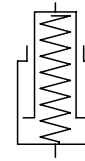


Hydraulic screw-in clamps type HSE

Hydraulic screw-on clamps type HSA

Operating pressure $p_{\max} = 500 \text{ bar}$



1. General

The hydraulic clamping cylinders of types HSE and HSA are single-acting power elements equipped with return springs that are used in high-pressure hydraulic fixtures and many other hydraulic installations where only a very restricted space is available for the generation of high forces with limited plunger movement.

- Jig/fixture engineering: Clamping and retaining of work pieces (manufacturing and assembly fixtures).
- Machine tool engineering: Clamping of slides and guideways as well as locking of circular tables, etc.
- Non-cutting shaping: Bending, stamping, punching and shearing.

The surface of the steel cylinder is corrosion protected. The piston (with internal travel stop) is tempered and ground. Pressure fluid supply is via the manifold.

2. Available versions, main data

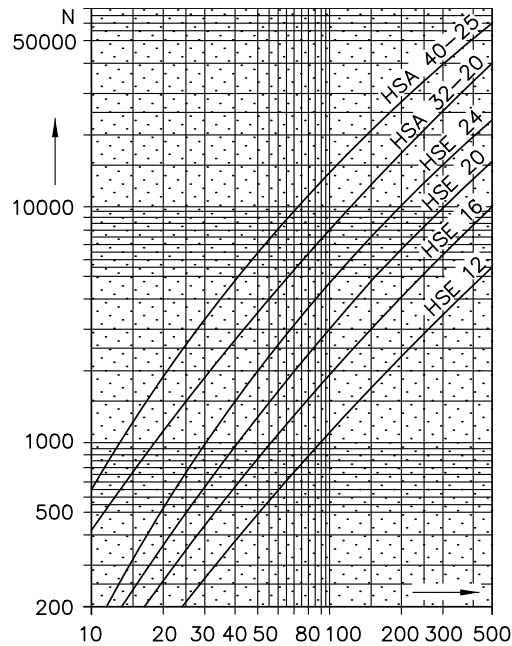
Coding	Piston $\varnothing d$ (mm)	Stroke H (mm)	Sealing of housing	Return press. (spring load) (bar) ¹⁾		Mounting	Mass (weight) approx. (kg)
				extended	retracted		
HSE 12-2	12	2	Cutting	6	3	screw-in into manifolds	0.05
HSE 12-5		5	Seal ring 20x24x1.5 DIN 7603-Cu	6.5	3		0.06
HSE 12-8		8		5	2		0.08
HSE 16-3	16	3	Cutting	5.5	3		0.08
HSE 16-8		8	Seal ring 24x29x2 DIN 7603-Cu	7	3.5		0.09
HSE 16-12		12		6.5	3.5		0.12
HSE 20-4	20	4	Cutting	6	3.5		0.14
HSE 20-10		10	Seal ring 30x36x2 DIN 7603-Cu	7	3		0.2
HSE 20-15		15		5.7	2.5		0.25
HSE 20-20		20		6.5	2.5		0.3
HSE 24-5	24	5	O-ring 37x2.5 NBR 90 Sh and steel backup ring HAWE-Nr. 4711 006 d	6	4.5	0.25	
HSE 24-15		15		7	3.5	0.4	
HSE 24-20		20		6	4	0.5	
HSA 32-20	32	20	O-ring 34x3 NBR 90 Sh	5	1	via screws onto a manifold	1.6
HSA 40-25	40	25	O-ring 44x5 NBR 90 Sh	4.5	1		2.5

¹⁾ The pressure specified, is the theoretical pressure generated by the return spring during the return stroke. This figure also represents the minimum pressure required to extend the piston.

2.1. Additional parameters

Nomenclature	Single-acting plunger cylinder with spring return
Installed position	Any
Surface coating	Housing zinc galvanized
External forces	Any axial loads onto the piston while retracted is not permissible, otherwise an external stop must be provided. Side forces on the piston must also be avoided!
Pressure fluid	Hydraulic oil conforming DIN 51 524 part 1 to 3; ISO VG 10 to 68 conforming DIN 51 519 Viscosity limits: min. approx. 4; max. approx. 1500 mm ² /s opt. operation: approx. 10...500 mm ² /s Also suitable for biological degradable pressure fluids types HEPG (Polyalkylenglycol) and HEES (Synth. Ester) at service temperatures up to approx. +70 °C Attention: The return movement may be slowed down due to the back pressure when long and/or small lines are used (dep. on fluid viscosity). An external return spring should be used under such conditions..
Temperature range	Ambient: approx. -40 ... +80 C Fluid: -25 ... +80°C, note the viscosity range Permissible temperature during start: -40°C (observe start-viscosity!), as long as the service temperature is at least 20K higher for the following operation Biological degradable pressure fluids: Observe manufacturer's specifications. Considering the compatibility with seal material not over +70 °C.

Pressure - force - curve

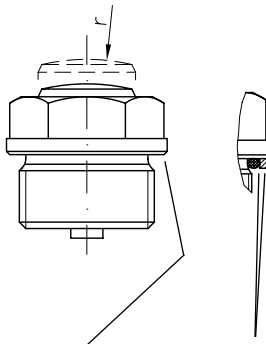


3. Dimension

All dimensions are in mm, subject to change without notice !

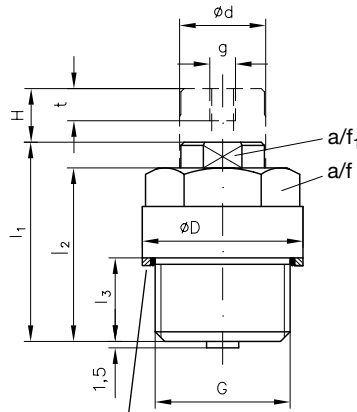
3.1. Type HSE

Dimensional sketch 1



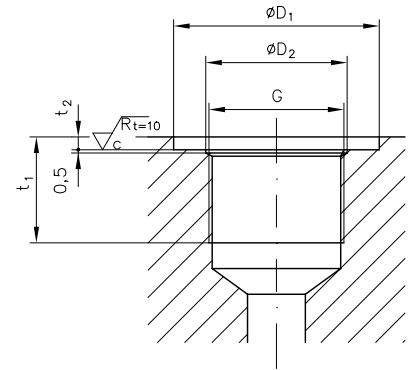
Seal ring
O-ring and steel backup ring at HSE 24-5

Dimensional sketch 2



Seal ring
DIN 7603-Cu
O-ring and steel backup ring at HSE 24-15
HSE 24-20

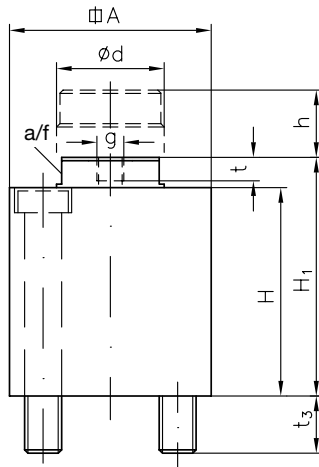
Location hole



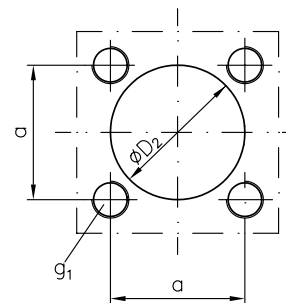
Type	Dimensional sketch	D	D1	D2	G	H	d	g	l1	l2	l3	r	t	t1	t2	a/F				
																Torque (Nm) 1)	a/f1			
HSE 12-2	1	without hexagonals troughout	28	20.2	M 20x1.5	2	12	M 5	20.5	19	11	40	--	4	12	0.2	24	80	9	
HSE 12-5	2		24 ^{+0.1}			5			28	22		--	0.8							
HSE 12-8						8			32.5	26.5										
HSE 16-3	1	28	29 ^{+0.1}	24.2	M 24x1.5	3	16	M 6	26.5	25	14	50	--	6	15	0.2	24	130	12	
HSE 16-8	2					8			35.5	29		--	2							
HSE 16-12						12			41.5	35										
HSE 20-4	1	35	36 ^{+0.1}	30.2	M 30x1.5	4	20	M 6	28.5	26.5	14.5	60	--	16	0.2	30	250	17	--	
HSE 20-10	2					10			44	37										
HSE 20-15						15			51	44		16.5	--							2
HSE 20-20						20			56	49										
HSE 24-5	1	45	46 ^{+0.1}	36.2	M 36x1.5	5	24	M 8	34	32	19	70	--	22	2	36	500	19	--	
HSE 24-15	2					15			56	47		20	--							23
HSE 24-20						20			65	55										

1) Safety factor approx. 2 for mech. deformation

3.2. Type HSA



Hole pattern of the manifold (top view)



The oil feed hole must be located within $\varnothing D_2$

Type	A	D2	H	H1	a	d1	g	g1	h	t	t3	a/f	Torque
HSA 32-20	60	35	62	71	40	32	M8	M10	20	7	17	27	40 Nm
HSA 40-25	70	45	74	85	50	40	M8	M12	25	10	15	32	70 Nm