

# MANUAL COUPLING SYSTEMS

for manual operation, single- and double-acting, pmax. 500 bar

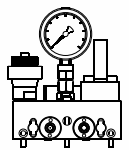


Double-acting coupling nipple unit with 13 cm<sup>3</sup> hydraulic reservoir (l.), coupling mechanism board (r.) and safety retainer for coupling mechanism board with inductive proximity switch (b.)



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## Description:

Manual coupling systems are applied with machine tools that operate with hydraulic devices 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-release couplings, manual couplings do not bear the danger of mixing up pressure pipe and tank pipe. 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 reservoir, one check valve and one pressure relief valve which protects the hydraulic reservoir from a pressure increase over 10%.

The coupling unit can be equipped with two different hydraulic reservoirs. HYDROKOMP recommends the reservoir with 13 cm nominal volume up to an oil volume of approx. 100 cm in the fixture. When the required oil volume is larger, the hydraulic reservoir with 40 cm nominal volume should be applied.

The hydraulic reservoirs are subject to technical rules for pressure vessels (see data sheet 600-20).

## Installation instruction:

As standard the manual coupling systems are equipped with G1/4 threaded ports and manifold ports with O-ring for flange connection.

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 channels.

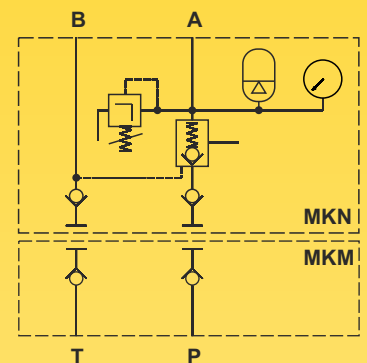
## Safety information:

A safety retainer 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 into a parking station (see page 3).

Through the integrated proximity switch the safety retainer can be directly connected with the machine control. With that, the pallet transport is only permitted in decoupled state.

With the help of a counterbalance valve in the coupling nipple of the T-port the pressure build-up 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.

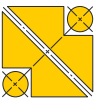


## Advantages:

- ⊗ Oil supply via G1/4 threaded port or manifold connection with O-ring
- ⊗ Versatile mounting options
- ⊗ Safety elements integrated
- ⊗ Two hydraulic reservoirs choosable
- ⊗ No mixing up of pressure pipe and tank pipe
- ⊗ Fast and easy coupling
- ⊗ System pressure remains during coupling

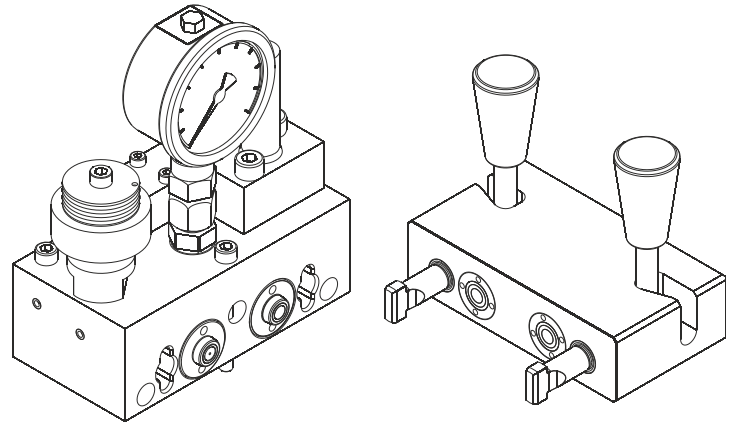
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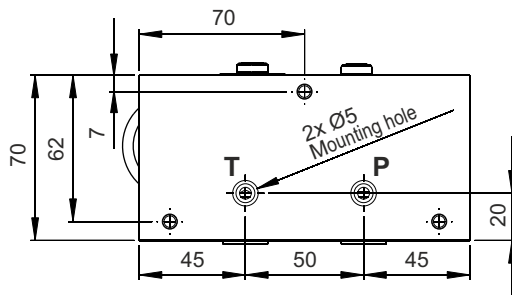
## Manual coupling system with pilot operated check valve

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



### Coupling nipple unit:

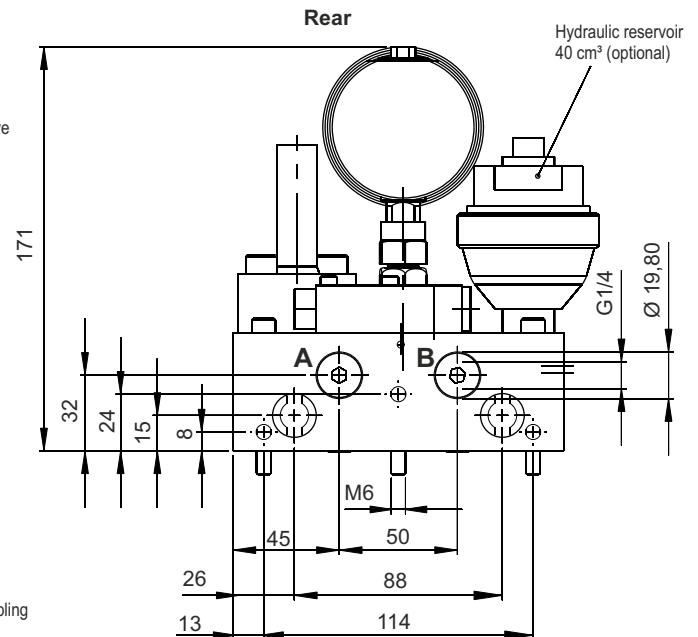
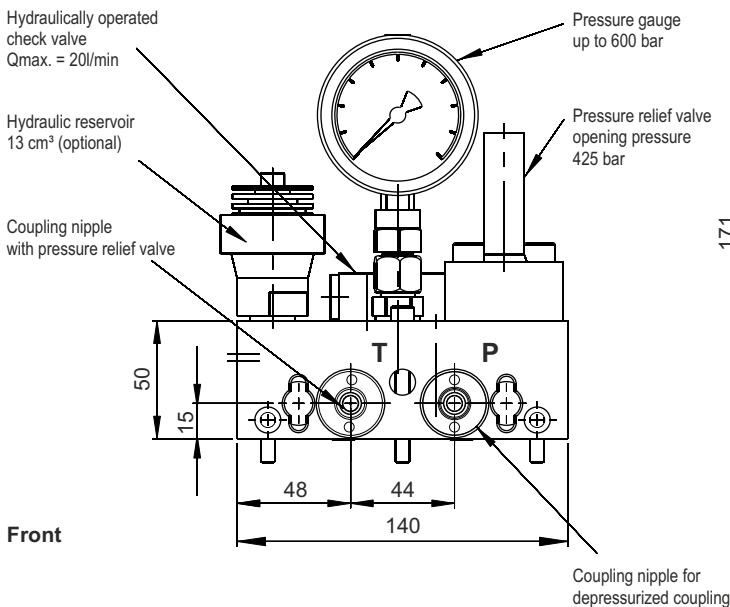
Bottom



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

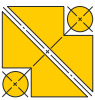
For rear flange connection the O-rings are included.

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



### Order numbers:

Part:	Comment:	Order number:
Coupling nipple unit (manifold connection, bottom-side)	reservoir volume 13 cm <sup>3</sup>	MKN-460-5-011
Coupling nipple unit (manifold connection, bottom-side)	reservoir volume 40 cm <sup>3</sup>	MKN-460-5-009
Coupling nipple unit (manifold connection, rear-side)	reservoir volume 13 cm <sup>3</sup>	MKN-460-5-013
Coupling nipple unit (manifold connection, rear-side)	reservoir volume 40 cm <sup>3</sup>	MKN-460-5-015
Coupling nipple unit (G1/4 threaded port)	reservoir volume 13 cm <sup>3</sup>	MKN-460-5-012
Coupling nipple unit (G1/4 threaded port)	reservoir volume 40 cm <sup>3</sup>	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 NW 5, depressurized coupling	(spare part)	KN-460-5-EG004
Coupling nipple NW 5, with pressure relief	(spare part)	KN-460-5-EG006
Hydraulic reservoir 13 cm <sup>3</sup>	(spare part)	8200-001
Hydraulic reservoir 40 cm <sup>3</sup>	(spare part)	8200-002

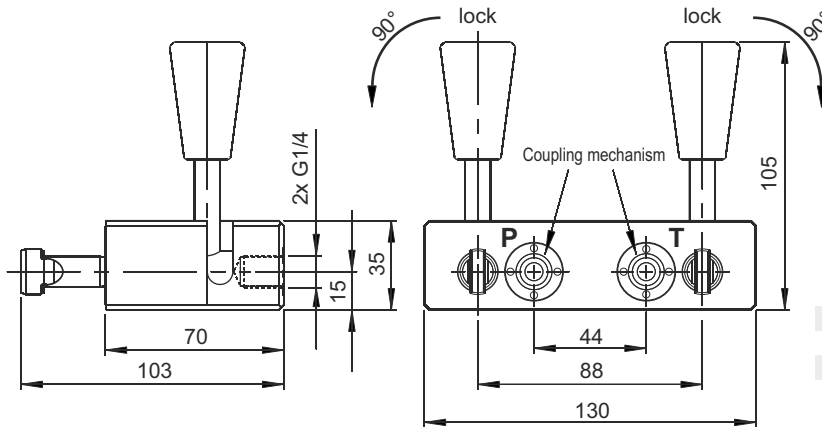


## Manual coupling mechanism board / Safety retainer

### Coupling mechanism board:

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

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

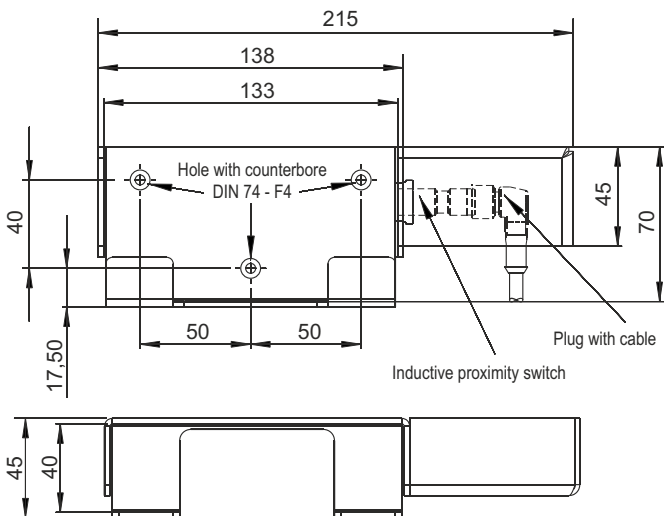


#### Order numbers:

Coupling mechanism board	<b>MKM-460-5-100</b>
Coupling mechanism (spare part)	<b>KM-460-5-EG008</b>
Mounting tool for seal replacement <sup>(1)</sup>	<b>9000-010</b>
Seal, red, (spare part, unit 10 pcs.)	<b>D-460-5-001</b>

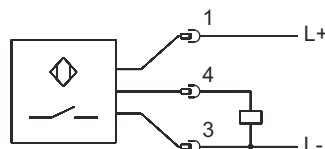
<sup>(1)</sup>Accessories, for details see data sheet 100-5.

### Safety retainer (accessories):



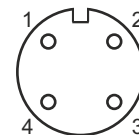
Safety retainer with inductive proximity switch and plug (cable length 3 m). The safety retainer takes up the uncoupled coupling board into a parking station.

Through the integrated proximity switch the safety retainer 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

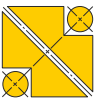
Electrical type	DC PNP
Initial function	N.O. contact
Operating voltage [V]	10...36 DC
Current rating [mA]	100
Reverse polarity protection	yes
Overload protected	yes
Voltage drop [V]	< 2,5
Power input [mA]	< 10 (24 V)
Protection grade/class	IP 68 (Coolant), II
Connection	M12 connecting insert, contacts gold-coated
Accessories (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 <sup>2</sup>
Cable length [m]	3

#### Order numbers:

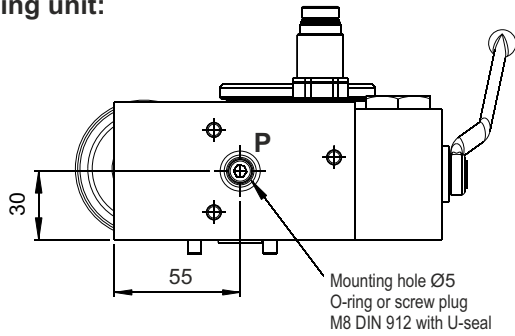
Safety retainer completely	<b>MKS-5-001</b>
Plug with 3 m cable (spare part)	<b>8500-032</b>
Inductive proximity switch (spare part)	<b>8500-031</b>
Retainer metal plate (spare part)	<b>9000-101</b>



## Manual coupling unit with ball valve

### Coupling unit:

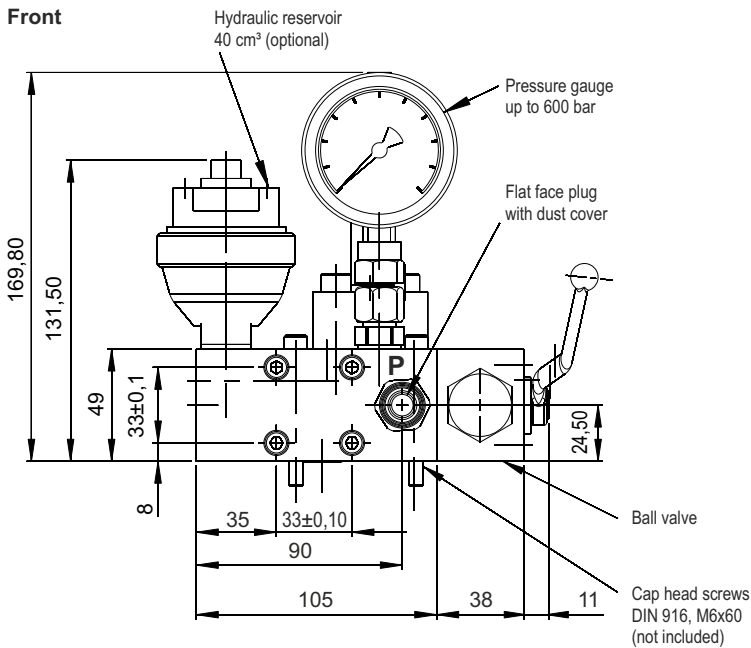
Bottom



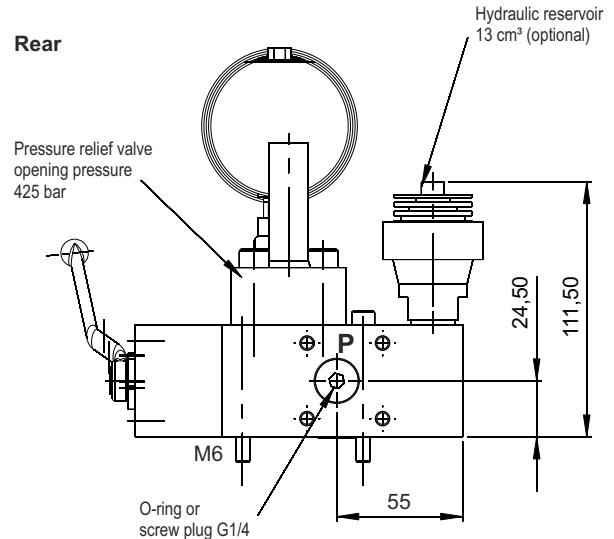
The coupling unit can be connected optional at factory by flange-bottom, flange-rear or rear threaded port.

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

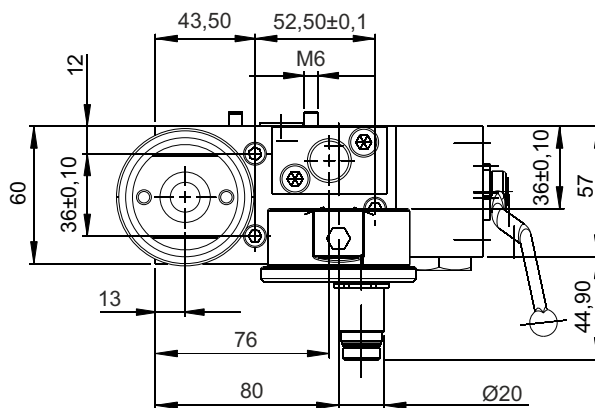
Front



Rear



Top



### Order numbers:

Part:	Comment:	Order number:
Coupling unit (manifold connection, bottom-side)	reservoir volume 13 cm <sup>3</sup>	MK-5-001
Coupling unit (manifold connection, bottom-side)	reservoir volume 40 cm <sup>3</sup>	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 reservoir 13 cm <sup>3</sup>	(spare part)	8200-001
Hydraulic reservoir 40 cm <sup>3</sup>	(spare part)	8200-002
Ball valve	(spare part)	8100-018
Pressure gauge, 0 - 600 bar	(spare part)	8200-000
Coupling joint with G1/4 port	(spare part)	8100-027
O-rings 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