

# **VERO-S mini**

## **Accessories for high temperature applications**

### **Notes on assembly and use at high temperatures**



## Imprint

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### Technical changes:

We reserve the right to make alterations for the purpose of technical improvement.

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thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

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**Please read the operating manual in full and keep it close to the product.**

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## 1 Accessories for high-temperature applications


Accessories for high-temperature applications are indicated with the suffix "-HT". They have been developed for use in additive production (SLM 3D printing), but can also be used in other applications, taking into account the instructions in this manual


The following table shows the list of the available accessories for high-temperature applications

ID	Description	Permissible temperature range	Holding force 5°C to 200°C	Reduced holding force* > 200°C to 520°C
1393004	SPA-HT mini 20	5°C to 520°C	15 kN (M6) / 25 kN (M8)	6 kN (M6) / 10 kN (M8)
1393005	SPB-HT mini 20	5°C to 520°C		
1393006	SPC-HT mini 20	5°C to 520°C		
1460953	IXB-HT V1 mini	5°C to 520°C	-	-

\* See chapter "Holding force for high temperature applications" ([👉 3, Page 5](#)).

## 2 General notes

	<b>CAUTION</b>
	<p>At high ambient temperatures, a tempering effect may occur, resulting in a golden yellow surface. This is completely normal and does not limit the function in any way.</p>

	<b>CAUTION</b>
	<p>Due to the retightening of the clamping pin screw, the repeat accuracy may deviate from &lt; 5 µm. The play in the clamping pin fitting results in a maximum possible deviation of 22 µm.</p>

### 3 Holding force at high temperatures

When exposed to very high temperatures (> 200°C to 520°C), the holding force of the clamping pin screw is reduced.

The specified reduced holding forces are only valid after retightening with the specified tightening torque in a **cooled** state (< 60°C).

→ See screw tightening torques Ⓐ and Ⓑ

At temperatures > 200°C, the clamping pin must not be actively subjected to a tensile force (e.g. during heat treatment).

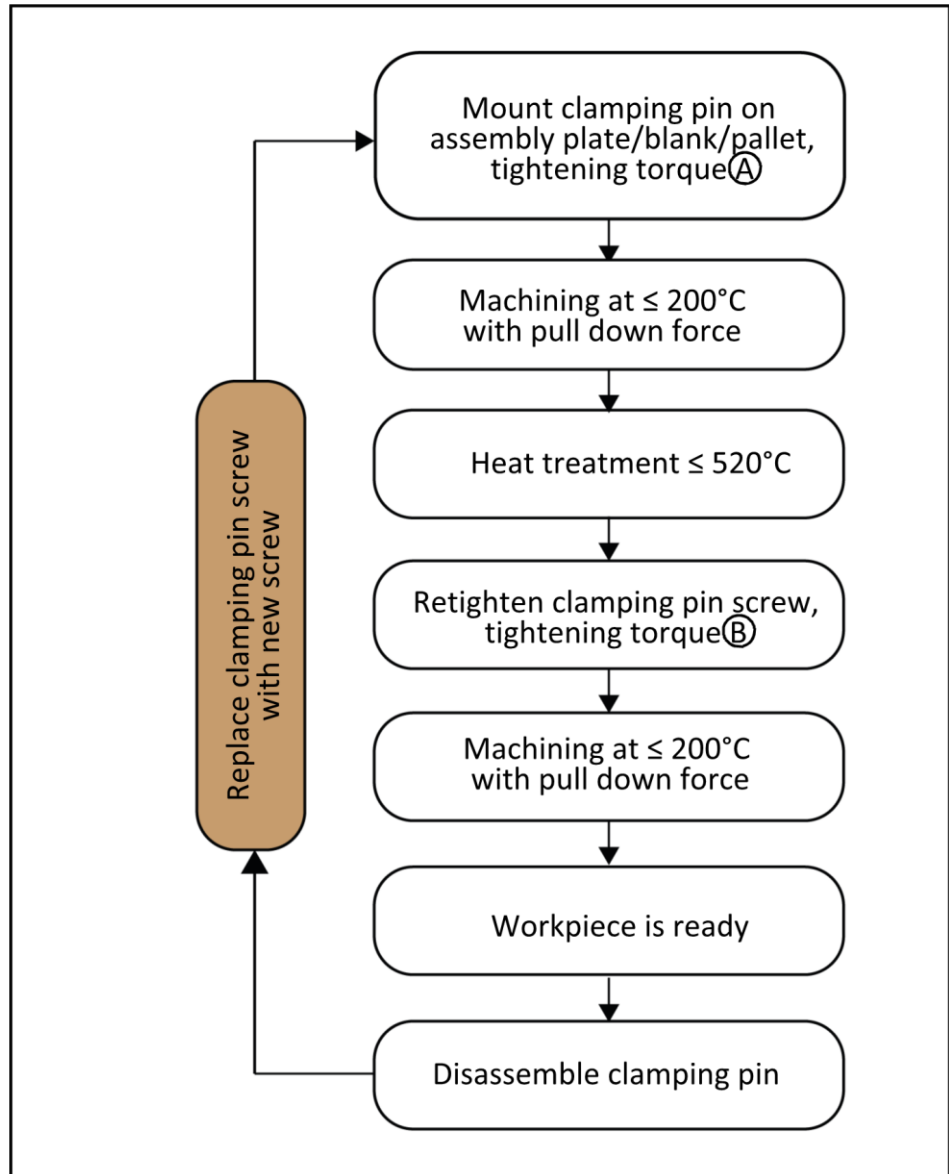


#### **CAUTION**

After a temperature cycle > 200°C the clamping pin screws must be replaced with new screws.

At temperatures ≤ 200°C, the screw does not need to be retightened or replaced.

The following example process illustrates the procedure.



## 4 Installation conditions

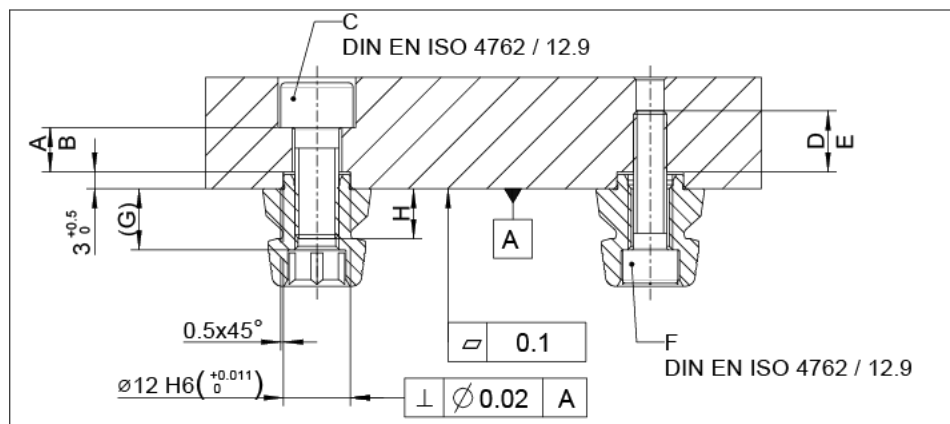


### CAUTION

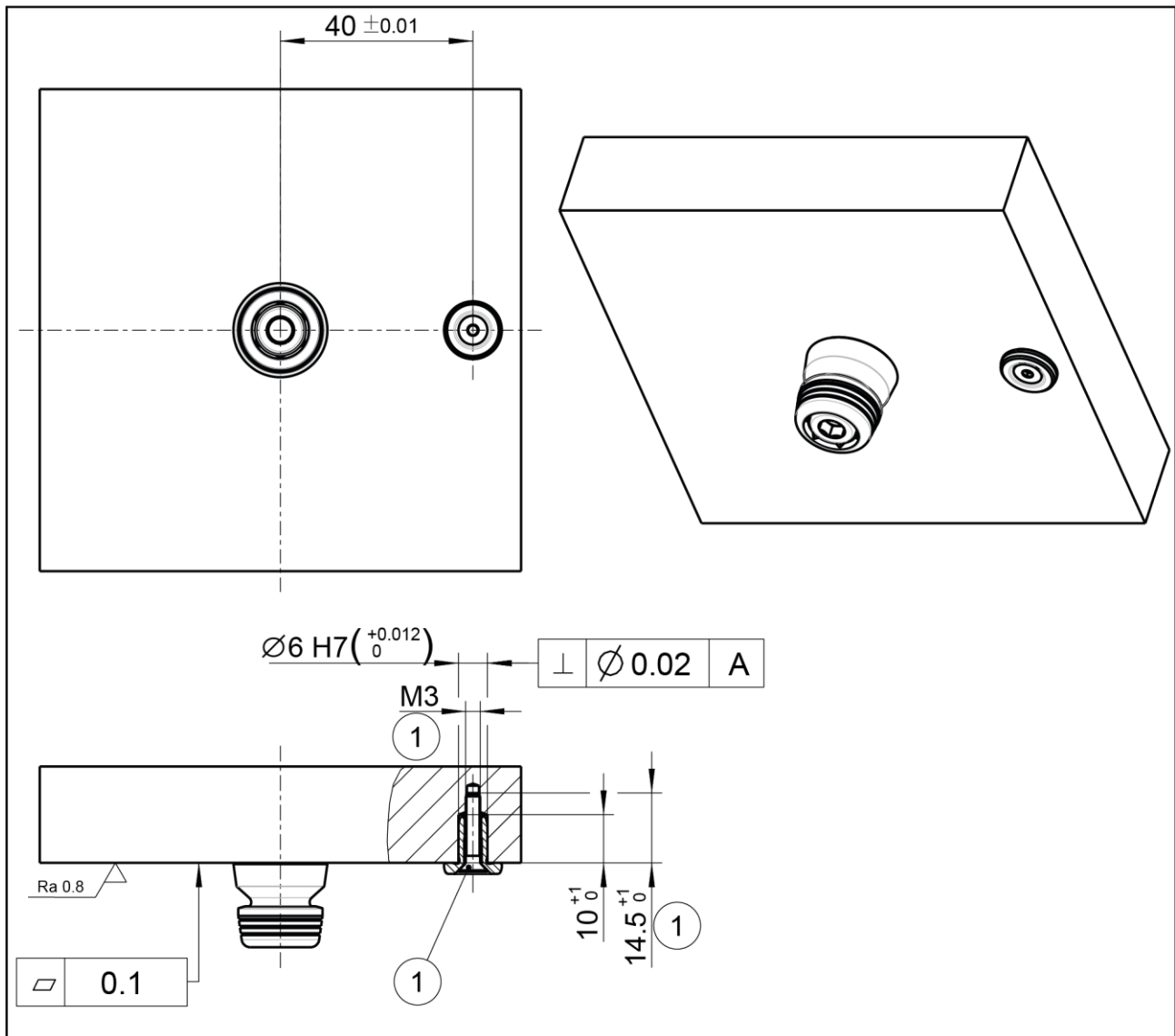
#### Notes on thermal distortion and released clampings

Released clampings can lead to the required flatness of the clamped object no longer being maintained. This can cause problems in downstream processes because the clamping pin no longer protrudes correctly into the clamping module. Any clampings released must not lead to the permissible flatness being exceeded (see illustration "Mounting the clamping pins").

The clamping pins can be mounted on the device or pallet in two different ways. The mounting variant on the left in the illustration, which is screwed from above, is the preferred variant.







Type	ID	A (steel)	B (aluminum)	C	D (steel)	E (aluminum)	F	G	H
SPA-HT mini 20	1393004	> 8 mm	> 13 mm	M8	> 9 mm	> 11 mm	M6	11 mm	> 8 mm
SPB-HT mini 20	1393005								
SPC-HT mini 20	1393006								



Mounting the indexing pin

Position	Description
<p style="text-align: center;">①</p>	<p>The indexing pin IXB-HT V1 mini can also be screwed tight with a screw ISO 10642 – M3x16 – 010.9 in addition to pressing in.</p> <p>This is recommended for applications at an ambient temperature &gt; 60°C. The reason for this is that a large thermal expansion of the fitting can cause the indexing pin to fall out when the pallet is lifted.</p> <p>Securing the indexing pin is optional for applications &lt; 60°C</p>

Usage/arrangement of the different types of clamping pins

-  Type A clamping pin, with positioning in two directions
-  Type B clamping pin, with positioning in one direction
-  Type C clamping pin, without positioning, with centering clearance of 0.1 mm
-  Indexing pin for positional alignment and torque transmission with torque pin V1. Positioning in one direction

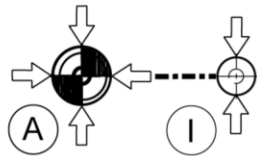


Positioning direction, perpendicular to the positioning axis

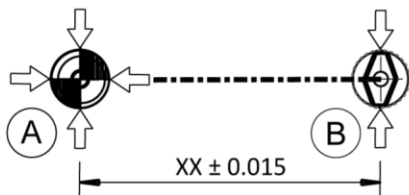


Select the positioning axis with the greatest possible distance

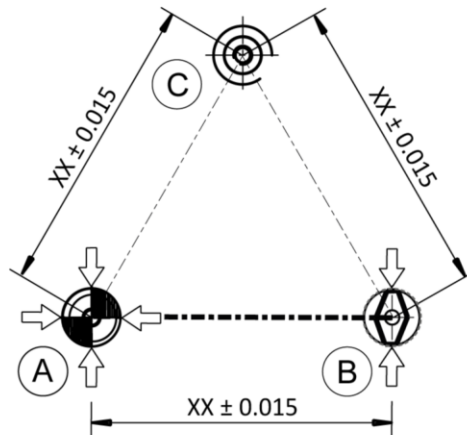
1 clamping area



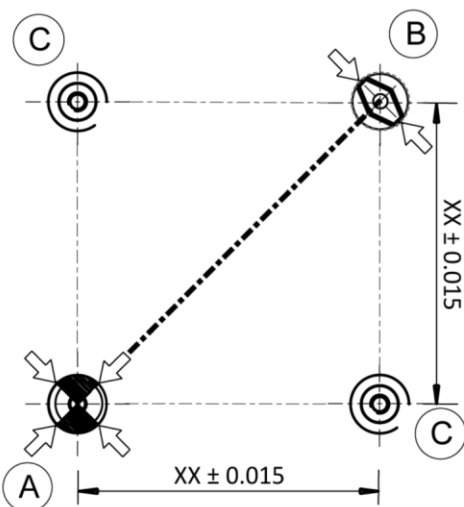
2 clamping areas



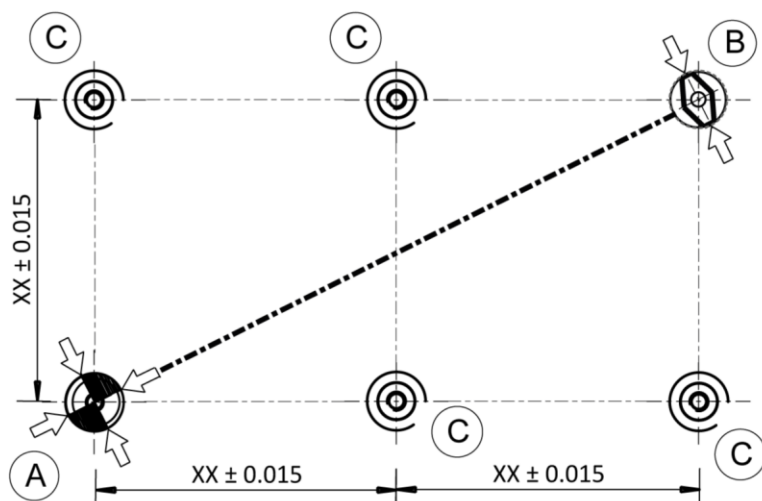
3 clamping areas



4 clamping areas



6 clamping areas



## 5 Screw tightening torques



### CAUTION

#### Notes on clamping pins and mounting screws

The holding force of the clamping pin is limited essentially by the tightness of the screw connection and the ambient temperature. This is why only screws of strength class 12.9 may be used. Only original SCHUNK clamping pins may be used. If the clamping pins are to be used in customer-owned devices, the customer must provide sufficiently dimensioned threaded holes or a sufficiently thick mounting material.

**For high-temperature applications (> 200°C to 520°C) it is essential to observe the reduced holding forces and tightening torques!**

#### Tightening torques for mounting the clamping pin

(Screw quality 12.9)

Screw size	M6		M8	
Temperature effects (°C)	Ⓐ	Ⓑ	Ⓐ	Ⓑ
	5 ... 200	> 200 ... 520	5 ... 200	> 200 ... 520
Tightening torques (Nm)	15	10	32	20

#### Tightening torques for mounting the indexing pin

(Screw quality 10.9)

Position	M3
Screw size	1