Modular Units for Assembly

COMBINE MODULAR UNITS TO LIFT, TILT, ROTATE OR MOVE.
INCREASES PRODUCTIVITY, REDUCES FATIGUE.

See Assembly Products at: **www.carrlaneroemheld.com**

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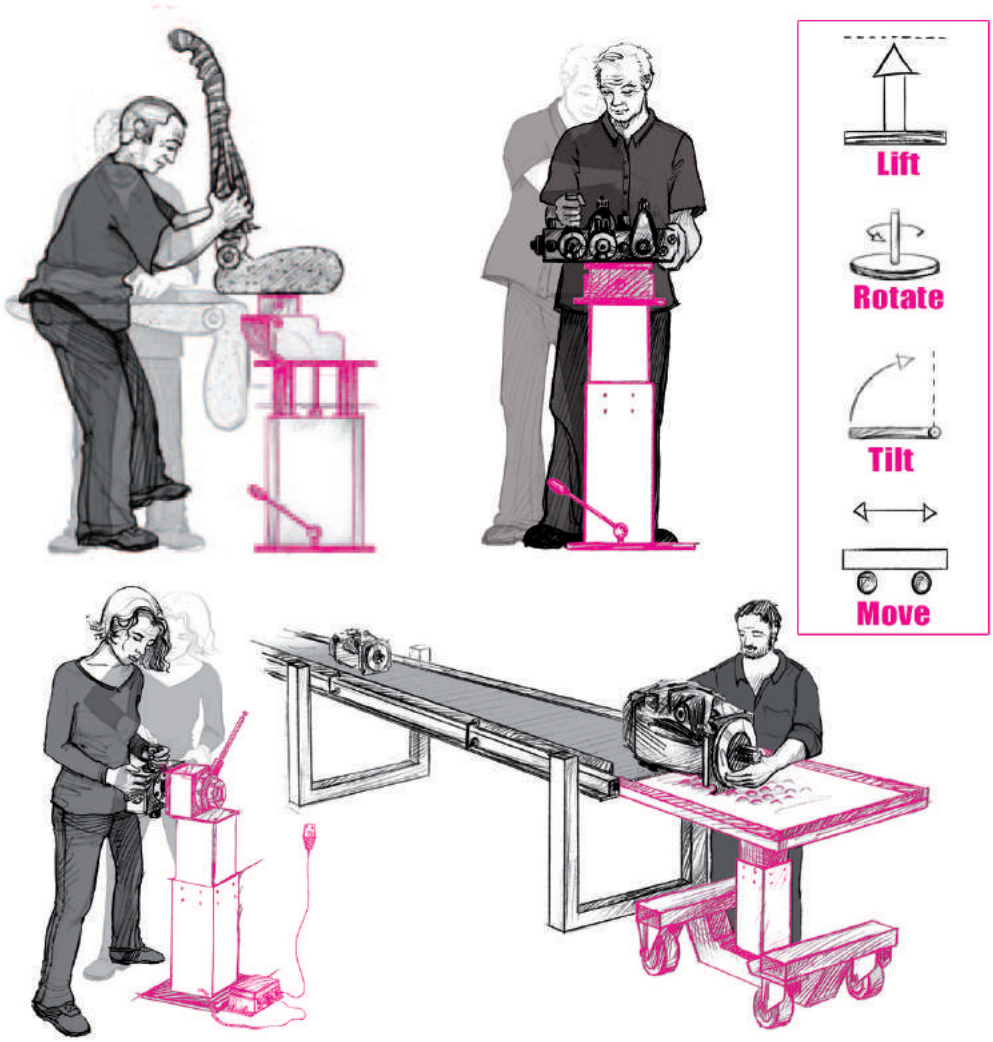
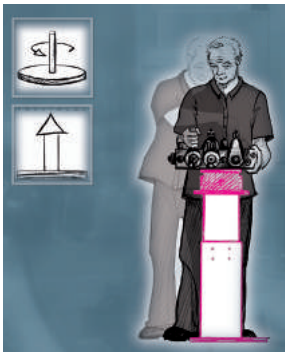


Modular Units Enhance Productivity in Assembly Operations

Our modular units can be combined in numerous ways for safe and efficient handling and movement of heavy or light loads in assembly operations. Various modules provide horizontal and vertical rotating, tilting and lifting of workpieces with mechanical, hydromechanical or electric operation. Each module can be used individually since they are independent functional units, or several can be combined together to create a multi-functional unit.

Lifting module operated by foot pedal with rotating module vertical axis



Here a complex hydraulic subassembly requires access to 5 sides during the installation of its components.

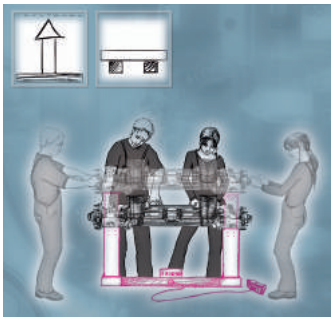
The employee can rotate the workpiece 360˚ in both directions about the vertical axis of this rotating module. Now the employee can select the most ergonomic position via manual or electric operation. Model versions with indexing are available too; standard index angles are 45˚, 60˚, 90˚, 120˚.

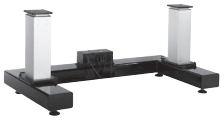
The appropriate working height is adjusted by the foot pedal of the self-contained hydraulic lifting module.

Lifting module operated by hand pendant with rotating module horizontal axis

Multi-shift organizations know that every shift change also ushers in the change of each and every employee's size and ability. Modular combinations adapt to such changes and this one is composed of two modules: electric lift and horizontal-axis rotating. The electric lifting module effortlessly adjusts to an employee's height via a hand or foot push-button pendant. The horizontal-axis rotating module does just what its name implies; it spins a workpiece about its horizontal axis. It has 360˚ of rotation in both directions. Push or pull your workpiece to rotate the version without indexing or automatically index to your next position using the hand-lever or foot-pedal versions.

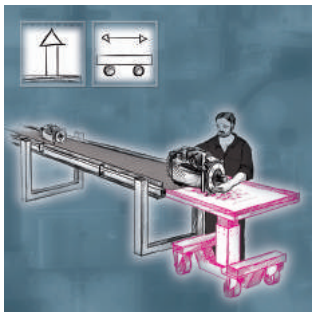
Electrically operated lifting module in sync





Assembly of truck axles is carried out by two employees at the same time. Components are installed and fastened from above as well as from both ends. The working height is adjusted via a foot pendant that controls two synchronized electric lifting modules. The synchronized lifts guarantee a level work surface throughout the entire stroke. The lifting modules are mounted to a floor module to improve stability.

Lifting module operated by hand pendant with rotating module horizontal axis



The assembly and testing of heavy workpieces such as axial piston machines is carried out at many stations. Transfer from station to station is made easy by fastening a tabletop plate to a hydraulic lift module that is mounted on top of a cart module.

Applying the brake on the cart module locks the unit in place. The operator can easily raise or lower the tabletop by pumping the foot pedal of the hydraulic lifting module.

Lifting module operated by foot pedal with tilting module and rotating module vertical axis

Optimum assembly of car seats requires the ability to quickly and easily move the seat into different positions. This modular combination allows the employee to raise, lower, rotate and tilt the seat. The tilting module is equipped with a pneumatic balancer that counteracts almost all of the tilting torques. This means very little force is required of the employee to tilt heavy objects.

Lifting module operated by foot pedal with tilting module

Here the employee is carrying out the final assembly of an electric motor followed by a series of tests.

The working height is adjusted by the foot pedal of the hydraulic lifting module. The tilting module mounted on top of the lifting module allows the employee to tilt the motor back and forth by 90˚. The integrated pneumatic-counterbalance feature makes tilting the motor a nearly effortless task.

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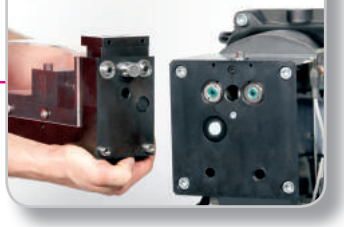
Modular Units from Carr Lane Roemheld

Clamping Modules

Fixture Mounting Devices

Docking Station

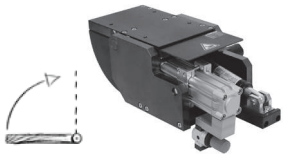


Rotating Modules
vertical

Rotating Modules
horizontal

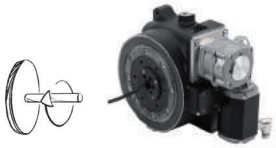
Power and signal supply through the axis of rotation

Tilting Modules



Rotating Modules
vertical

Rotating Modules
horizontal



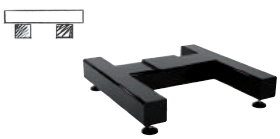
Lifting Modules
electric or hydraulic

Controllers

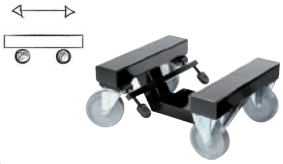
Battery Powered
for mobile systems

Controls

Floor Module



Cart Module



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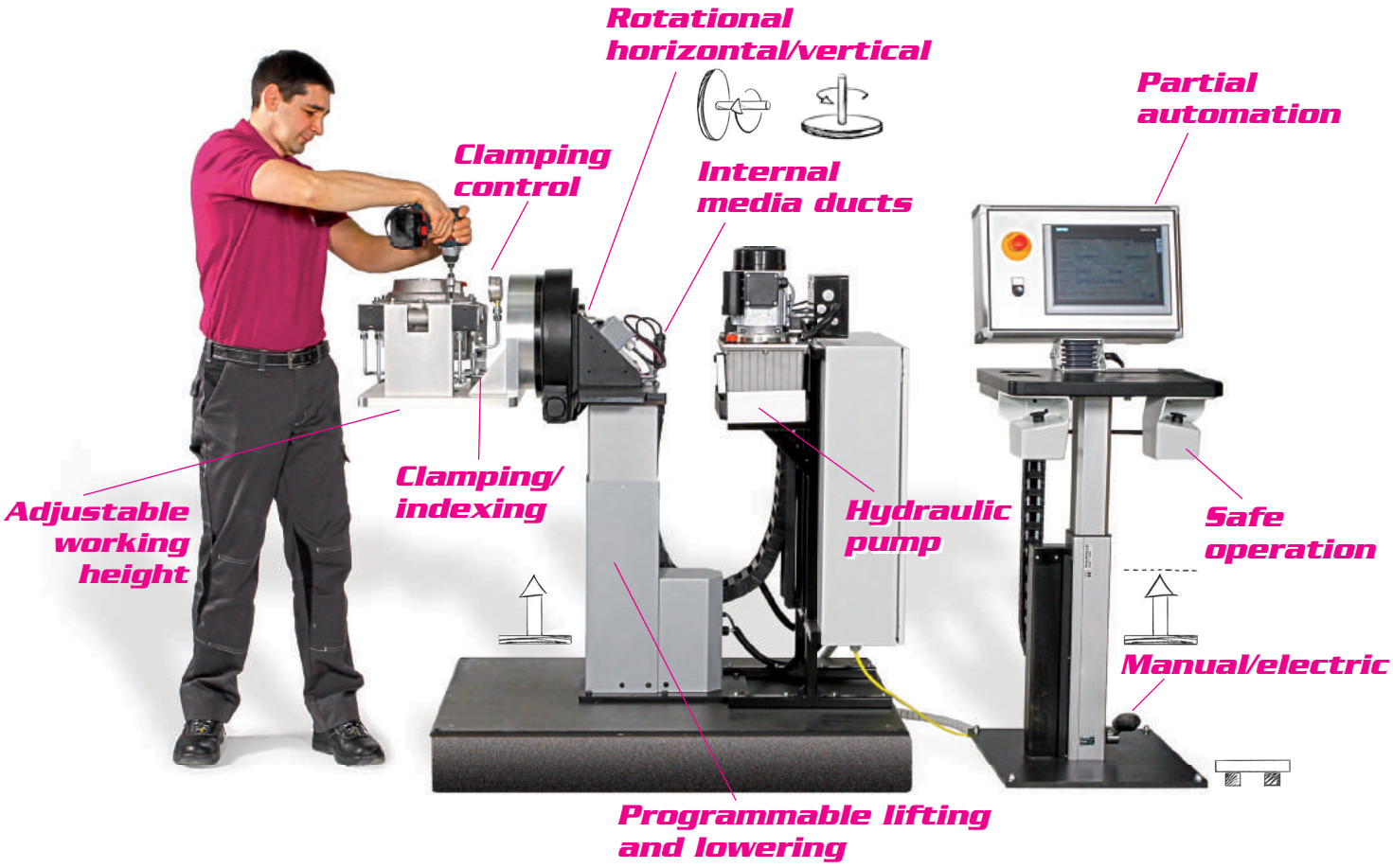
Easy Handling of Heavy Loads – Greater Productivity

Handling and manual assembly operations have great potential for process improvement through the use of our modular units and modular combinations. The optimal handling and installation position is achieved in a safe and secure manner.



Workpiece weights up to 600 kg (1325 lbs)

Manual or partially automated

Strokes from 200 - 1000 mm (7.87 - 39.37 inches)

- ✔ **Lifting modules for raising and lowering workpieces for the adjustment of optimal working height**
- ✔ ***Modules for rotating, tilting and swiveling workpieces for adjusting the optimal workpiece position***
- ✔ **Clamping modules and fixture mounting devices for quick and safe fixturing of a workpiece**
- ✔ ***Cart Module: for when your modular units need to be mobile***
- ✔ **Command Module: for when your modular units need to be mobile**

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Modular Units Maximize Ergonomics, Efficiency in Manual Workstations

Challenge: *Thermo Fisher Scientific, a global market leader in laboratory technology, designed new incubators for medical engineering and health research, to cultivate human and animal cells. Target customers were universities, research labs and others in the industry. Preassembly of the incubators required a lot of handling and was physically very demanding, requiring numerous rotations.*

Solution: *The company used Modular Units for Assembly from Carr Lane Roemheld, which can be combined to lift, tilt, rotate or move, with horizontal and vertical rotation, to increase productivity and reduce operator fatigue.*

Ergonomically designed production line

Thermo Fisher Scientific developed an ergonomic production line for the manual assembly of a new series of incubators. Health-conscious workstation design was a top priority, in addition to process and product quality.

The new "Heracell Vios" incubators are for medical engineering and health research, where they are used for cultivating human and animal cells. Target customers are universities, research labs and the medical industry.

"An ergonomic workstation like this is invaluable. It is good for the back, neck, and shoulders and is a noticeable relief. The body feels it immediately."

Thermo Fisher's world headquarters are near Boston, MA, but variations of the incubators were being assembled in the company's plant near Frankfurt, Germany. Apart from two sizes with 42 and 63 gallons of useful space, variations included bactericidal and fungicidal models of copper, incubators with a stainless steel inner, and for different gases and varying sensor technology.

Thermo Fisher's new incubator is the successor of the model "Heracell" of which 75,000 units were sold in 15 years. The new series, launched in September 2014, is distinct in its optimized control behavior, improved protection against contamination and facilitated operation.

Assembly workstations: from prototype to production line

Thermo Fisher Scientific worked with ROEMHELD experts for the new workstations. Headquartered in Laubach, Germany, ROEMHELD (represented in North America by Carr Lane Roemheld of Fenton, Missouri), has provided assembly and handling of laboratory equipment to Thermo Fisher since 2009.

The rotary module has indices which may be released in steps of 45° by two foot switches.

Carr Lane Roemheld's modular units for assembly and handling consist of numerous modules that provide for the optimum and ergonomic positioning of objects for manual assembly. Horizontal and vertical rotation, tilting, lifting, placement and movement are the basic manipulations. The units can be combined into a modular system with application flexibility and variably combinable components for loads from 22 to 1325 lbs. Operation can be either manually on the module directly, or electrically via levers or buttons.

The latest development is a rotary module with media feed-ducts. Among other advantages, these allow for the hydraulic, electrical or pneumatic operation of devices clamped by zero-point clamping systems without complex boring.

The focus is on ergonomics

Technical Head Felix Pergande is very satisfied. "ROEMHELD intensely and dedicatedly responds to our individual requirements. In addition, their products are very reliable and can be configured according to our requirements - we do not have to buy anything ready-made."

Ergonomics were the top priority for the new manual

assembly workstation. The earlier incubator series had been assembled on height-adjustable tables, but later units weighing around 40 lbs. had to be moved manually without any auxiliary equipment. “For this reason, preassembly of the inner containers required a lot of handling and was physically more demanding,” says Production Resources Engineer Stefan Kämmerer.

Open to the front, the inside casing is approx. 28 in. high and 18 in. wide for the 42 gallon incubator type, and is manufactured in Thermo Fisher’s own sheet workshop. In one to two shifts as required, 8 of the plant’s 150 employees cover all 5 sides with heater foils, requiring the container to be rotated several times. Apart from this, a sensor and a fixture have to be mounted. The entire process takes about 45 minutes before insulation is attached and the outside casing is assembled over it.

Electronic modules have push-button lift, and rotary modules are operated by two foot switches.

Assembly line with four manual workstations

ROEMHELD designed a line of four assembly workstations, comprised of an electronic Shop-Floor lift module with a stroke of 8 in., which can be lifted and lowered by a pushbutton, and a rotary module. This rotary module is provided with indices which may be released manually in steps of 45°; for this purpose, the fitter can use two foot switches without having to walk around the container. “For efficiency, the fitters had the idea of a second foot switch; this suggestion could rapidly be implemented by ROEMHELD,” Kämmerer recalled. After the design completion of the assembly workstations, he ordered and assembled the ROEMHELD components.

All parties were satisfied with the workstation design. Pergande emphasizes the excellent ergonomics, and sees an evident improvement in product quality: “The clear position fixation and the defined handling by means of the 45° indices noticeably reduced the risk of dents in the container.” According to Pergande, time savings and cost reduction are not high priorities in this design, though both are achieved. He emphasizes that the ergonomic design of the workstations contributes to protecting the employees’ health and that “the absence of an employee costs money, because either we cannot produce or we have to assign a replacement.” As a consequence, less rejects and healthier employees contribute to cost savings and enhance Thermo Fisher’s success as a market leader.

To protect the work surfaces, a clamping device with brushes on bearing surfaces holds inner containers.

The company is now designing other manual workstations using the modular units. Equipment fitter Steffen Hillesheim remarked, “An ergonomic workstation with useful features like this is invaluable. It is good for the back, neck, and shoulders and is a noticeable relief. The body feels it immediately.” The standard interface conception of the modular units allows for the flexible and uncomplicated planning of future workstations, and Hillesheim said it has also helped assembly workstations in complying with the latest occupational health and safety regulations.

An employee covers five sides with heater foils, so the container has to be rotated several times.

ROEMHELD, represented in North America by Carr Lane Roemheld of Fenton, Missouri, is one of the world’s market and quality leaders for solutions in industrial production, assembly, clamping and drive technology.

In addition to assembly components, the company also offers a host of power workholding devices, machine vises, and zero point mounting systems for CNC machining, as well as die, mold and tool clamping systems for presses, die casting, injection molding and compression molding machines.

In the News: Modular Lifting Units Assist Trek Bicycle With Painting and Finishing

High quality custom painting and graphics are key to the popularity of Trek bicycles, and Carr Lane Roemheld helped the company provide ergonomic workstations for this process. Modular lifting columns are utilized to lift bicycle parts, enabling detailed applications by hand. Carr Lane Roemheld worked on the installation with Project One Paint Manager Craig Haley, who has been employed by Trek for 30+ years.

Trek Bicycle Corporation started in 1976 as a five man operation in a red barn in Waterloo, Wisconsin, and has grown to a billion dollar company. “Quality is always first with us,” said Craig. “We offer options not available from other manufacturers. Customers may choose from a virtually limitless array of colors and graphics, including ‘nuclear’ colors, multi-color fades, animal theme graphics, and more. Talented people with great equipment are key to providing the cutting edge excellence that Trek customers have come to expect.” With all of this detail, it was important to provide ergonomic work stations. “The modular lifting columns enabled each technician to maximize their comfort and effectiveness,” said Craig. “We started with one, and these lifting modules have proved so popular they have spread throughout the paint and finish department. In the future, we expect continued expansion of ergonomic work stations utilizing modular lifting and handling modules.”

Besides the lifting unit, modular units from Carr Lane Roemheld are available for tilting as well as horizontal and vertical rotating of workpieces, with hydromechanical or electric operation. The units can be combined in numerous ways for safe and efficient handling and movement of heavy loads. They can be used for enhanced productivity in conjunction with carts, floor modules, plates, clamps, or height adjustable tables.

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