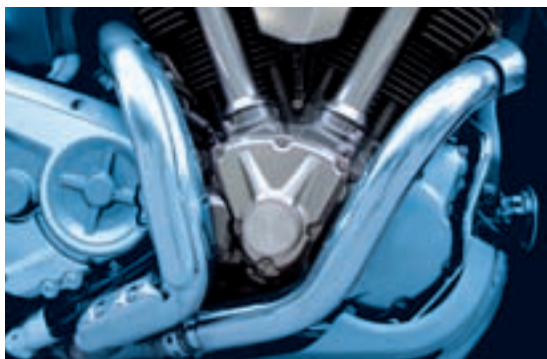
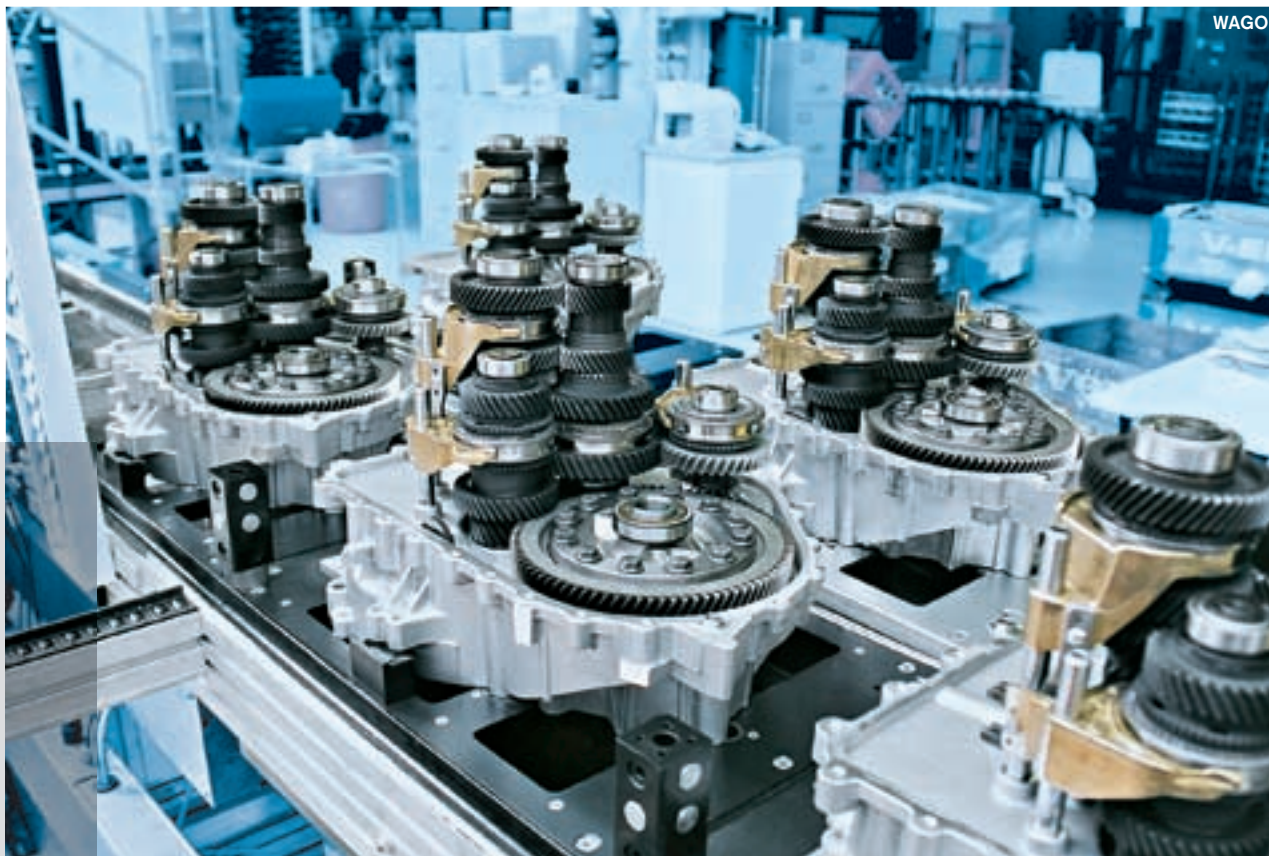
- Different conveyor media: polyamide belts, toothed belts, flat top chains and accumulation roller chains
- Numerous specific components for curves, transverse conveyors, positioning and drive units
- Heavy duty components: steel parts, reinforced conveyor profiles, stainless steel guides and sturdy conveyor chains for extreme loads and harsh environmental conditions at continuous loads of up to 200 kg per meter

## **TS 4plus transfer system: for the assembly of large workpieces**

The transport of heavy workpieces up to 250 kg is the domain of the TS 4plus transfer system, making it the ideal solution for many applications in automobile construction.

- Modular assembly system allows for fast implementation of economic material flow solutions for simple circuits as well as for heavily branched, more complex systems
- Durable, low-friction accumulation roller chains ensure safe transport of workpiece pallets, even in harsh production environments





Engines



Transmissions



Drive shafts



Axles



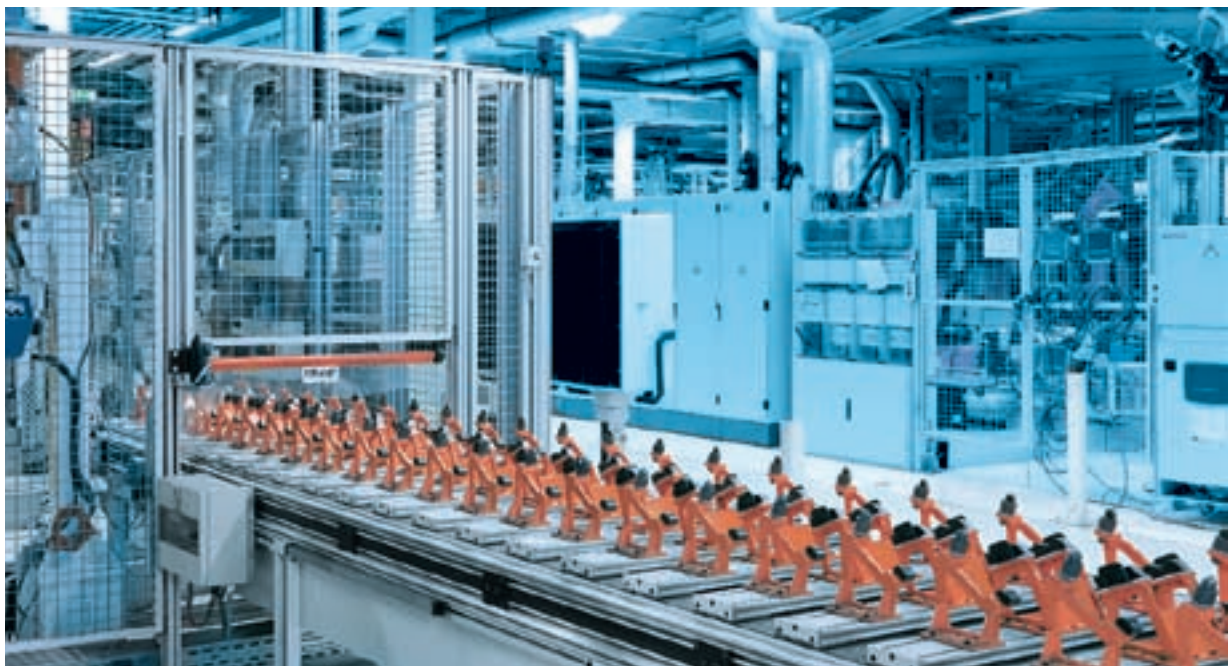
# Component assembly: Rexroth – a green light for smooth material flow

Rexroth offers highly efficient, economical solutions for component assembly at vehicle manufacturers or suppliers. In correspondence to the customer's production philosophy and manufacturing environment, we provide individually adapted, precisely-matched systems for high assembly productivity and reliability. Here are a few examples:

- Chain conveyor and transfer systems
- Identification systems
- camoLINE handling systems
- Manual workstations and parts presentation systems
- EcoSafe protective barrier systems



Automated assembly of power steering pumps with a camoLine handling system



Customized process-linking system



## Application example 1:

**VarioFlow chain conveyor system and TS 2plus transfer system for oil pump assembly****Application**

System:

Assembly line for oil pumps

System segment provided by

Rexroth:

Workpiece transport with

VarioFlow chain conveyor system,  
material supply with the TS 2plus  
transfer system

**Machine/process**

Automated solution for oil pump assembly. Compact assembly line with nine production steps: workpiece transfer from manufacturing, assembly of pressure relief valve with spring, ball and cover installation, shaft/gear set centering and mounting, sleeve insertion, cover fastening, pump friction torque and suction volume check, function and quality check.

**Customer specifications**

- Compact system design
- Reproducible and traceable quality
- Automated workpiece function and quality testing



Space-saving: The Rexroth VarioFlow chain conveyor system with 90 mm wide chains and small turning radiuses



Zero-defect quality counts: NOK parts travel over a diverter to the manual workstation

**Our solution**

A VarioFlow chain conveyor system with a 90 mm wide chain, total circuit width of 1100 mm, total conveyor length of 6000 mm, workpiece pallets, diverters for feeding workpieces in and out, figure-8 conveyor layout, drives with frequency converters, stop gates with positioning units, TS 2plus transfer system for material supply, protec-

tive barrier system as well as the stationary Tightening System 300.

**Deciding factors for customer**

- Space-saving construction
- Highly flexible conveyor system due to modular construction
- Positioning units can be retroactively added at any point along the conveyor without mechanical modifications, therefore enabling

the customer to make assembly process changes simply and economically.

- Quick start-up, as the modular system allows for the delivery of pre-assembled units.

## Application example 2:

### TS 2*plus* transfer system for the manufacture of vehicle seats

#### Application

System:

Vehicle seat manufacturing

System segment provided by

Rexroth:

Assembly of the seat structure

#### Machine/process

- TS 2*plus* transfer system
- Assembly of the substructure for vehicle seats and backrests. The transfer system conveys the substructure and optimizes workstation ergonomics.

#### Customer requirements

- Short cycle times
- Quick retrofit and reconfiguration of the transfer system for production changeovers

#### Our solution

- Versatile transfer system with outstanding all-around performance: loads of up to 100 kg and workpiece pallets in sizes from 160 x 160 mm up to 1040 x 800 mm
- Some stations have an inclined workpiece pallet position to ensure better ergonomics

#### Deciding factors for the customer

- High quality and reliability of the transfer system
- Outstanding flexibility during changes in production
- Manual workstations and custom solutions made of standard components were easy to integrate into the transfer and material flow system
- Modular transfer system on two levels supplies approximately 30% space savings



The versatile TS 2*plus* transfer system covers numerous application possibilities with loads of up to 100 kg and a broad range of workpiece pallet sizes. Here, the TS 2*plus* transfer system is employed in the assembly of substructures for vehicle seats and backrests



# Final assembly: Rexroth – reach your goal safely and reliably

The final assembly in an automobile manufacturer's factory is the "crowning" conclusion of the entire manufacturing process. Rexroth is an ideal system supplier for this process step. In addition to protective barriers, we also offer a sophisticated flow rack system that can be used flexibly for efficient material

supply – for small parts such as screws and nuts, as well as installed components and even larger modules.

The advantages of our flow racks:

- Extremely versatile due to various manual conveyor types and rollers

- Custom sizes and special accessories can be implemented quickly and inexpensively
- Future-proof investment due to simple reconfiguration and expansion
- Easy visual management: ideal for the FIFO principle thanks to multi-colored rollers with Kanban systems



Manufacturing according to the Kanban principle: colored rollers indicate re-fill needs in a timely fashion and prevent inventory waste at the same time



# Bosch Rexroth: a strong partner for the global automotive industry

Rexroth offers its customers much more than just high-performance assembly technology. As one of the leading international brands, we have specialized in all types of drive and control technologies and provide them

in integrated systems throughout the world, all with the same high Rexroth quality. And of course, whatever applies to our products also applies to our extensive service program.



Long-standing automotive experience and knowledge of industry-specific needs make Rexroth a sought-after contact and system supplier for automobile manufacturers and supply companies



We offer our customers comprehensive support. From system planning all the way through to start-up and employee training, including best-in-class after sales service. We are there wherever and whenever you need us.



### **The entire spectrum from one source**

Only Rexroth covers the entire spectrum of automation: from electric drives and controls through hydraulics and pneumatics up to linear motion and assembly technologies. With innovative components, modules and systems, we increase efficiency and safety in automobile production and effectively support manufacturers.

Rexroth hardware and software are consistently on the cutting edge of technology and universally correspond to current international standards. We pursue the goal of zero-defect quality in all of our products

and services, and focus – just like the automotive industry – on process-oriented quality management. Thus, we provide our customers with a solid basis for success in international competition.

### **Concentrated automotive experience under one roof**

Rexroth is thoroughly familiar with the industry's special requirements thanks to its affiliation with the Bosch Group and long-standing cooperation with various vehicle manufacturers. We speak the same language and have adapted our processes and products to specifically fit the automotive industry.

It is not for nothing that we are so strongly represented in exactly this industry.

### **Locally active on all continents**

Rexroth is as global as the automotive industry and is present everywhere that vehicles are built or vendor parts manufactured. Our system solutions are used successfully in plants for almost all automobile manufacturers and in numerous, important supplier companies.

Rexroth customers benefit from our global, practical knowledge and unique, country-specific expertise. A close-knit network of sales and service offices in more than 80 countries guarantees a continuous, reliable supply of our products and services.

Whether for advice, project planning, start-up and training or maintenance, repair or spare parts: Rexroth's extensive offerings correspond exactly to the automotive industry's requirements and are available globally.



Our repair service is quickly on the spot when it is needed, regardless of location. With it we ensure high system uptime and offer our customers the security that comes with high productivity and successful manufacturing

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