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Quick Coupling systems

Info 1

Automotive industry

Technical expertise for maximum productivity

The recommendation, development and manufacture of quick coupling systems for well-known national and international motor manufacturers requires a high degree of competence. We at WALTHER-PRAEZISION have successfully proven our level of performance in this area, as is illustrated in the various examples given in this brochure.

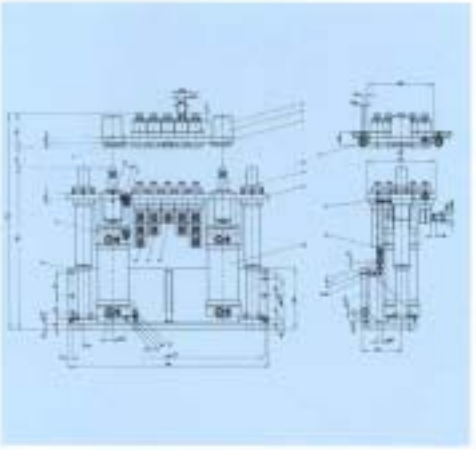
Connecting, controlling, measuring, regulation, automation and testing are all functions which can be performed by couplings from our extensive range of standard and non-standard monocouplings, multicouplings and docking systems.

Efficient operating procedures in production and test facilities require a high level of automation.

This applies to press tools, testbeds, transfer lines and robotics.
In all these cases it is a question of quick and safe connection and disconnection of electrical, air, gas and fluid lines between stationary and mobile components.

We at WALTHER-PRAEZISION know how to safely connect a wide variety of media, under various operating pressures by means of couplings which are available in numerous nominal bore sizes and which can be disconnected cleanly without spillage.
The same applies to electrical connections used in high voltage, high frequency and control lines. Our extensive experience of practical applications enables us to propose a solution to any problem – a solution which we can be relied upon to achieve.

Years of experience with computerized test stands connected to automated docking systems have shown that by automating test operations, improved test results can be obtained, and the number of teststand staff required substantially reduced.



① – ⑤ Testbed installations for diesel engines of different types and sizes. The changing of the engines to be tested takes place automatically, and fluid, electrical and exhaust gas lines are connected to the teststand and engine and disconnected from them by means of WALTHER docking systems. When the engine docks in the teststand the mechanical drive shaft is automatically connected to it.

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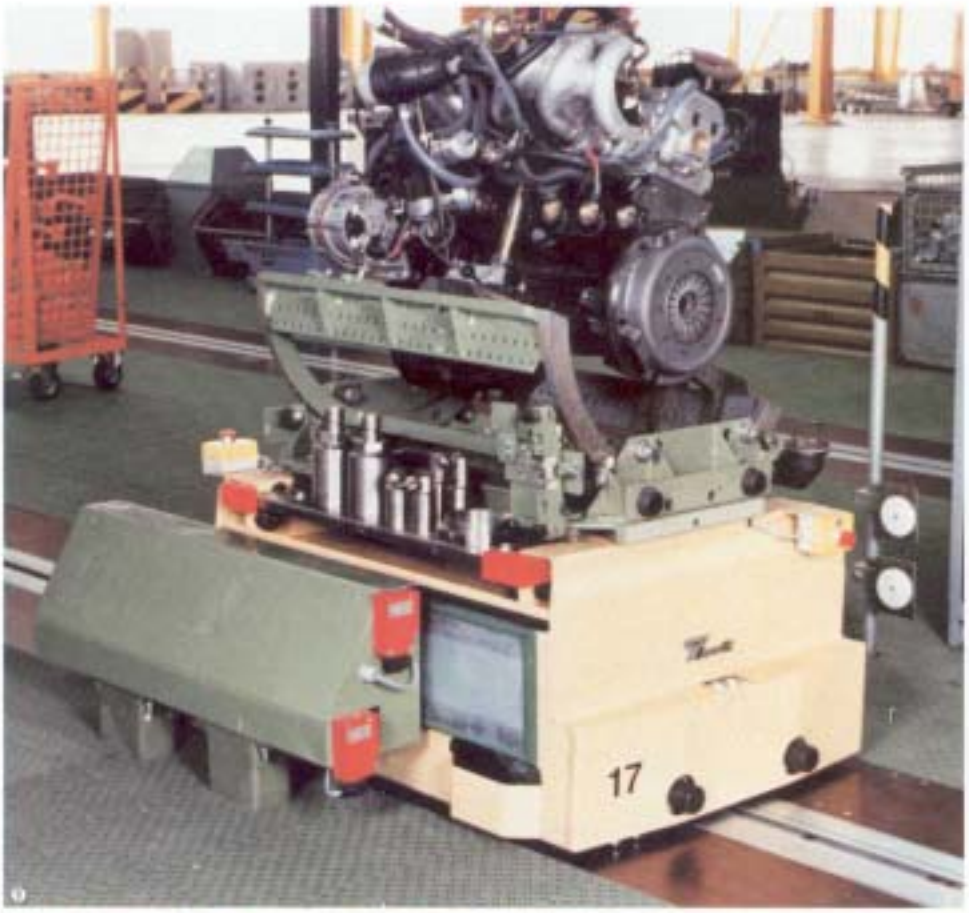


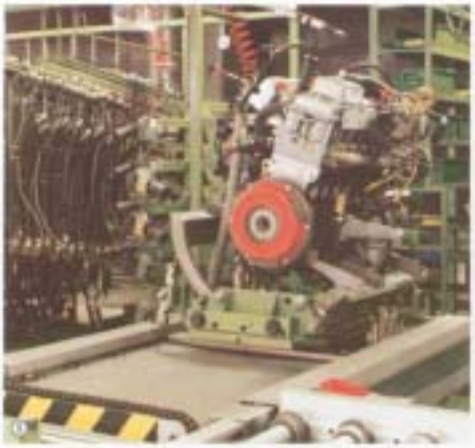
Walther docking systems have proven themselves over many years in development teststands and testbeds for the testing of Otto and diesel engines. Here the docking systems are used in vertical and in horizontal positions. The docking systems serve to connect the fluid and electrical lines between engine and teststand. Media discharge is safely avoided by having a Clean Break coupling on each medium line, thereby ensuring spillage-free disconnection.

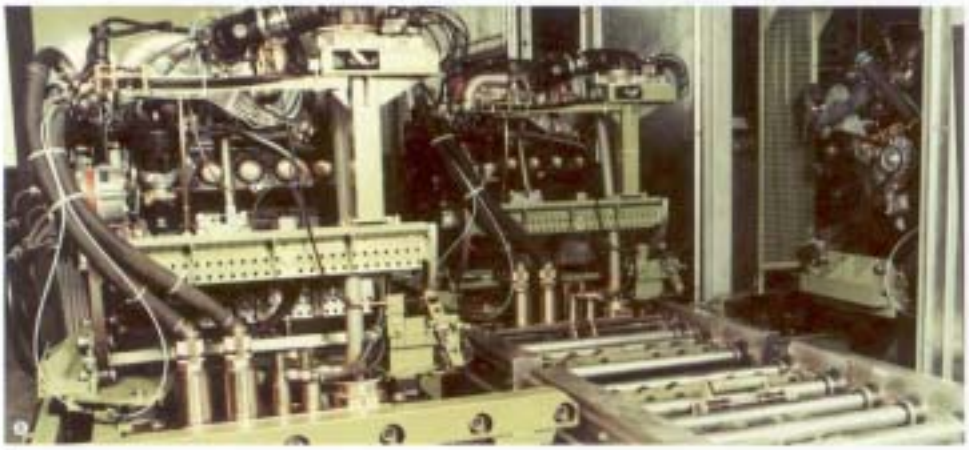
① Engine pallet with engine mounted. The WALTHER docking system is also used as a pallet in which BCD codes allow the pallet to be identified during the test.

② Pallet as docking system component with engine mounted.

③ Fully automatic feeding of teststand with pre-rigged engines on pallets. Parking points are located opposite the teststands for optimization of engine changeover times.

④ Pre-rig and strip down point for engine test pallets. Engine rigging sets allow quick-connection between engine and multicoupling by use of self sealing monocouplings and direct engine connectors.





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① Manually-operated coupling used for quick connection between engine and multi-coupling for exhaust gases up to 800 °C.

② Pallet with multicoupling fixed half, compressed air storage and universal clamping units for different engine types.

③ – ⑤ Engine transport systems. Trolleys with front-mounted and prerigged diesel engines of different types.

⑥ Fully automatic engine test area. Docking of engine in the test bay performed by vertically mounted multicouplings.

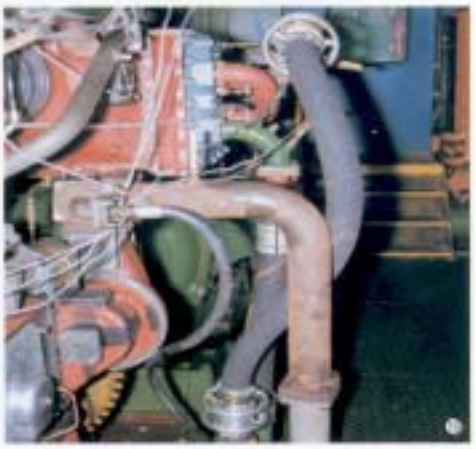
⑦ Docking systems for various engines with measuring lines for testing and timing of electronic ignition and injection systems.

⑧ Diesel engine teststand with vertically mounted multicouplings for connection of engine services.

⑨ Multicouplings for transmission test-stands for automatic checking of differently constructed transmissions.

⑩ Docking system with hydraulic pull-in actuator technique in teststand for testing of automatic transmissions.

⑪ WALTHER monocouplings with large nominal bores equipped with ring grips optimize manual rigging times of large engines.



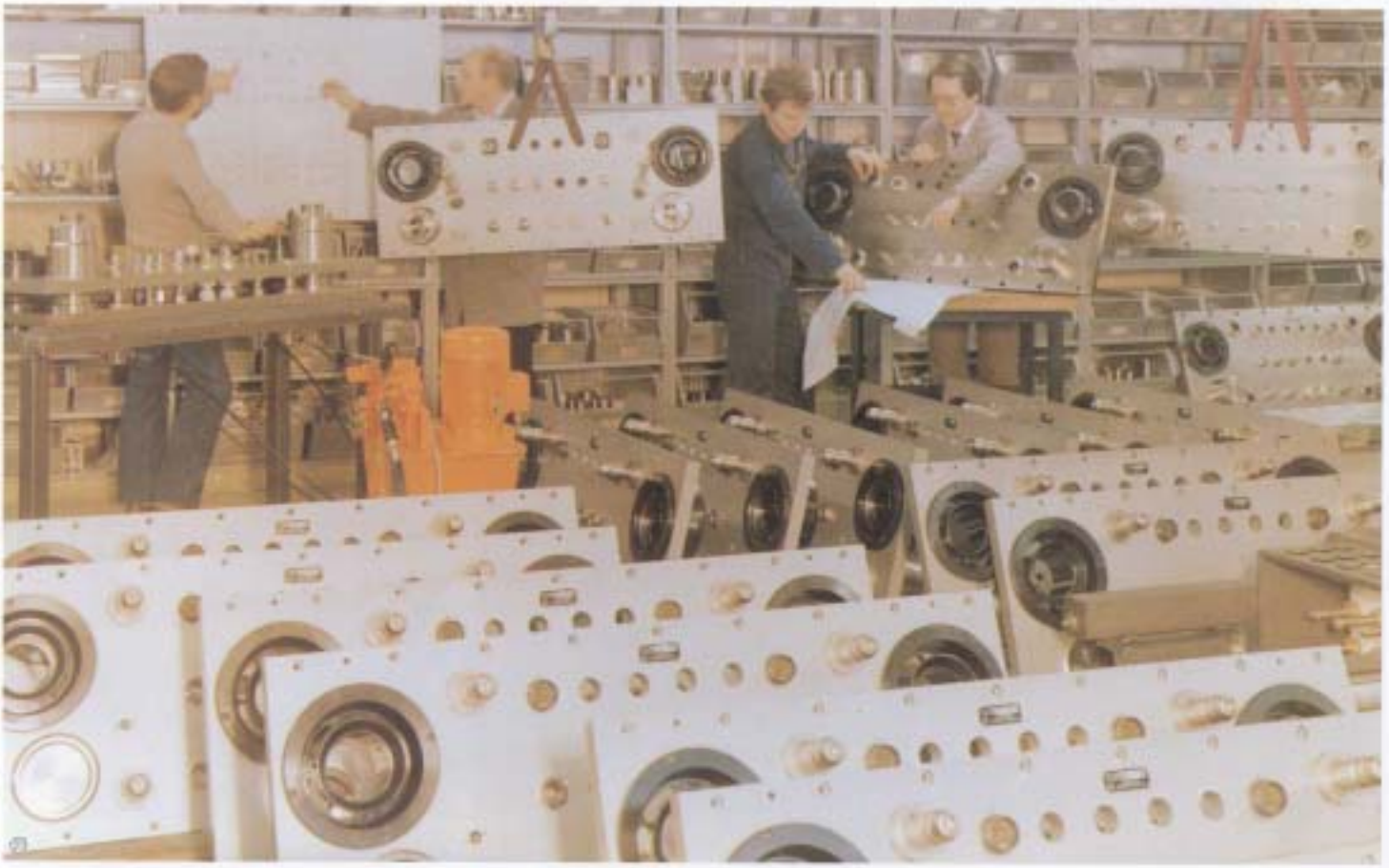
The degree of mechanization of production facilities in press shops and body production in the automotive industry has risen steadily in recent years. During this time the number of body types has increased, resulting in a corresponding decrease in batch size. For this reason the flexibility of production and inspection facilities has assumed an ever-increasing importance. In order to reduce unproductive idle times to a minimum it was necessary to find solutions for quick and reliable fluid and electricity connections for all mobile components in production installations. The task was as follows:

to connect and to disconnect a large number of supply, measuring and control lines while avoiding possible wrong connections, and, for environmental reasons avoiding any spillage during disconnection.

Due to the use of multicouplings and docking systems of different constructions these demands have been achieved, production plants have been made more flexible and shut-down times have been diminished.

① ② Final assembly of WALTHER multi-couplings and docking systems for test stands and transfer lines.

③ Final inspection of WALTHER multi-couplings and docking systems according to factory standards and customer specifications.



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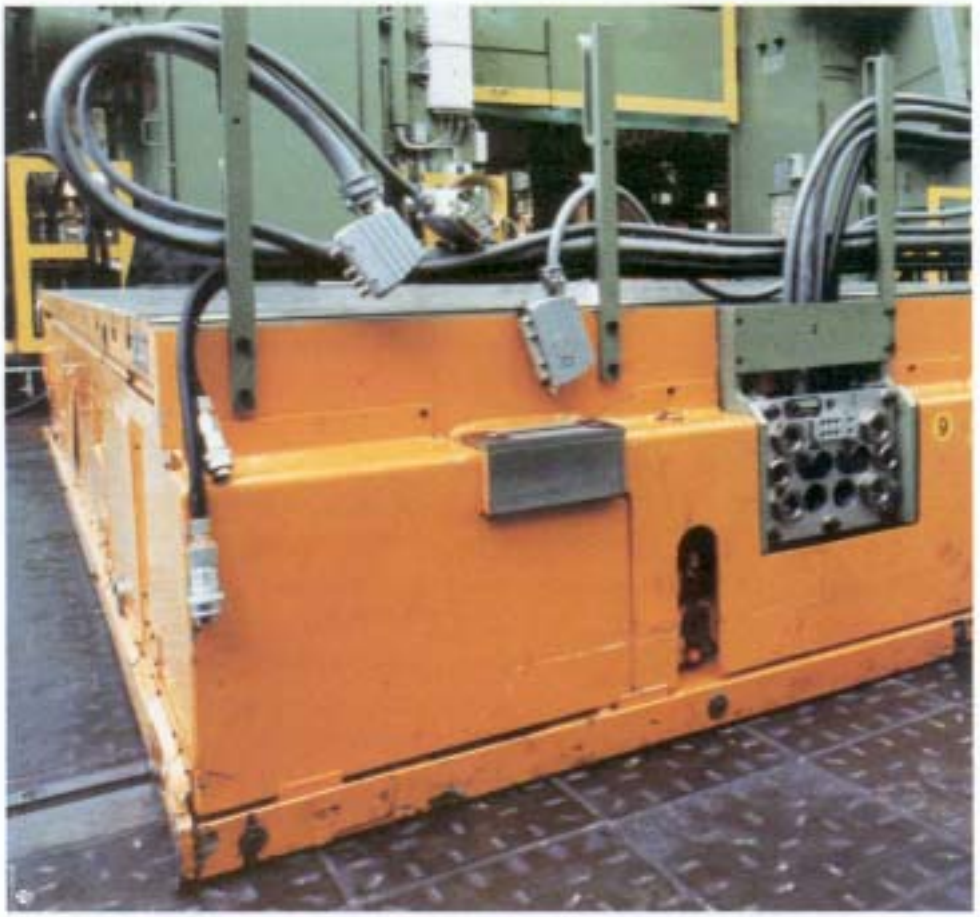
① Fluidic multicouplings on a pressing tool.

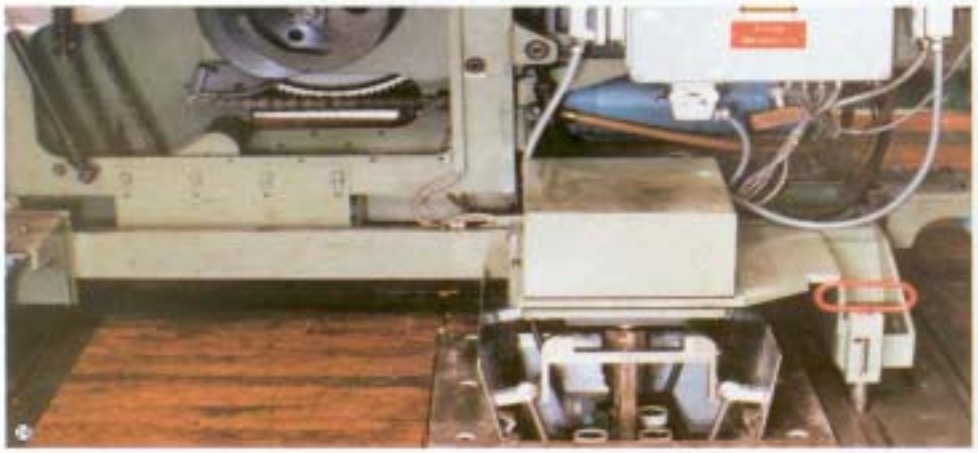
②③ Docking system set in floor for electricity and fluid supplies to mobile components in press line. The multicoupling floor cover opens and closes automatically by remote control.

④ Trolleys with WALTHER docking systems for connection of fluid and electrical lines between press and rigged tools.

⑤ WALTHER multicouplings for the connection of fluid and electrical lines between press tappets and upper tool half.

⑥ Manually-operated multicouplings for the connection of electrical and fluid lines between press and tool. Multicoupling in connected position.





⑤ ⑥ Manually-operated multicoupling with locking and unlocking aids for the connection of electrical and fluid lines between tool and press.

⑦ Multicoupling fixed half.

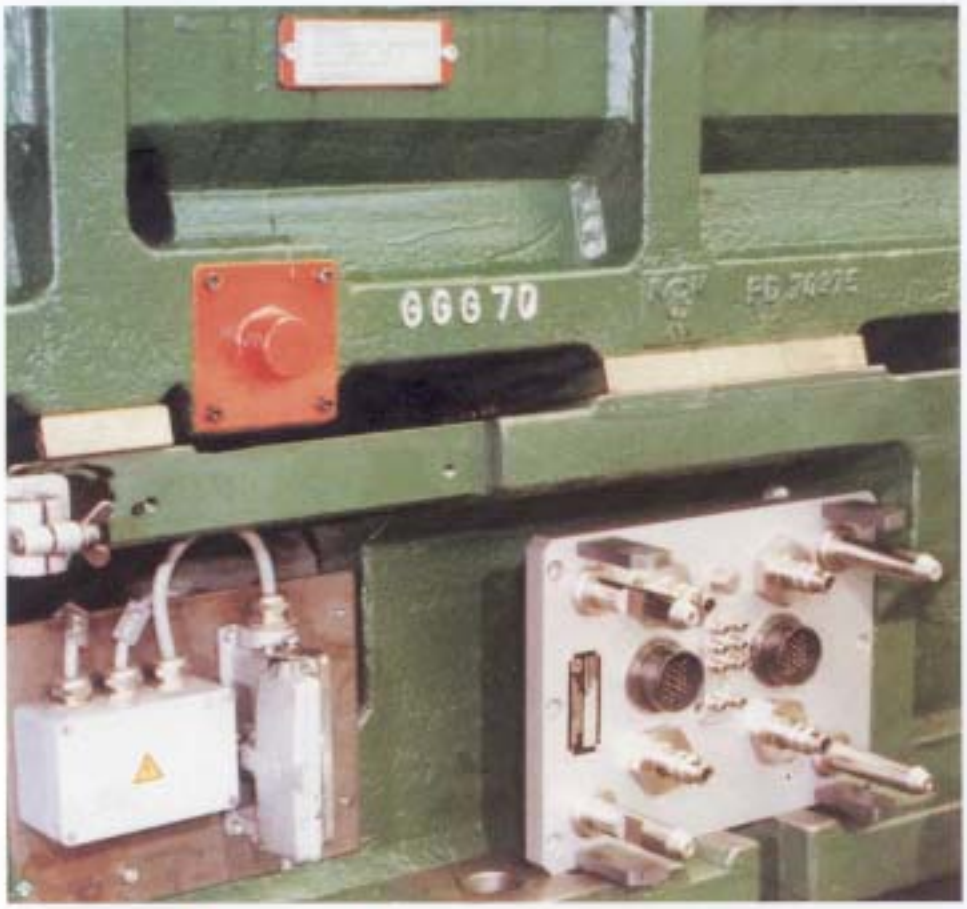
⑧ Multicoupling free half in connected position.

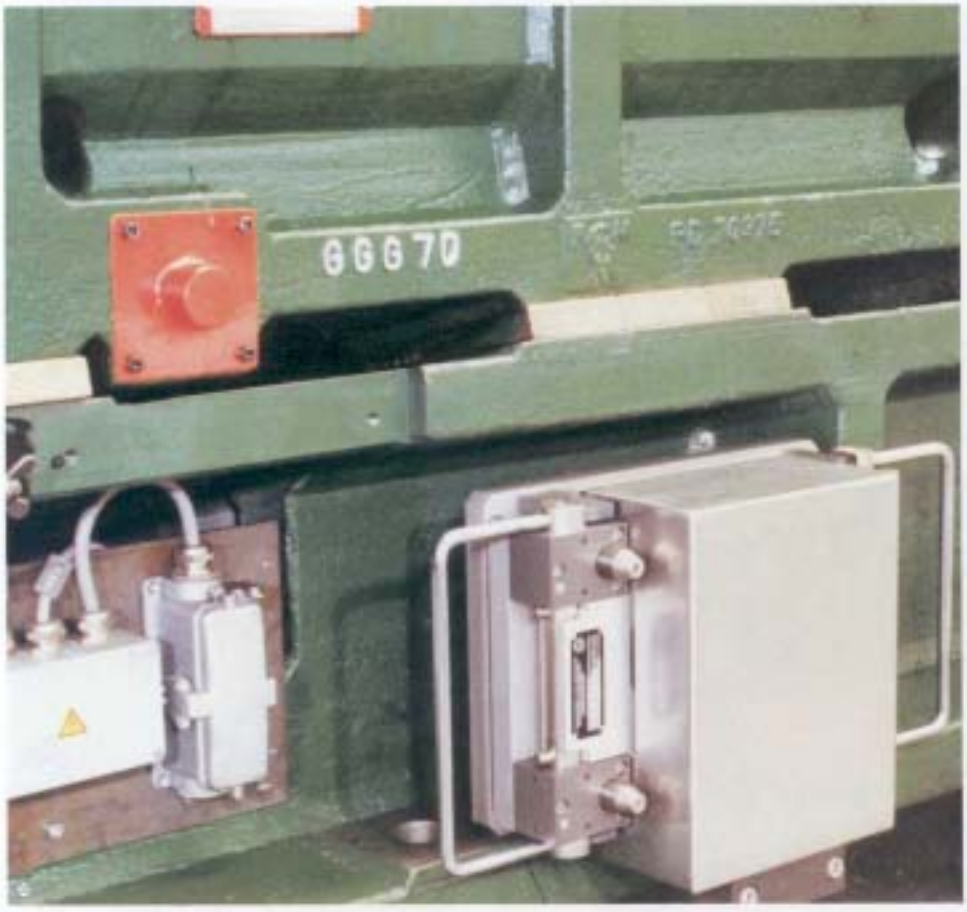
⑨ Support and grip rail.
Connection of fluid and electrical lines to grip rail performed by WALTHER multicouplings.

Monocouplings type LP-006 and LP-007 for compressed air lines on press (not shown on picture).

⑩ Manually-operated multicouplings for connection of electrical and fluid lines between press and tool.

⑪ WALTHER docking systems for automatic docking of electrical and fluid lines between press and sliding table.





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⑭ – ⑰ WALTHER docking system for energy supply to tool carriers in an assembly shop for securing truck wheels. Tool carriers with different multiple screw heads are located to the left and right of the assembly line in waiting areas. The energy supply lines are located parallel to the assembly line on mobile overhead gantries.

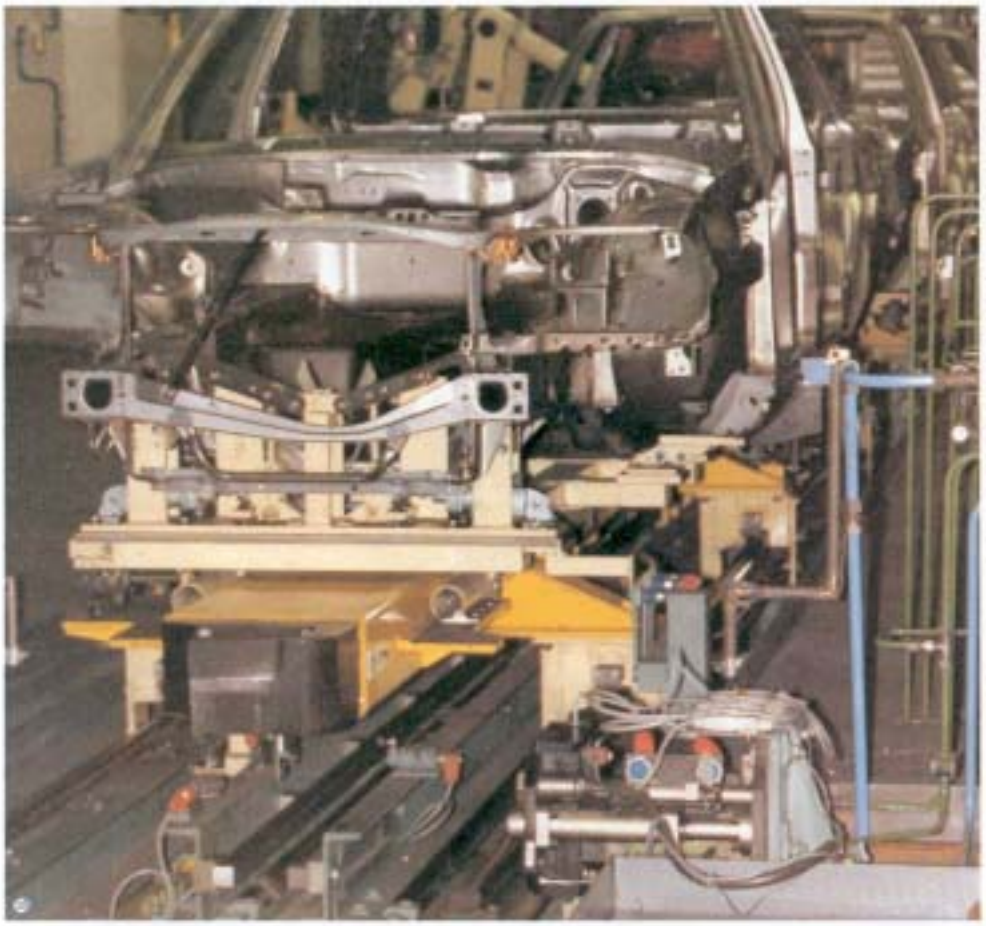
When moving a tool from the waiting area to the working area the WALTHER docking system takes care of the automatic connection of all supply lines. When returning the tool carrier into the waiting area the energy supply is disconnected automatically.

⑭ Tools and multicoupling fixed halves in waiting area.

⑮ Mobile gantry with tool carrier in working area. The connected multicoupling can move freely with the tool carrier.

⑯ Tool carrier entering gantry. Docking system not yet connected. Background gantry: tool carrier on gantry, docking system connected. More tool carriers with disconnected multicouplings in waiting area in background.

⑰ Tool carrier with multicoupling fixed half moving between waiting area and mobile gantry. Multicoupling free half disconnected and locked in parking unit.



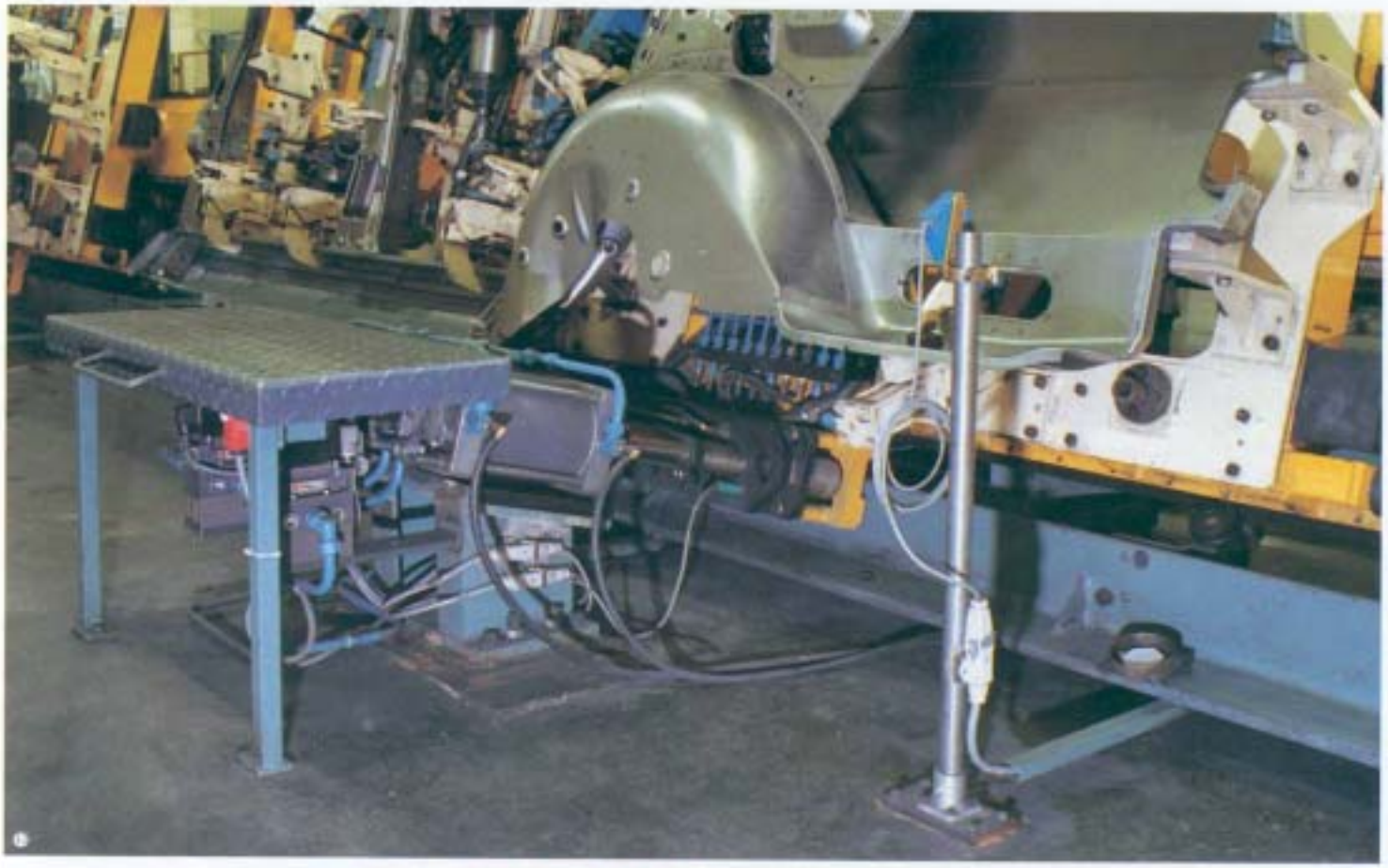
Ⓐ – Ⓓ WALTHER docking systems on different transfer lines for electricity and fluid supplies between transfer line and pallet, on welding lines and for tool changes. The electrical lines provide control as well as welding currents. The Clean Break elements mounted on the docking systems are used to seal compressed air and hydraulic lines without spillage.

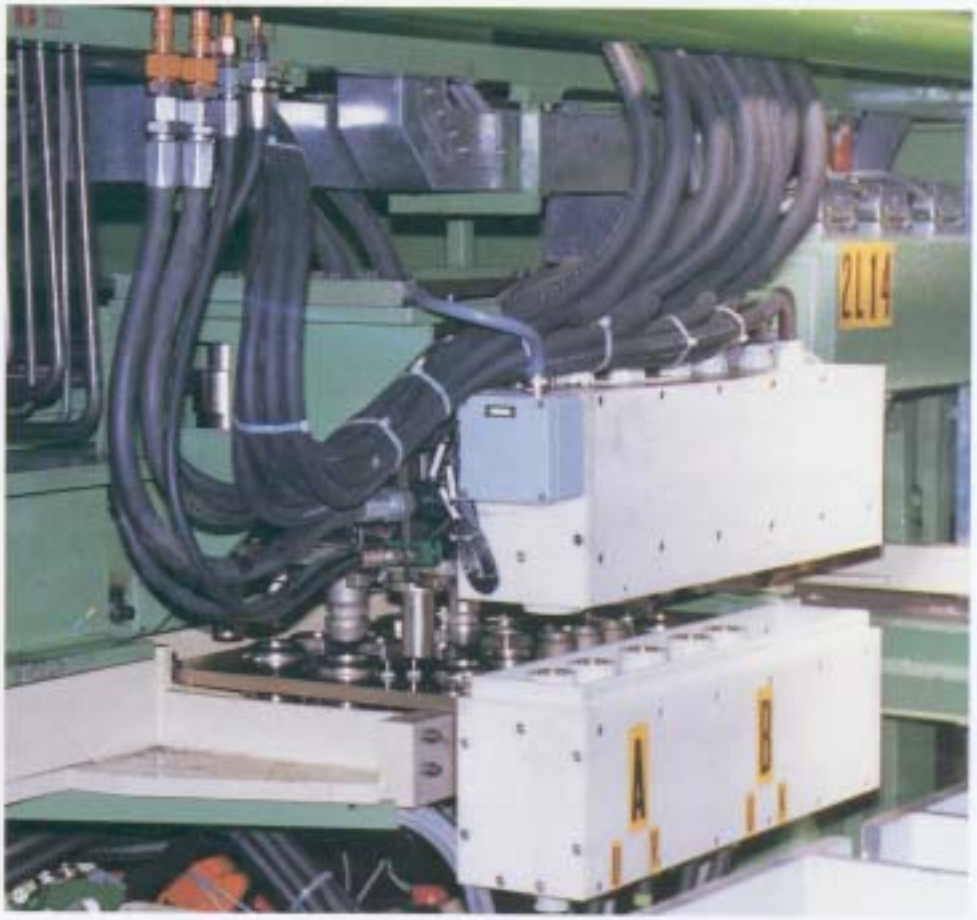
Ⓐ – Ⓓ Docking system with two hydraulic and four mechanical locking units, CS coupling elements of different nominal bores, high current contacts, electro-multicouplings for control lines and four contacts for supervising coupling positions by means of proximity sensors.

The multicoupling free half is suspended from four guiding pillars and mechanically locked. Unlocking takes place hydraulically once the locking cylinder piston has been extended. The connection sequence is as follows:

Firstly: extension of the locking cylinder and mechanical locking of its locking bolt.

Secondly: retraction of the hydraulic cylinder and drawing together of multicoupling plates. Disconnection takes place in reverse order.

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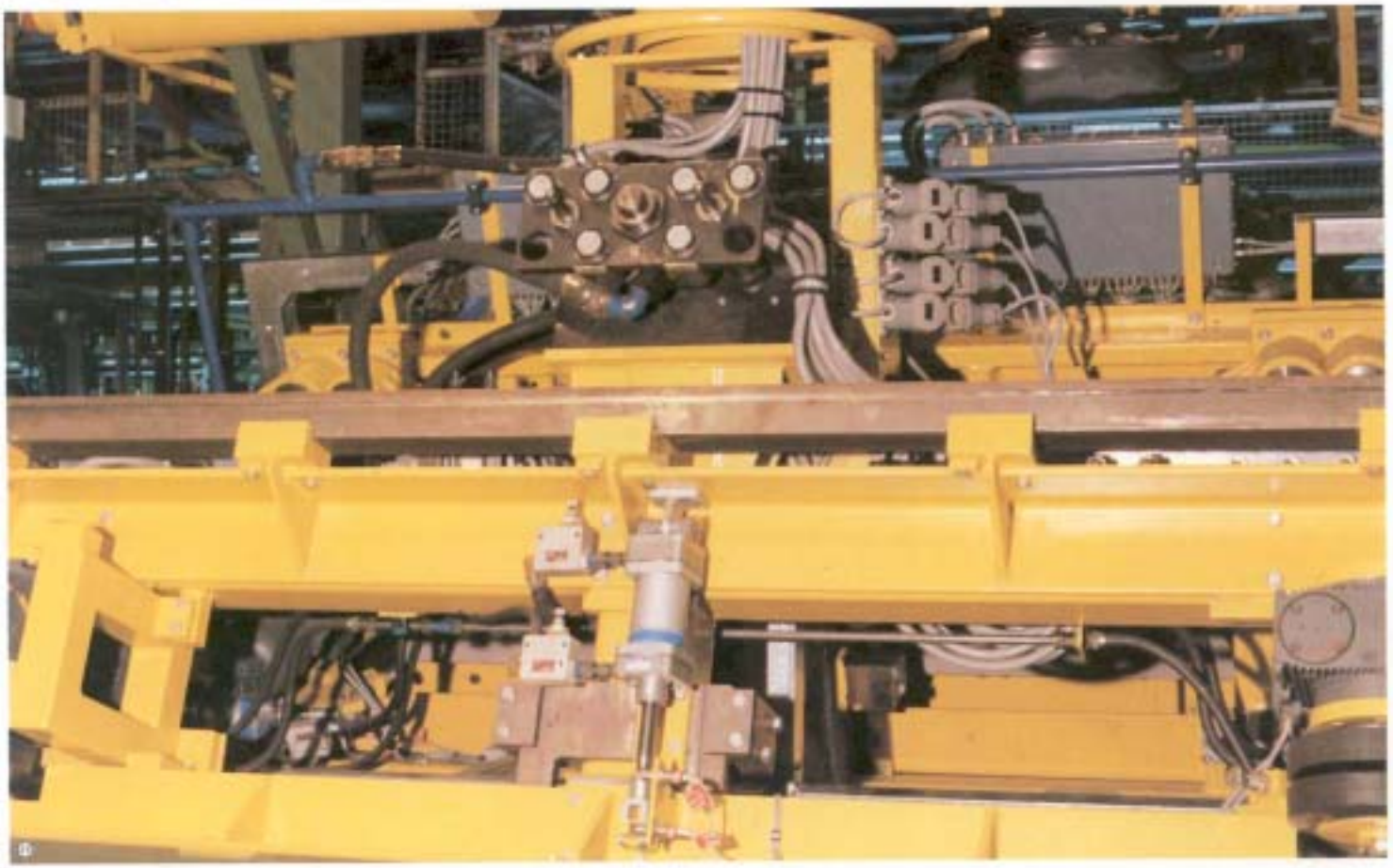
WALTHER mono- and multicouplings in a car body side line for supplying pallets with compressed air and electricity.

Ⓑ Ⓓ The multicoupling free halves are located above the guide rail for the pallets on both sides of the transfer line. Magnetic switches on the pallet are controlled and monitored electrically. These electrical lines are connected by six 25-pin electrocoupling elements. The multicoupling is also equipped with an EC-element for the compressed air supply for all clamping cylinders on the pallet.



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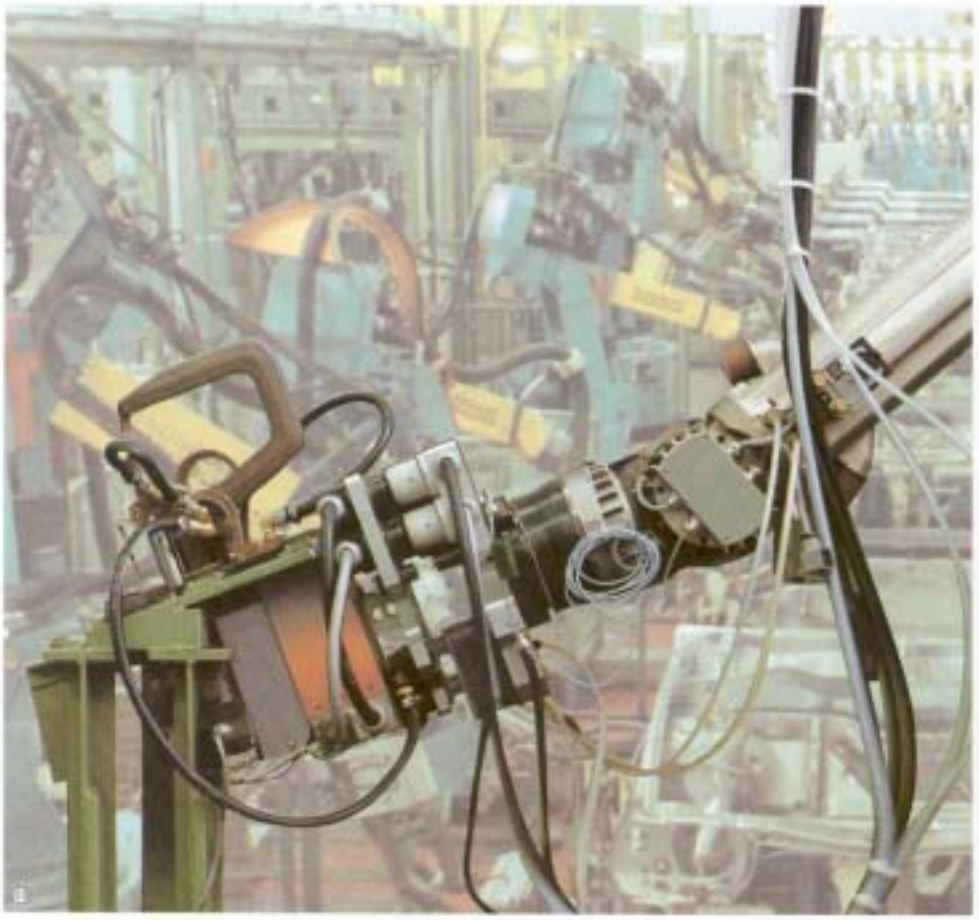
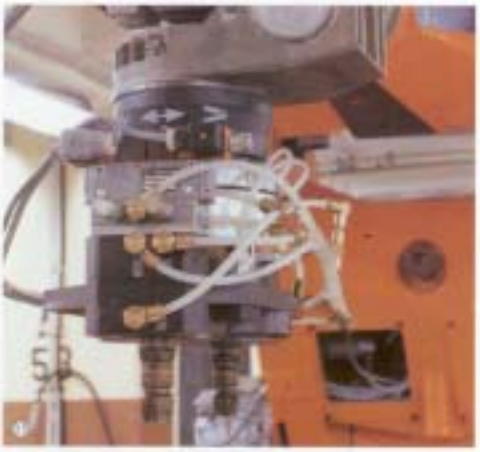
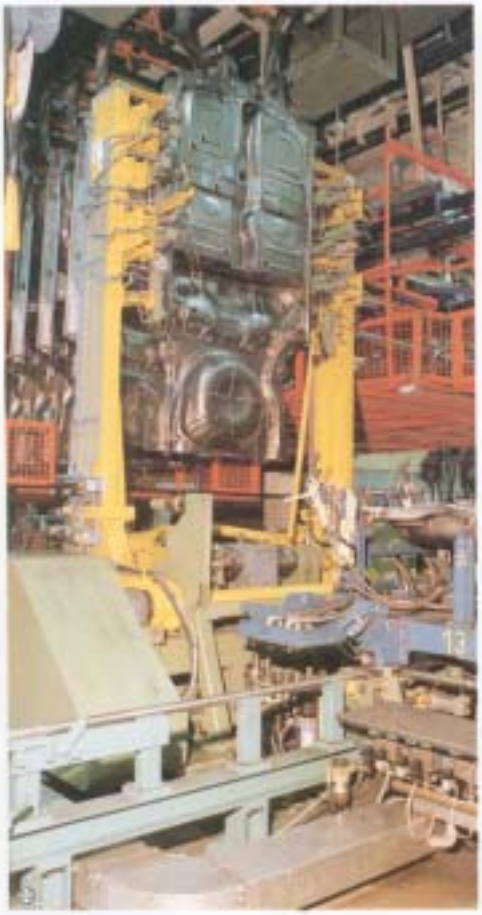
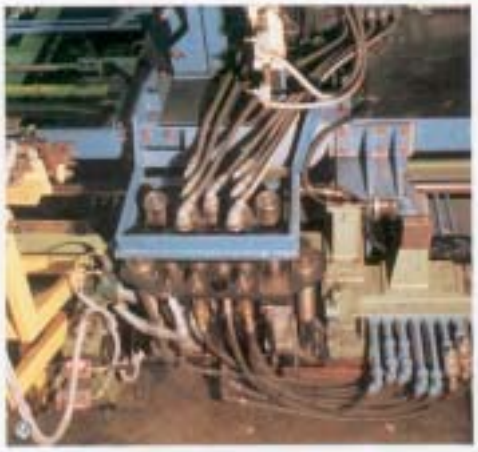
① – ⑤ WALTHER docking systems for automatic tool change on robots. The docking system connects control lines for welding currents, pneumatic, hydraulic and cooling water supplies. After disconnection all fluid lines seal without spillage. Connection takes place by means of a balanced force system.

The demand for more flexibility in manufacturing plants has led to a greater utilization of robots, by equipping the sixth axis of the robot with a WALTHER docking system. Due to this system it has been made possible to connect different welding tongs and/or manipulators and to supply them with energy. The quick and automatic retooling of the robots increases their job capabilities and subsequently the degree of their efficiency.







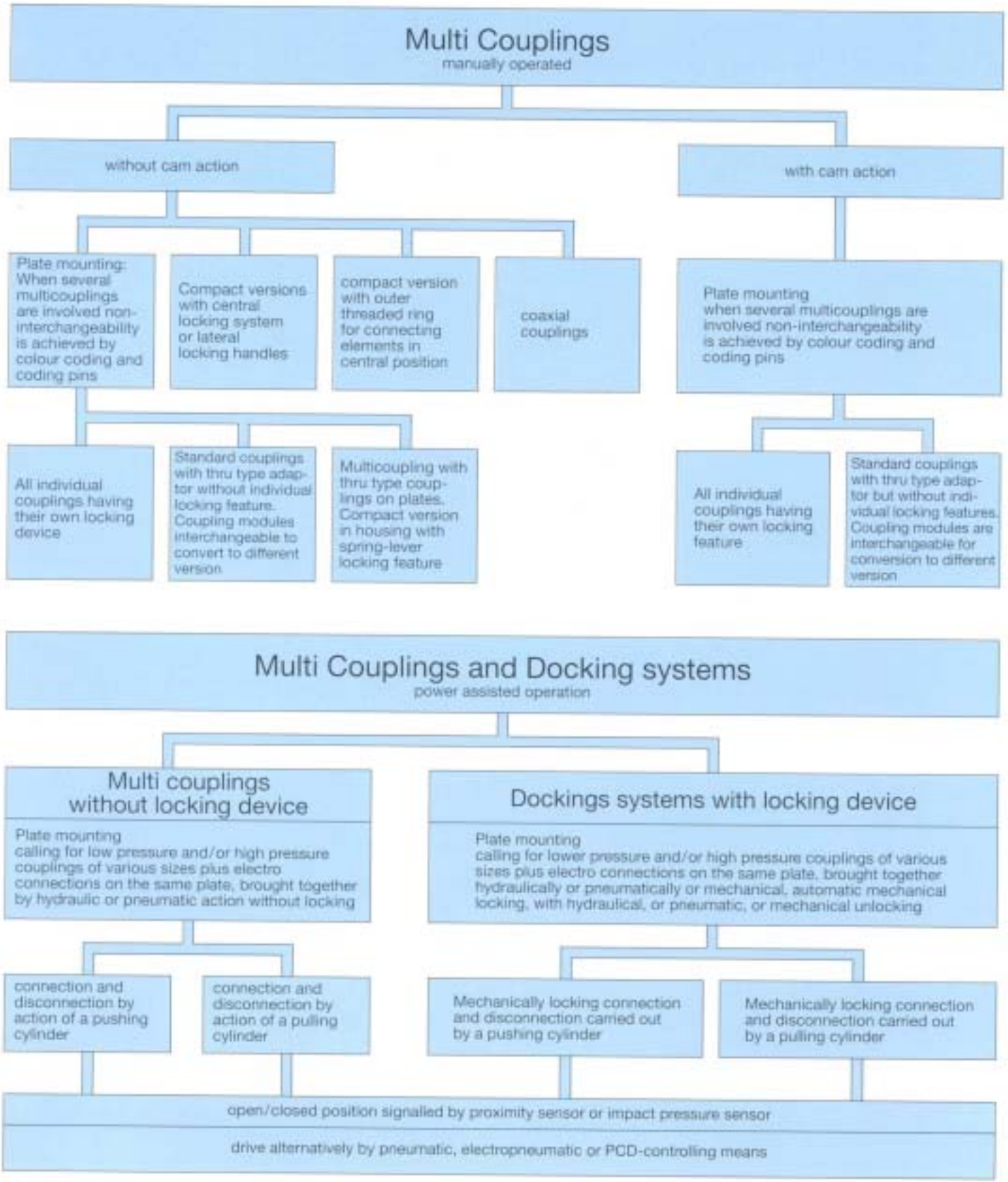


① – ⑤ WALTHER docking systems for connection of pneumatic lines in transfer lines. In order not to subject the pallets to additional forces, the docking is effected by means of a balanced forces system. In this way no force is transferred to the pallet.

As soon as a pallet has reached the working position, connection between stationary multicoupling free half and the multicoupling fixed half takes place. Firstly, the locking pins of the stationary unit are extended. They lock in the multicoupling fixed half automatically. After locking, the multicoupling free half connects by retracting the pins of the locking cylinders.

At disconnection the coupling elements separate by the extension of the locking cylinders. Afterwards the locking elements on the fixed half are pneumatically unlocked from the free half (stationary unit). Then the locking pins are retracted resulting in the transfer line and pallet becoming disconnected.

Multi Couplings and Docking Systems



In Multicouplings and Dockingsystems one can use alternatively full flow elements, one- or both side sealing elements in standard-, high pressure-, or clean break version according to WALTHER standard sheets WWN 43.1, 46.1, 46.2, 50.1, 51.1 and 51.2.

For computerized installations Multicouplings and Dockingsystems can be coded binarily.

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