

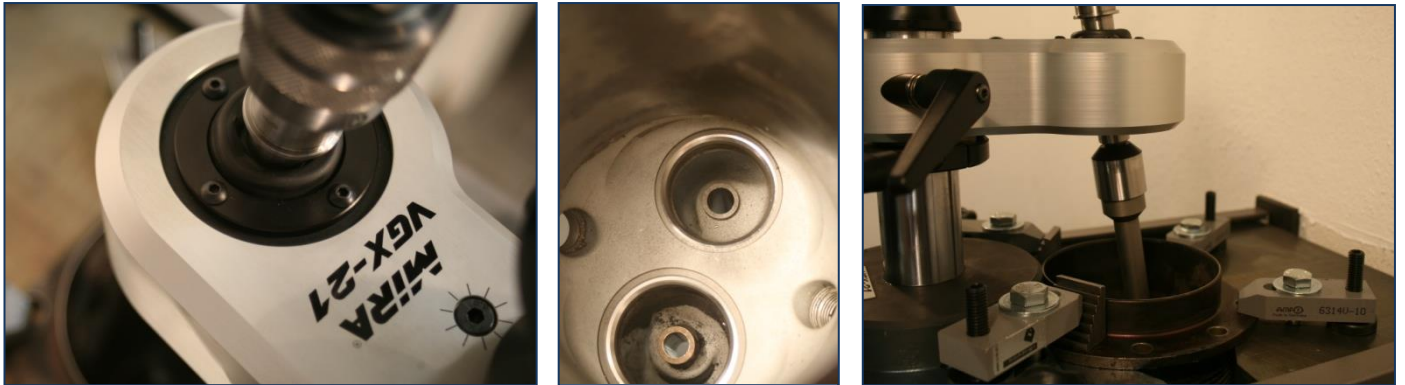
VGX-AEROKIT

Set Up Instruction

***Valve Seat Refacing Unit for
Continental and Lycoming
Aero Engines***



VGX-Aerokit



Precise valve seat cutting and counterboring on blind cylinders of Aero engines is made easy by using the unique Swiss Made MIRA VGX-Aerokit. With the famous MIRA VGX-21 valve seat refacing unit a quick and perfect valve seat refacing job can be executed. The specially made robust blind cylinder support system easily accommodates different cylinder sizes. The MIRA Aerokit has been specially developed for the professional Aero engine rebuilder.

The VGX-Aerokit contains the following equipment:

- **1 Cylinder Support Unit** – for safe and fast cylinder mounting
- **1 Moveable Base Plate** – for the processing of different cylinder sizes
- **1 Adjusting Plate** – for the processing of smaller blind cylinders
- **2 Wall Reinforcement Plates** - for safe and proper wall mounting
- **4 Clamps** – for the solid mounting of blind cylinders
- **1 VGX-21 Valve Seat Refacing Unit** – for the precise refacing of valve seats
- **1 VGX-Aero Extension Shaft** – for reaching the exact depth of the blind cylinder
- **1 Spare Parts list and Drawing** – for quick replacement part identification

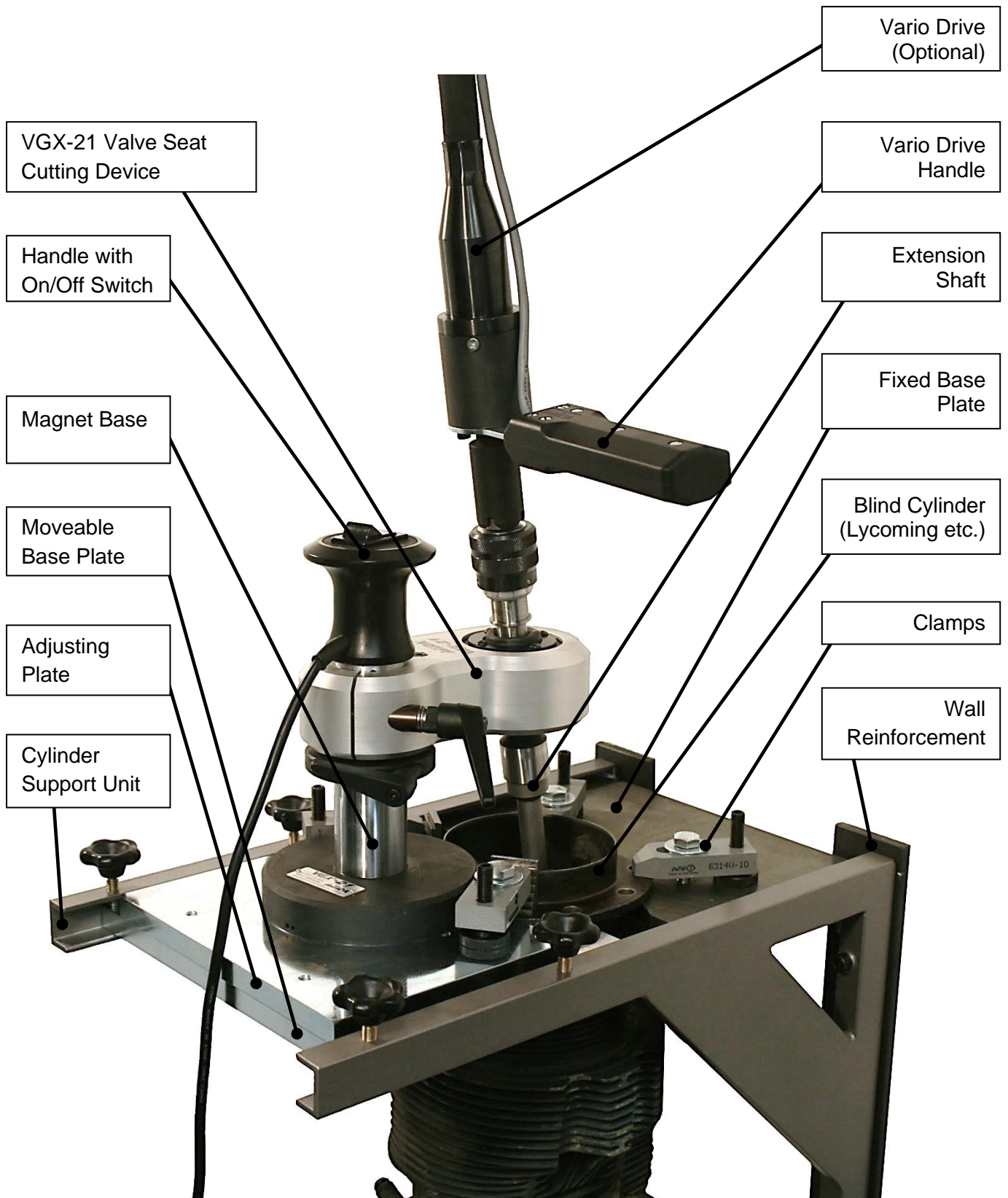
Optional

Vario Drive – adaptable, variable electronic drive unit

Non-liability

The VGX-Aerokit device may only be installed and operated according to the MIRA operating instructions. The manufacturer refuses to accept any liability for accidents and damages caused by incorrect operation. The Manufacture also refuses any liability for alienated use of the device.

Picture below shows the VGX-Aerokit including the VGX-21 Valve Seat Refacing Unit and the optional Vario Drive Electronic Drive Unit. The cylinder support unit features a fixed and a moveable base plate which accommodates different cylinder diameters. For different depths of blind cylinders an adjusting plate can be installed/reinstalled. The working height of the valve seat cutting operation can be adjusted continuously by the VGX-21 unit.



Special blind cylinder support unit

It is important that blind cylinders are fixed properly before any valve seat cutting job is executed. The MIRA VGX-21 Aerokit does include a special and unique blind cylinder support unit. Make sure, that the unit is mounted on a solid wall.

Blind cylinder clamping

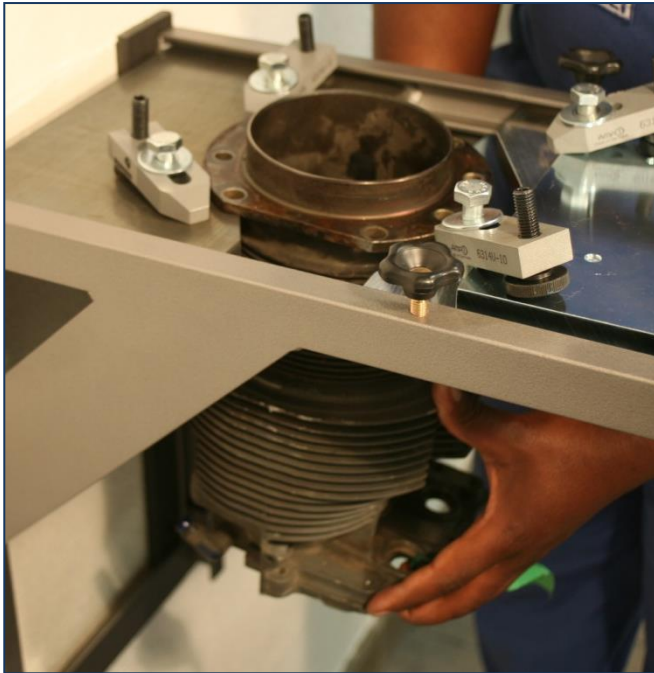


Fig. 1

Following steps have to be executed:

- **Release loose side** of the base plate. Move the base plate up to the point where the blind cylinder can be installed from underneath.
- Carefully position the blind cylinder until the cylinder is **supported on the fixed plate**.
- Move the loose side of the base plate towards the blind cylinder until the edge of the blind cylinder is supported.
- Install and align the enclosed clamps.
- Evenly tighten the blind cylinder down to the base plates by using the enclosed hex bolts.

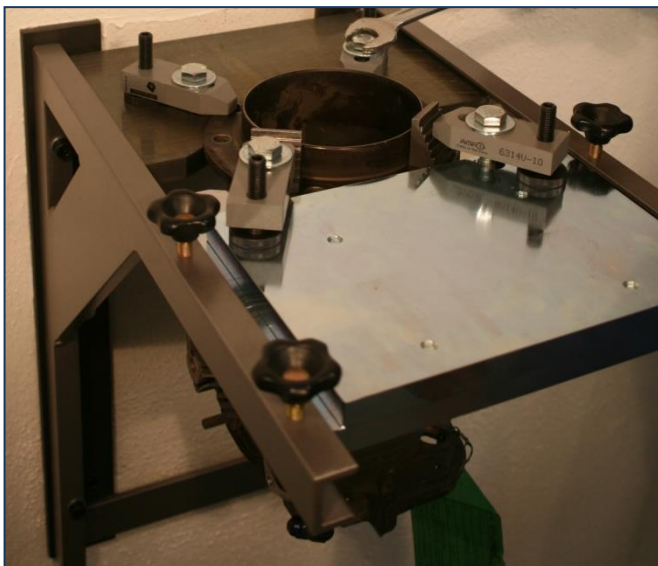


Fig. 2

1 VGX-21 setting up

Always consult the enclosed VGX-21 Instruction Manual for preparing and setting up the VGX-21 valve seat refacing unit.



Fig. 3



Fig. 4

Beside the VGX-21 unit, the following tools must be ready in order to execute a complete valve seat job on blind cylinders:

2 x MIRA FD-Pilots

(Specified by the inner valve guide \varnothing)

2 x MIRA Formtools Type A,B oder C

(Specified by the profile and the valve seat \varnothing)

1 x MIRA Toolhead DT1,DT2 or DT3

(Specified by the valve seat diameter)

1 x MIRA AeroKit extension shaft L=200m



Fig. 5

1.1 Pilot selection

Make sure, that the valve guide is cylindrical and clean. Select a MIRA FD type pilot which glides vertically into the valve guide without resistance! Do not use force! Make sure, that the selected MIRA FD-type pilot moves freely after insertion!



In order to get a perfect valve seat job, the gap between the inner valve guide diameter and the outer FD-pilot diameter should not exceed **0.01mm**.

Select two suitable FD-pilots. One for the intake seat and one for the exhaust seat.

Mount the first pilot onto the selected DT toolhead and clamp it with the enclosed allen key!



Fig. 6

1.2 Formtool setting"

Transmit the corresponding valve seat diameter to the selected formtool by using the MIRA formtool setting gauge.

Clamp the formtool by using the enclosed allen key.

Remove the MIRA formtool setting gauge from the pilot.

In some cases, the control of the valve seat position on the bottom of a blind cylinder can be challenging!



Fig. 7

Insert the extension spindle/formtool package into the valve guide. By simultaneously turning and carefully pushing the formtool against the raw valve seat, a small cutting contour on the valve seat can be created.

If necessary, this optical contour can be helpfull in finding, controlling and adjusting the final position of the valve seat!



Fig. 8

1.3 Extension shaft mounting

After setting the formtool, mount the extension shaft to the DT1 toolhead.



Make sure, that the marking point on the DT1 spindle is in line with the mounting screw of the extension shaft!

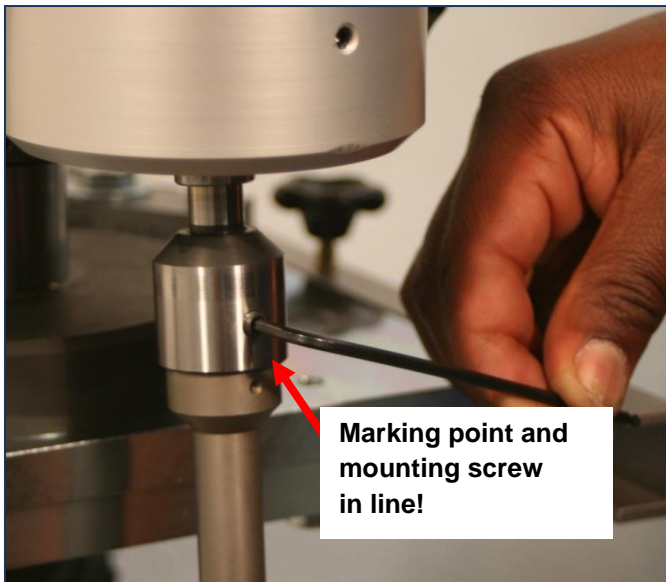


Fig. 9

Insert the extension shaft including formtool and FD pilot to the VGX-21 valve seat refacing unit.



Fig. 10

1.4 Mounting the VGX-21 to the cylinder support

Place the VGX-21 valve seat refacing unit in its highest position. Carefully insert the FD-pilot into the corresponding valve guide. Slowly move down the VGX-21 valve seat refacing unit until the magnetic base of the VGX-21 is firmly placed onto the clean surface of the cylinderhead support plate.



Please read the VGX-21 instruction manual! It will guide you to the final mounting process!



Fig. 11

1.5 Aligning of the VGX-21

CAUTION!

Make sure, that during insertion and setting up of the unit the distance between the formtool cutting tip and the valve seat is sufficient. **Otherwise you can destroy the formtool!**



Please read the VGX-21 instruction manual! It will guide you to the final centering process!

1.6 Processing the valve seat of blind cylinders

After the above mentioned installation work has been carried out, the unit is ready for the first valve seat cutting job!

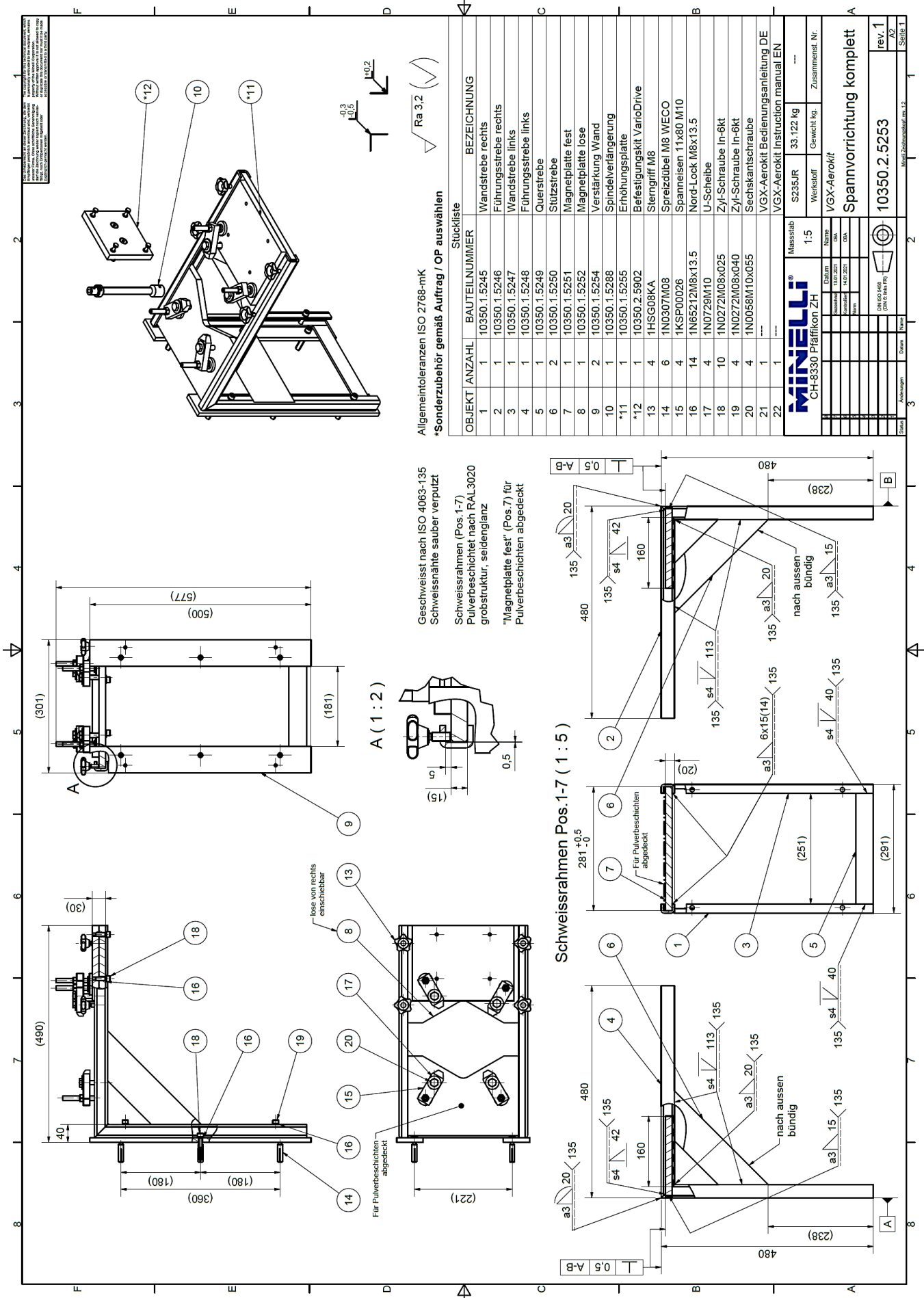
Special Note!

Processing of the valve seat is only possible on the side of the moveable base plate!
For processing the opposite valve seat the blind cylinder must be turned around!

2 Replacement Part List

In case of order, always indicate serial number of the Aerokit. The following replacement parts can be ordered through MIRA Switzerland or the official MIRA distributor in your region:

| Description | Pos. | Part Number |
|--------------------------------|-------------|--------------------|
| Wall strut right | 1 | 10350.1.5245 |
| Guide strut right | 2 | 10350.1.5246 |
| Wall strut left | 3 | 10350.1.5247 |
| Guide strut left | 4 | 10350.1.5248 |
| Cross piece | 5 | 10350.1.5249 |
| Support strut | 6 | 10350.1.5250 |
| Base plate fixed | 7 | 10350.1.5251 |
| Base plate loose | 8 | 10350.1.5252 |
| Wall reinforcement | 9 | 10350.1.5254 |
| Spindle extension L200mm | 10. | 10350.5288 |
| Height plate (Optional) | 11 | 10350.1.5255 |
| Mounting Kit Vario Drive | 12 | 10350.2.5902 |
| Star grip M8 for clamping unit | 13 | 1HSG08KA |
| Expansion anchor M8 WEGO | 14 | 1N0307M08 |
| Clamps 11x80 M10 | 15 | 1KSP00026 |



Allgemeintoleranzen ISO 2768-mK
 *Sonderzubehör gemäß Auftrag / OP auswählen

| OBJEKT | ANZAHL | BAUTEILNUMMER | STÜCKLISTE | BEZEICHNUNG |
|--------|--------|----------------|------------|------------------------------------|
| 1 | 1 | 10350.1.5245 | | Wandstrebe rechts |
| 2 | 1 | 10350.1.5246 | | Führungstrebe rechts |
| 3 | 1 | 10350.1.5247 | | Wandstrebe links |
| 4 | 1 | 10350.1.5248 | | Führungstrebe links |
| 5 | 1 | 10350.1.5249 | | Querstrebe |
| 6 | 2 | 10350.1.5250 | | Stützstrebe |
| 7 | 1 | 10350.1.5251 | | Magnetaufbau fest |
| 8 | 1 | 10350.1.5252 | | Magnetaufbau lose |
| 9 | 2 | 10350.1.5254 | | Verstärkung Wand |
| 10 | 1 | 10350.1.5288 | | Spindelverlängerung |
| *11 | 1 | 10350.2.5902 | | Erhöhungplatte |
| *12 | 1 | 10350.2.5902 | | Befestigungsskit VarioDrive |
| 13 | 4 | 1HSG08KA | | Stengriff M8 |
| 14 | 6 | 1N0307M08 | | Spannzylinder M8 WECCO |
| 15 | 4 | 1KSP00026 | | Spannisen 11x80 M10 |
| 16 | 14 | 1N65212M8x13.5 | | Nord-Lock M8x13.5 |
| 17 | 4 | 1N0729M10 | | U-Scheibe |
| 18 | 10 | 1N0272M08x025 | | Zyl-Schraube In-6kt |
| 19 | 4 | 1N0272M08x040 | | Zyl-Schraube In-6kt |
| 20 | 4 | 1N0058M10x055 | | Sechskantschraube |
| 21 | 1 | --- | | VGX-Aerokit Bedienungsanleitung DE |
| 22 | 1 | --- | | VGX-Aerokit Instruction manual EN |

| CH-8330 Pfäfers ZH | Massstab 1:5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <table border="1"> <tr> <th>Zeichnungs-Nr.</th> <th>Datum</th> <th>Umfeld</th> <th>Umfeld</th> </tr> <tr> <td>10350.1.5245</td> <td>13.03.2021</td> <td>MAK</td> <td>MAK</td> </tr> <tr> <td>10350.1.5246</td> <td>13.03.2021</td> <td>MAK</td> <td>MAK</td> </tr> <tr> <td>10350.1.5247</td> <td>13.03.2021</td> <td>MAK</td> <td>MAK</td> </tr> <tr> <td>10350.1.5248</td> <td>13.03.2021</td> <td>MAK</td> <td>MAK</td> </tr> <tr> <td>10350.1.5249</td> <td>13.03.2021</td> <td>MAK</td> <td>MAK</td> </tr> <tr> <td>10350.1.5250</td> <td>13.03.2021</td> <td>MAK</td> <td>MAK</td> </tr> <tr> <td>10350.1.5251</td> <td>13.03.2021</td> <td>MAK</td> <td>MAK</td> </tr> <tr> <td>10350.1.5252</td> <td>13.03.2021</td> <td>MAK</td> <td>MAK</td> </tr> </table> | Zeichnungs-Nr. | Datum | Umfeld | Umfeld | 10350.1.5245 | 13.03.2021 | MAK | MAK | 10350.1.5246 | 13.03.2021 | MAK | MAK | 10350.1.5247 | 13.03.2021 | MAK | MAK | 10350.1.5248 | 13.03.2021 | MAK | MAK | 10350.1.5249 | 13.03.2021 | MAK | MAK | 10350.1.5250 | 13.03.2021 | MAK | MAK | 10350.1.5251 | 13.03.2021 | MAK | MAK | 10350.1.5252 | 13.03.2021 | MAK | MAK | Werkstoff 33.122 kg Gewicht kg Zusammenst. Nr. --- VGX-Aerokit Spannrückführung komplett 10350.2.5253 rev. 1 ZV Serie 1 |
| Zeichnungs-Nr. | Datum | Umfeld | Umfeld | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10350.1.5245 | 13.03.2021 | MAK | MAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10350.1.5246 | 13.03.2021 | MAK | MAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10350.1.5247 | 13.03.2021 | MAK | MAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10350.1.5248 | 13.03.2021 | MAK | MAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10350.1.5249 | 13.03.2021 | MAK | MAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10350.1.5250 | 13.03.2021 | MAK | MAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10350.1.5251 | 13.03.2021 | MAK | MAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10350.1.5252 | 13.03.2021 | MAK | MAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Geschweisst nach ISO 4063-135
 Schweißnähte sauber verputzt
 Schweißrahmen (Pos. 1-7)
 Pulverbeschicht nach RAL3020
 grobstruktur, seidenglanz
 "Magnetplatte fest" (Pos. 7) für
 Pulverbeschichten abgedeckt

A (1:2)

Schweißrahmen Pos. 1-7 (1:5)



Manufacturer and worldwide distributor:

Your local distributor:

MINELLI CORPORATION
Mattenstrasse 3
8330 Pfäffikon ZH
Switzerland

www.miratool.ch