

Application example:

Six-fold coupling system with self-locking, two pairs of lines are each pressurized double-acting and two lines are used for pneumatics. The fixture pallet does not have to be clamped in the loading station in order to absorb the coupling forces. For this purpose, the system has the self-locking function.

Description:

Multiple coupling systems are predominantly used in machine tools, where they serve as the interface for media transmission between the fixture pallet and the loading and unloading station, or the machining station.

Applications have been successfully carried out in other areas of engineering, such as handling technology, robotics and in the construction of moulds and dies.

The design of the coupling systems is based on the built-in coupling elements according to data sheet 100-3. These are integrated into a common plate in a very compact and functional manner.

We provide standardized subassemblies or design and manufacture customer specific coupling systems.

Functioning:

The coupling elements required for the transmission of media are built into common base plates. The coupling mechanism plates are fitted in the operating and machining station, and the coupling nipple plates in the fixture pallets.

Depending on the design, various additional functions can be integrated into the coupling plates.

General technical data:

| Nominal diameter: | 3 | 5 | 8 | 12 |
|---|------------------|------------------|------------------|-------|
| Max. operating pressure [bar] | 350 | 500 | 300 | 250 |
| Max. flow/minute [l] | 8 | 12 | 25 | 50 |
| Coupling stroke [mm] | 4,5 | 4,5 | 7,0 | 10,0 |
| Min. coupling force at 0 bar [N] | 94 | 98 | 98 | 169 |
| Axial coupling force under pressure each coupling point F[N]=9,4xp[bar] | F[N]=15,4xp[bar] | F[N]=31,4xp[bar] | F[N]=70,7xp[bar] | |
| Axial positioning tolerance [mm] | + 0,5 | + 0,5 | + 0,5 | + 0,5 |
| Radial positioning tolerance [mm] | ± 0,3 | ± 0,3 | ± 0,3 | ± 0,5 |
| Permitted angle tolerance | ± 1° | ± 1° | ± 1° | ± 1° |

The spring-loaded blast nozzle built into the coupling mechanism plate can be designed in such a way that the jet of air in the coupled state can, for example, be passed on for system monitoring of the workpieces.

In order to avoid the clamping of the device pallet and the associated absorption of coupling forces, the coupling systems can be equipped with a self-locking system that saves on additional, expensive clamping elements in the operating station.

The coupling elements themselves are all made of stainless materials. This means that not only hydraulic fluids but also air or vacuum can be transmitted with no difficulty. Coupling elements of different nominal diameters can be combined in a multiple coupling system.

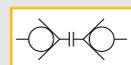
Combinations with rotary couplings in the operating station permit the fixture pallet to be turned through 360°, thus providing easy access to the fixture.

Operating conditions:

The coupling elements can be coupled either only when depressurized or when pressurized up to maximum operating pressure, whichever is chosen.

If systems are used that can be coupled under pressure, it is, for example, possible to effect a pressure change to the clamping pressure during machining, which is not possible when pilot-controlled check valves are used in the clamping line.

Webcode: 010004



Advantages:

- ⊗ Different coupling elements can be combined
- ⊗ Can be combined with rotary couplings
- ⊗ Additional functions can be integrated
- ⊗ Depressurized or pressurized coupling
- ⊗ Varied with four nominal diameters
- ⊗ Transfer of liquid, gaseous media and vacuum

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Technology that connects



Rotary coupling system for a machine tool with fourfold coupling interface and integrated six-fold rotary coupling

- l. Coupling mechanism plate, depressurized coupling
- r. Coupling nipple plate with blast nozzle and integrated rotary coupling with hydro-mechanical locking



Docking station with six coupling points, pressurized coupling; in order to dock the coupling plate, it is raised by an integrated hydraulic cylinder.

- An electronic sensor queries the position.
- The positioning of the counter-couplings is realized by two bolts.



Coupling system with hydro-mechanical locking and two coupling points:

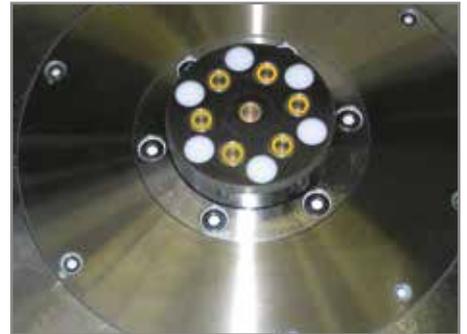
- l. Coupling mechanism plate without locking for the machining station
- h. Coupling nipple plate with integrated rotary coupling and locking bolts for the loading station
- r. Coupling nipple plate for mounting into the fixture



Coupling system for extrem low leakage hydraulic oil fed in tool changing modules of a robot. Therefore two hydraulic lines are coupled by threaded-body coupling elements (M24x1,5).



Docking system in the loading and unloading station of a machine tool. In order to allow 360° rotation of the hydraulic clamping fixture the system is equipped with a rotary coupling.



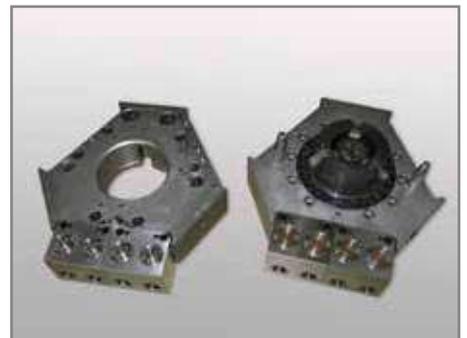
Coupling plate used for the transmission of hydraulic oil in the loading and unloading station of a fixture plate. The six coupling elements are coupled pressurized.



Triple coupling system for hydraulic oil fed in the fixture plate in a machine tool. The connection in the loading and unloading station is realized through the lowering of the fixture plate.



Coupling nipple plate in the fixture plate of a machine tool. The nipple plate is docked to the docking unit (figure above) and hydro-mechanically locked.



Tool-change system for a handling unit in a robot with four coupling elements (nominal diameter 8) as the interface for a hydraulically operated cutting tool.