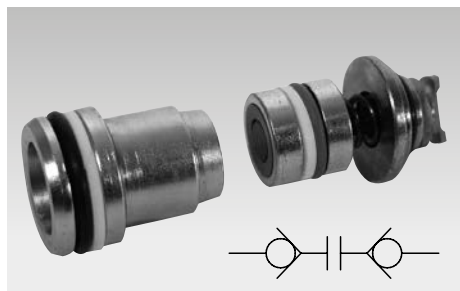




Coupling Elements

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).

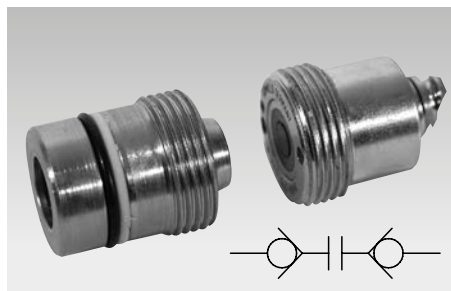
In case of the threaded-body type, the coupling mechanism is screwed directly into the base plate and the coupling nipple into the clamping fixture. Depending on the sealing, the coupling elements can be coupled either against pressure or only without pressure.

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!

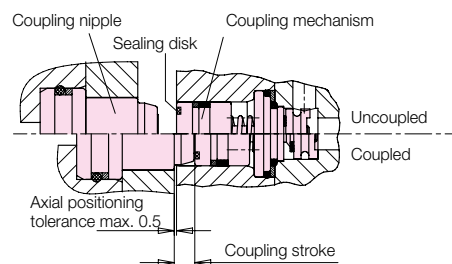
The sealing surfaces on the front face of the coupling elements have to be cleaned before coupling to ensure the tightness in coupled condition. We recommend to wash the elements and finally clean them with compressed air. Protection covers should be used as far as possible.

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

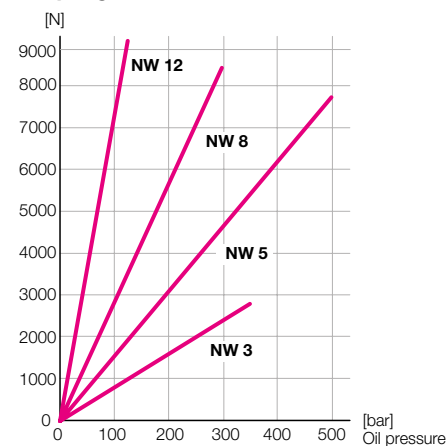
To transmit compressed air and vacuum, use only the coupling elements for “depressurised coupling”.

* Other media such as coolant and water on request.

Coupling situation

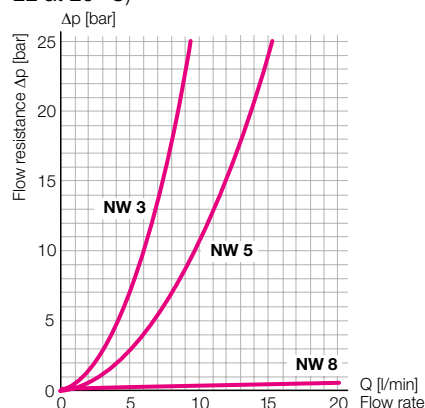


Coupling force



Δ characteristic curve

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



ND8 : Δp = 1.75 bar at 35 l/min
ND12 : Δp = 2 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 x p [bar]		F = 15.4 x p [bar]			F = 28.4 x p [bar]		F = 71 x p [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 0460776 / -751	[mm]	-	-	±0.5	-	-	-	-	-
Adm. angular deviation	[°]	1	1	1	1	1	1	1	1

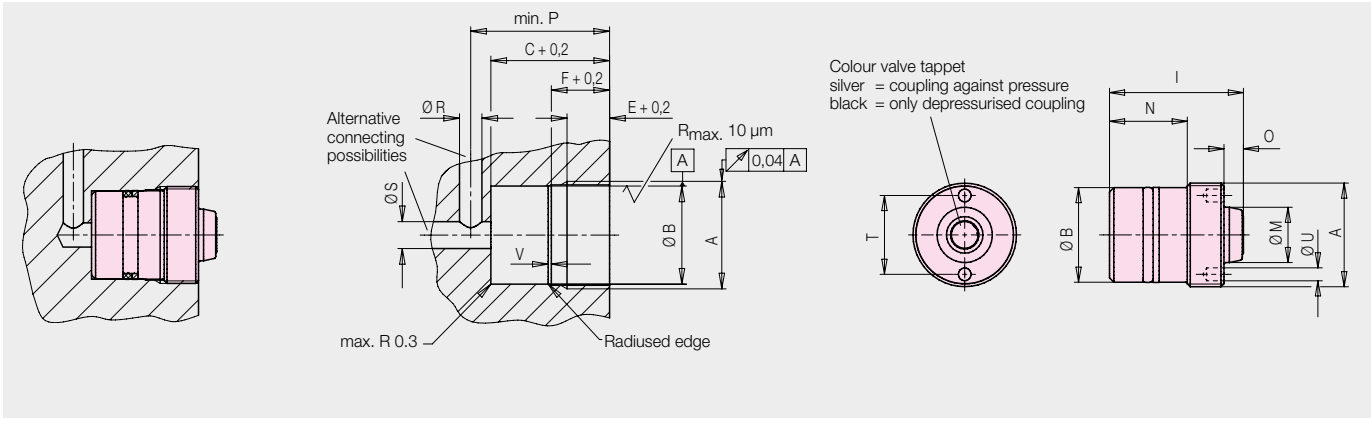
Coupling nipple

Installation examples

Location hole

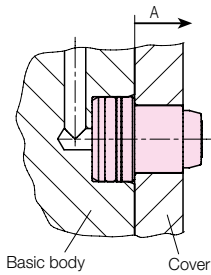
Dimensions

Threaded-body type



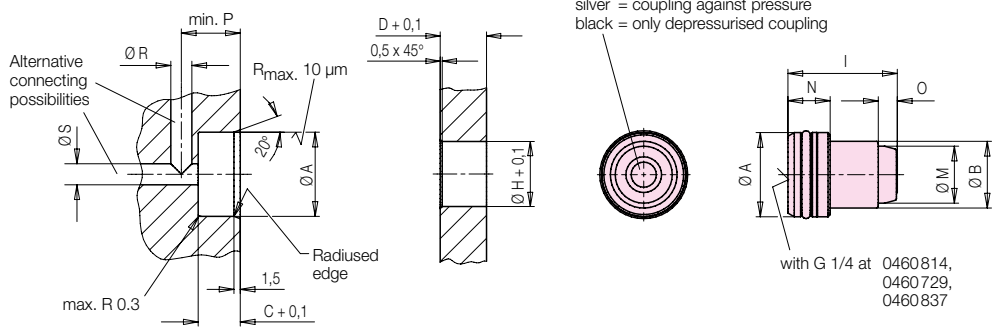
Built-in type

Holding force for cover > axial force A



Base plate

Cover



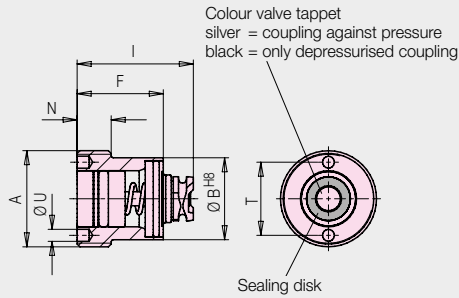
Version		Threaded-body	Threaded-body with VSV	Built-in	Threaded-body	Threaded-body with VSV	Built-in	Built-in long	Threaded-body	Built-in	Threaded-body
ND		3	3	3	5	5	5	5	8	8	12
A	[mm]	M20x1.5	M20x1.5	Ø 20 H7	M24x1.5	M24x1.5	Ø 20 H7	Ø 20 H7	M32x1.5	Ø 24 H8	M45x1.5
Ø B	[mm]	17 H7	17 H7	15.8	21.9 H8	21.9 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	[°]	1.5x20°	1.5x20°	–	0.7x15°	0.7x15°	–	–	2x20°	–	3.2x20°
Axial force A	[N]	–	–	31.4 xp [bar]	–	–	31.4 xp [bar]	31.4 xp [bar]	–	45.2 xp [bar]	71 xp [bar]
Max. tightening torque (dry)	[Nm]	37	37	–	56	56	–	–	128	–	260
Part no.											
coupling against pressure		0460 836	–	0460 692	0460 831	–	0460 691	0460 814	0460 713	0460 714	–
only depressurised coupling		0460 838	–	0460 743	0460 751	–	0460 682	0460 729	0460 772	0460 841	0460 1004
with preloaded valve (VSV)*		–	0460 834	–	–	0460 835	–	0460 837	–	–	–
Screw-in tool		2010 905	2010 905	–	2010 904	2010 904	–	–	2010 903	–	–

* Coupling nipple with preloaded valve **Only depressurised coupling!**

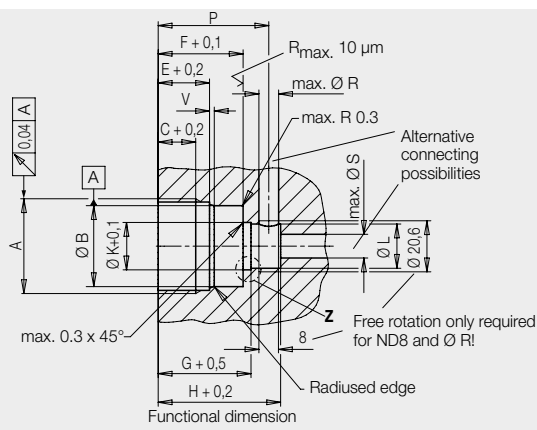
Coupling mechanism

Threaded-body type

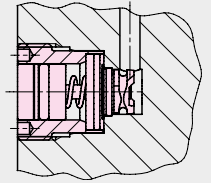
Dimensions



Location hole



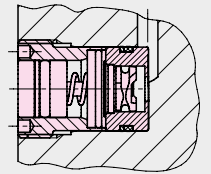
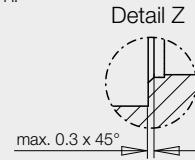
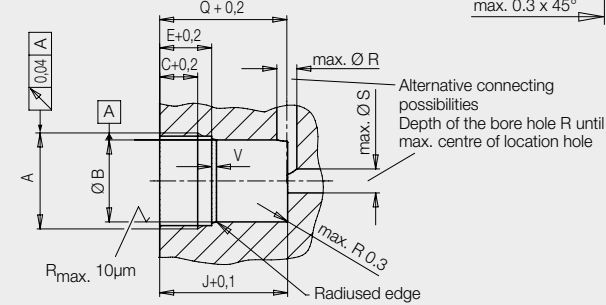
Installation examples



Additional bushing for simple location hole

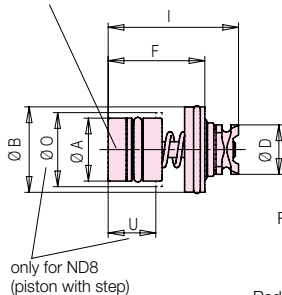


Simple location hole

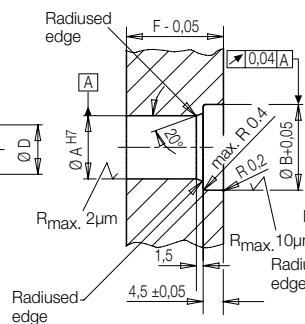


Built-in type

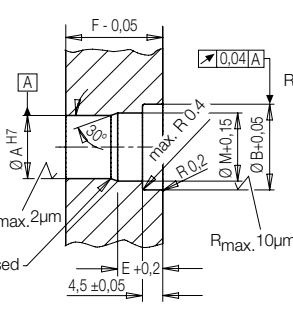
Colour valve tappet
silver = coupling against pressure
black = only depressurised coupling



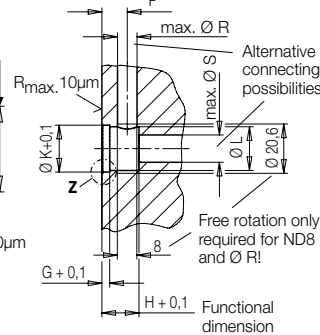
Location plate for ND3 and ND5



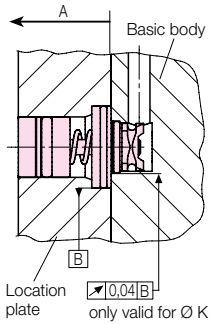
Location plate only for ND8



Basic body



Holding force for location plate > axial force A



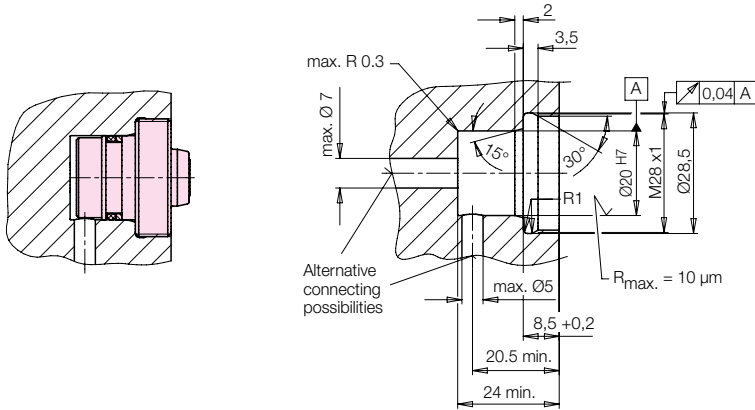
Version		Threaded-body	Built-in	Threaded-body	Built-in	Threaded-body	Built-in	Threaded-body
ND		3	3	5	5	8	8	12
A	[mm]	M20 x 1.5	10	M24 x 1.5	14	M32 x 1.5	19	M45 x 1.5
Ø B	[mm]	18 H7	15	20.5 H8	19	27 H7	24	41 H7
C	[mm]	9.5	-	9.5	-	13	-	13
D	[mm]	-	10.8	-	10.8	-	18	-
E	[mm]	13	-	13	-	16	14	15
F	[mm]	21.5	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	[°]	0.5 x 20°	-	2 x 20°	-	2 x 20°	-	2.5 x 20°
Axial force A	[N]	-	17.7 x p [bar]	-	28.4 x p [bar]	-	45.2 x p [bar]	-
Max. tightening torque (dry)	[Nm]	37	-	56	-	128	-	260
Part no.								
coupling against pressure		0460 832	0460 818	0460 830	0460 656	0460 711	0460 712	-
only depressurised coupling		0460 833	0460 819	0460 776	0460 659	0460 771	0460 839	0460 1005
Additional bushing for simple location hole		0460 884	-	0460 777	-	0460 847	-	-
Screw-in tool		2010 905	-	2010 904	-	2010 903	-	-
Sealing disk (spare part)		3001 997	3001 997	3001 999	3001 999	3001 998	3001 998	3002 568
Assembly tool for sealing disk		0460 991	0460 991	0460 873	0460 873	0460 914	0460 914	-

Threaded-body type with integrated nozzle Application example

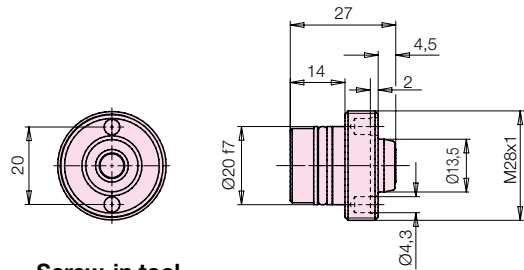
Coupling nipple ND5 threaded-body type part-no. 0460 703 for coupling mechanism with integrated nozzle

Installation example

Location hole



Coupling against pressure

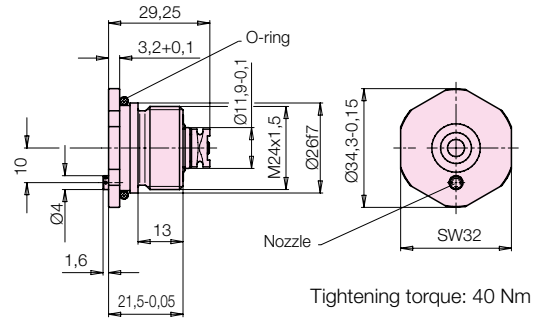
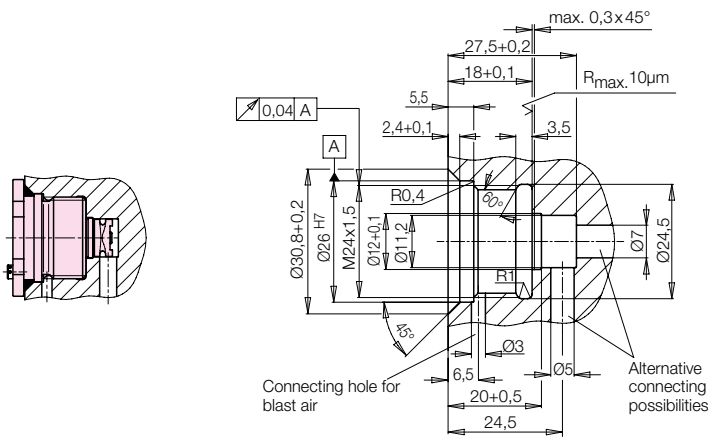


**Screw-in tool
Part no. 2010901**

Tightening torque: 45 Nm

Coupling mechanism ND5 threaded-body type part-no. 0460 732 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

