


# Zfx™ Inhouse5x Maintenance Plan



Zfx


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This maintenance schedule is intended to ensure the reliable functionality of the Zfx™ Inhouse5x for the user. Therefore, we highly recommend to conduct routinely the maintenance activities described in the following!

The yearly maintenance service is carried out by Zfx™ Service Support Technicians only!


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## 1. Maintenance Activities: Daily

| Activity                     | Description  | Remark   |
|------------------------------|--|--|
| <b>Clean Collet</b>          | Check to make sure that the collet in the spindle is working properly.<br>Clean Spindle taper and collet with brush without removing.  | Collet chuck 5° D4 for Zfx™ Inhouse5x<br>ZFX02010001 |
| <b>Clean Milling Chamber</b> | Remove residual material from the milling chamber by using a brush and a vacuum cleaner.<br><br><b>Caution: Don't use compressed air to blow out the milling chamber!</b>                |  |
| <b>Clean Tool Changer</b>    | We recommend cleaning of the tool places after milling 10-15 elements.<br><br><b>Caution: After cleaning the Tool changer, check all tool positions with the supplied "set-up tool"!</b> |  |
| <b>Spindle warm up</b>       | If the spindle has not been running for 2-3 days, run the quick start program "Warm-up".   |  |
| <b>Clean swarf filter</b>    | Clean the Swarf filter in the milling chamber under running water, to minimize the residual titanium dust and shavings, which are very combustible.                                      |  |
| <b>Clean Viewing Window</b>  | Clean the viewing window to the milling chamber  |  |

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## 2. Maintenance Activities: Weekly

| Activity  | Description   | Remark  |
|---|---|---|
| <b>Clean Collet / Adjust</b>  | Check to make sure that the collet chuck in the spindle is working properly.<br><b>Disassemble, clean and adjust collet correctly.</b><br>(instruction "clean collet chuck.pdf"). | Collet chuck 5° D4 for Zfx™ Inhouse5x<br>ZFX02010001        |
| <b>Cleaning of the bellows</b>  | Clean bellows and lamellas from the X- and Y-axis.  |   |
| <b>Cleaning of the machine housing</b>                                    | Clean the complete machine housing with a clean, non-abrasive tissue.<br>If necessary, use a suitable liquid cleaner.   |   |
| <b>Lubricate Spindle housing</b>  | Lubricate spindle housing with extended Z-axis.<br>Use a suitable maintenance spray (silicon spray).<br><b>Caution: Risk of collision!</b>  |   |
| <b>Lubricate the plunger rod of the Tool Changer</b>                      | Lubricate the plunger rod of the tool changer with a suitable maintenance spray. (silicon spray).   |   |
| <b>Lubricate the rotary seal of the Tool Changer</b>                      | Lubricate the rotary seals of the tool changer with a silicone spray.   |   |
| <b>Clean / Replace Swarf Filter</b>                                       | Replace the filter if it is necessary. (Every two weeks)<br>Residual Titanium dust and shavings are very combustible, also after cleaning the filter.                             | Swarf filter 45ppi for Zfx Inhouse5x:<br>ZFX02010030        |
| <b>Cleaning of the probe for tool length measurement</b>                  | Clean the sensor with a brush / cloth and check function.<br><br>Note: Ensure that the cleaning is not done with too much pressure, as this leads to an error message.            |   |
| <b>Suction System (incl.Suction filter) and clean/ emptying chip tray</b> | Clean suction system (instruction "Suction filter.pdf") and be sure chip tray is empty.   | Suction Filter for Zfx™ Inhouse5x:<br>ZFX02010000           |
| <b>Clean Coolant System incl. Filter, and if necessary replace Filter</b> | Clean the coolant filter (instruction "coolant filter.pdf"). If the coolant-pressure is not enough after reinstallation, replace the filter.                                      | Coolant Filter 100 µm<br>for Zfx™ Inhouse5x:<br>ZFX02010010 |

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### 3. Maintenance Activities: Bimonthly

| <b>Activity</b>  | <b>Description</b>  | <b>Remark</b>  |
|--|---|--|
| <b>Milling Test Body</b>                                 | <p>To verify the accuracy of the milling machine, mill a test body every two months.</p> <p>The milling program for these samples must not be calculated as they are saved in the system. (C:\Multimill\Cnc-Programme\Testprogramme\12mm\Zfx_Kinematic_V2_hM_20mm_T162_T21.nc)</p> <p>Before milling the test body, make sure that both tools T162 and T21 are in the tool magazine with a sufficiently lifetime.</p> | <p>Zfx™ Accurate grey 98x20:<br/>ZFX08002269</p> <p>PMMA_KF_D2/4 L15/25 - T21:<br/>ZFX06000954</p> <p>PMMA_SF_D4/4 L16/27- T162:<br/>ZFX06000952</p> |
| <b>Clean Coolant System, replace coolant filter</b>      | Clean the coolant system. Replace the coolant filter.   | Coolant Filter 100 µm for Zfx™ Inhouse5x:<br>ZFX02010010   |
| <b>Clean Metal Mesh / Splash Guard of the Front Door</b> | Dismantle the splash guard of the front door and clean it for example with a steam jet.   |  |

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#### 4. Maintenance Activities: half-yearly

| Activity                        | Description  | Remark                           |
|---------------------------------|--|----------------------------------|
| <b>Replace Zfx™ Cutting Oil</b> | Replace cutting oil can and do not only a fill up. | Zfx™ Cutting Oil:<br>ZFX02002077 |

#### 5. Maintenance Activities: Yearly

| Activity                  | Description  | Remark  |
|---------------------------|--|---|
| <b>Maintenance by Zfx</b> | Yearly maintenance by authorized Zfx service technicians | ZFX-Maintenance-Package - Zfx Inhouse5x:<br>ZFX17000301 |
| <b>Lubricate all Axis</b> | Yearly maintenance by authorized Zfx service technicians |   |
| <b>Calibrate all Axis</b> | Yearly maintenance by authorized Zfx service technicians |   |



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| Date | Daily        |                       |                    |                 |                    |                      | Weekly       |                         |                                 |                                  |   |                        |                                | 2 Months   |   | 6 Months          | Yearly                                       |   |                          |                    |                    |
|------|--------------|-----------------------|--------------------|-----------------|--------------------|----------------------|--------------|-------------------------|---------------------------------|----------------------------------|---|------------------------|--------------------------------|--|---|-------------------|--|---|--------------------------|--------------------|--------------------|
|      | Clean Collet | Clean Milling Chamber | Clean Tool Changer | Spindle warm up | Clean Swarf filter | Clean Viewing Window | Clean Collet | Cleaning of the bellows | Cleaning of the machine housing | Lubricate of the spindle housing | Lubricate the plunger rod of the Tool Changer | Emptying the chip tray | Clean / Replace i Swarf Filter | S Suction System (incl.Suction filter) and clean/ emptying chip tray | Cleaning of the probe for tool length measurement | Milling Test Body | Clean Coolant System, replace coolant filter | Clean Metal Mesh / Splash Guard of the Front Door | Replace Zfx™ Cutting Oil | Maintenance by Zfx | Lubricate all Axis |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |
|      |              |                       |                    |                 |                    |                      |              |                         |                                 |                                  |   |                        |                                |  |   |                   |  |   |                          |                    |                    |