

# Siepmann



## VG - CNC Vertical Grinding Machines



# Content

## 3 The VG-CNC Concept

4 Sizes and Technical Data

6 Definition of Axes

## 7 Machine Types

7 VG1/VG2/VG3/VG5

## 9 Technical Specification

9 Grinding Wheel Wear Compensation

10 Rotation Device

11 Dressing Device

12 Flushing Device

13 Protective Cover and Extraction Device

14 Clamping Facilities

15 Operation and Programming

## 19 After Sales



## The VG-CNC Concept

### Features

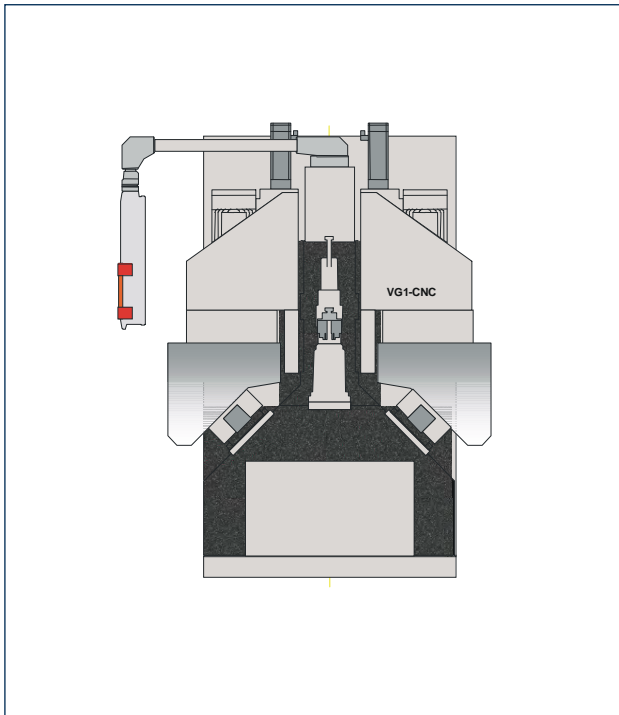
✓ Only 1/3 space requirement compared to a horizontal grinding system
✓ A Polymer concrete machine base absorbs vibration and, due to low heat conductivity, eliminates expansion while maximizing precision
✓ Direct drive spindle (without belts) with pre-loaded bearings eliminates any vibrations
✓ Improved quality due to high precision linear motion guides
✓ The vertical design offers an optimum flow of coolant and grinding swarf
✓ Stainless enclosure within the grinding area
✓ Sensing system for grinding wheel wear compensation with no mechanical moving parts
✓ Reduced idle times due to rapid traverse speeds up to 60 m/min in the grinding axis and extremely short workpiece change times
✓ Low set-up time due to rapid clamping systems, easy grinding wheel change and supporting CNC programs
✓ SIEMENS HT8 or OP10 operating panels are used as operator interfaces
✓ Operator friendly programming
✓ Preventive maintenance instructions displayed on the HMI
✓ Integration with different robots systems (SCARA or 6-axis robots) and magazines to suit the customers' requirements
✓ Modular design enables the interlinkage with other operations and machining stations, thus allowing to configure manufacturing cells for complete machining.
✓ Full enclosure of the workspace possible
✓ The machine is capable for industry 4.0 applications



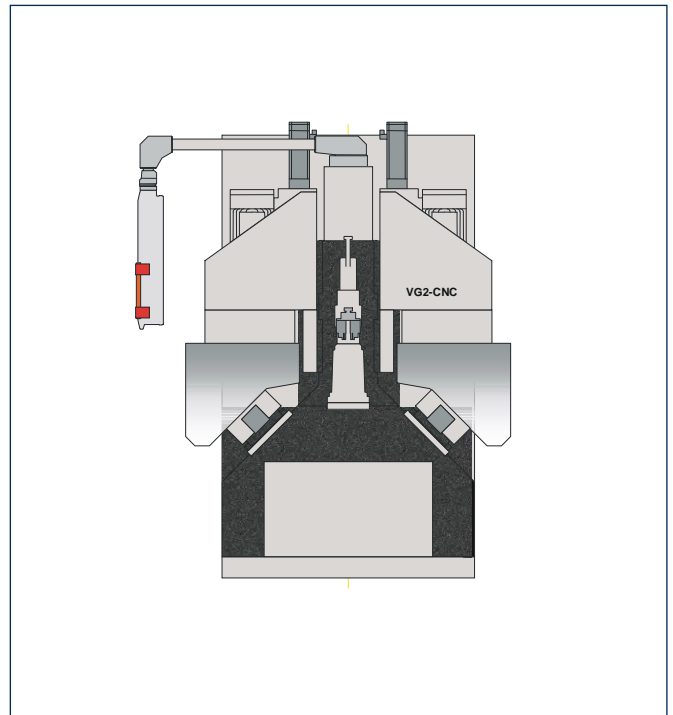
Typical parts for the VG series of machines

## Vertical Grinding Machine VG-CNC

### Sizes and Technical Data



Size 1



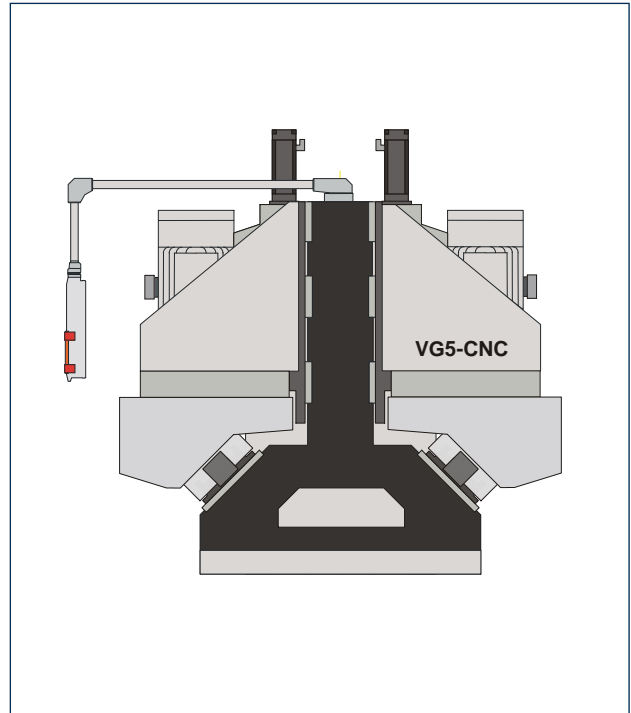
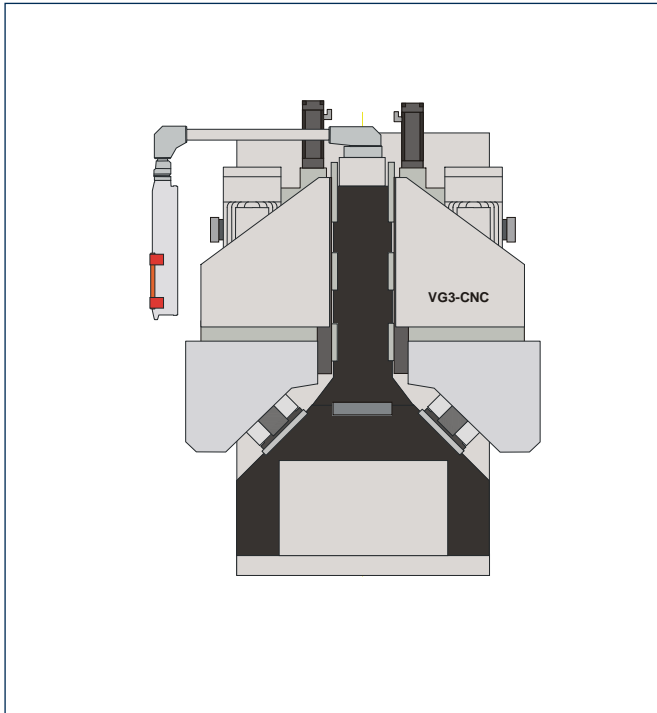
Size 2

<b>VG1-CNC/VG1-CNC-B</b>	
<b>Grinding length</b> optional	150 mm 250 mm
<b>Grinding wheel drive</b>	2.2-3 kW
<b>Grinding wheel- surface speed</b>	20-50 m/s infinitely variable
<b>Grinding wheel-Ø</b>	125-200 mm
<b>Spindle bearing-Ø (play free, pre-loaded)</b>	80 mm
<b>Rapid movement (max)</b>	60 m/min
<b>Weight</b>	2,000 kg
<b>Dimensions (standard machine) W x L x H</b>	1,500 x 2,100 x 2,950 mm Stand-alone control cabinet

<b>VG2-CNC</b>	
<b>Grinding length</b>	250 mm
<b>Grinding wheel drive</b>	11-18.5 kW
<b>Grinding wheel- surface speed</b>	20-50 m/s infinitely variable
<b>Grinding wheel-Ø</b>	200-350 mm
<b>Spindle bearing-Ø (play free, pre-loaded)</b>	125 mm
<b>Rapid movement (max)</b>	60 m/min
<b>Weight</b>	3,500 kg
<b>Dimensions (standard machine) W x L x H</b>	2,050 x 3,100 x 2,600 mm Integrated control cabinet

## Vertical Grinding Machine VG-CNC

Sizes and Technical Data



Size 3

Size 4

VG3-CNC	
Grinding length optional	360 mm 250/ 680 mm
Grinding wheel drive	15-30 kW
Grinding wheel-surface speed	20-50 m/s infinitely variable
Grinding wheel-Ø	450/500 mm
Spindle bearing-Ø (play free, pre-loaded)	230 mm
Rapid movement (max)	60 m/min
Weight	4,600 kg
Dimensions (standard machine) W x L x H	2,400 x 3,100 x 2,600 mm Integrated control cabinet

VG5-CNC	
Grinding length optional	650 mm 900/1250* mm
Grinding wheel drive	37 kW/45 kW
Grinding wheel-surface speed	20-50 m/s infinitely variable
Grinding wheel-Ø	550/710 mm
Spindle bearing-Ø (play free, pre-loaded)	280 mm
Rapid movement (max)	60 m/min
Weight	8,600 kg
Dimensions (standard machine) W x L x H	3,100 x 3,500 x 2,600 mm Stand-alone control cabinet

\* special version



## Definition of Axes

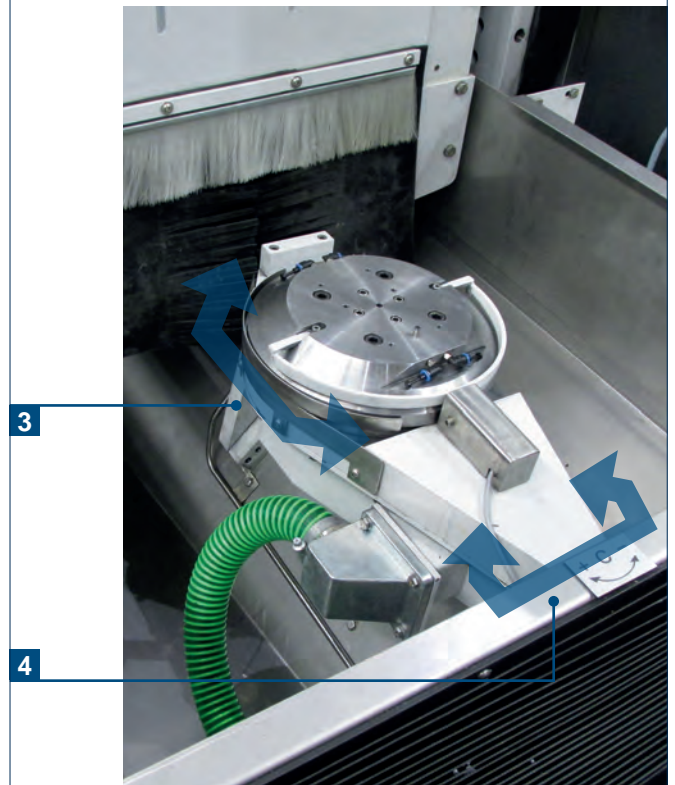
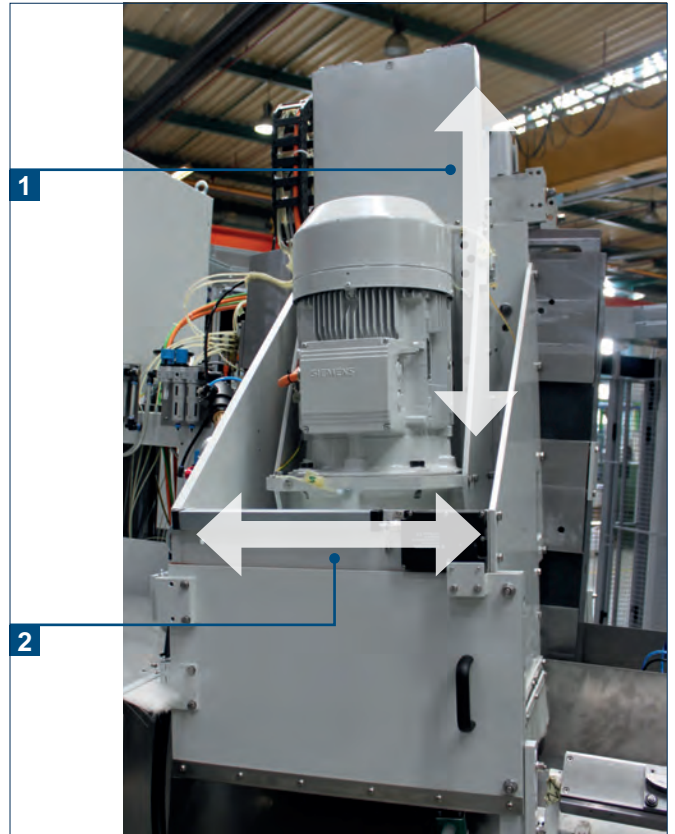
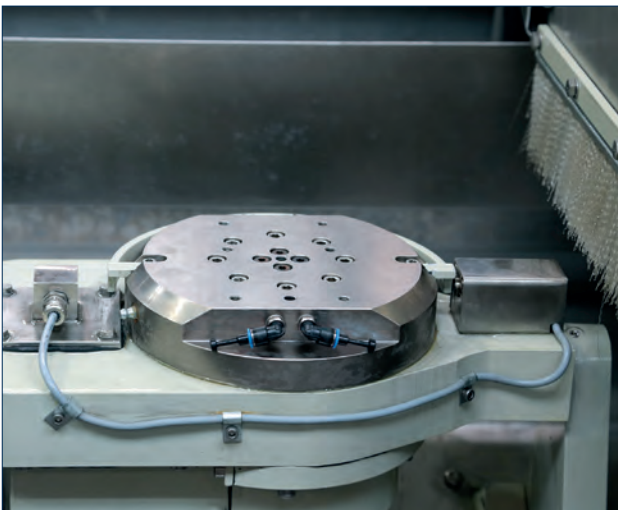
The grinding machine consists of two symmetrically arranged machine halves.

All components and functions are identical, only the adjustment values of the drives are different.

The pictures show the individual axes and their designation.

- 1** Y axis
- 2** X axis
- 3** C axis
- 4** Z axis

### Example C axis of a VG2/VG3-CNC



## Machine Types

VG1-CNC / VG2-CNC



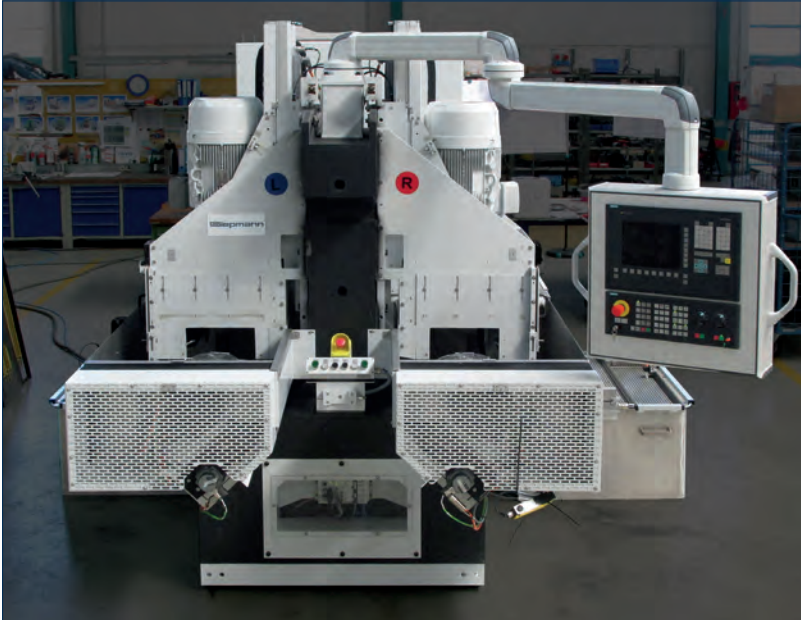
Type VG1-CNC



Type VG2-CNC

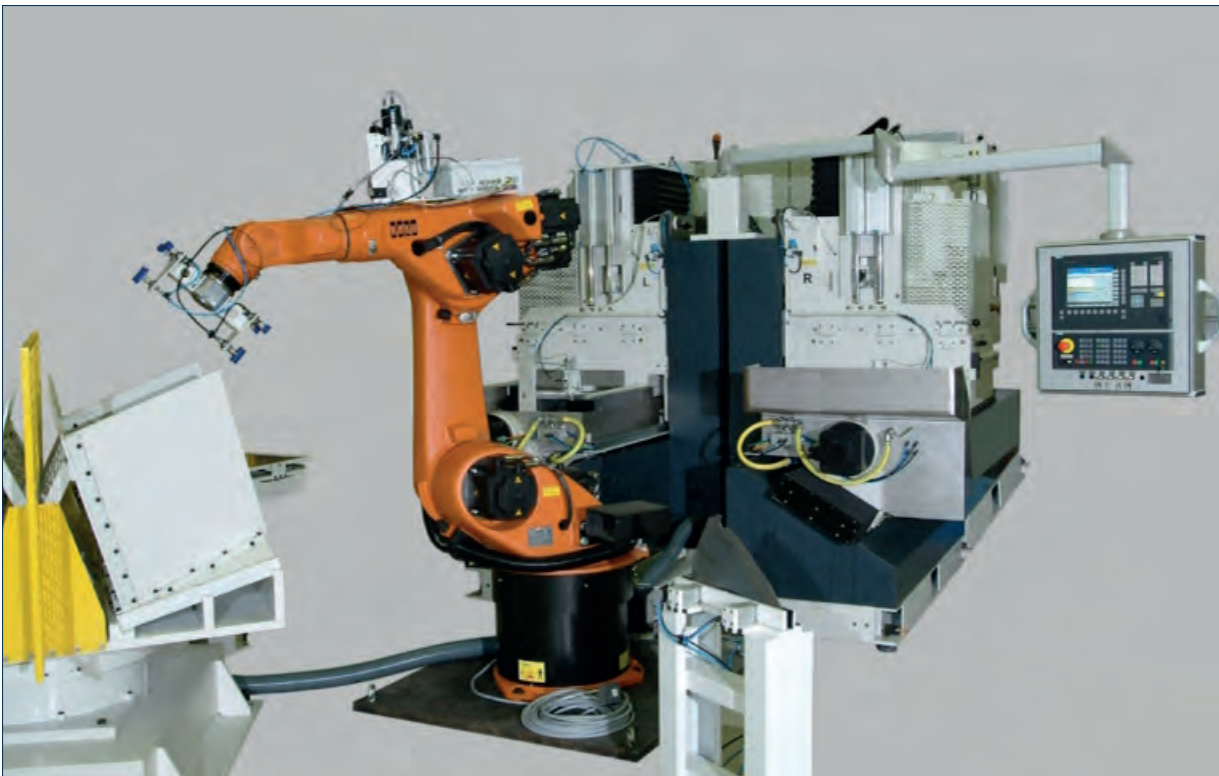
## Machine Types

VG3-CNC / VG5-CNC



Type VG3-CNC

Type VG5-CNC





## Grinding Wheel Wear Compensation

### Measuring the Grinding Wheel Height

Since the grinding wheel is subject to constant wear during grinding, the grinding wheel is re-calibrated after each grinding process.

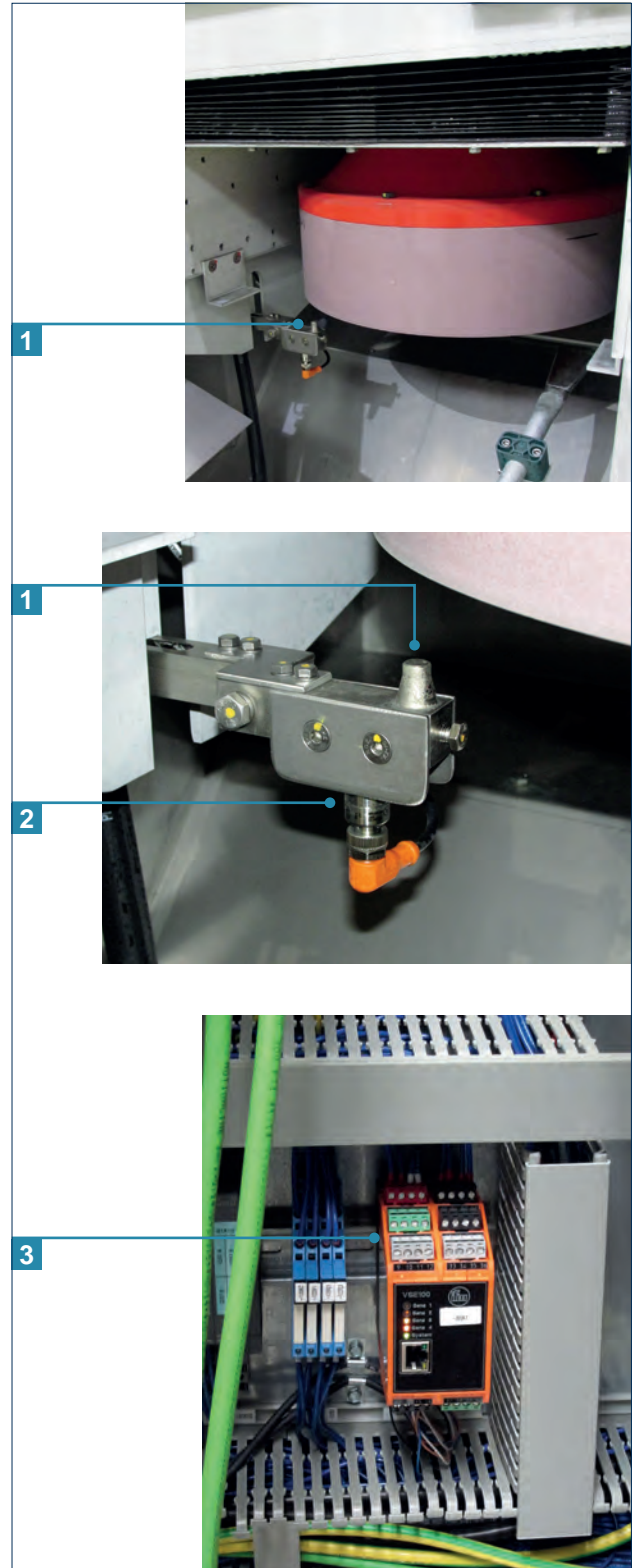
This is achieved by approaching the grinding wheel towards the diamond of the gauging pin.

As the diamond is approached the structure-borne noise is measured and interpreted as a limit value by a noise meter and an evaluation unit installed in the control cabinet.

- 1** Gauging pin with diamond tip
- 2** Structure-borne noise detector
- 3** Evaluation unit

### Advantages

✓ Significantly reduced sensing time due to short paths
✓ Less maintenance and repair due to the elimination of mechanical moving parts
✓ Full repeatability of CNC programs due to minimum wear of the diamond.



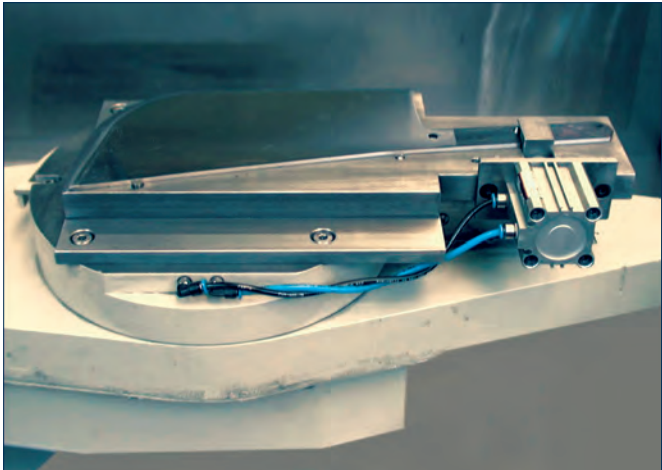
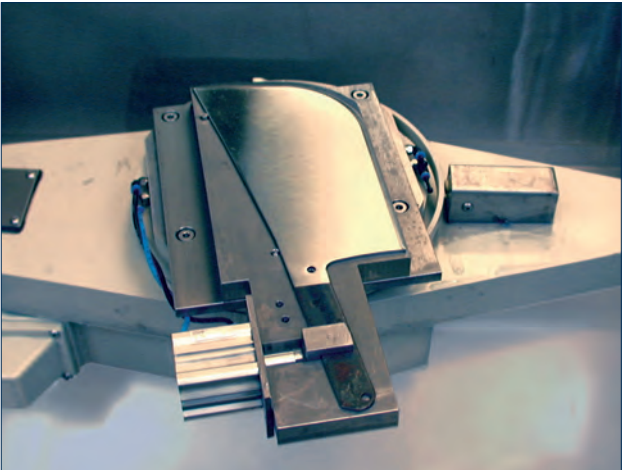
## Rotation Device

The rotation device is used for grinding curves of any desired angle.

Example pruning and lopping shears shears



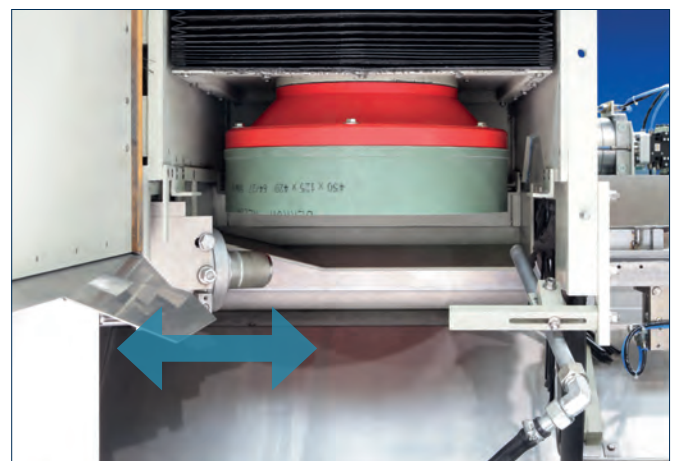
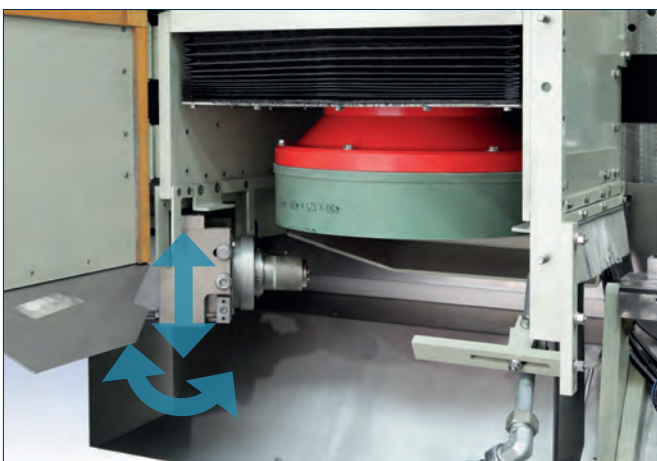
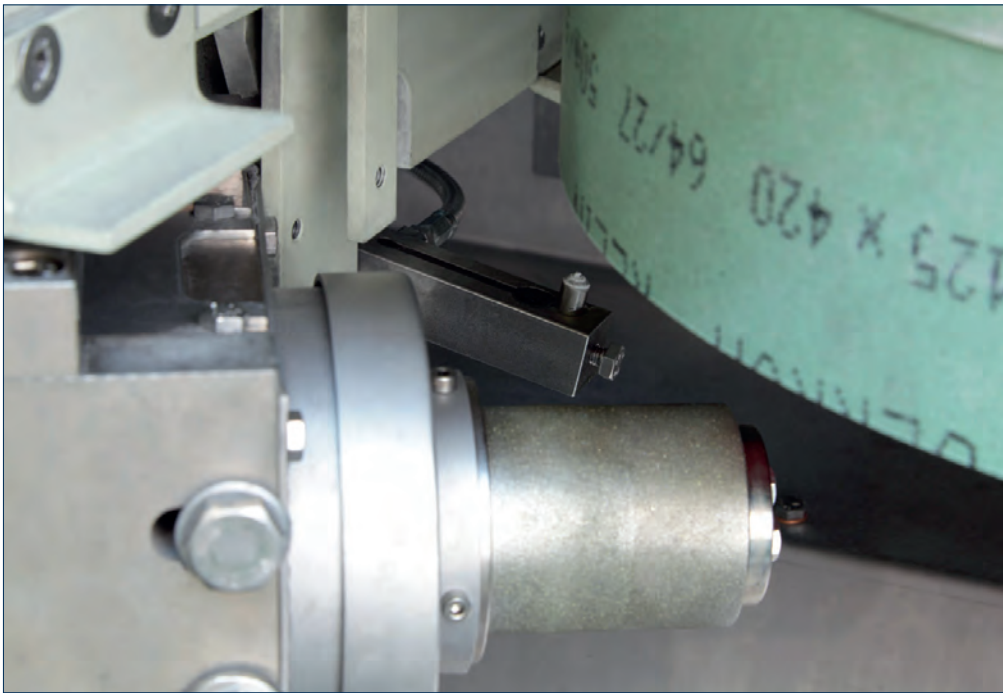
Example splitter



## Dressing Device

For dressing of grinding wheels e.g. for the bolster shape on chef's knives or any other profiles.

### Example VG3

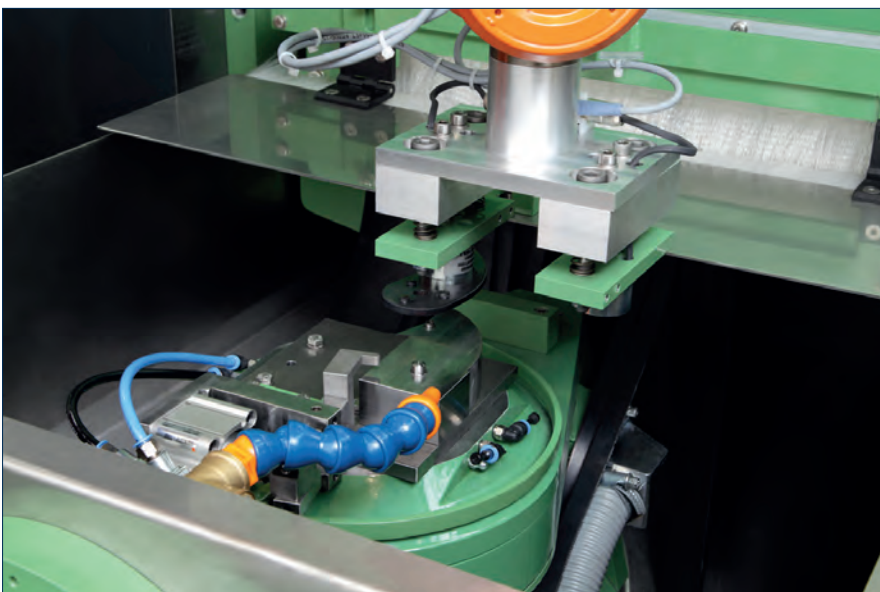


Manual setting options



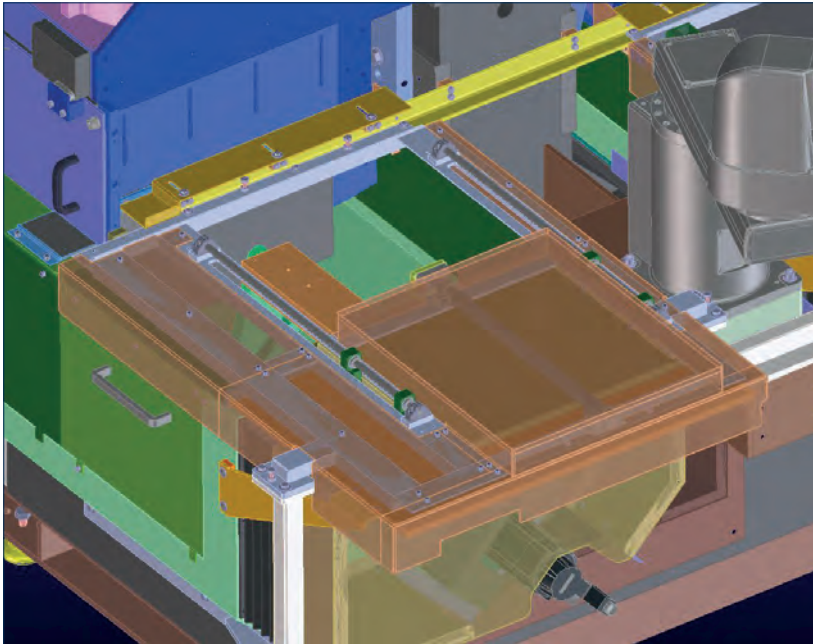
## Flushing Device

For cleaning the part supports during unloading and loading.



## Protective Cover and Extraction Device

During the machining process the complete working area is enclosed by a protective cover. For loading and unloading the workpiece change area is released.

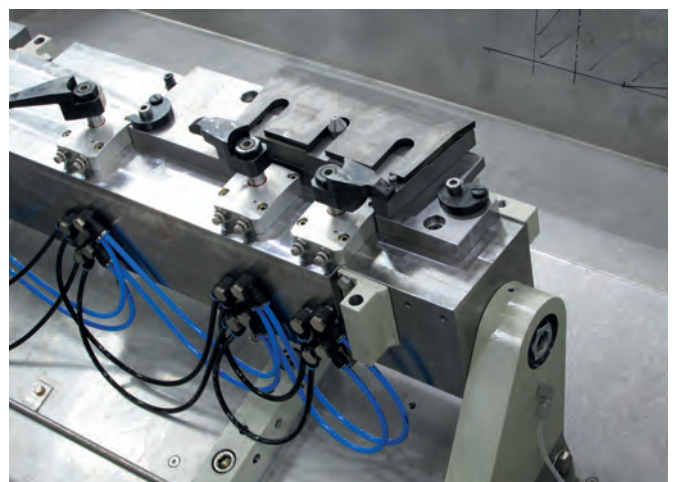
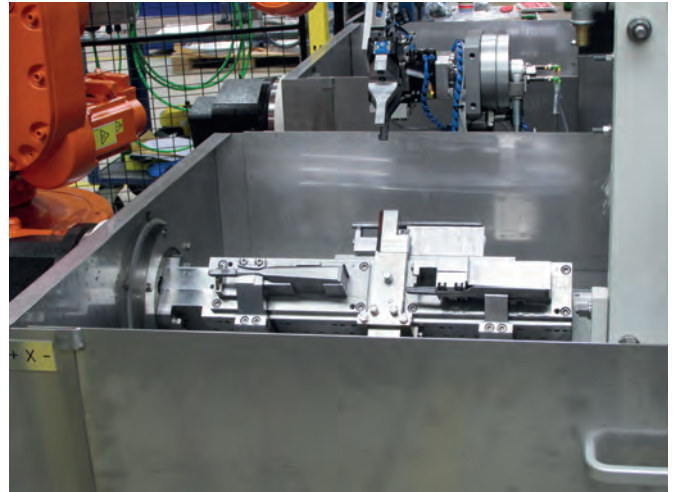
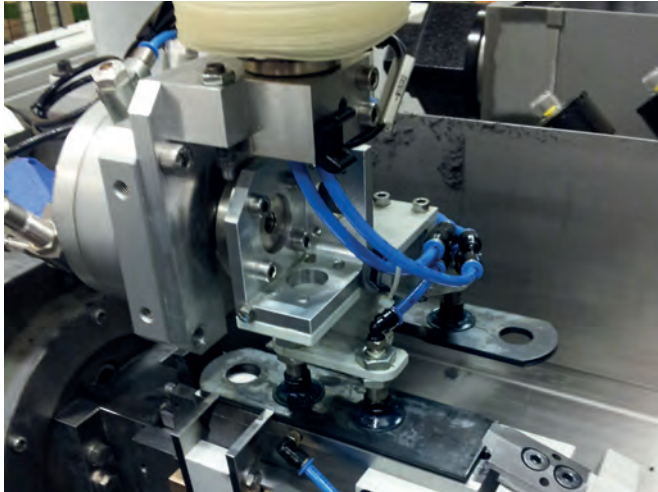




## Clamping Facilities

The part supports (clamping rails) must be adapted to each workpiece according to its size and shape. The workpieces are fixed on the clamping rail by a pneumatically actuated clamping finger.

Examples of clamping devices for VG-CNC machines





## Operation and Programming



© Siemens AG 2018, All rights reserved

### OPO10 + MCP483PN

10" Display, numeric keyboard

Machine control panel for all important functions. For example operation mode selection, manual functions, axis movement and program control. Key switch for access level [0,1,2,3].

Installed in a swivel arm housing.



© Siemens AG 2018, All rights reserved

### HT8

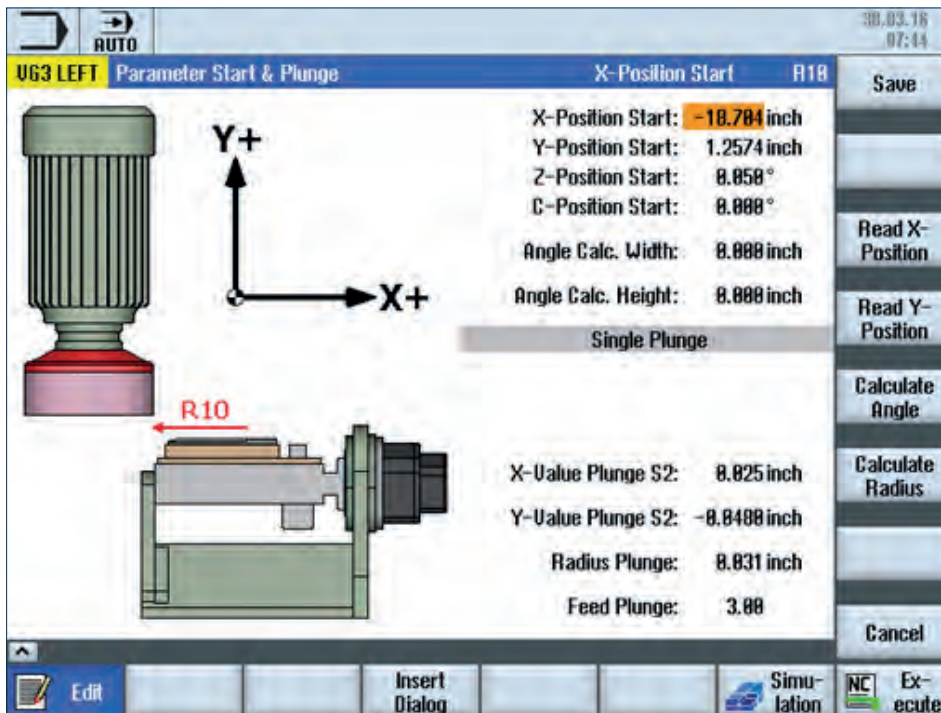
Handheld 8" touch display, keyboard will appear on the display when needed.

Integrated machine control panel for all important functions. For example operation mode selection, manual functions, axis movement and program control.

Confirm button for left-handed and right-handed operators.

## Operation and Programming

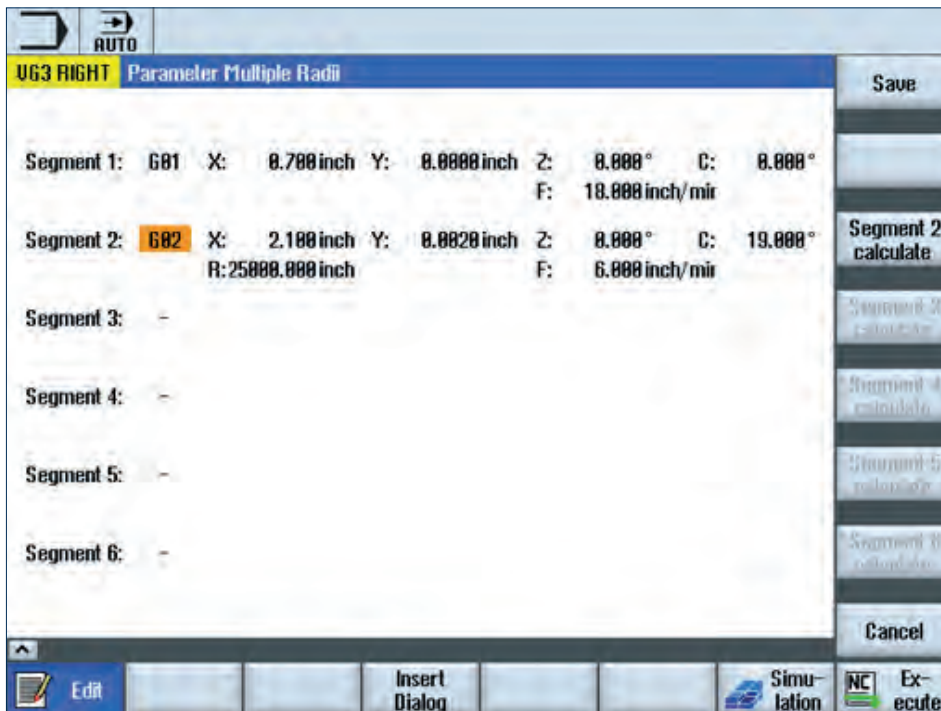
Dialog: Parameter Start & Plunge



- ✓ Clear and simple input of start position and plunge parameter due to reduction to really necessary parameters
- ✓ Graphical help pictures for each parameter
- ✓ Takeover (Teach) of current position to start position
- ✓ Selection of various plunge types
- ✓ Calculation of grinding angle and plunge radius

## Operation and Programming

Dialog: Parameter contour with tangential transitions



- ✓ Clear and simple input of up to 6 grinding segments with calculation of a tangential transition if needed.

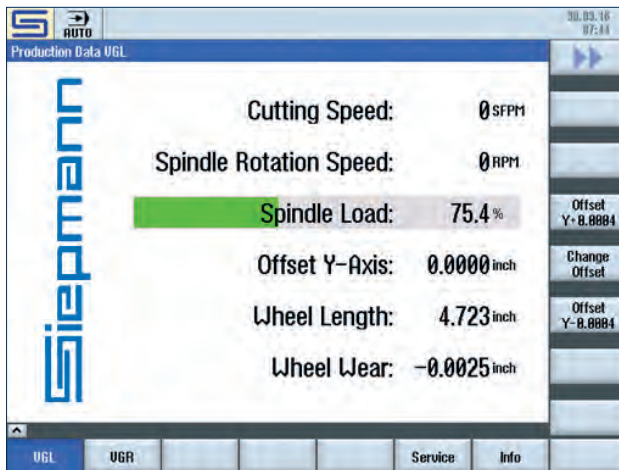


Example simulation



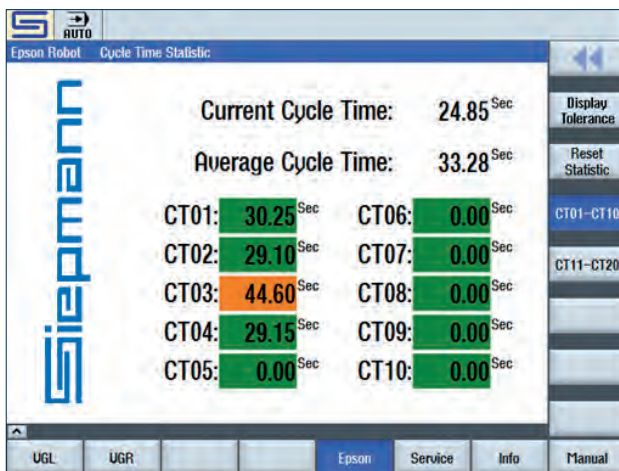
## Operation and Programming

### Production data screen



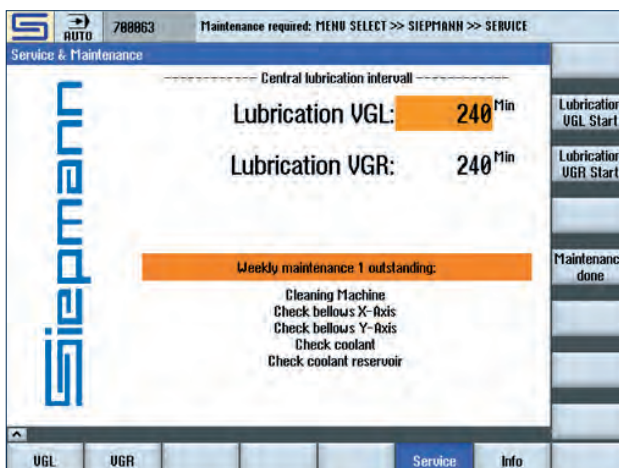
- ✓ Display of important machine information
- ✓ Display of spindle load with color changing progress bar (Green → Yellow → Red)
- ✓ Offset setting for smaller adjustments during production without stopping the machine

### Robot production data screen



- ✓ Display of the average cycle time
- ✓ Adjustable cycle time tolerance
- ✓ Display of the last 20 cycle times with color highlighting when the tolerance limit has been exceeded

### Service and maintenance



- ✓ Adjustable intervals for central lubrication.
- ✓ Manual executing of a lubrication cycle
- ✓ Display of current pending maintenance tasks.

## Our Service

Our competent team of factory-trained technicians is dedicated to ensure an on-going high performance of your manufacturing equipment through qualified maintenance, service, repair and overhauling.

In case of immediate mechanical or electrical problems our **teleservice** specialists provide support either on the phone or via direct connection with the machine control system in order to solve the problem as quickly as possible jointly with the customer's service personnel on site.

SIEPMANN genuine spare parts have been designed and selected specifically for our machines in order to optimally match the product and application specific requirements.

Even if a machine is brand new we recommend to consider stocking frequently needed **spare and wear parts** in good time. In case of component failures short reaction times are a must. In order to ensure flexibility in such an event and to avoid long delivery times we supply spare and wear parts lists together with the machine and offer our customers individual spare parts packages which will allow them to be quickly up and running again in case of a machine breakdown.

Due to the constantly increasing demands for availability and productivity of manufacturing equipment we offer our customers **maintenance contracts** in order to guarantee a maximum machine efficiency and output.



# SIEPMANN

Latest grinding technology combined with long tradition.

The internationally renowned brand of SIEPMANN represents more than 130 years of tradition and experience in grinding technology. As part of the company SVQ GmbH and with own patented products SIEPMANN is one of the leading brands in the field of grinding and polishing of knives, hand tools and machine blades.

We supply solutions worldwide – from single machines to completely automated systems.



© Global Retool Group GmbH. Subject to change without notice. Printed 02/2018



The headquarter of Global Retool Group in Lebach.

## Contact



SVQ GmbH  
SIEPMANN Solingen

Mankhauser Str. 7a  
D-42699 Solingen  
Phone: +49 2 12 . 64 57 26 0

Fax: +49 2 12 . 64 57 26 18

E-Mail: [info@siepmann-solingen.com](mailto:info@siepmann-solingen.com)



[www.youtube.com/global-retool-group](http://www.youtube.com/global-retool-group)

[www.global-retool-group.com](http://www.global-retool-group.com)