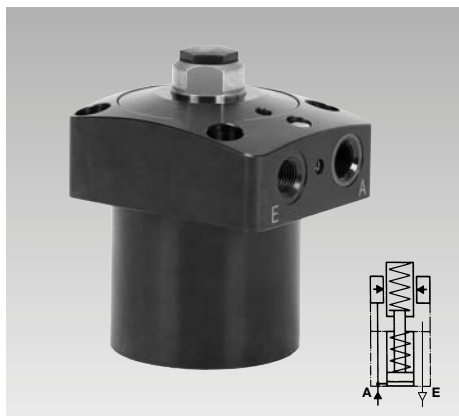


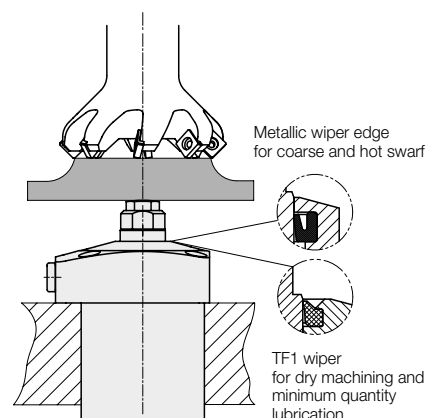
Work Supports

Top flange type, metallic wiper edge or TF1 wiper single acting, max. operating pressure 70 bar



Advantages

- Load force up to 25 kN
- Space-saving version
- 2 sizes available
- Alternatively metallic wiper edge or TF1 wiper
- Contact force of the support plunger selectable
- Inner parts protected against corrosion
- Alternatively pipe thread or drilled channels
- Flow control valve available as accessory
- Connection for venting and positive air pressure protection
- Mounting position: any



Application

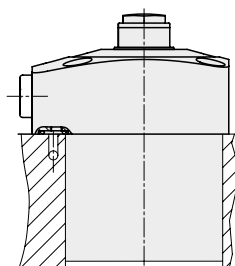
Hydraulic work supports are used to provide a self-adjusting rest for workpieces and avoid their vibration and deflection under machining loads.

This series offers very high support forces already at 70 bar and can directly be connected to the low-pressure hydraulic of the machine tool.

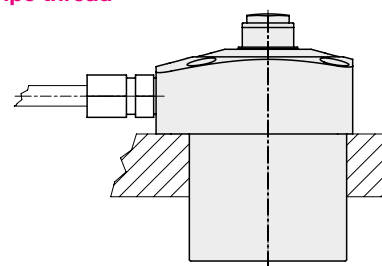
Due to their compact design they can be arranged in a very limited space. Oil supply is made through drilled channels or pipe thread.

Installation and connecting possibilities

Drilled channels



Pipe thread



Description

The support plunger is hydraulically extended by a small piston and contacts the workpiece with spring force. The contact spring can be easily exchanged. Locking of the support plunger is made through the slotted clamping sleeve and by means of a ring-shaped conical hydraulic piston where the locking force is transmitted by a low-friction ball shell. Unlocking and retracting of the support plunger is made by spring force.

Important notes!

Work supports are not suitable to compensate side loads. The support plunger must not be stressed by tensile load. The admissible load force is valid for static or dynamic load. Machining forces can generate vibrations, whose amplitude exceeds far an average value, and this can cause yielding of the support plunger.

Remedy: Increase the safety factor or the number of work supports.

Work supports must only be operated with a sealed contact bolt.

In dry machining applications, with minimum quantity lubrication or in case of accumulation of very small swarf, there can be a swarf holdup in the area of the metallic wiper edge. A new TF1 wiper variant provides a remedy, which effectively protects the element against dirt ingress.

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

Combination with clamping elements

With this combination, clamping and machining forces will add up:

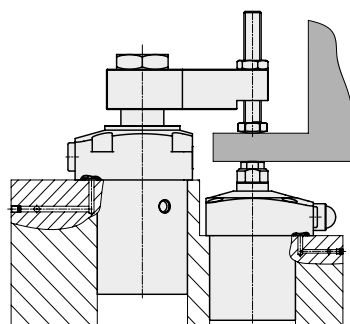
$$\frac{\text{Clamping force} + \text{max. machining force}}{\text{minimum support force} \times \text{safety factor}}$$

Rough calculation from practice:

Required support force $\geq 2 \times$ clamping force

To increase the safety, a support force as high as possible should be achieved by

- using a larger work support
- utilising the max. operating pressure
- using a smaller clamping element or reducing the clamping pressure



Example

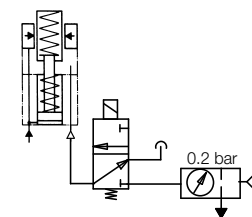
Work support 1967 600XXXX
max. load force at 70 bar 25.0 kN
and
swing clamp 1856 T090R27M
as per data sheet B 1.8500
– Effective clamping force at 70 bar 8.3 kN
= Reserve for machining force 16.7 kN

Vent port

To guarantee safe functioning, a vent port is imperative. It is important that no liquid can penetrate into the venting system. (see connecting possibilities page 2)

Positive air pressure protection

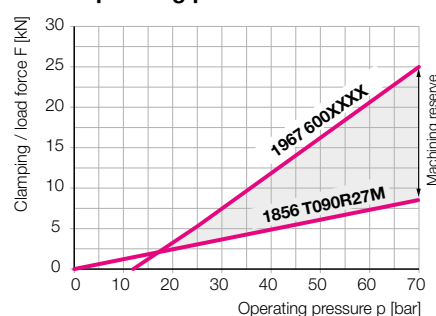
By connecting a slight overpressure of max. 0.2 bar, the venting system is effectively protected against the penetration of dirt and liquids.



Important notes!

The positive air pressure must be free of oil and water. For unclamping the air sealing must be switched off.

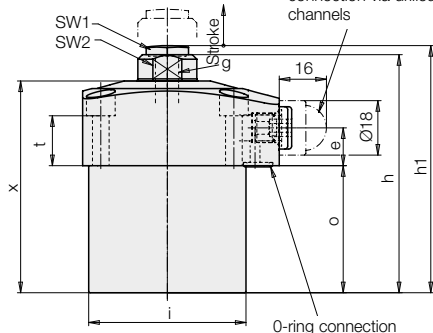
Clamping / load force as a function of the operating pressure



Dimensions

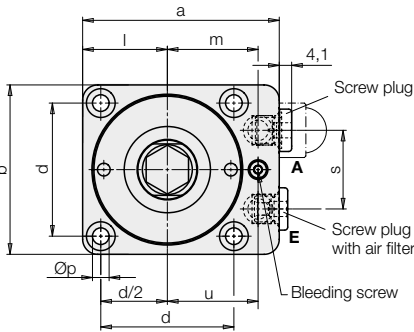
Technical data • Accessories

Accessory
Flow control valve
2957 209
can only be used for
connection via drilled
channels



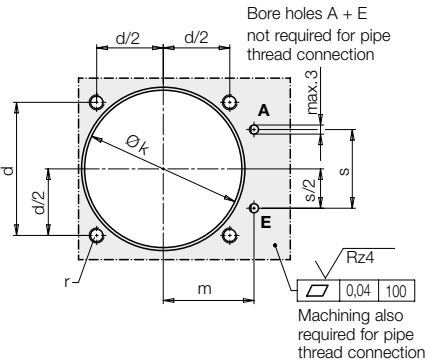
Important note!
Both O-rings must be inserted also
for pipe thread connection.

O-ring connection
2x O-ring 7x1.5
included in the delivery

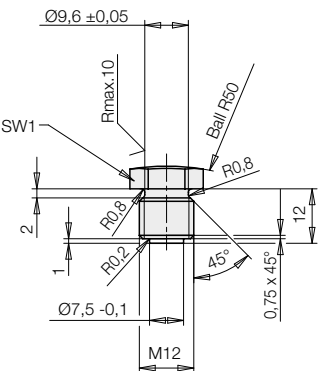


A = hydraulics G 1/8
E = venting or positive air pressure connection G 1/8

Connecting scheme



Dimensions for self-made contact bolts



Max. load force at 70 bar	[kN]	15.5	25
Load force at p (bar)	[kN]	0.272 x p-3.54	0.439 x p-5.70
Support plunger ØD	[mm]	20	22
Stroke	[mm]	12	14
Required oil per stroke	[cm ³]	3.5	5
Admissible flow rate	[cm ³ /s]	25	25
Recommended minimum pressure	[bar]	25	25
Max. pressure in the return line	[bar]	1	1
Elastic deformation with load and 70 bar	[µm/kN]	2.5	2.5
Operating temperature	[°C]	0...70	0...70
a	[mm]	65	75
b	[mm]	56	65
d	[mm]	44	52
e	[mm]	12.5	12.5
g x depth	[mm]	M12x12	M12x12
h	[mm]	78.7	97
h1	[mm]	81.7	102
Øi	[mm]	52-0.2	60-0.2
Øk	[mm]	52+0.3/+0.1	60+0.3/+0.1
l	[mm]	28	32.5
m	[mm]	30	33.5
o	[mm]	42	57
Øp	[mm]	5.5	6.5
r		M5	M6
Tightening torque	[Nm]	5.9	10
s	[mm]	26	30
t	[mm]	16.5	15.9
u	[mm]	30	36
x	[mm]	70	87
SW1	[mm]	14	14
SW2	[mm]	17	19

Wiper and metallic wiper edge

		M	M
Plunger contact force min./max.	[N]	4/14	4/12
Part no.		1967500M112	1967600M114
Plunger contact force min./max.	[N]	11/17	10/15
Part no.		1967500M312	1967600M314
Plunger contact force min./max.	[N]	12/28	16/28
Part no.		1967500M512	1967600M514
TF1 wiper		B	B
Plunger contact force min./max.	[N]	11/17	10/15
Part no.		1967500B312	1967600B314
Plunger contact force min./max.	[N]	12/28	16/28
Part no.		1967500B512	1967600B514

Accessory

Flow control valve G 1/8	2957 209	2957 209
Screw plug G 1/8	3610 158	3610 158

Connecting possibilities (see page 1)

1. Pipe thread

1.1 Dry environment

Port E: Screw plug with air filter

1.2 Wet environment

Port E: Fitting G1/8 with pipe laid in a dry place

2. Drilled channels

2.1 Wet environment

Port A: Screw plug G1/8 or flow control valve 2957 209 (accessory)

Port E: Screw plug with air filter

2.2 Wet environment

Port A: see 2.1

Port E: Screw plug G 1/8
3610 158 (accessory)

Adm. load force F as a function of the operating pressure p

