

Manual coupling systems

with levers or ball valve, single- and double-acting, pmax. 500 bar

100-2
Issue: 03/2023



Double-acting coupling nipple unit with 13 cm³ hydraulic accumulator (l.), coupling mechanism board (r.) and safety holder for coupling mechanism board with proximity switch (b.).

Description:

Manual coupling systems are applied with machine tools that operate with hydraulic fixtures but do not have a standard equipment of a hydraulic interface for oil supply to the fixture pallet.

The operating personnel take care of coupling and decoupling. In contrast to quick locking couplings, manual couplings do not bear the danger of mixing up pressure line and tank line. Also, the coupling process is made much faster.

After clamping the workpiece it is easy to unclamp the system without effort by the use of a hydraulically piloted check valve. Also the system pressure remains.

To unclamp the system, the T-port must be pressurized. At the single-acting coupling system the ball valve takes this feature (see page 4).

Required safety elements are already integrated. These include one hydraulic accumulator one check valve and one pressure relief valve which protects the hydraulic accumulator from a pressure rise over 10%.

The coupling unit can be equipped with two different hydraulic accumulators. HYDROKOMP recommends the accumulator with 13 cm³ nominal volume up to an oil volume of approx. 100 cm³ in the fixture. When the required oil volume is larger, the hydraulic accumulator with 40 cm³ nominal volume should be applied. The hydraulic accumulators are subject to technical rules for pressure vessels (see data sheet 600-20).

Installation instruction:

As standard the manual coupling systems are equipped with manifold and G1/4 threaded ports for oil supply. All flange-on surfaces have O-ring counterbores on the bottom and on the rear side, which also allow oil supply without pipes through drilled ducts.

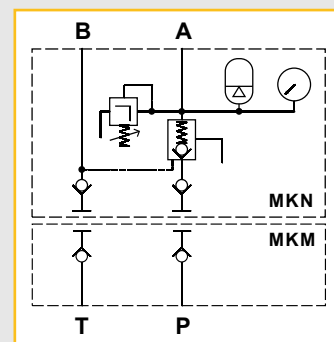
Safety information:

A safety holder with an inductive proximity switch is optional available for the double-acting coupling system. The safety retainer keeps the coupling mechanism board in the decoupled state in a parking station (see page 3).

Through the integrated proximity switch the safety holder can be directly connected with the machine control. With that, the pallet transport is only permitted in decoupled state. With the help of a equalizer valve in the coupling nipple of the T-port the pressure rise is limited to about 5 bar in decoupled state, e. g. when a leakage in the system occurs. For coupling and uncoupling of the coupling nipple unit and the coupling mechanism board both hydraulic lines must be depressurized by the hydraulic valves.



Webcode: 010002



Advantages:

- Oil supply by manifold or G1/4 threaded port connection
- Versatile mounting options
- Safety elements integrated
- Two hydraulic accumulators choosable
- No mixing up of pressure line and tank line
- Quick and easy coupling
- System pressure remain during coupling

We also design and manufacture customized variants!

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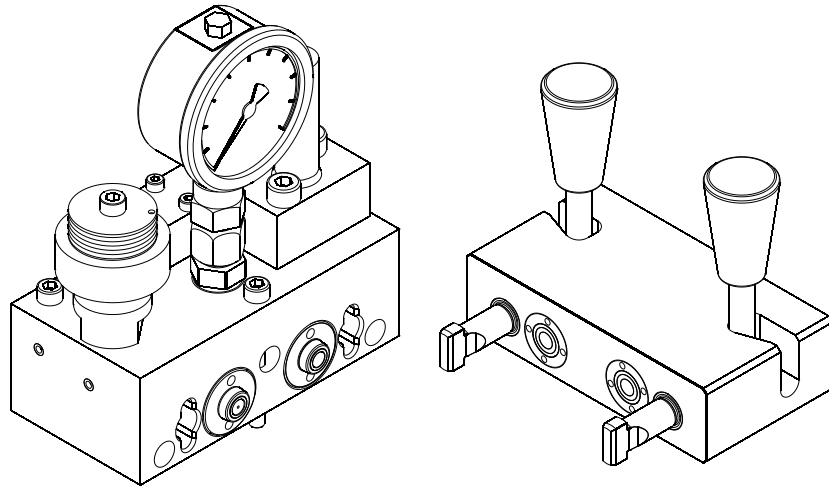
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Technology that connects



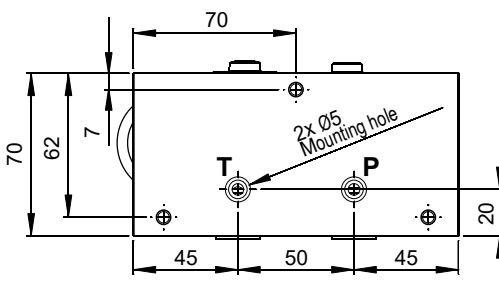
Manual coupling system

Manual coupling system, consisting of coupling nipple unit, coupling mechanism board and optional safety holder with inductive proximity switch (page 2 and 3).



Coupling nipple unit:

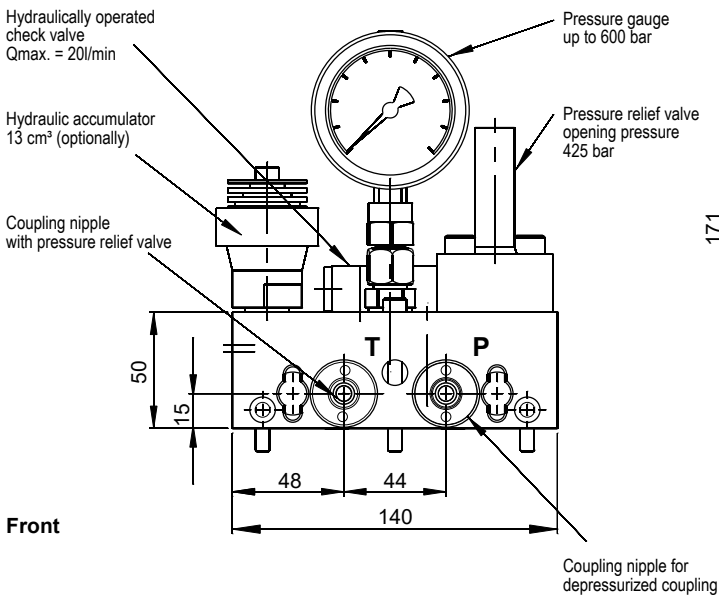
Bottom



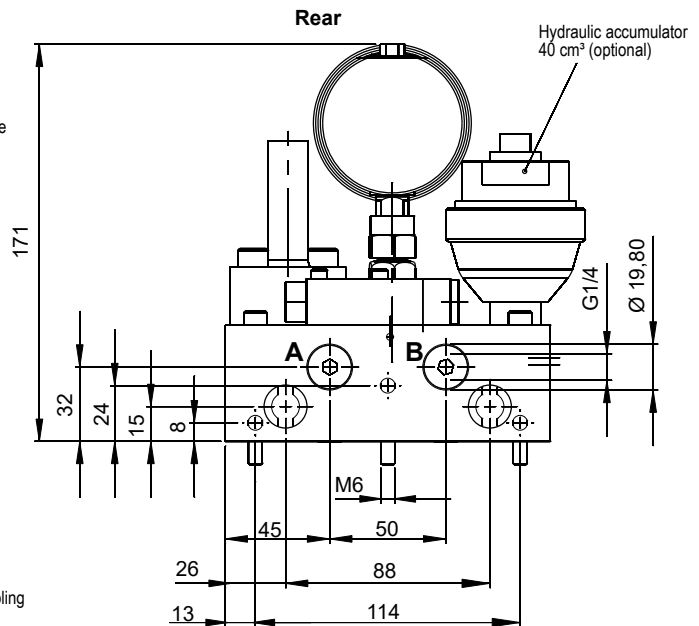
The flange-on surfaces for bottom or rear manifold connection must have a surface accuracy of at least $Ra = 1.6$.

For rear flange connection the O-rings are included.

Weight of the coupling mechanism board approx. 3,8 kg



Front



Order numbers:

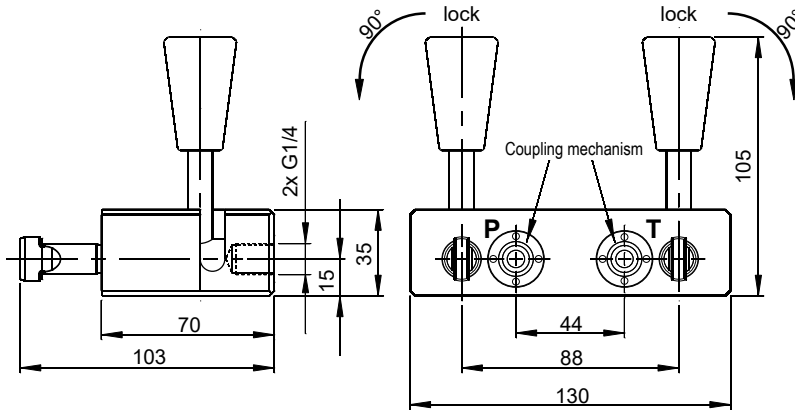
| Part: | Comment: | Order number: |
|---|---------------------------------------|----------------|
| Coupling nipple unit (manifold connection, bottom-side) | accumulator volume 13 cm ³ | MKN-460-5-011 |
| Coupling nipple unit (manifold connection, bottom-side) | accumulator volume 40 cm ³ | MKN-460-5-009 |
| Coupling nipple unit (manifold connection, rear-side) | accumulator volume 13 cm ³ | MKN-460-5-013 |
| Coupling nipple unit (manifold connection, rear-side) | accumulator volume 40 cm ³ | MKN-460-5-015 |
| Coupling nipple unit (G1/4 threaded port) | accumulator volume 13 cm ³ | MKN-460-5-012 |
| Coupling nipple unit (G1/4 threaded port) | accumulator volume 40 cm ³ | MKN-460-5-014 |
| O-rings FKM, 16x2, for manifold connection | (spare part) | 6020-001 |
| Pressure gauge, 0 - 600 bar | (spare part) | 8200-000 |
| Pressure relief valve, opening pressure 425 bar | (spare part) | 8000-003 |
| Check valve, hydraulic, pilot operated | (spare part) | ERSV-500-5-003 |
| Coupling nipple DN 5, depressurized coupling | (spare part) | KN-460-5-EG004 |
| Coupling nipple DN 5, with pressure relief function | (spare part) | KN-460-5-EG006 |
| Hydraulic accumulator 13 cm ³ | (spare part) | 8200-001 |
| Hydraulic accumulator 40 cm ³ | (spare part) | 8200-002 |



Coupling mechanism board:

Coupling mechanism board, which locks both components for pressure transfer.

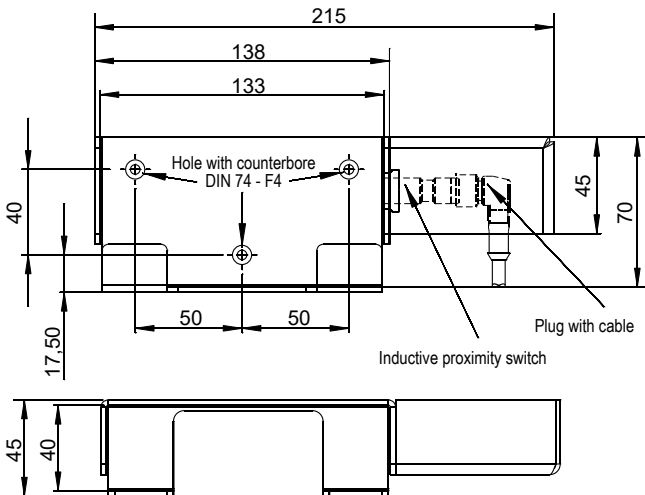
Both tension rods are inserted into the bayonet catch. Then the levers are turned to the side by 90°. Through two integrated drafts the tension rods are shortened and the coupling process is executed. The locking stroke is 5 mm, weight approx. 2,4 kg.



| Order numbers: | |
|---|----------------------|
| Part: | Order number: |
| Coupling mechanism board | MKM-460-5-100 |
| Coupling mechanism (spare part) | KM-460-5-EG008 |
| Mounting tool for seal replacement ⁽¹⁾ | 9000-010 |
| Seal, red, (spare part, unit 10 pcs.) | D-460-5-001 |

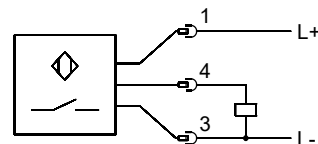
⁽¹⁾Accessory, for details see data sheet 100-5.

Safety holder (accessory):



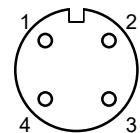
Safety holder with inductive proximity switch and plug (cable length 3 m). The safety holder takes up the uncoupled coupling board into a parking station.

Through the integrated proximity switch the safety holder can be directly connected to the machine control. So, the pallet transport is only permitted in uncoupled state.



Pin configuration:

- BK black
- BN brown
- BU blue
- WH white



- > 1 BN
- > 2 WH
- > 3 BU
- > 4 BK

Inductive proximity switch

| | |
|-----------------------------|---|
| Electrical type | DC PNP |
| Initial function | N.O. contact |
| Operating voltage [V] | 10...36 DC |
| Current rating [mA] | 100 |
| Reserve polarity protection | yes |
| Overload protected | yes |
| Voltage drop [V] | < 2,5 |
| Power input [mA] | < 10 (24 V) |
| Protection grade/class | IP 68 (Coolant), II |
| Connection | M12 connecting insert, contacts gold-coated |
| Accessory (supplied) | 2 fixing nuts |

Plug with cable

| | |
|------------------------------|---------------------------------------|
| Operating voltage [V] | 250 AC / 300 DC |
| Current rating [A] | 4 |
| Version | angled |
| Ambient temperature [degree] | -25°...90°C |
| Protection grade/class | IP 67 |
| Connection | PUR-cable/3 m, 4x0,34 mm ² |
| Cable length [m] | 3 |

Order numbers:

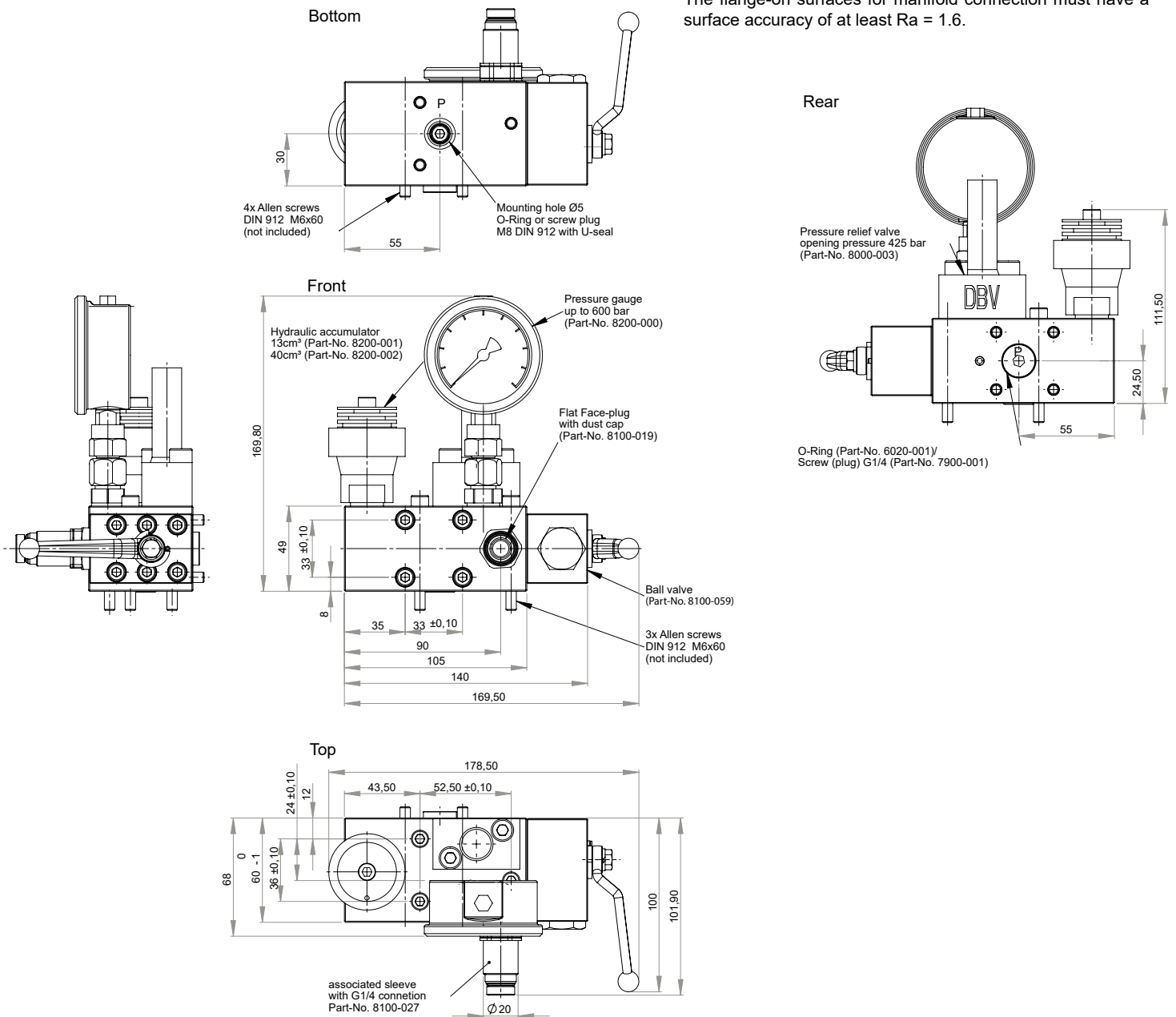
| | |
|---|-----------|
| Safety holder completely | MKS-5-001 |
| Plug with 3 m cable (spare part) | 8500-032 |
| Inductive proximity switch (spare part) | 8500-031 |
| Holder frame (spare part) | 9000-101 |



Coupling unit:

The coupling unit can be connected optional at factory by flange-bottom, flange-rear or rear threaded port.

The flange-on surfaces for manifold connection must have a surface accuracy of at least $Ra = 1.6$.



Order numbers:

| Part: | Comment: | Order number: |
|--|---------------------------------------|-----------------|
| Coupling unit (manifold connection, bottom-side) | accumulator volume 13 cm ³ | MK-5-001 |
| Coupling unit (manifold connection, bottom-side) | accumulator volume 40 cm ³ | MK-5-002 |
| Pressure relief valve, opening pressure 425 bar | (spare part) | 8000-003 |
| Flat face plug with dust cover | (spare part) | 8100-019 |
| Hydraulic accumulator 13 cm ³ | (spare part) | 8200-001 |
| Hydraulic accumulator 40 cm ³ | (spare part) | 8200-002 |
| Ball valve | (spare part) | 8100-059 |
| Pressure gauge, 0 - 600 bar | (spare part) | 8200-000 |
| Coupling joint with G1/4 threaded port | (spare part) | 8100-027 |
| O-ring FKM, 16x2 for manifold connection | (spare part) | 6020-001 |
| O-ring for manifold connection, bottom-side | (spare part) | 6014-002 |
| U-seal | (spare part) | 6006-003 |
| Screw plug G1/4 | (spare part) | 7900-001 |
| Screw plug M6 DIN 912 | (spare part) | 7006-022 |