

ADS-TEC Industrial IT

# Surface specification for stainless steel precision casting surfaces

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Version	Date	Prepared by	Changes
1.0	10.02.2022	MeDr	Draft
1.1	25.02.2022	UhLz	Revision
1.2	21.01.2026	RnBh	Translation in english
1.3	23.01.2026	IrHd	New Layout (2025-22-09)

# 1 Purpose

The purpose of these inspection instructions is to define appearance requirements and quality criteria for stainless steel precision casting surfaces.

# 2 Scope

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# 3 Classification of visible surfaces

The classification is generally divided into

- Surfaces visible on the outside of the end product
- Functional surfaces (sealing surfaces for the service shaft cover)
- Surfaces outside the visible area (surfaces inside the housing)

In the following, the focus is only on surfaces visible on the end product. No requirements apply to surfaces in the internal area or to the inside of the service shaft. These surfaces have an as-cast finish.

Defects that cannot be detected under the conditions described below are disregarded, provided the defects are purely visual and do not impair function in any way. This applies in particular to sealing surfaces.

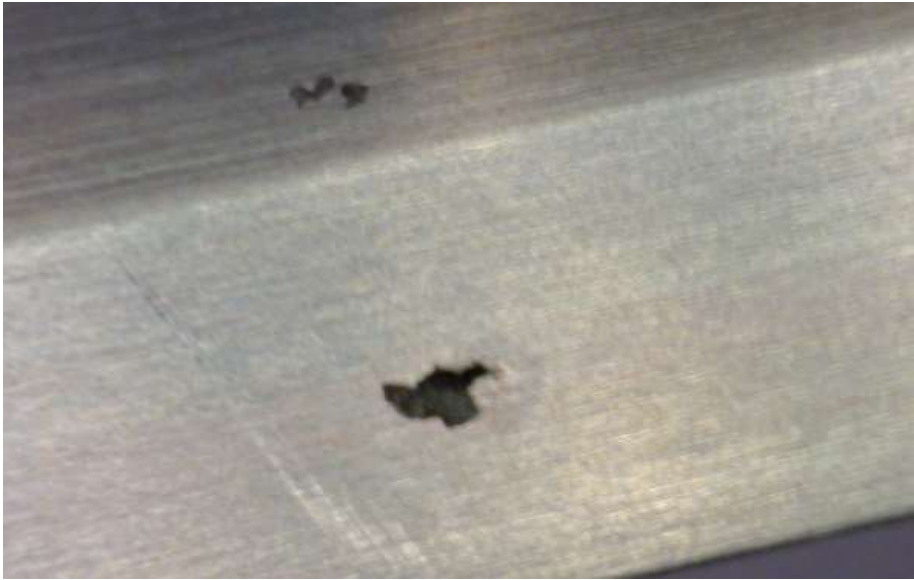
	<b>Surfaces visible on end product</b>	<b>Functional surfaces</b>	<b>Internal surfaces</b>
<b>Quality level</b>	Highest requirement	Limited requirements	No special requirements
<b>Permitted defects</b>	Minimal defects permitted *	Irregularities, shrinkage cavities (porosity), damage - provided they do not impair function	Irregularities, shrinkage cavities (porosity), damage


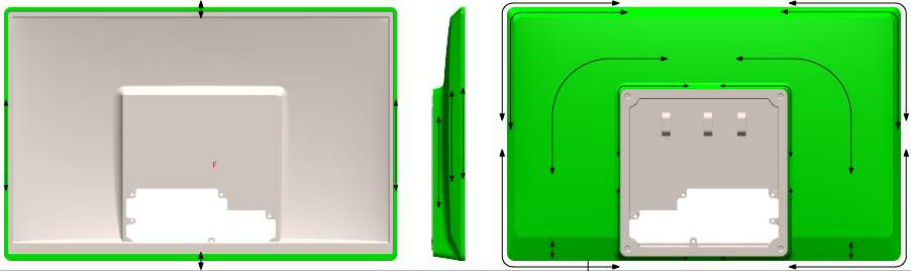
\*See 3.2 / "Surface defects"


### 3.1 Inspection methods for visible surfaces

Specification	Surfaces visible on end product
<b>Inspection methodology</b>	<p>Thorough inspection: systematic visual scanning of each surface to be inspected; deliberate search for defects. The component is assessed visually by the inspector. The surfaces to be assessed are not held up to the light. As a rule, the inspector's visual assessment is the primary inspection.</p> <p>If defects are noticed that could exceed the exceptions described below, they are examined in more detail. For this purpose, a microscope with an appropriate measuring function is used.</p>
<b>Guideline for inspection distance</b>	For the inspector's visual inspection: one arm's length distance.
<b>Lighting</b>	Illuminance is at least 600 lux.

### 3.2 Surface defects

Surface defects	Surfaces visible on end product
<b>Casting defects</b>	
Pinholes/shrinkage cavities	<p>Allowed:</p> <ul style="list-style-type: none"> <li>Pinholes/shrinkage cavities <math>\leq 1</math> mm; max. 1 occurrence on the housing</li> </ul> <p>Not allowed:</p> <ul style="list-style-type: none"> <li>Pinholes/shrinkage cavities <math>&gt; 1</math> mm</li> </ul>
	

Clusters of pinholes ('starry sky')	<p>Allowed:</p> <ul style="list-style-type: none"> <li>Clusters of max. 50 pinholes <math>\leq 0,5\text{mm}/100\text{ cm}^2</math></li> <li>Clusters of more than 50 pinholes <math>\leq 0,3\text{mm}/100\text{ cm}^2</math></li> </ul> <p>Not allowed:</p> <ul style="list-style-type: none"> <li>Clusters of more than 50 pinholes <math>&lt; 0,51\text{mm}/100\text{ cm}^2</math></li> </ul>
	
Grinding pattern	
Grinding direction	<p>Not allowed:</p> <ul style="list-style-type: none"> <li>Grinding direction perpendicular to the specified grinding direction</li> </ul> 
Waviness	<p>Allowed</p>

	
<b>Damage</b>	
Scratches / notches	<p>Allowed:</p> <ul style="list-style-type: none"> <li>Up to four (4) pieces, maximum dimensions 0,4mm x 20mm</li> </ul> <p>Not allowed:</p> <ul style="list-style-type: none"> <li>More than four (4) pieces</li> <li>Dimensions greater than 0,4mm x 20mm</li> </ul>
Dent	<p>Allowed:</p> <ul style="list-style-type: none"> <li>Up to two (2) pieces, maximum dimensions Ø6,0mm x approx.0,2mm</li> </ul> <p>Not allowed:</p> <ul style="list-style-type: none"> <li>More than two (2) pieces</li> <li>Dimensions greater than Ø6,0mm x approx.0,2mm</li> </ul>

### 3.3 Defect definitions

Quality characteristic	Criterion to be evaluated
<b>Casting defects</b>	
Pinhole	Small casting defects on the surface of cast parts
Clusters of pinholes ('starry sky')	Cluster of multiple pinholes on the surface of cast parts
<b>Grinding direction</b>	
Grinding direction	Grinding direction deviating from the specified grinding direction
<b>Damage</b>	
Scratch	Damage to the otherwise flat surface