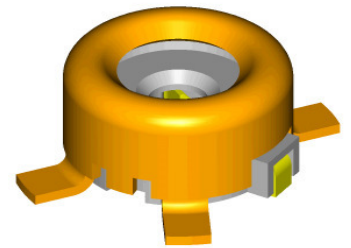


# Product data sheet

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|   |  |             |                       |
|---|--|-------------|-----------------------|
| <b>Part Number: 3976.99.0030.001</b>        |  |             | Revision: rev. D      |
| <b>Description: SMT-Switch</b>              |  |             | Date: 11.01.2007      |
|   |  |             | Signature: TZ         |
|   |  |             | Page: 1 of 7          |
| <b>ELECTRICAL CHARACTERISTICS</b>           | colored value means: still under test target value |             | <b>Unit</b>           |
|   | <b>value</b>                                       |             |                       |
| Impedance (MIL-C-39012B)                    | 50   |             | [Ohm]                 |
| Counter part:                               | 3989.91.1420.01´                                   |             |                       |
| Operation frequency                         | 6  |             | [GHz]                 |
|   | unswitched   | switched    |                       |
| Return loss                                 | 1GHz   | > 30        | [dB]                  |
|   | 2GHz   | > 28        | [dB]                  |
|   | 3GHz   | > 26        | [dB]                  |
|   | 6GHz   | > 16        | [dB]                  |
| Insertion loss                              | 1GHz   | < 0,15      | [dB]                  |
|   | 2GHz   | < 0,20      | [dB]                  |
|   | 3GHz   | < 0,25      | [dB]                  |
|   | 6GHz   | < 0,50      | [dB]                  |
| 3rd. Order PIM product 2x43dBm              | 100  |             | [dBc]                 |
| Isolation:                                  | 1GHz   | n/a         | [dB]                  |
|   | 2GHz   | > 36        | [dB]                  |
|   | 3GHz   | > 30        | [dB]                  |
|   | 6GHz   | > 26        | [dB]                  |
| Contact resistance                          | Center contact                                     | > 19        | [dB]                  |
|   | Outer contact                                      | > 19        | [dB]                  |
| Insulation resistance - initial > 0,50 Gohm | < 80   |             | [mOhm]                |
| Rated voltage                               | < 50   |             | [mOhm]                |
| Proof voltage / withstand voltage           | > 0,20   |             | [Mohm]                |
| Power handling                              | 250  |             | [Vrms]                |
|   | 300 (AC)   |             | [Vrms]                |
|   | @ 2,0 GHz  |             | [W]                   |
| <b>MECHANICAL CHARACTERISTICS</b>           |  |             |                       |
|   | <b>Value</b>                                       | <b>Unit</b> | <b>Remarks</b>        |
| Engagement force                            | approx. 10   | [N]         | with 3989.91.1420.01´ |
| Seperating force                            | approx. 10   | [N]         | with 3989.91.1420.01´ |
| Mating cycles                               | 10.000   | -           | with 4021.93.8914.10´ |
| Mating cycles                               | 50   | -           | with 3989.91.1420.01´ |



**Remarks**  
 Attention: electrical values strongly depending on layout !  
 Reference-pcb: AGK-4001  
 at 1870 MHz measured with K-2227 / 3989.91.1420.01´

after SMT-process / conditioning  
 Nennbelastung

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|                                      |                         |
|--------------------------------------|-------------------------|
| <b>Part Number:</b> 3976.99.0030.001 | <b>Revision:</b> rev. D |
| <b>Description:</b> SMT-Switch       | <b>Date:</b> 11.01.2007 |
|                                      | <b>Signature:</b> TZ    |
|                                      | <b>Page:</b> 2 of 7     |

| <u>MATERIAL AND PLATING</u>  |   |  |       |
|--|---|--|-------|
| Housing<br>Spring<br>Stationary spring<br>Insulator<br>-<br>-  | Material<br>stainless steel<br>copper beryllium<br>bronze<br>PPA  | Plating<br>Ni + 0,2µm Au<br>Ni + 0,5µm Au<br>Ni + 0,2µm Au<br>-        | white |
| <u>ENVIROMENTAL</u>  |   |  |       |
| Temperature range<br>Storage temperature<br>Storage humidity<br>Temperature change<br>Damp heat cyclic<br>Vibration-broad band random<br>Shock<br>Bump | IEC 60068-2-14 / Nb<br>IEC 60068-2-30 / Db<br>IEC 60068-2-64 / Fh<br>IEC 60068-2-27 / Ea<br>IEC 60068-2-29 / Eb | -40°C to +100°C<br>-10°C to +40°C<br>15% to 85% RH<br><br>60 g<br>40 g |       |

**Notes**

| <u>Update historie</u> |            |           |
|------------------------|------------|-----------|
| Rev.                   | date       | Signature |
| a                      | 22.11.2011 | C.MB      |
| b                      | 24.11.2014 | MF        |
| c                      | 17.07.2015 | MF        |
| d                      | 05.06.2018 | C.MB      |
|                        |            |           |
|                        |            |           |
|                        |            |           |
|                        |            |           |
|                        |            |           |
|                        |            |           |

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Revision: rev. D

Date: 11.01.2007

**Description: SMT-Switch**

Signature: TZ

Page: 3 of 7

## SMD - solderability acc. IPC/JEDEC J-STD-020C - Pb-Free Assembly

**Table 4-1 SnPb Eutectic Process – Package Peak Reflow Temperatures**

| Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> ≥ 350 |
|-------------------|-----------------------------|------------------------------|
| <2.5 mm           | 240 +0/-5 °C                | 225 +0/-5 °C                 |
| ≥ 2.5 mm          | 225 +0/-5 °C                | 225 +0/-5 °C                 |

**Table 4-2 Pb-free Process – Package Classification Reflow Temperatures**

| Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> 350 - 2000 | Volume mm <sup>3</sup> >2000 |
|-------------------|-----------------------------|-----------------------------------|------------------------------|
| <1.6 mm           | 260 +0 °C *                 | 260 +0 °C *                       | 260 +0 °C *                  |
| 1.6 mm - 2.5 mm   | 260 +0 °C *                 | 250 +0 °C *                       | 245 +0 °C *                  |
| ≥2.5 mm           | 250 +0 °C *                 | 245 +0 °C *                       | 245 +0 °C *                  |

\* Tolerance: The device manufacturer/supplier shall assure process compatibility up to and including the stated classification temperature (this means Peak reflow temperature +0 °C. For example 260 °C+0°C) at the rated MSL level.

**Table 5-2 Classification Reflow Profiles**

| Profile Feature  | Sn-Pb Eutectic Assembly            | Pb-Free Assembly                   |
|--|------------------------------------|------------------------------------|
| Average Ramp-Up Rate (Ts <sub>max</sub> to Tp)   | 3 °C/second max.                   | 3° C/second max.                   |
| <b>Preheat</b><br>- Temperature Min (Ts <sub>min</sub> )<br>- Temperature Max (Ts <sub>max</sub> )<br>- Time (ts <sub>min</sub> to ts <sub>max</sub> ) | 100 °C<br>150 °C<br>60-120 seconds | 150 °C<br>200 °C<br>60-180 seconds |
| Time maintained above:<br>- Temperature (T <sub>L</sub> )<br>- Time (t <sub>L</sub> )  | 183 °C<br>60-150 seconds           | 217 °C<br>60-150 seconds           |
| Peak/Classification Temperature (Tp)   | See Table 4.1                      | See Table 4.2                      |
| Time within 5 °C of actual Peak Temperature (tp)   | 10-30 seconds                      | 20-40 seconds                      |
| Ramp-Down Rate   | 6 °C/second max.                   | 6 °C/second max.                   |
| Time 25 °C to Peak Temperature   | 6 minutes max.                     | 8 minutes max.                     |

Note 1: All temperatures refer to topside of the package, measured on the package body surface.

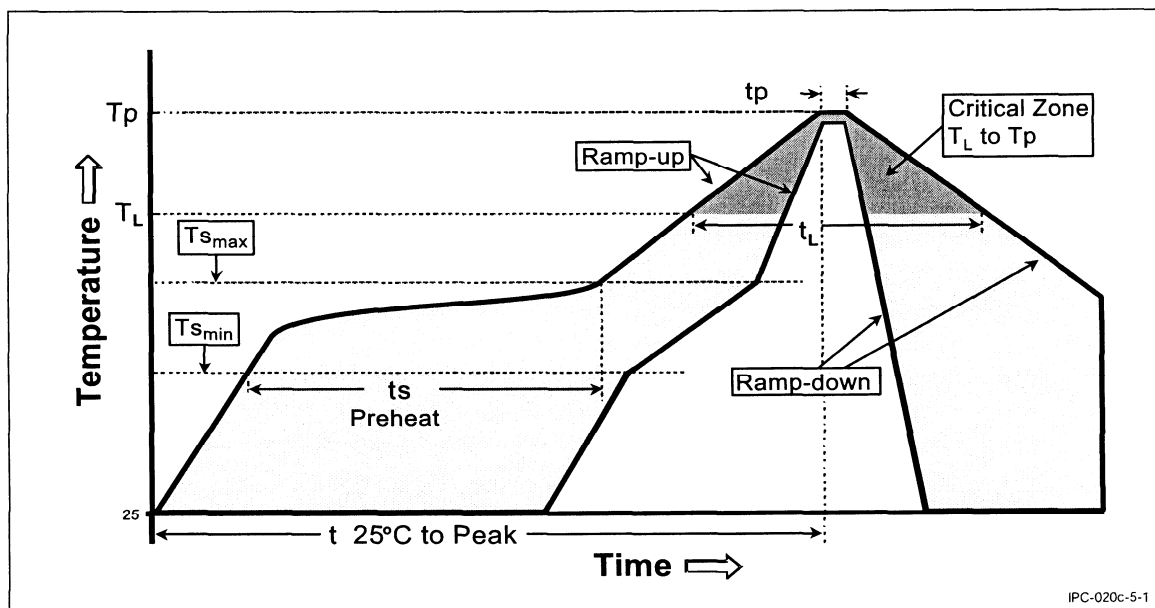


Figure 5-1 Classification Reflow Profile

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Revision: rev. D

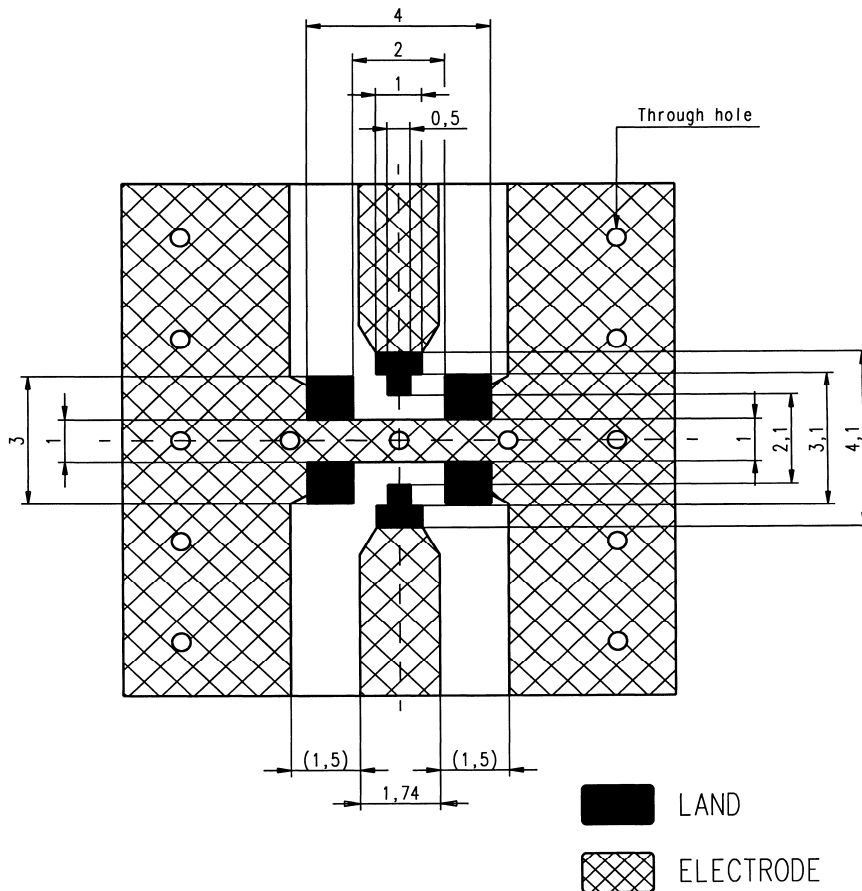
Date: 11.01.2007

Signature: TZ

**Description: SMT-Switch**

Page: 4 of 7

## PCB-Layout



Standard pattern dimensions

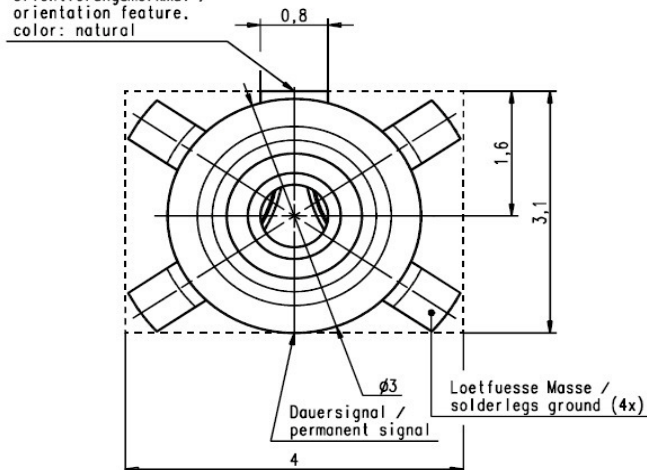
Please design I/O pattern so that the impedance match 50 ohm including the land pattern.

The material of PCB is the epoxy resin of grass fabric base. ( $\epsilon_r = 4.8$ ). Thickness is 1.0 mm.

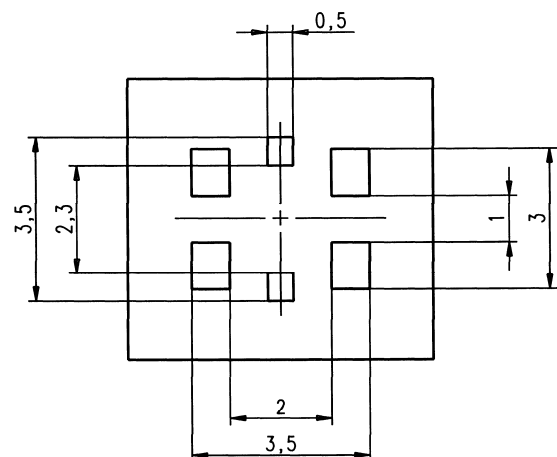
The solder resist should be printed except for the land pattern on the PCB.

Signaldurchgangspfad /  
switched signal

Orientierungsmerkmal /  
orientation feature.  
color: natural



The standard solder cream metal mask drawing (Mask thickness 0,15 mm)



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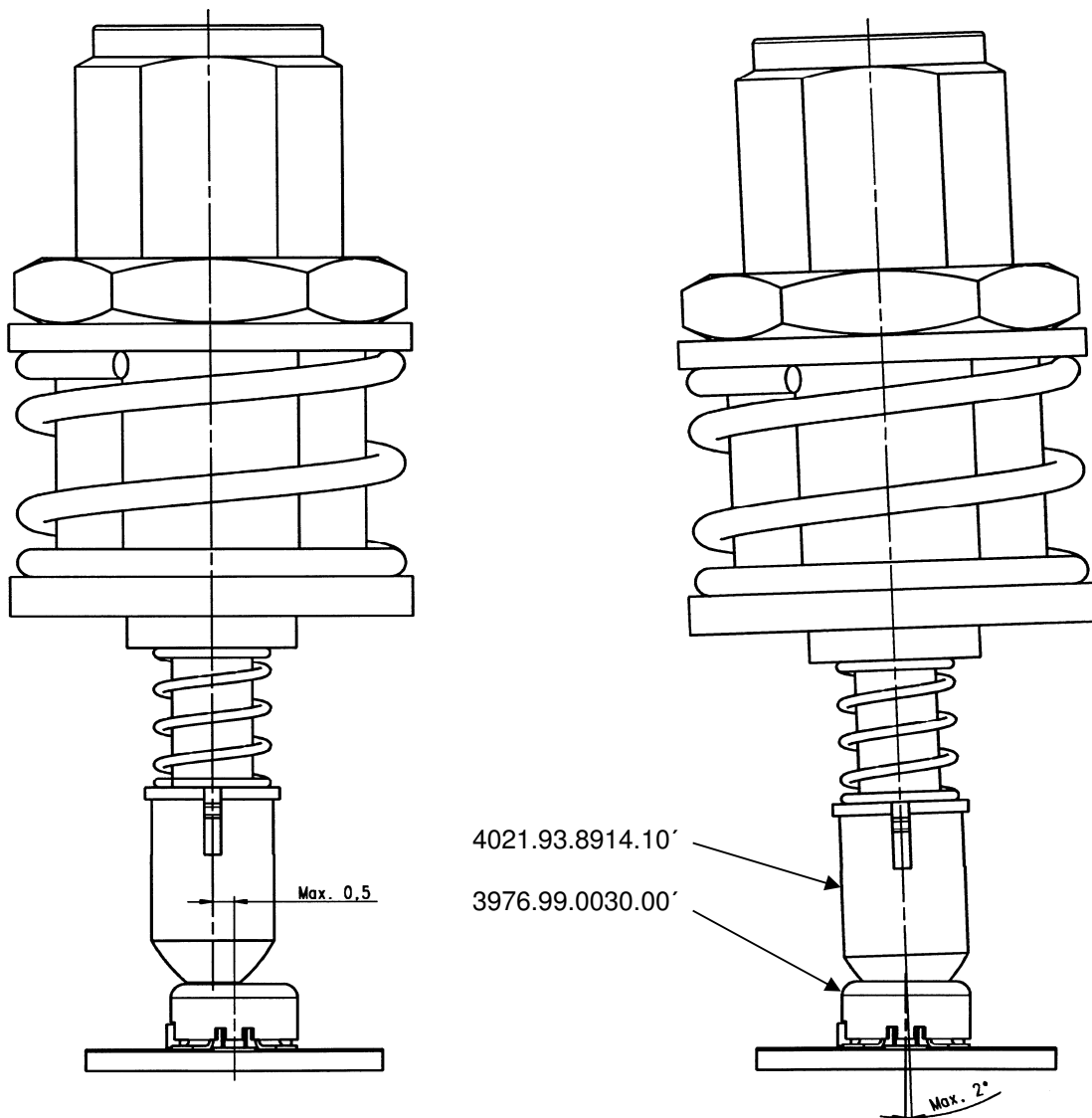
Revision: rev. D

Date: 11.01.2007

Signature: TZ

Page: 5 of 7

## Mechanical requirements



Misalignment between switch to adapter :  
max. 0,50 mm / corresponds to an angle  
deviation of 2 degrees.

# Assembly Instruction

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**Number: M-228**

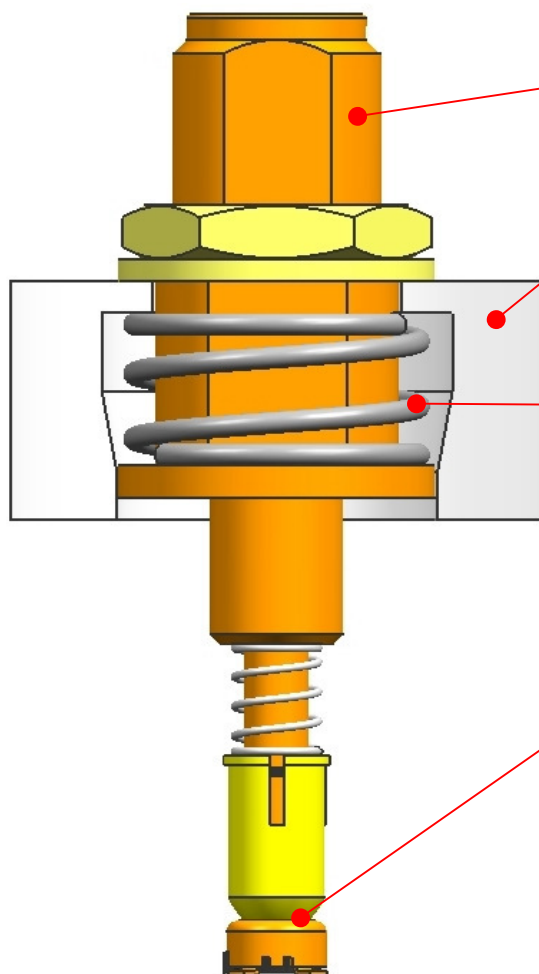
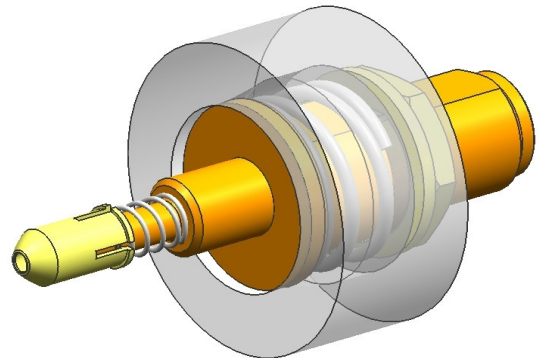
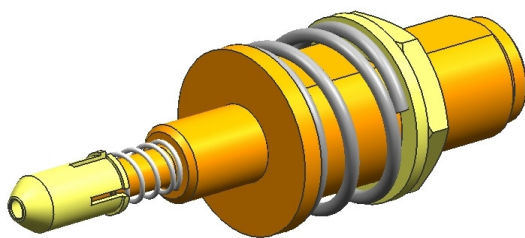
**Date: 12.02.2007**

**Description: Automatic test adapter**

**Signature: T. Zech**

**Page: 1 of 2**

## Using parts:



Adapter

Housing - proposal.

Installation recommendation for adapters:  
For a correct function a floating device of the adapter is absolutely necessary. A firm positioning is not allowed !

Maximum vertical stroke : 2 mm.  
Adapter must not accumulate on block.

Detailed data for installation situation can be taken from the individual outline drawings of the adapters.

Misalignment between switch to adapter:  
max. 0,50 mm / corresponds to an angle deviation of 2 degrees.

# Assembly Instruction

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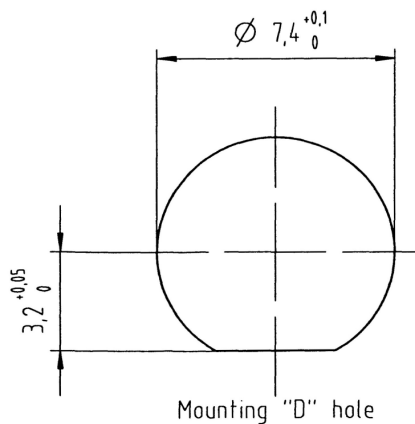
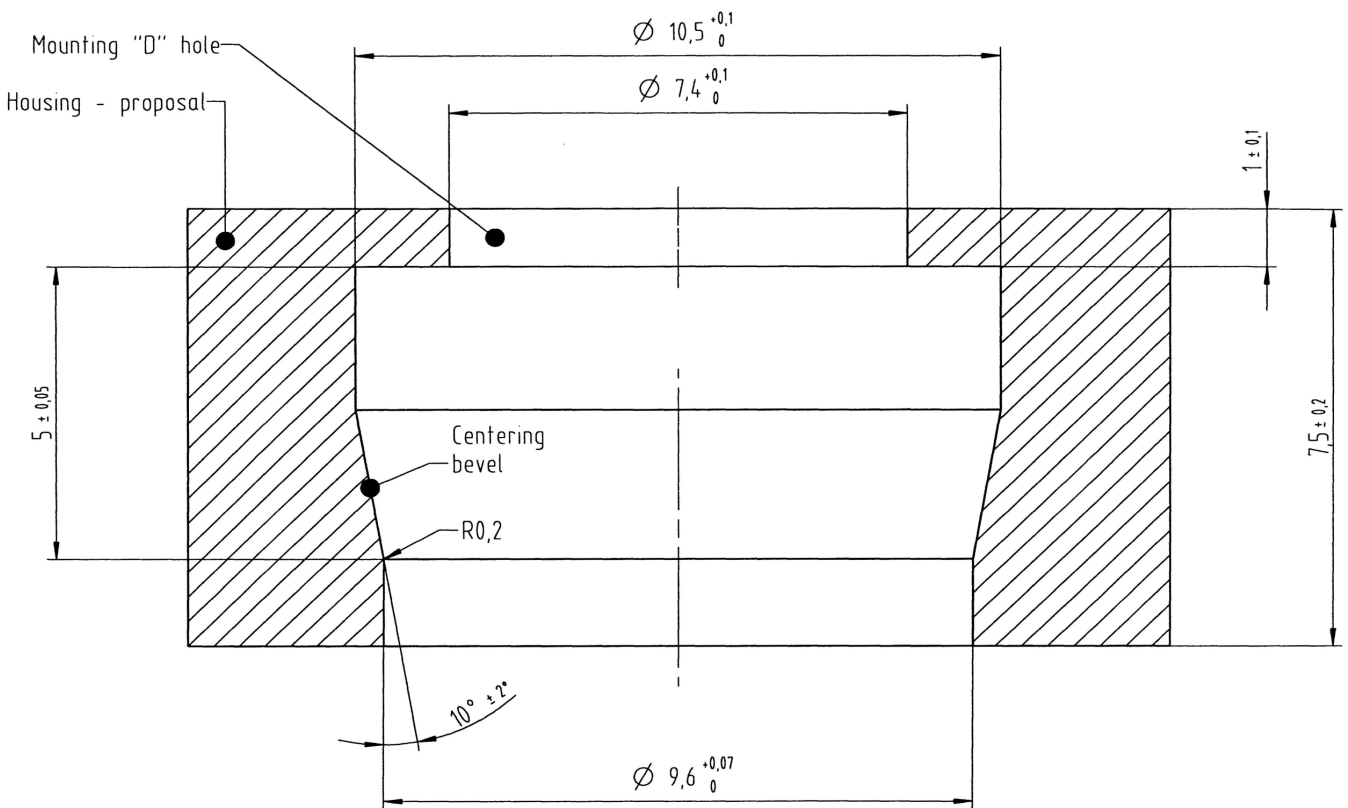
**Date: 12.02.2007**

**Description: Automatic test adapter**

**Signature: T. Zech**

**Page: 2 of 2**

**Dimensions:**



Housing/Gehäuse - proposal

Installation recommendation for adapters:

For a correct function a floating device of the adapter is absolutely necessary. A firm positioning is not allowed !

Einbauempfehlung für Adapter:

Für eine korrekte Funktion ist eine schwimmende Aufnahme des Adapters absolut notwendig. Der Adapter darf nicht fest positioniert werden.