

USER MANUAL
HANDLING COMPONENTS
Displacement unit VS

BA-100027

englisch, edition 01/2008

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User manual
Displacement unit VS

1. Important Information

EC Declaration of Conformity (to MRL Appendix II A)

1.1. Manufacturer explanation

Rules and standards complied with:
Machinery guidelines 89/392/EWG, 91/368/EWG

Manufacturer:
Montech AG, Gewerbestrasse 12 CH-4552 Derendingen
Tel. +41 32 681 55 00, Fax +41 32 682 19 77

1.2. Product description and use

Displacement units VS are used where regular, linear movements in either the forward or reverse direction are required.

Under all circumstances attention must be paid to the performance limits, as given in the technical data.

1.3. Hazards

The use of Displacement units VS-30 and VS-60 in an installation is only permissible when they are guarded by MOVING, ISOLATING PROTECTIVE DEVICES as per EN 292-2, para.4.2.2.3.
Failure to comply with this protective measure can result in injury due to squeezing, e.g. of fingers..

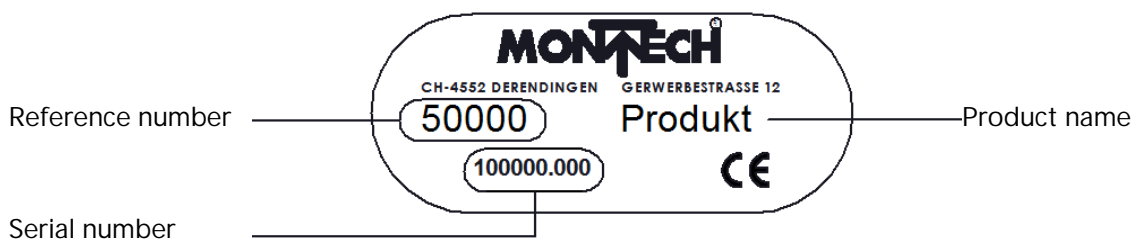
1.4. Additional information

The aim of the present User Manual is to enable users to employ displacement unit VS correctly and safely. Should further information be required in relation to your particular application, please contact the manufacturer.

When reordering User Manuals, it is essential to quote the reference number, the product name and serial number.

This document can be obtained from our homepage www.montech.com.

Nameplate



Montech AG
Management



U. D. Wagner



C. Wullschleger

1.5. Validity of the User Manual

Our products are continually updated to reflect the latest state of the art and practical experience. In line with product developments, our User Manuals are continually updated.

Every User Manual has an order number (e.g. BA-100027) and an edition number (e.g. 01/2008). The order number and the addition number are shown on the title page.

Validity

Full name	Short name	Reference number
Displacement unit	VS-30	45194
Displacement unit	VS-60	45209

2. Technical data

2.1. Technical data VS

Size		VS-30	VS-60
Max./min. strokes	[mm]	0/30	25/60
Extension/retraction force at 5 bar	[N]	60	
Dia. of piston/piston rod	[mm]	16/6	
Operating pressure	[bar]	4-8	
Operating medium		air,oiled or unoled,filtered to 5m, dew point <6°C	
Pneumatic connection plug-in		for hose 2.7/4 mm dia.	
Permissible load		see fig. 3 and 4	
Ambient temperature	[°C]	+10 bis 50	
Rel. Atmospheric humidity		5%-85% (without condensation)	
Purity of the air		normal workshop atmosphere	
Own weight	[kg]	0.840	1.140
Check on end positions	1)	by inductive proximity switzches	
Speed regulation		by adjustable exhaust throttle M5	
Repeatability	2) [mm]	0.02	
Service life, min.	3) [m]	3.2•10 ⁶	
Noise level	4) [dBA]	< 62	
Ref. No.		45194	45209

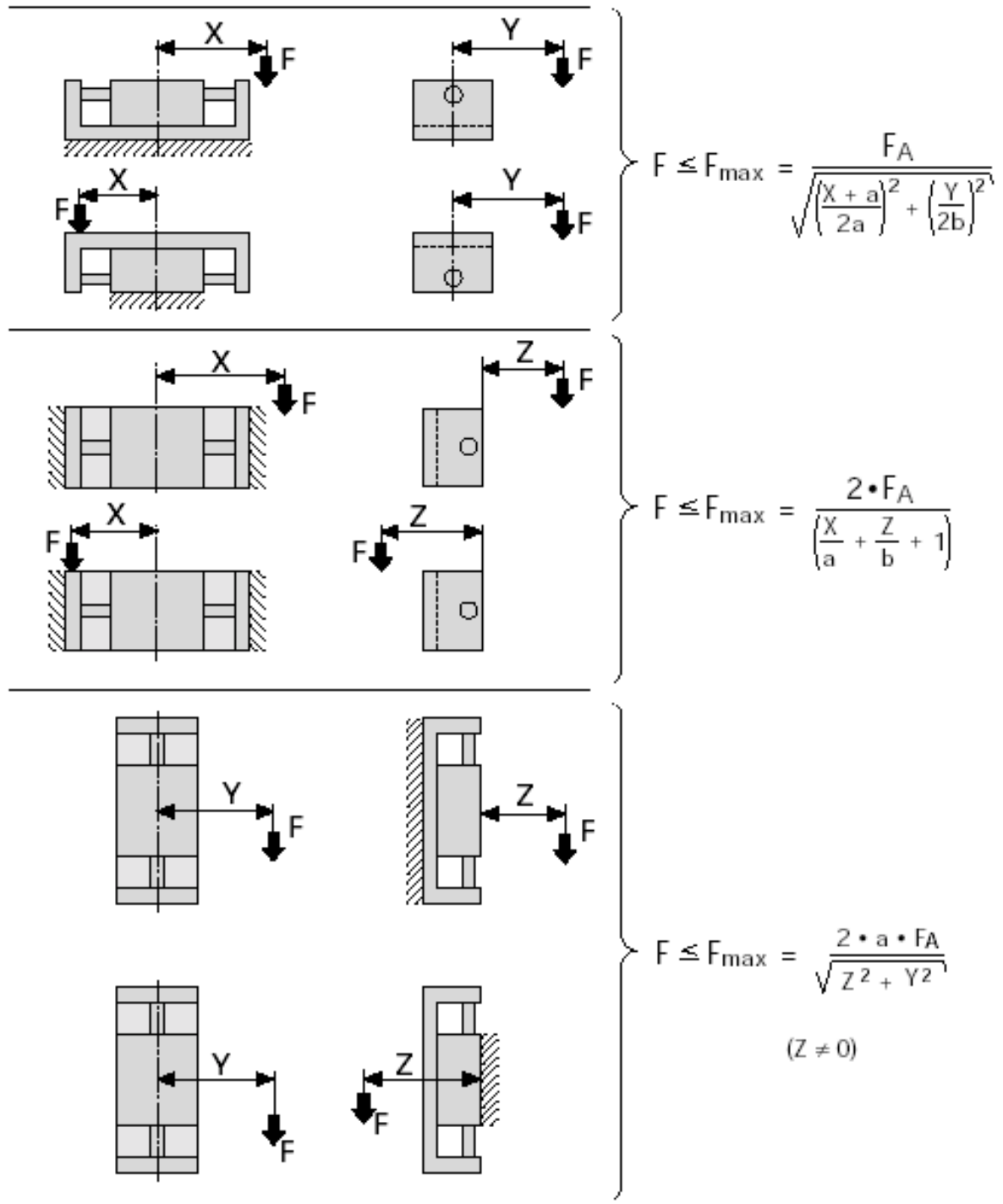
- 1) See special accessories
- 2) Difference between end positions of 100 successive strokes.
- 3) Calculated from the permissible number of metres covered assuming an average load.
- 4) Measured at 5 bar, maximum stroke and average load.

2.2. Special accessories VS

	Ref. no.
Inductive proximity switches PNP Ø 6.5 mm with LED, protection against shortcircuits and reverse pin connection, switch gap 2 mm, flush-mountable: Cable Length 2m	508842
Inductive proximity switches NPN Ø 6.5 mm with LED, protection against shortcircuits and reverse pin connection, switch gap 2 mm, flush-mountable: Cable Length 2m	508850

2.3. Loads

Fig.3 Kinds of loadn VS

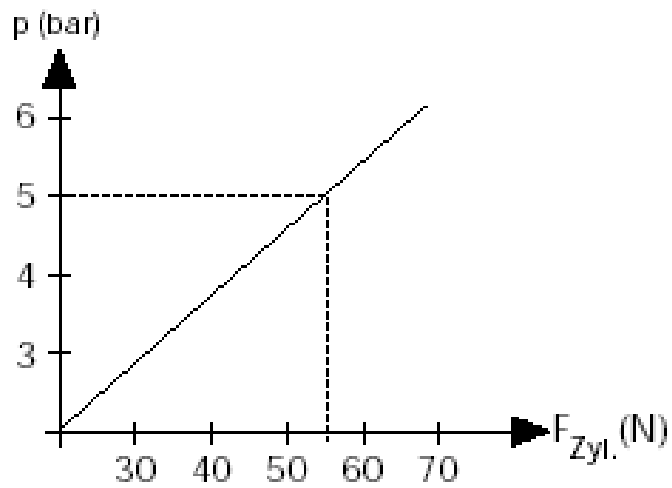


For values for a, b and F_A , see Table Load values

Load values

	a (mm)	b (mm)	F_A (N)
VS-30	16	26	46
VS-60	31	26	46

Fig.4 Drive force of the cylinder F_{Zy}



$p = 5 \text{ bar} \longrightarrow F_{Zyl} = 55 \text{ N}$

- 1) Calculate F_{max} according to formula (Kinds of load)
- 2) Compare F with F_{max}
- 3) Compare F with force of the cylinder F_{Zyl}

2.4. Travel time diagrams

Horizontal setup (at 5 bar and max. stroke)

Fig.5

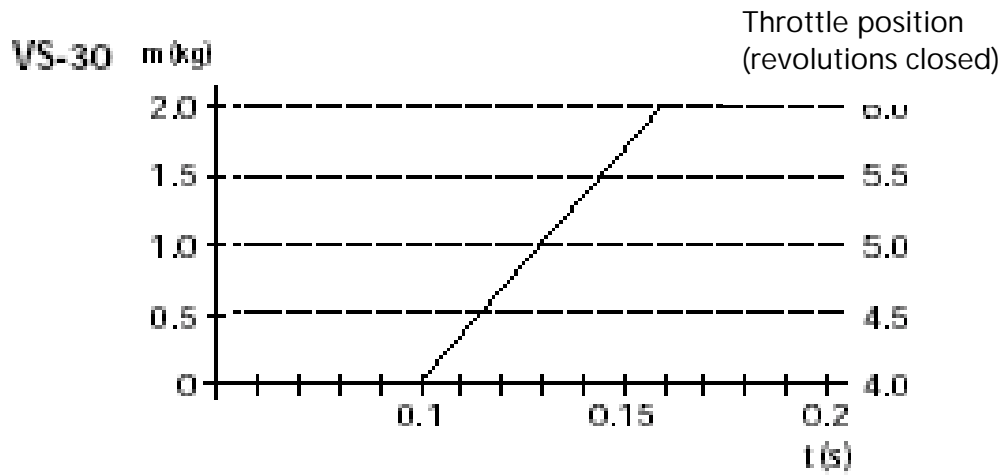
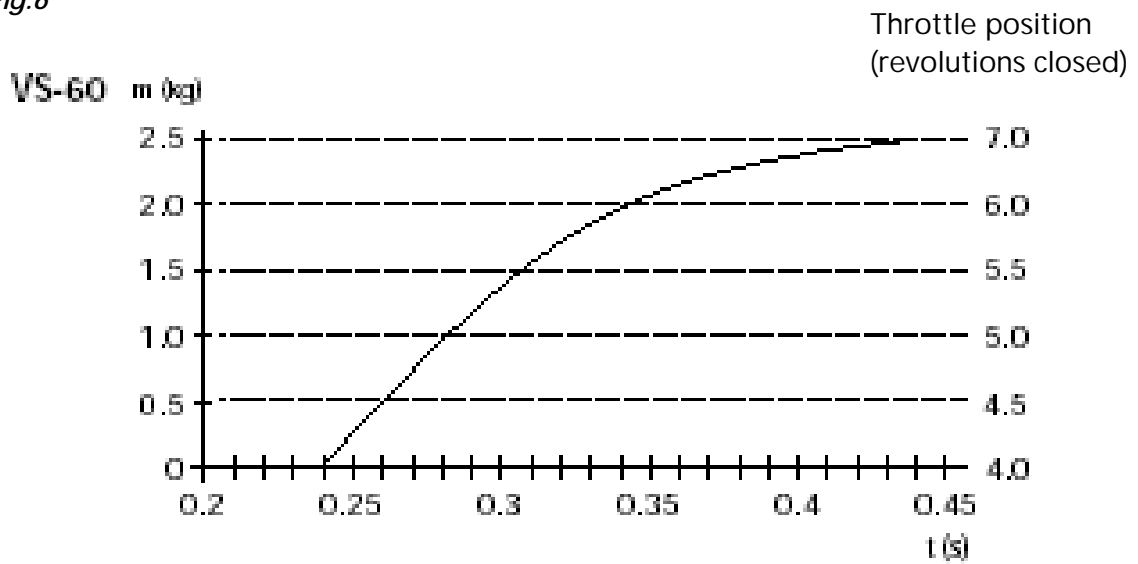


Fig.6



m = Mass built up
t = Travel time

Vertical setup (at 5 bar and max. stroke)

Fig.7

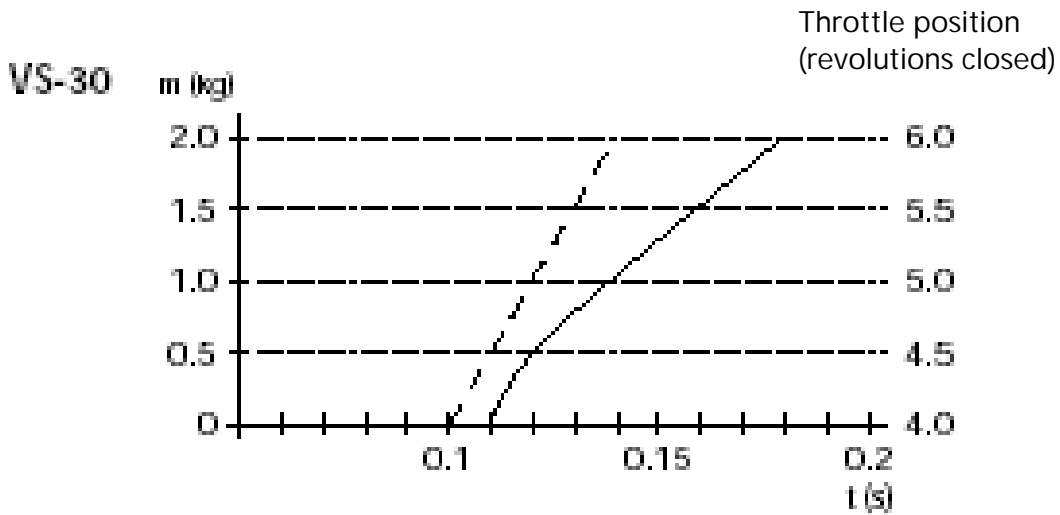
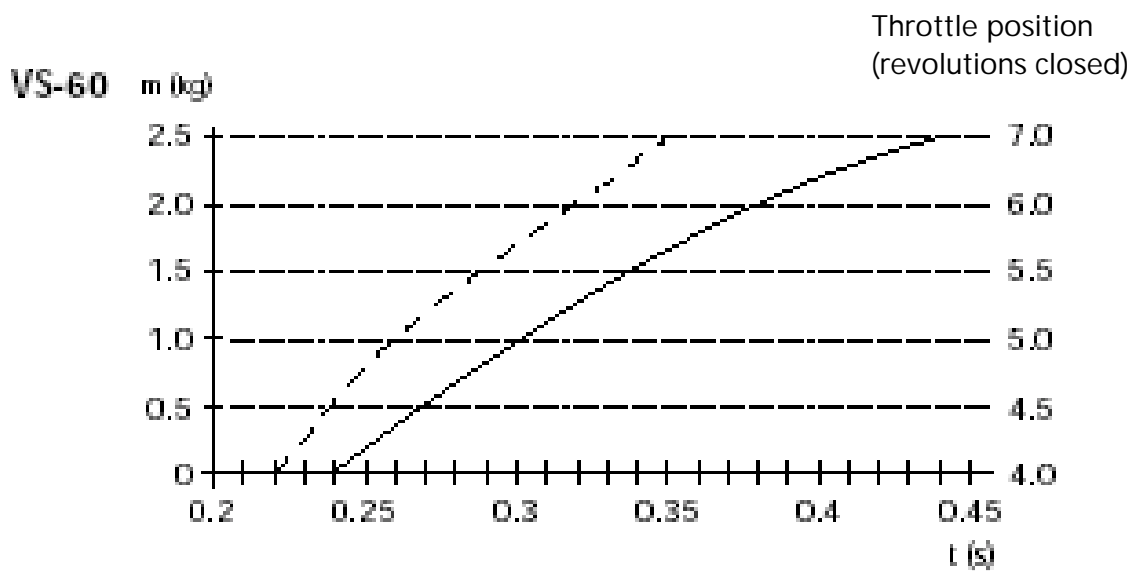


Fig.8



m = Mass built up

t = Travel time

— Raising

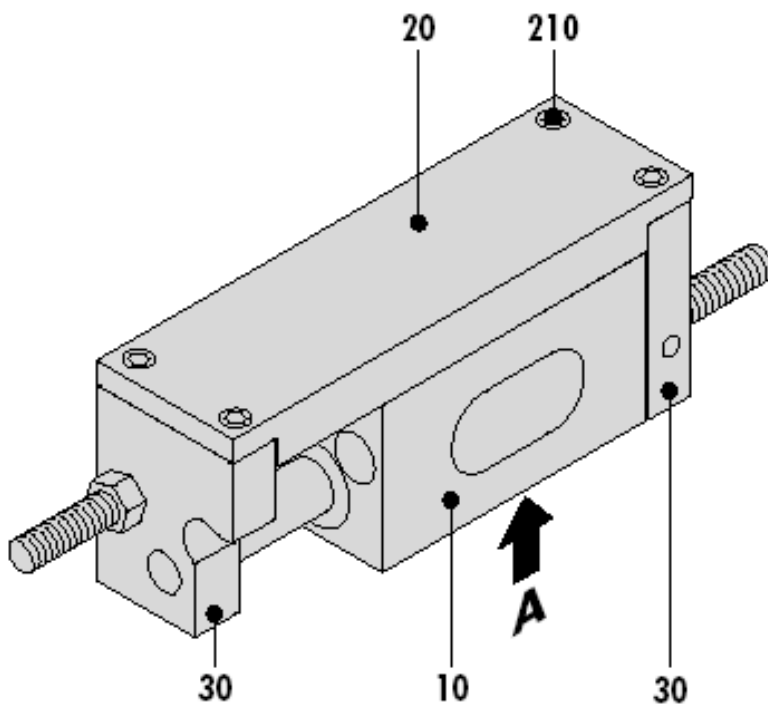
- - - Lowering

3. Commissioning

3.1. Mounting position

Displacement units can be used in any position.

Fig.9



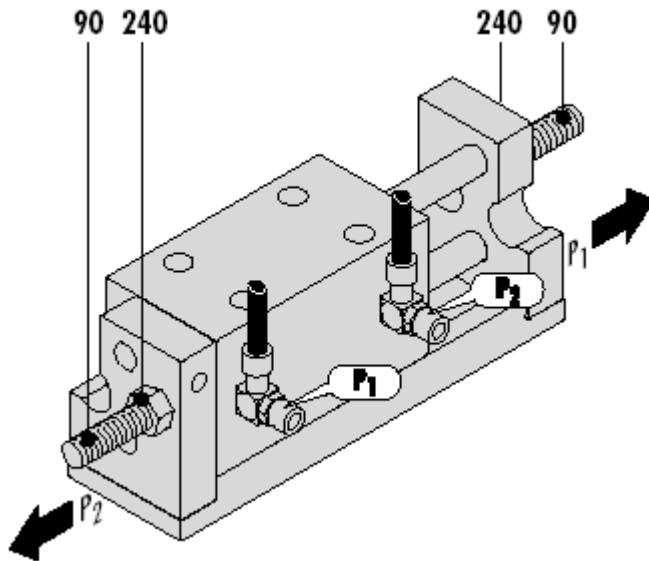
For installation purposes, the casing (10) has 4 fixing holes on the A side. If fixing holes are required in the baseplate (20), the following procedure must be followed:

- Unscrew the 4 screws (210).
- Remove baseplate (20) and make fixing holes.
- Screw back baseplate (20) with side plates (30).

3.2. Supply of compressed air

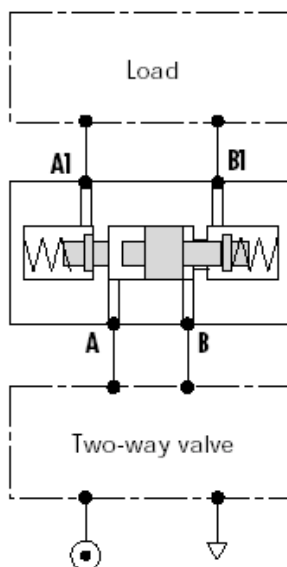
The non-return throttle valves are completely closed on delivery and must be opened by at least 3-4 revolutions for commissioning the displacement unit.

Fig.10



If connection P1 is subjected to pressure, the guide rod moves to the right.
If connection P2 is subjected to pressure, the guide rod moves to the left.

Fig.11



To maintain the slide position in the event of a failure of the pressure, we recommend installing a stop valve (Ref. No. 46582) in the supply line.

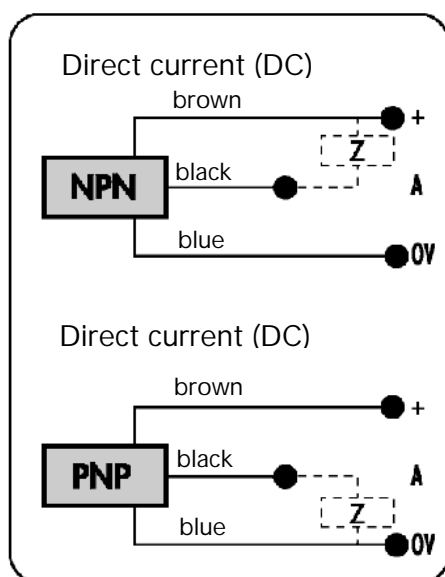
3.3. Stroke setting (Fig. 10)

- Loosen lock nut (240).
- Adjust slide stroke by screwing the stop screw (90) in or out.
- Tighten lock nut (240).

3.4. Connecting and adjusting the inductive proximity switches

The proximity switches used must have a switching distance S_n of 2 mm, be designed for flush mounting and have a housing 6.5 mm in diameter. The electrical connection is shown in the diagram (Fig. 12).

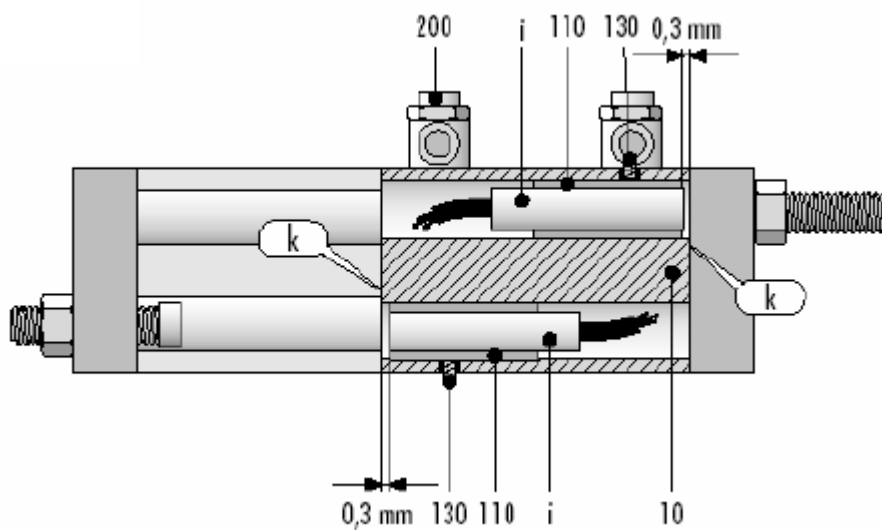
Fig.12



3.5. Adjustment process (Fig. 13)

- Insert proximity switch (i) into the protective sleeve (110) and place these together in the hole in the casing (10) so that the front end face of the protective sleeve (110) is recessed 0.3 mm relative to the surface (k) of the casing (10).
- Lightly tighten the proximity switch with set-screw (130).

Fig. 13



3.6. Speed regulation

The speed is regulated by means of the 2 non-return throttle valves (200, Fig. 13).

3.7. Maintenance

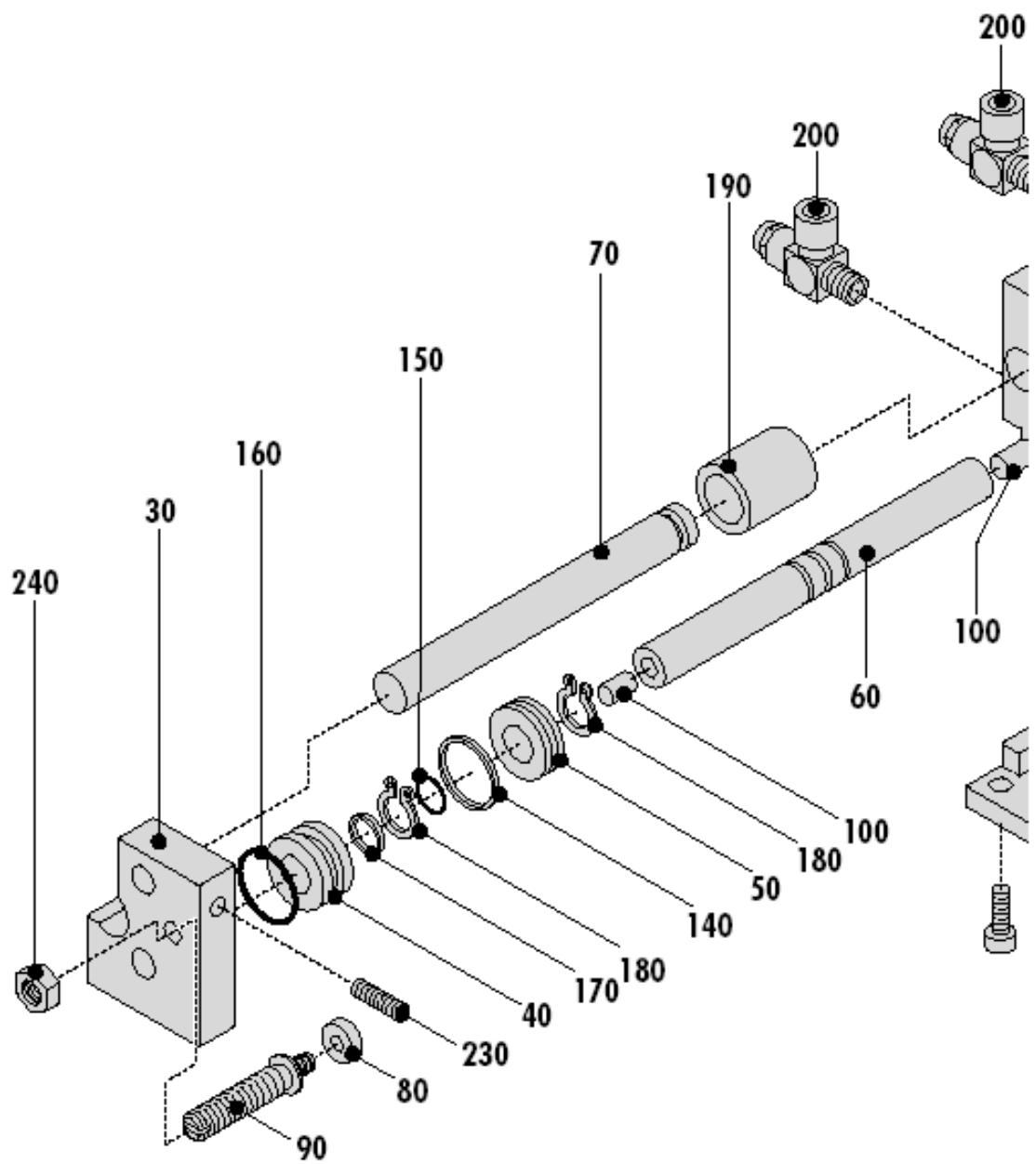
VS is generally maintenance-free up to 5 mio. cycles. We recommend the following preventative maintenance to ensure optimum performance of the unit:

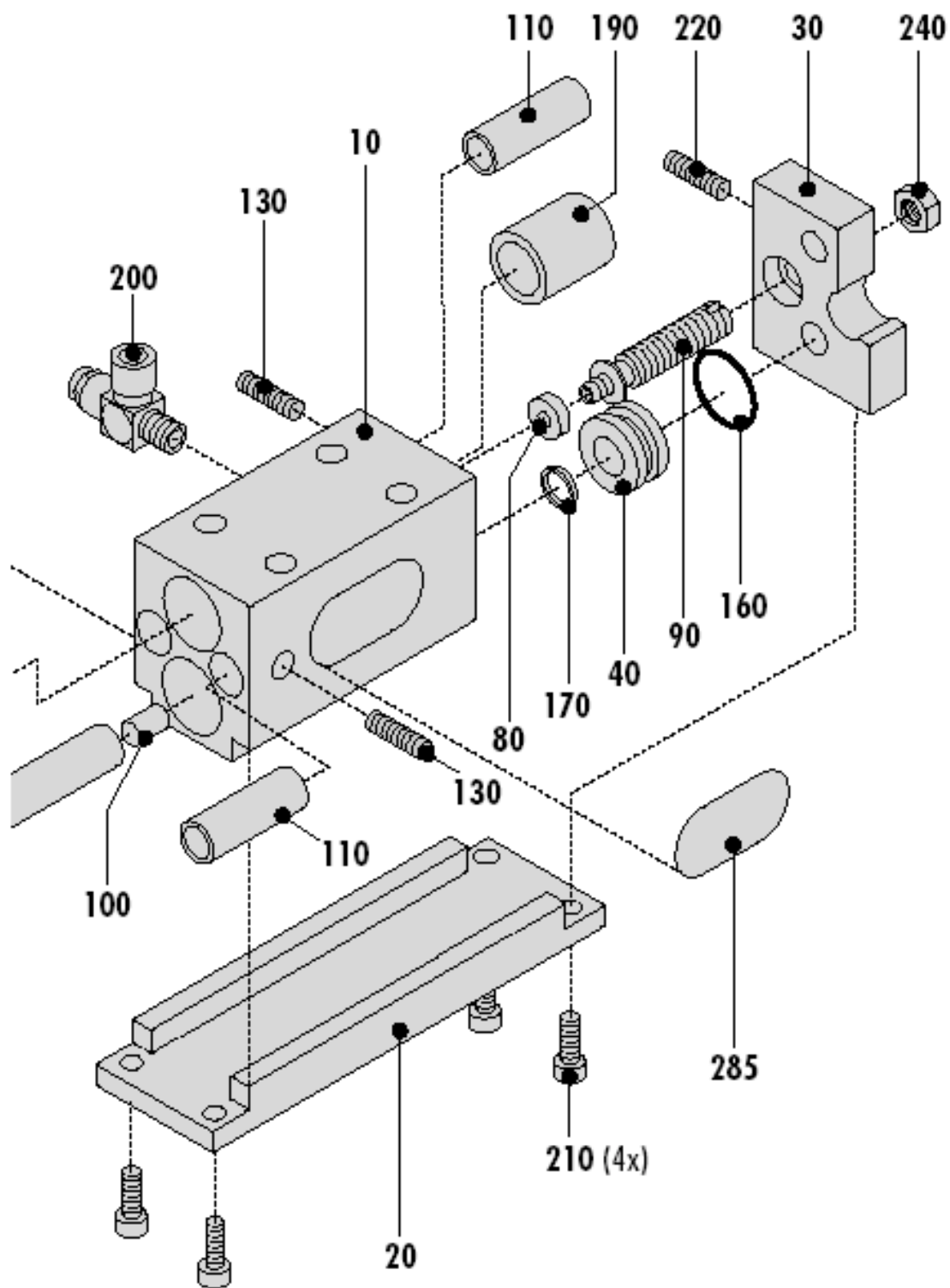
- Periodic cleaning of the unit, particularly the mechanical guide
- Inspection of the seals, possible replacement
- Lubricate with Paraliq P460 (Montech article no. 504721), particularly the mechanical guide

For further information about our services, support and downloads, please visit our homepage at www.montecom.com or contact your local representative.

Notes:

Fig. 14





Item	Sym.	Designation	Ref.No. VS-30	Ref.No. VS-60	Material
	■	Displacement unit VS	45194	45209	
10	◇	Casing	45195	45205	Steel
20	●	Baseplate	45196	45206	Steel
30	◇	Plate	28417	28417	Steel
40	◇	Bush	28418	28418	Bronze
50	◇	Piston	39082	39082	Bronze
60	●	Piston rod	45200	45207	Steel
70	◇	Guide rod	45201	45208	Steel
80	◇	Damping washer	40959	40959	POM
90	◇	Stop crews	40961	40961	Steel
100	◇	Peg	45202	45202	PA
110	●	Clamping sleeve	42010	42010	POM
130	◇	Set-screw M3x4	501884	501884	Steel
140	●	Seal	503100	503100	NBR
150	●	O-ring 4x1	503101	503101	NBR
160	●	O-ring 13x1.5	501233	501233	NBR
170	●	Glide ring	503103	503103	Turcon
180	◇	Spring ring	502444	502444	Steel
190	◇	Spherical bush	504982	504982	Steel
200	◇	Non-return throttle valve	505023	505023	Brass
210	◇	Chhd screw M4x8	501618	501618	Steel
220	◇	Set-screw M4x6	501963	501963	Steel
230	◇	Set-screw M4x5	501894	501894	Steel
240	◇	Hex nut M6x0.8d	502001	502001	Steel
285	◇	Nameplate	41620	41620	Polyester

- These are wearing parts and are available from stock
- ◇ May not be available ex stock (upon request)
- Price-listed items available ex stock

4. General information

4.1. Environmental compatibility and disposal

Materials used:

- Steel
- Bronze
- Brass
- Acryl-nitrile-butadiene rubber (NBR)
- POM (Polyoxymethylene)
- PA Polyamide
- Paraffinic mineral oil, synthetic hydrocarbon

Surface treatment:

- Blackening of steel
- Nickel-plating of brass

Shaping processes:

- Machining of Steel, Bronze, POM, PA
- Moulding of NBR gaskets

Emissions during operation:

None

Disposal:

Displacement units that are no longer serviceable should not be disposed of as complete units, but dismantled into their parts which can be recycled according to the material of which they are made. The kind of material used for every part is shown in the spare parts list. Material that cannot be recycled should be disposed of appropriately.