OPERATING MANUAL
METO-FER® AUTOMATION AG

VERTICAL UNIT TYPE	VE-22-A VE-52-A VE-82-A VE-82-B

1. PRODUCT DESCRIPTION

1.1 Introduction

1.1.1. Utilization

The vertical unit VE 22/52/82 (Type A, B) is able to execute linear movements in any position. This linear movement can be adjusted in its working area (stroke).

1.1.2. Safety Precautions

Before starting to operate the vertical unit VE 22/52/82 (Type A, B), it is necessary to check that no body parts are within the working range of the element. In such a case the unit must not be operated.

The maximum supply pressure of 8 bar must not be surpassed.

1.1.3. Danger Area

Any body parts are to be kept out of the working area (stroke area) of the unit in order to avoid mangling.

1.2 Technical Data

1.2.1 Weights and Measurements

See also Sheet 5

Typ	Stroke	Adjustment Range Between	A	B	C	Weight Lb.(kg)
VE-22	0-20	0-20mm	68mm	144mm	32mm	2.4 (1.1)
VE-52	0-50	12-50mm	98mm	204mm	62mm	3.1 (1.4)
VE-82	0-80	42-80mm	128mm	264mm	92mm	3.7 (1.7)

1.2.2. **Performance Characteristics**

Type	Piston force 72.5 PSI (5 Bar)	Air consumption for each double stroke at 72.5 PSI (5 bar)
VE-22	107 N	0.07 NL
VE-52	107 N	0.17 NL
VE-82	107 N	0.28 NL

NL: Normal Liter

Repetition accuracy +/-0.0004" (0.01mm)

1.2.3 **Operating Source**

40mm filtered, unoiled or oiled air (dew point 6°C)

Operating pressure P_{min} 3 bar

P_{max} 8 bar

1.2.4 **Connections**

Air connections M-5 (see sheet 6)

1.2.5 **Environment**

Temperature 50°F to 122°F (+ 10°C to + 50°C)

Relative humidity 95% (without condensation of water)

Purity of the environment air regular working place atmosphere

1.3 Features

1.3.1 **Standard Features** (included in delivery)

The unit delivered will have two patented end screws type AS 08/40 with fine thread. These end screws adjust the stroke within its working area. According to the type, the units are equipped with the following cushions:

Vertical Unit	Cushions	Type
VE-22-A	Elastomer cushions	KB 07/M 14X1
VE-52-A	Elastomer cushions	KB 07/M 14X1
VE-82-A	Elastomer cushions	KB 08/M 14X1
VE-82-B	Oil cushions	OB/M 14X1

1.3.2 **Special Equipment**

The end screws can be fitted with the patented sensing elements (see Meto-Fer® Electronic catalog, pages 22 and 23) in order to check the end position.

Vertical Unit	Conical Bar for Mechanical Gripper MZ 12	Conical Bar Length
VE-22	KS-01-061	6.02”/153mm
VE-52	KS-02-062	8.38”/213mm
VE-82	KS-01-063	10.74”/273mm

Vertical Unit	Conical Bar for Mechanical Gripper MZ 25	Cone	Total Length Conical Bar/Cone
VE-22	KS-02-070	KS-02-005	10.15”/258mm
VE-52	KS-02-071	KS-02-005	12.51”/318mm
VE-82	KS-02-072	KS-02-005	14.88”/378mm

2. SAFETY REGULATIONS

2.1 In general

See chapters 1.1.1
1.1.2
1.1.3

2.2 Specifically

Under no circumstances are any changes or modifications to be made on the unit.

3. CONSTRUCTION AND FUNCTION

The stroke adjustment can be made infinitely variable with the end screw AS 08/40 (Pos.101) in order to check the occurred movement, the end screws can be fitted with our sensing elements (see Meto-Fer® Electronics catalog).

4. INITIAL OPERATION

4.1 Compressed Air

Remove the safety caps from the air connections. In order to regulate the velocity of the movement, we recommend our flow controls DV-M5 (see sheet 5.021). Unused air connections must be covered with the M5 caps.

4.2 Stroke Adjustment

- loosen security nut on the end screw
- adjust the required stroke with the end screw (Pos.101)
- tighten security nut on the end screw

4.3 Cushion Adjustment

The basic adjustment of the cushions has to be optimized by the user upon his special requirements.

The position of the cushions can be seen on the construction drawing.

The brake resistance can be changed by adjusting the length of the brake path.

When using oil and elastomer cushions, it must be checked that the end stop is not made by the cushions. The cushions should show a remainder stroke of 0.039" (1mm).

5. MAINTENANCE

5.1 Introduction

The mini linear unit does not require any special maintenance procedure. Never use any type of solvents in order to clean the unit.

5.2 Air Supply

The mini linear unit is equipped with **oil-free seals** and can be operated with dry and non-oiled compressed air. If oiled compressed air is used, we recommend:

- Airpress compound SAE 5 (Klueber Order No. 063027)

6. REPAIR

6.1 Introduction

If the unit no longer meets the desired requirements (leakage, wear, etc.) the defective parts must be replaced.

6.2 Safety Precautions

Before dismounting the unit, it is necessary to check that the compressed air supply is turned off. It is best to disconnect the compressed air supply from the unit.

When repair work is done, only the original spare parts and lubrication must be used.

6.3 Replacing the Seals

- Remove the top end plate (Pos.2) by loosening screws (Pos.216 and 202).
- Remove the bottom end plate (Pos.3) by loosening screws (Pos.202) and extract by help of press.
- Extract guide rod (Pos.5).
- Remove the clips by the end cylinder caps (Pos.203) and

- Extract the two caps (Pos.7) by disassembling the clip (Pos.203).

- Extract the piston rod (Pos.4).

- Clean all parts.

- Replace the seals.

  Grease the cylinder, piston rod, guide shaft (see Chapter 7.2).

- The parts are then assembled in reverse order as described above.

6.4 Replacing the linear ball bushings

- Remove the plate (Pos.2). Extract all parts as described in Chapter 6.3.

- Remove the cylinder (Pos.1).

- Remove linear ball bushings (Pos. 211) and replace with new greased bushings. Please note that the seal rings lie on the outside of the housing.

7. SPARE PARTS LIST

7.1 Spare Parts

When ordering spare parts, the type and serial number of the unit must be supplied.

Position	Part Number	Description	Amount
*205	025.100.0530	O-Rings	2 pieces
*206	025.230.0040	Seal Rings	2 pieces
*207	025.140.0058	Rod Seals	2 pieces
*208	025.150.0600	Piston Seal	1 piece
209	045.110.0030	Bearing	1 piece
211	045.100.0075	Linear Ball Bushings	2 pieces

Seal Kit Order No. **460.100.0199** all items marked with (*)
Repair Kit Order No. **460.110.0028** kit includes Pos.209 and 211).

7.2 Lubrication

Grease for seals	Staburag NBU 4 Atemp. (Klueber Order No. 005 040)
Grease for linear ball bushings	Staburag NBU 4 Atemp. (Klueber Order No. 005 040)