



Operating Instructions

Built-In Pistons



Built-in piston

- single acting
- with hydraulic connection without tubes
- very compact design

These operating instructions are available for built-in pistons of the following types:

107x-xxx

Target group of this document

Fitters and setters of machine tools. They have to be familiar with the handling of hydraulic power workholding components.

Provided use

Built-in pistons are used to transform hydraulic pressure to a linear movement. Use only hydraulic oil. Avoid side loads acting on the piston.

Safety



Danger of crushing

Keep hands and other parts of the body out of the working area!



Material damage

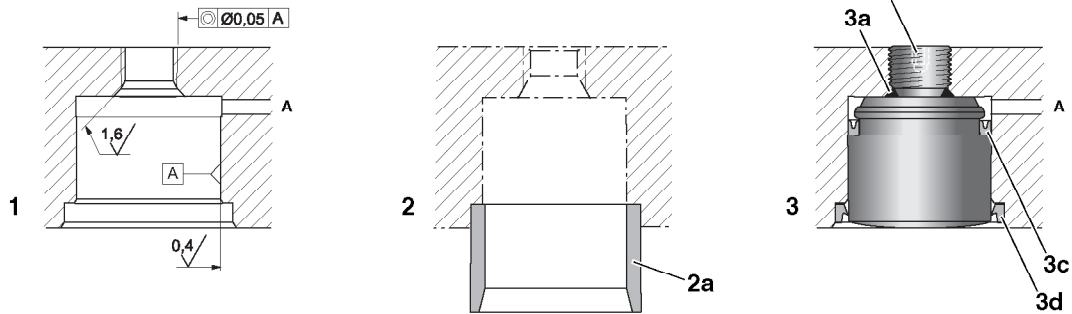
With hydraulic pressure very high forces are generated. The fixture or machine must be in the position to compensate these forces.

Instructions for safe operation

- ◆ Swarf or contamination in the hydraulic oil lead to increased wear or damage at the guides, running surfaces and seals.
- ◆ Support points at the workpiece must be free of swarf to guarantee an exact and safe force application.
- ◆ To ensure perfect function, build-in dimensions and surface qualities as per the data sheet are to be strictly observed.
- ◆ For mounting the suitable mounting sleeve is imperative to introduce the piston sealing fit exactly.
- ◆ After disassembly of a built-in piston the O-ring has to be exchanged.
- ◆ The maximum service temperature is 80 °C.
- ◆ Any mounting position is possible.
- ◆ Use hydraulic oil as per Römheld data sheet A 0.100.

Function

These built-in pistons allow a space-saving installation in locking bars and clamping blocks with hydraulic connections without tubes. They are suitable for clamping and locking of workpieces. These built-in pistons are particularly suitable for narrow and flat installation spaces, also in close multiple arrangements.



All figures are schematic figures.

Install built-in piston

Fabricate with utmost accuracy the location hole (1) to avoid leakages (tolerance zone H8, surface $R_a = 0.4$).

Before screwing-in of the built-in piston, check that O-ring and piston sealing are in perfect condition.

- ♦ Drill the holes for hydraulic oil supply in the fixture (see also Römheld data sheet). Deburr oil supply line
- ♦ Clean the fixture.



Note

Lubricate slightly the location hole, but do not lubricate O-ring and piston sealing!

- ♦ Put suitable mounting sleeve (2a) onto the fixture.
- ♦ Fix O-ring (3a) and piston sealing (3c) at the built-in piston.
- ♦ Use Loctite no. 242 to secure thread. The thread must be oil free and clean.
- ♦ Push the built-in piston through the mounting sleeve.
- ♦ Fasten built-in piston at the hexagon socket (3b). Consider the seating torque (see section "General characteristics", page 3).
- ♦ Remove mounting sleeve.
- ♦ Install wiper (3d).
- ♦ Let Loctite cure one day.

Hydraulic connection

- ♦ Connect hydraulic lines to qualifying standards, pay attention to scrupulous cleanliness! See also Römheld data sheets A 0.100, F 9.300, F 9.310 and F 9.360.
- ♦ Use only fittings "screwed plug B" as per DIN 3852 (ISO 1179).
- ♦ Do not use sealing tape, copper rings or coned fittings.
- ♦ Check sealing of the hydraulic connections!

Hydraulic bleeding

Bleed the hydraulic lines during start-up of the system, otherwise clamping times can be considerably prolonged and function problems can be caused.

Install a bleeding screw at the upper end of the piping.

- ♦ Loosen carefully at low oil pressure the bleeding screw in the clamping line (port A).
- ♦ Pump until bubble free oil comes out.
- ♦ Fasten the bleeding screw.



General characteristics

Part-no.		1072	1073	1074	1075
Stroke	mm	8	8	8	12
Operating pressure, max.	bar	250	250	250	250
Clamping force at 250 bar	kN	12.25	20	31.25	48.75
Spring return force, minimum	N	130	200	230	400
Seating torque of the built-in piston	Nm	10	20	25	30

Maintenance

Check if the hydraulic ports are tight (visual control). The built-in piston itself does not require maintenance.

Data sheets

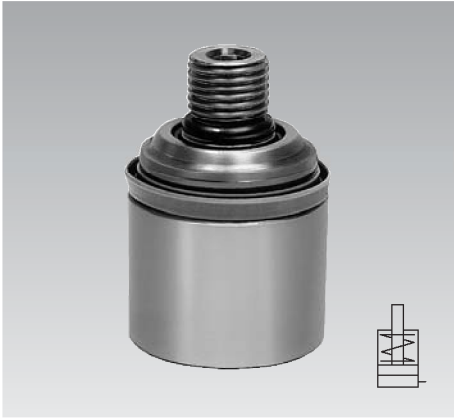
Types	Corresponding data sheets
107x	B 1.462

Trouble shooting

Trouble	Cause / Remedy
Piston does not extend	Hydraulic oil supply or return is impeded - Check and blow through tubes or channels.
Piston extends jerkily	Air in the hydraulic system - Hydraulic bleeding
Hydraulic pressure reduces due to built-in piston	Wear at the seals - Exchange seals
Hydraulic oil visible	Surface or tolerance of the location hole incorrect Refinish the location hole
	Piston sealing is leaky - Exchange sealing, mount the built-in piston again by a mounting sleeve



Built-in Piston
single acting with spring return
max. operating pressure 250 bar



Application

Easy installation in bars and blocks. Suitable for workpiece clamping and locking as well as for perforating, punching and stamping of sheet steel.

Very suitable for narrow and flat installation spaces. Compact multiple arrangement is possible. Mounting position: any. Hydraulic oil supply through drilled holes in the base. Only one oil port required.

Description

Plunger piston with integrated pull-back spring, stroke limitation and fastening screw form a unit that cannot be disassembled. With PTFE-type piston seal. O-ring as static seal. Piston hardened and ground.

Wiper for case mounting supplied upon request.

Special seals on request.

Advantages

- low built-in height
- very compact design
- extremely low overall height despite of return spring and fully utilisable stroke limitation
- easily exchangeable
- high force density

Note:

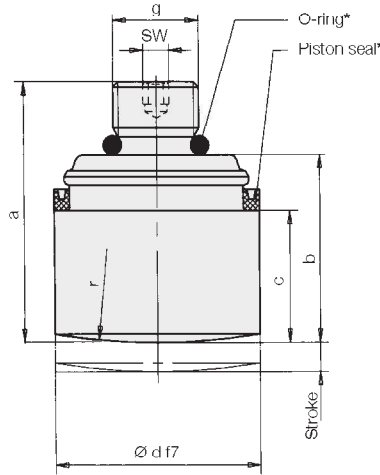
Lateral forces less than 5% of clamping forces. To ensure perfect function, build-in dimensions and surface qualities are to be strictly observed. Use Allen key for assembly and disassembly. Replace O-ring after disassembly. Max. service temperature 80°C. Use Loctite no. 242 to secure thread.

Important notes

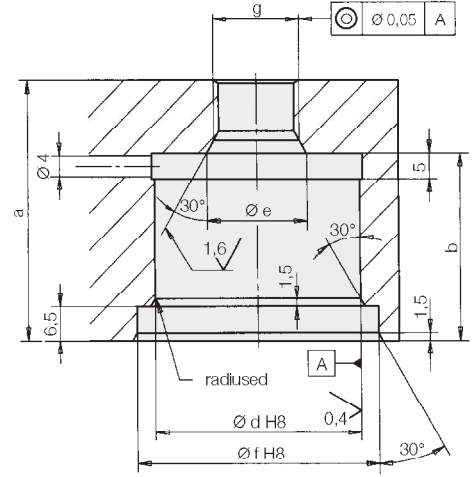
Operating conditions, tolerances and other data see data sheet A 0.100.

Power units see catalogue section "D".

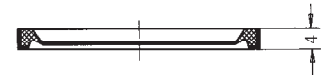
Element



Location hole



Wiper

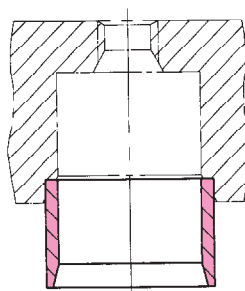


Clamping force at 250 bar	[kN]	12.25	20	31.25	48.75
Clamping force at 100 bar	[kN]	4.9	8	12.5	19.5
Spring return force, min.	[N]	130	200	230	400
Piston Ø d	[mm]	25	32	40	50
Stroke	[mm]	8	8	8	12
Total oil volume	[cm ³]	4	7	10	24
a	[mm]	40	47	50	75
b	[mm]	32.5	34.5	36	56
c	[mm]	23.5	25	26	43
e	[mm]	11.5	14	19.5	24
f	[mm]	32	42	47	58
g		G 1/8	G 1/4	G 3/8	G 1/2
r	[mm]	50	100	150	200
SW	[mm]	4	6	6	8
Seating torque	[Nm]	10	20	25	30
Weight	[kg]	0.10	0.17	0.28	0.59
Part-no.		1072-010	1073-010	1074-010	1075-020
Wiper	Part-no.	3000-838	3000-710	3000-649	3000-484
Seal kit	Part-no.	5700-005	5700-006	5700-007	5700-008
Mounting sleeve	Part-no.	5700-009	5700-010	5700-011	5700-012

* O-Ring and piston seal are delivered with built-in piston

Mounting sleeve and wiper

Use absolutely necessary!



Application example

Secured by means of Loctite no. 242

