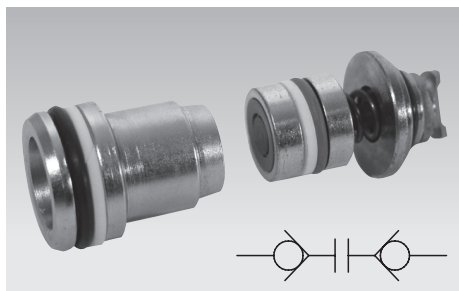




Coupling Elements

Built-in type and threaded-body type

ND 3, ND 5, ND 8, ND 12, max. operating pressure up to 500 bar



Built-in type

Application

On machine tools with pallet changing systems, the coupling elements transfer hydraulic oil or compressed air from the machine table to the hydraulic clamping fixture.

Description

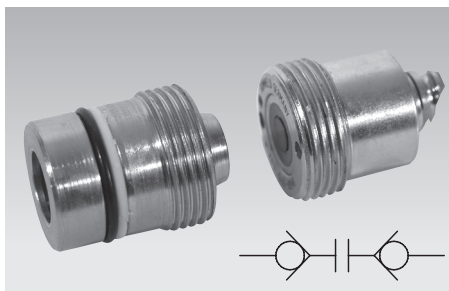
The coupling mechanism and the coupling nipple are provided with axial seals (see coupling situation) and have a very short coupling stroke. The smooth front face of the coupling mechanism is easy to clean in case of swarf formation. The recessed sealing disk can be easily replaced with the assembly tool if it is damaged. The built-in type is fixed with an intermediate plate and is particularly suitable for multi-couplings (see also data sheet F 9.440). The intermediate plates (location plates or covers) must absorb the axial forces generated by the hydraulic pressure (see pages 2 and 3). In case of the threaded-body type, the coupling mechanism is screwed directly into the base plate and the coupling nipple into the clamping fixture. Depending on the sealing, the coupling elements can be coupled either against pressure or only without pressure.

Coupling nipple with preloaded valve (VSV)

With double-acting cylinders, internal leakage oil from individual clamping or control elements can cause an increase in pressure in the return line when uncoupled, which can cause malfunctions or loss of clamping force. The built-in VSV limits the pressure increase to 5 bar. If the pressure is exceeded, hydraulic oil will leak, which indicates a larger internal leakage.

Type with integrated nozzle

A nozzle on the coupling mechanism generates a strong air stream to clean the smooth front face (see page 4).



Threaded-body type

Advantages

- Many installation variants
- Space-saving installation dimensions
- 4 different nominal diameters for optimum adaptation to the flow rate
- Built-in and threaded-body type of the same nominal size can be combined
- Transmission of hydraulic oil, compressed air and vacuum
- Stainless steel coupling elements
- Coupling mechanism with smooth front face reduces contamination and is easy to clean
- Axial sealing disk easily renewable
- Additional bushing simplifies the fabrication of the location hole for the coupling mechanism
- Relatively large positioning tolerances
- Threaded-body type ND 5 with integrated nozzle to clean the sealing surface (see also page 4)

Important notes

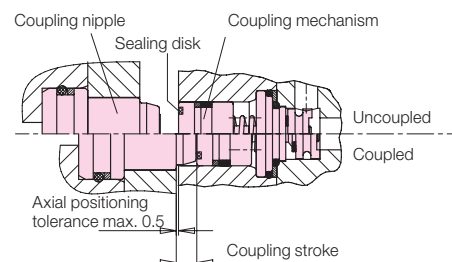
The sealing surfaces on the front face of the coupling elements have to be cleaned before coupling to ensure the tightness in coupled condition. We recommend to wash the elements and finally clean them with compressed air. Protection covers should be used as far as possible.

The mounting bodies of the coupling elements must be guided in parallel 2–3 mm before coupling without exceeding the radial positioning tolerance.

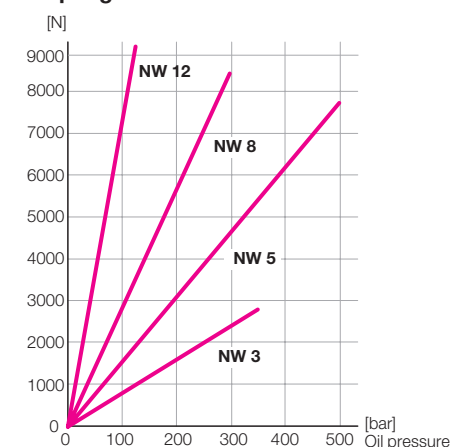
To transmit compressed air and vacuum, use only the coupling elements for “depressurised coupling”.

* Other media such as coolant and water on request.

Coupling situation

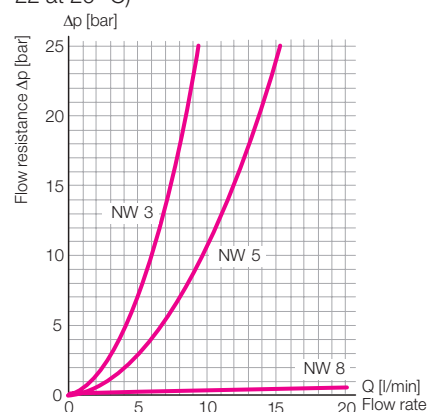


Coupling force



Δ characteristic curve

for kinematic viscosity of $53 \times 10^{-6} \text{ m}^2/\text{s}$ (HLP 22 at 20 °C)



ND8 : $\Delta p = 1.75 \text{ bar}$ at 35 l/min
 ND12 : $\Delta p = 2 \text{ bar}$ at 70 l/min

General technical characteristics

Version	Threaded-body	Built-in	Threaded-body	Threaded-body with nozzle	Built-in	Threaded-body	Built-in	Threaded-body
Nominal diameter	3	3	5	5	5	8	8	12
Max. operating pressure [bar]	350	300	500	500	300	300	300	250
Max. flow rate [l/min]	8	8	12	12	12	35	35	70
Coupling stroke [mm]	4.5	4.5	4.5	4.5	4.5	7.4	7.4	10
Axial coupling force against pressure per coupling point [N]	$F = 7.9 \times p \text{ [bar]}$		$F = 15.4 \times p \text{ [bar]}$			$F = 28.4 \times p \text{ [bar]}$		$F = 71 \times p \text{ [bar]}$
Axial coupling force at 0 bar approx. [N]	60	60	90	90	90	105	105	180
Axial positioning tolerance [mm]	+0.5	+0.5	+0.5	+0.5	+0.5	+0.5	+0.5	+0.5
Radial positioning tolerance [mm]	±0.1	±0.1	±0.25	±0.2	±0.2	±0.2	±0.2	±0.5
Radial positioning tolerance for 0460 776 / -751 [mm]	–	–	±0.5	–	–	–	–	–
Adm. angular deviation [°]	1	1	1	1	1	1	1	1

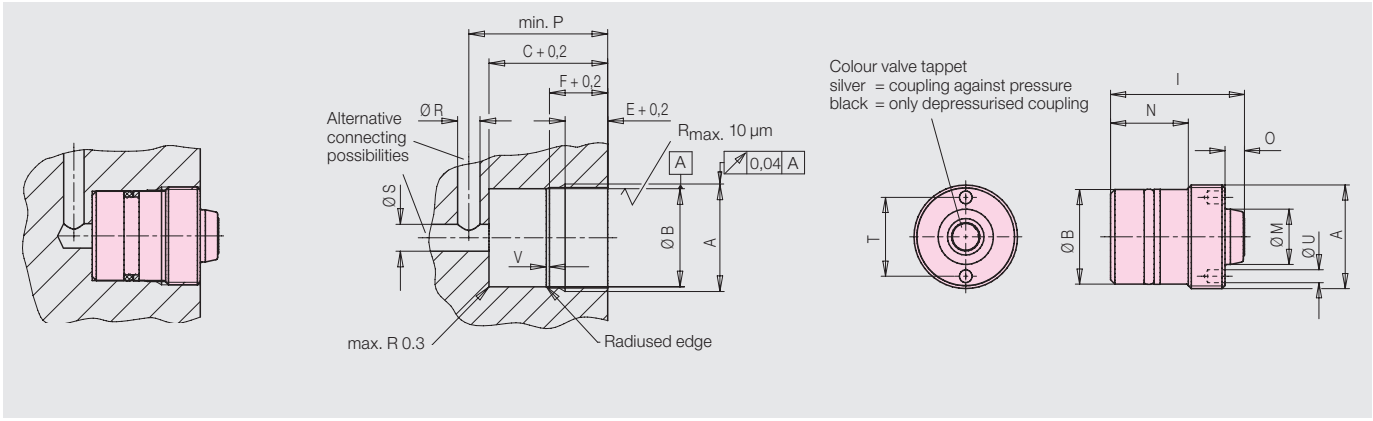
Coupling nipple

Installation examples

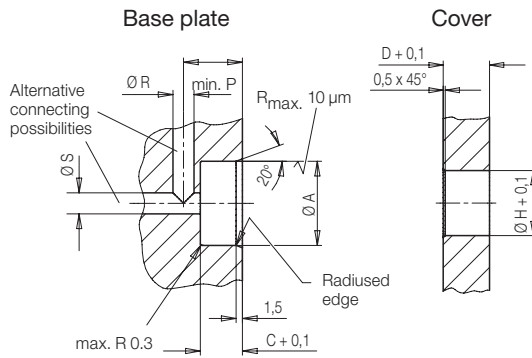
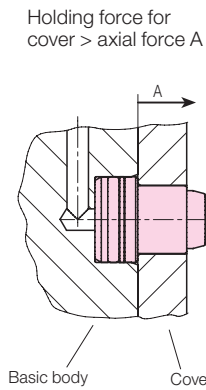
Location hole

Dimensions

Threaded-body type

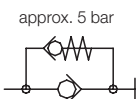


Built-in type



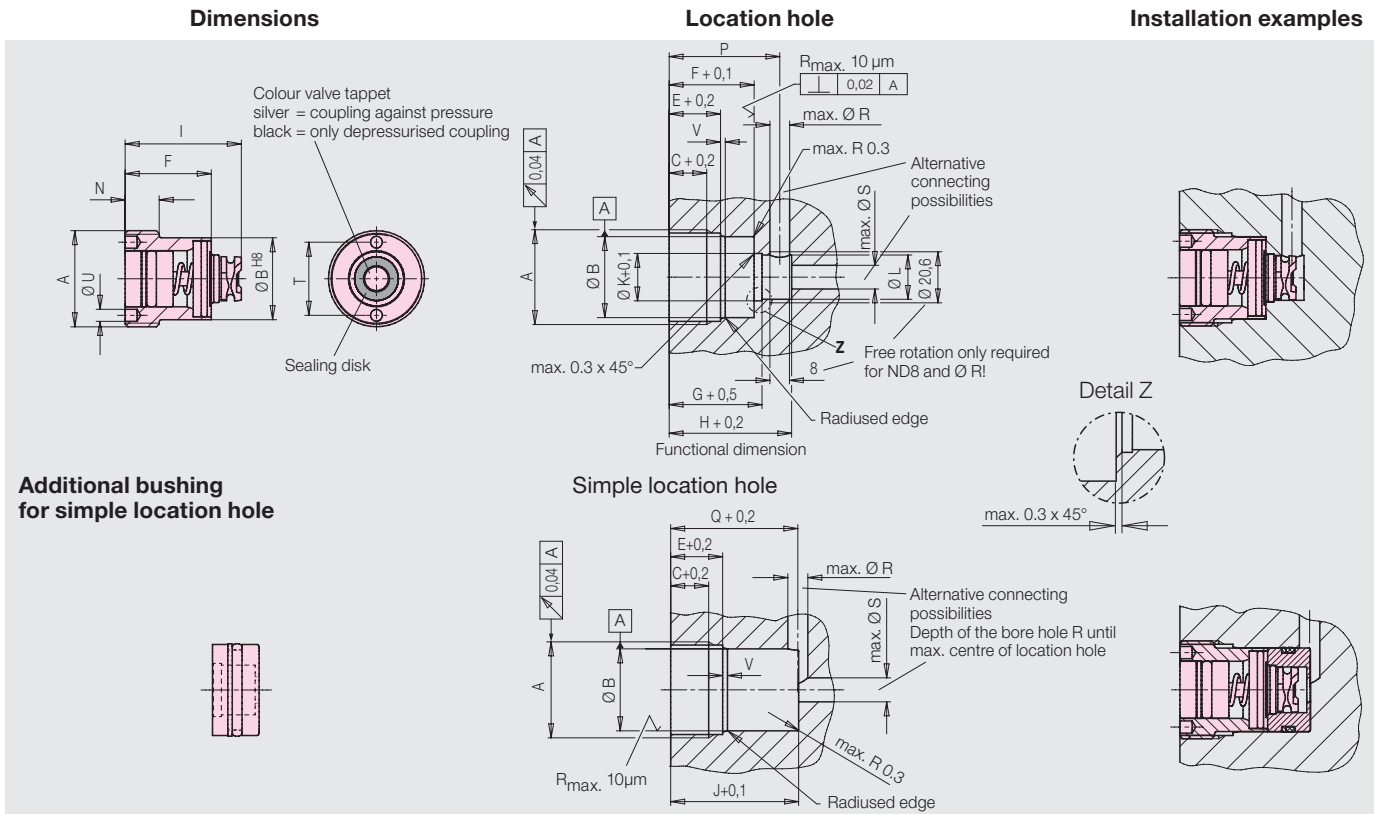
Version		Threaded-body	Threaded-body with VSV	Built-in	Threaded-body	Threaded-body with VSV	Built-in	Built-in long	Threaded-body	Built-in	Threaded-body
ND		3	3	3	5	5	5	5	8	8	12
A	[mm]	M20 × 1.5	M20 × 1.5	Ø 20 H7	M24 × 1.5	M24 × 1.5	Ø 20 H7	Ø 20 H7	M32 × 1.5	Ø 24 H8	M45 × 1.5
Ø B	[mm]	17 H7	17 H7	15.8	21.9 H8	21.9 H8	15.8	15.8	24 H7	21	41 H7
C	[mm]	22	27.5	10	26.5	27.5	10	16.5	24	9	30
D	[mm]	–	–	11.5	–	–	11.5	17.1	–	15	–
E	[mm]	9.5	9.5	–	9.5	9.5	–	–	12.5	–	12.5
F	[mm]	11	11	–	13	13	–	–	15	–	15
Ø H	[mm]	–	–	16	–	–	16	16	–	21 H8	–
I	[mm]	26.5	32	25.9	31	32	25.9	38.1	31.4	31.4	40
Ø M	[mm]	9.8	9.8	9.8	12.8	13.5	13.5	13.5	18.4	18.4	29
N	[mm]	13.5	19	10	18	19	10	16.5	12	9	18
O	[mm]	4.5	4.5	4.5	4.5	4.5	4.5	4.5	7.4	7.4	10
P	[mm]	27	32	14	31	32	14	21	29	14	39
Ø R	[mm]	5	5	5	5	5	5	5	8	8	12
Ø S	[mm]	6	6	5	6	6	5	5	10	10	12
T	[mm]	15	15	–	18.25	18.25	–	–	24.6	–	37
Ø U	[mm]	2.8	2.8	–	2.8	2.8	–	–	4.3	–	4.5
V	[°]	1.5 × 20°	1.5 × 20°	–	0.7 × 15°	0.7 × 15°	–	–	2 × 20°	–	3.2 × 20°
Axial force A	[N]	–	–	31.4 × p [bar]	–	–	31.4 × p [bar]	31.4 × p [bar]	–	45.2 × p [bar]	71 × p [bar]
Max. tightening torque (dry)	[Nm]	37	37	–	40	40	–	–	45	–	–
Part no.											
coupling against pressure		0460836	–	0460692	0460831	–	0460691	0460814	0460713	0460714	–
only depressurised coupling		0460838	–	0460743	0460751	–	0460682	0460729	0460772	0460841	04601004
with preloaded valve (VSV) *		–	0460834	–	–	0460835	–	0460837	–	–	–
Screw-in tool		2010905	2010905	–	2010904	2010904	–	–	2010903	–	–

* Coupling nipple with preloaded valve

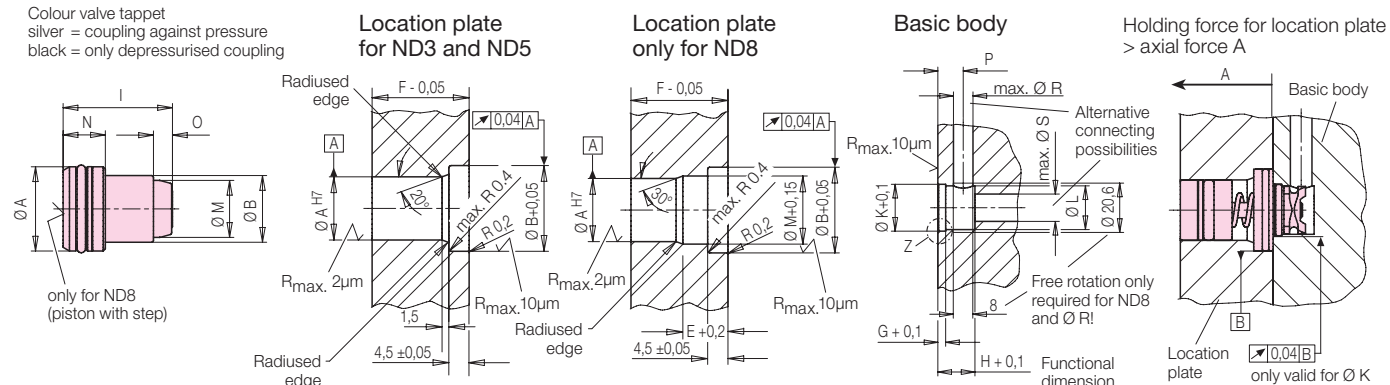


Only depressurised coupling!

Threaded-body type



Built-in type

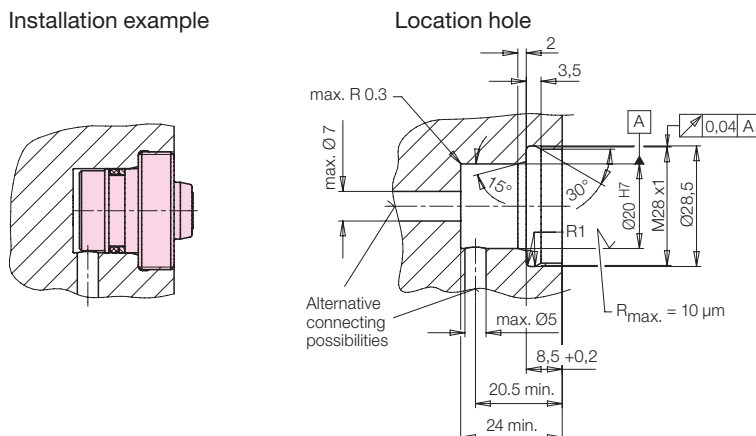


Version		Threaded-body	Built-in	Threaded-body	Built-in	Threaded-body	Built-in	Threaded-body
ND		3	3	5	5	8	8	12
A	[mm]	M20x1.5	10	M24x1.5	14	M32x1.5	19	M45x1.5
Ø B	[mm]	18 H7	15	20.5 H8	19	27 H7	24	41 H7
C	[mm]	9.5	-	9.5	-	13	-	13
D	[mm]	-	10.8	-	10.8	-	18	-
E	[mm]	13	-	13	-	16	14	15
F	[mm]	21.5	21.5	21.5	21.5	31	31	41
G	[mm]	23.5	2	23.5	2	-	-	-
H	[mm]	31	9.5	31	9.5	46.5	15.5	57.5
I	[mm]	29.3	29.3	29.25	29.25	44	44	53.75
J	[mm]	32	-	32	-	49	-	-
Ø K	[mm]	12	12	12	12	-	-	-
Ø L	[mm]	11.2	11.2	11.2	11.2	18 H8	18 H8	22 -0.2
Ø M	[mm]	-	-	-	-	-	20.5	-
N	[mm]	8.5	-	8.5	-	12	-	12
Ø O	[mm]	-	-	-	-	-	20	-
P	[mm]	28	6.5	28	6.5	38.5	7.5	50
Q	[mm]	31.8	-	31.8	-	48.8	-	-
Ø R	[mm]	5	5	5	5	8	8	12
Ø S	[mm]	6	7	6	7	8	10	12
T	[mm]	15	-	18.25	-	25	-	37
Ø U	[mm]	2.8	-	2.8	-	4.3	17.5	4.5
V	[°]	0.5x20°	-	2x20°	-	2x20°	-	2.5x20°
Axial force A	[N]	-	17.7 xp [bar]	-	28.4 xp [bar]	-	45.2 xp [bar]	-
Max. tightening torque (dry)	[Nm]	37	-	40	-	45	-	-
Part no.								
coupling against pressure		0460832	0460818	0460830	0460656	0460711	0460712	-
only depressurised coupling		0460833	0460819	0460776	0460659	0460771	0460839	04601005
Additional bushing for simple location hole		0460884	-	0460777	-	0460847	-	-
Screw-in tool		2010905	-	2010904	-	2010903	-	-
Sealing disk (spare part)		3001997	3001997	3001999	3001999	3001998	3001998	3002568
Assembly tool for sealing disk		0460991	0460991	0460873	0460873	0460914	0460914	-

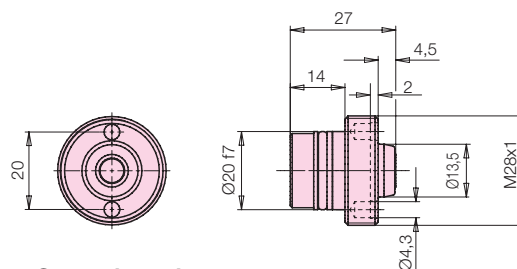
Threaded-body type with integrated nozzle Application example

Coupling nipple ND5 threaded-body type part-no. 0460703 for coupling mechanism with integrated nozzle

Installation example



Coupling against pressure

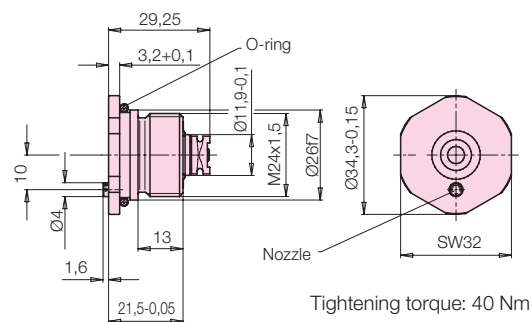
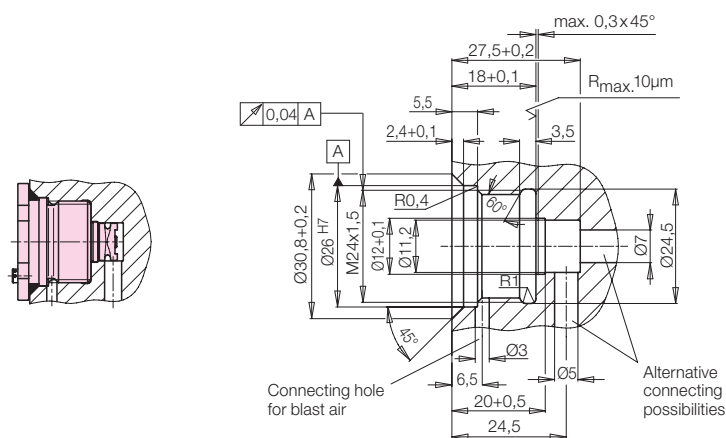


Screw-in tool Part no. 2010901

Tightening torque: 45 Nm

Coupling mechanism ND5 threaded-body type part-no. 0460732 with integrated nozzle to clean the sealing surface

Coupling against pressure



Tightening torque: 40 Nm

Application example

Rotary indexing table - clamping fixture, hydraulically operated, with trunnion bearing and hydraulic positioning

