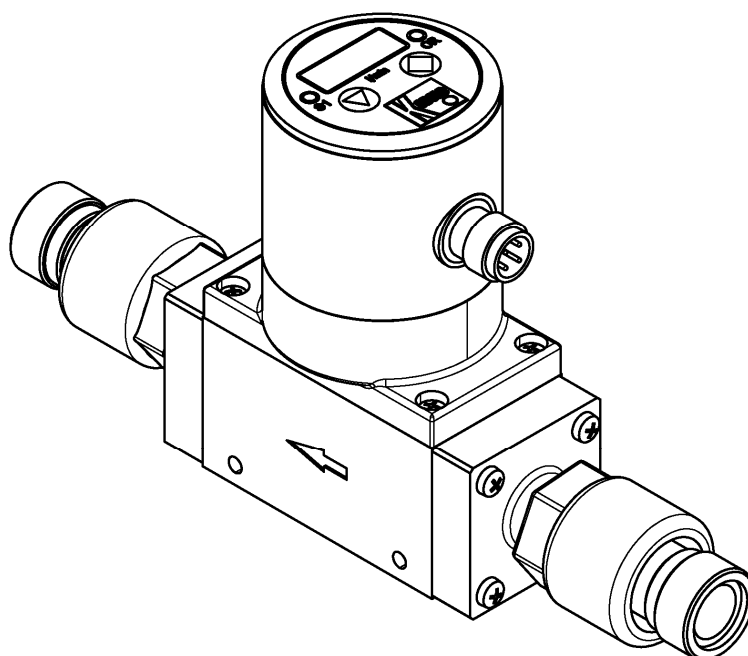




# **Operating Instructions for Compact Vortex Flow Meter**

**Model: DVZ-Y45001/1Y25**



## 1. Contents

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|   |    |
|---|----|
| 1. Contents.....                          | 2  |
| 2. Note .....                             | 3  |
| 3. Instrument Inspection.....             | 3  |
| 4. Regulation Use .....                   | 4  |
| 5. Operating Principle.....               | 4  |
| 6. Mechanical Connection.....             | 5  |
| 6.1 Check operating conditions.....       | 5  |
| 6.2 Installation.....                     | 5  |
| 6.3 Serto installation instructions ..... | 6  |
| 7. Electrical Connection .....            | 8  |
| 8. Adjustments – Compact Electronic ..... | 8  |
| 8.1 Button function.....                  | 8  |
| 8.2 Settings.....                         | 9  |
| 8.3 Value setting.....                    | 9  |
| 8.4 Set-up mode .....                     | 10 |
| 8.5 Main menu items .....                 | 11 |
| 9. Maintenance .....                      | 14 |
| 10. Technical Information.....            | 14 |
| 11. Order Codes .....                     | 14 |
| 12. Dimensions .....                      | 14 |
| 13. Disposal .....                        | 15 |
| 14. EU Declaration of Conformance .....   | 16 |
| 15. UK Declaration of Conformity.....     | 17 |

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## **2. Note**

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Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.

The instruction manuals on our website [www.kobold.com](http://www.kobold.com) are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that corresponds to the purchased product version, you can request it from us free of charge by email ([info.de@kobold.com](mailto:info.de@kobold.com)) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://www.kobold.com)

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

### **as per PED 2014/68/EU**

In acc. with Article 4, Paragraph (3), "Sound Engineering Practice", of the PED 2014/68/EU no CE mark.

Diagram 8, Pipelines, Group 1, dangerous fluids

## **3. Instrument Inspection**

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Instruments are inspected before shipping and sent out in perfect condition.

Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

### **Scope of delivery:**

The standard delivery includes:

- Compact Vortex Flow Meter      model: DVZ-Y45001/1Y25

## 4. Regulation Use

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Any use of the Compact Vortex Flowmeter, model: Y-DVZ45001/PS25, which exceeds the manufacturer's specifications, may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

## 5. Operating Principle

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The compact KOBOLD Vortex flow meter Type Y-DVZ45001/PS25 is used for measuring and monitoring smaller and medium-sized flow of low viscosity, water-like fluids in pipes. The device works using the vortex process, making it virtually maintenance-free. This involves the installation of a sharp-edged object (the vortex generator) in the flow duct. A vortex is created behind the object whose frequency is proportional to the velocity of flow of the fluid. The flow volume can be determined with a very great degree of accuracy by measuring the vortex frequency. This achieves a very high linearity across the whole measuring range. The device can be fitted with switching, frequency or analogue outputs. There is also an optional compact electronics package that includes a digital display, and both a switching and analogue output.

## **6. Mechanical Connection**

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### **6.1 Check operating conditions**

- Flow rate
- max. operating pressure
- max. operating temperature

### **6.2 Installation**

- Remove all packing materials and transport retainers and ensure that no such materials remain in the device.
- Install with flow in direction of arrow (universal mounting)
- Avoid pressure and radial tension
- Fasten the pipe at up stream and down stream at a distance of 50 mm from the connections
- Install the compression fitting (see section 6.3)
- Ensure inlet and outlet section of 10xDN (e.g. 10x nominal pipe diameter)
- Avoid valves or large reduction on the inlet section (this increases the inaccuracy of measurements)
- Check the seals of the connections



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**Caution! When used with an open output side, there is a danger of cavitation.**

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## 6.3 Serto installation instructions

### 1. Preparation

Cut the tube to length and deburr it. The tube must be straight and free from blemishes for approximately 1,5 d from the end. The union is lubricated. Thus lubrication with lubricating oil, MoS<sub>2</sub>, Teflon etc. is recommended for the assembly and reassembly of bigger sized unions (thread, compression ferrule).

### 2. Reinforcing the tube and pushing it in

Stiffener sleeves\* are required to reinforce plastic tubes and thin walled tubes

|                        |  |
|------------------------|--|
| <b>Copper</b>          | from d 10 mm with s < 1,0 mm<br>from d 12 mm with s < 1,5 mm |
| <b>Stainless steel</b> | from d 6 mm with s < 0,5 mm<br>from d 10 mm with s < 1,5 mm  |
| <b>Plastic</b>         | all  |

Align tube and union. Insert the tube as far as the stop. Details see chapter tubes in the appendix. [www.serto.com](http://www.serto.com)

### 3. Compression, stress relieving

3.1 Screw on the union nut by hand until finger tight.

At the same time, push the tube against the fitting.

3.2 Tighten down the union nut 1% rotation using an open ended spanner. (Making a mark will assist in correct rotation.)

3.3 Slightly release the nut once again to take the radial stress off the tube.

3.4 Checking of fit. A distinct bead or deformation must be visible on the inside of the tube.

3.5 Screw on the union nut until finger tight again and tighten down the union nut with + rotation for the final fit. (Hold adaptor from turning with a second wrench.)

### 4. Repeated fitting of the union

When refitting the same tube union, screw the union nut back on by hand until finger tight and tighten down the union nut with an open ended spanner + rotation for the final fit.

**In case of repeated assembly, parts must be lubricated.**

Tubes\*

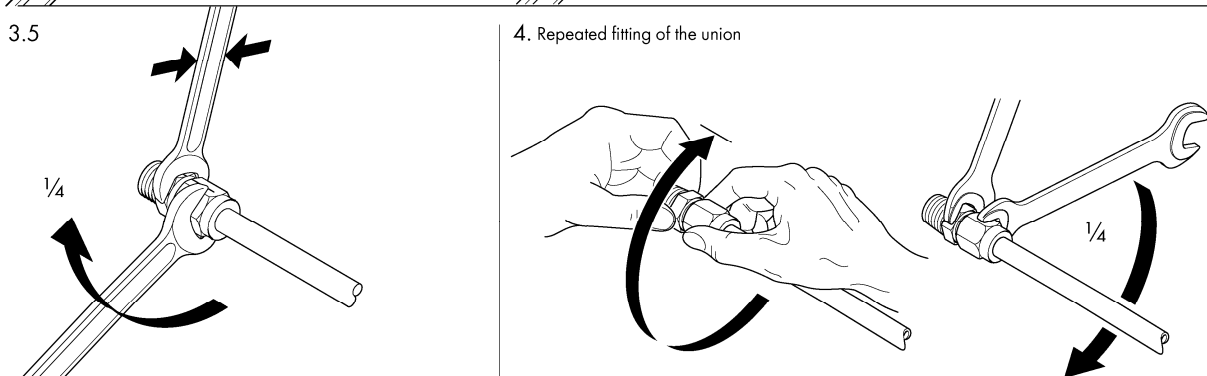
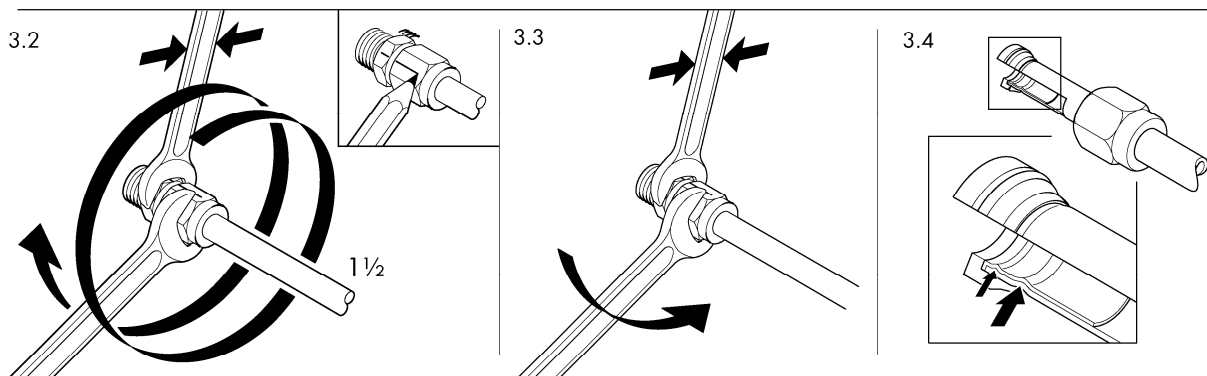
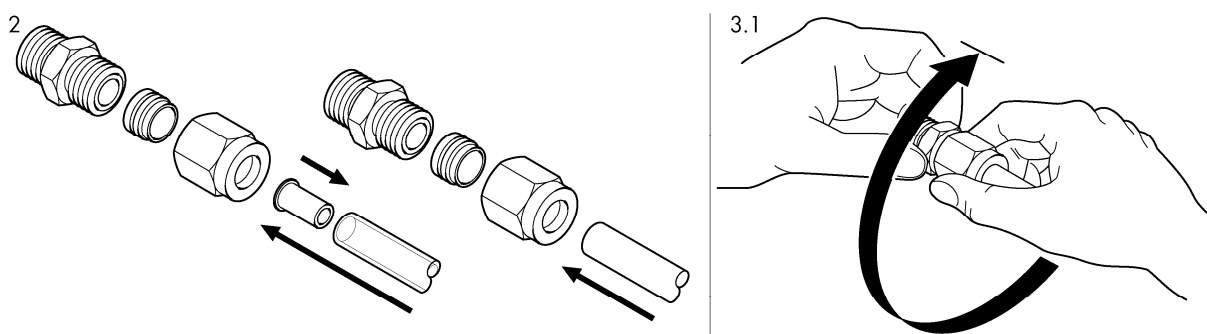
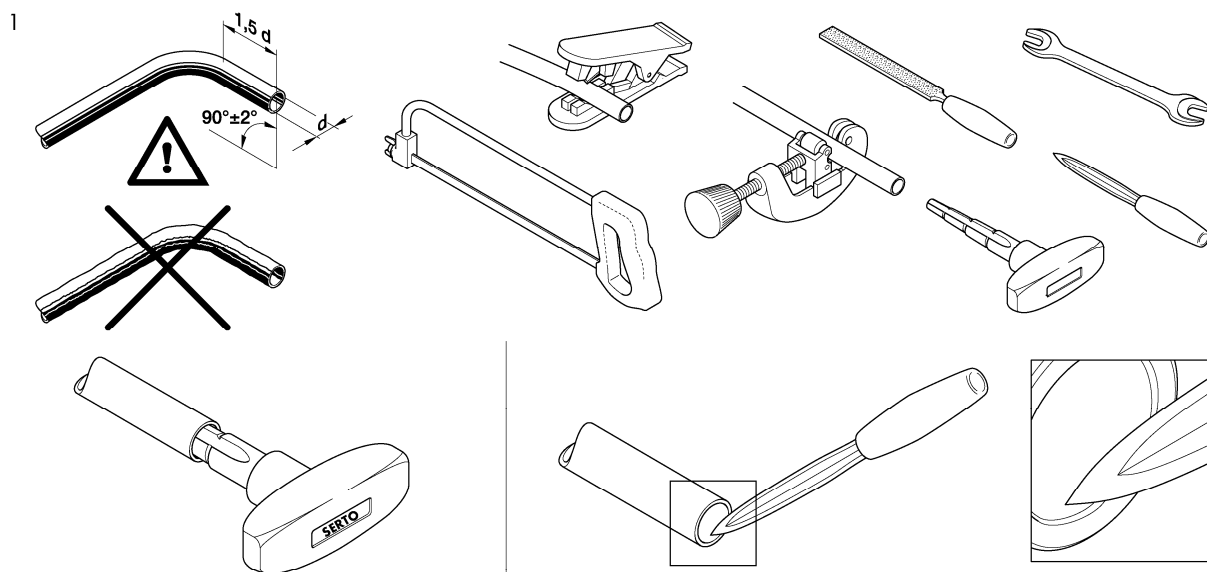
Tubes with a clean smooth external surface and with an outside diameter within the tolerance  $\pm 0.1$  mm should be used.

Turnable compression ferrule

It is of no detriment to the efficiency of the connection if, after assembly, the ferrule can be turned on the tube, or the tube in the union nut.

Pre-assembly stud

SO 56000, stainless steel, tuffride treatment, for stainless steel and brass M-Programme. SO 6000, CrNi steel hardened, for steel.

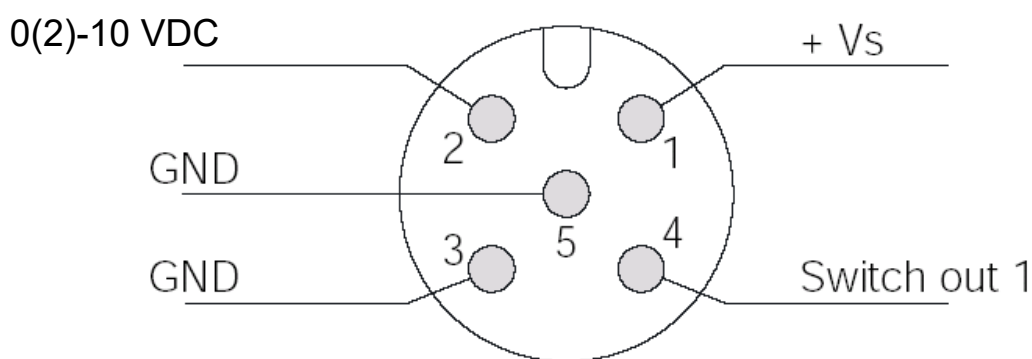


## 7. Electrical Connection



**Caution! Make sure that the voltage values of your system correspond with the voltage values of the measuring unit.**

- Make sure that the supply wires are de-energized.
- Plug in the system according to the connecting diagrams.
- We recommend the use of wires with cross sectional area of min. 0,25 mm<sup>2</sup>



## 8. Adjustments – Compact Electronic

Connect the compact electronic according to previous connection diagram. After power on, the measuring range (end current) will be shown for 3 seconds.

### 8.1 Button function

In the normal mode (measuring mode)

: Press 3 sec. → Setup mode

: Switch point/ Window point

In the set-up mode

: Next Step

: Change Value

Any time

3 sec

or do not press  
a button for 20 sec



Standard mode



[illegible]

\*\*\* 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 10

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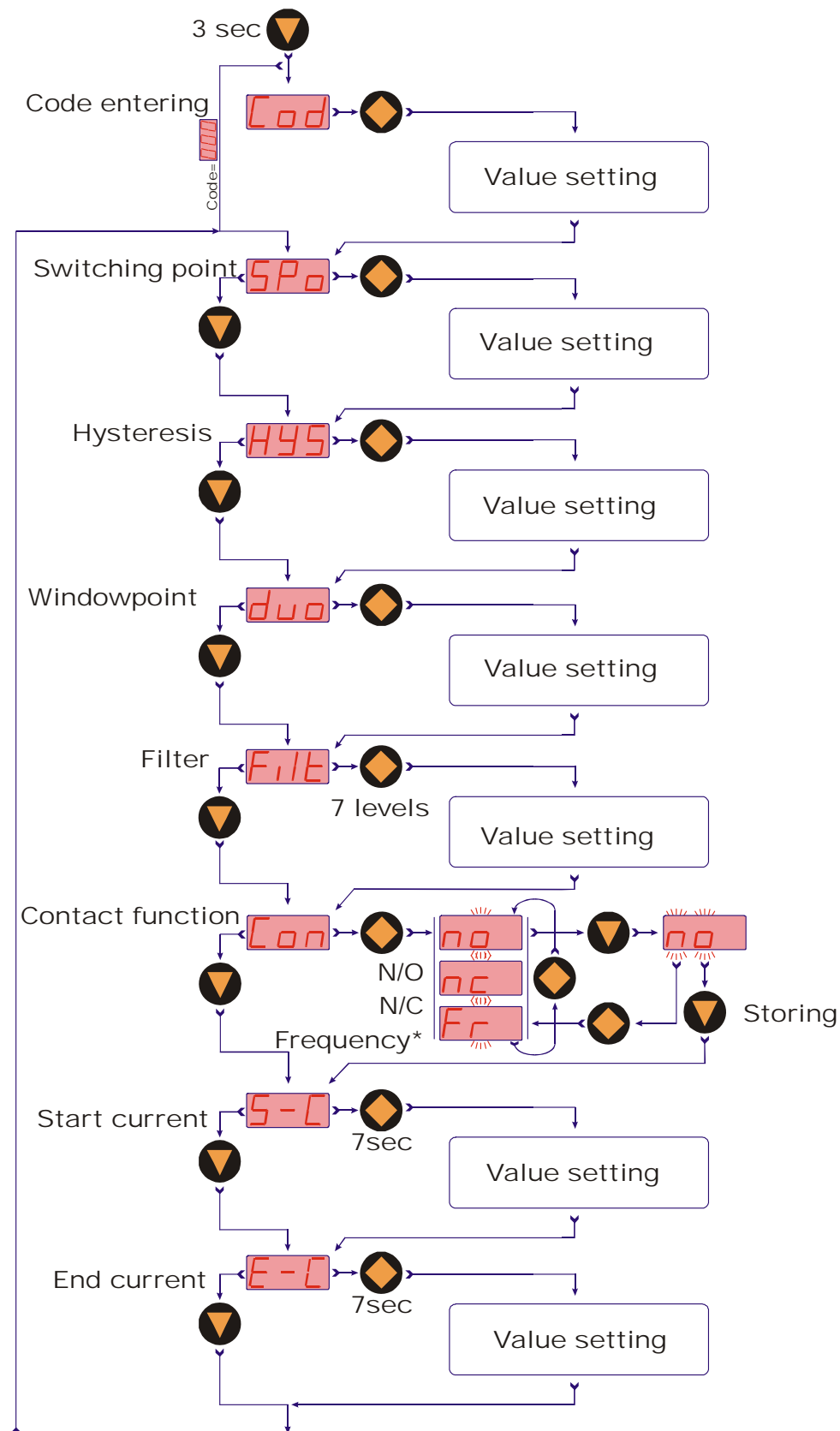
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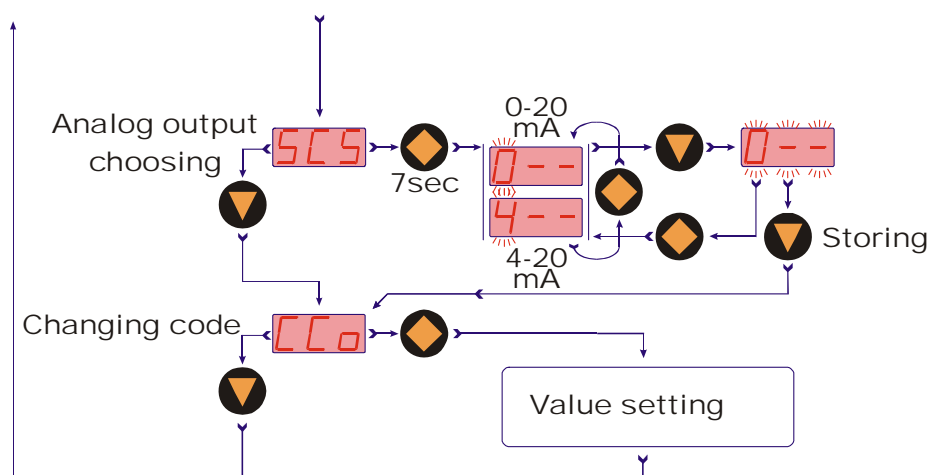


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## 8.4 Set-up mode

### Compact electronic





## 8.5 Main menu items

### 8.5.1 Switching point

The switching point is entered in the menu item "**Spo**". A setting value between 000 and 999 can be selected. This value can also include a decimal point. The decimal point can be set at two points (e.g. 10.0 or 1.00). If the measuring value is the set switch point, the electronic is activated and is signalled by a lightning LED.

If the hysteresis is equal to zero and the window point is de-activated, the electronic switches back whenever the indicated value falls below the switching point.

### 8.5.2 Hysteresis

After the setting of switching point, the hysteresis can be entered as a negative value in the "**HYS**" menu. The standard hysteresis value is zero. In operation condition this can lead to ambiguous switching behaviour if the reading fluctuates around the switching point or window point. Aid can be given here by increasing the hysteresis. The hysteresis relates to the switching point and the window point (switching point minus hysteresis; window point plus hysteresis).

**Example:** Switching point 20 L/min; Hysteresis: -2.5 L/min

The electronic switches when 20 L/min is exceeded and switches back when the reading drops below 17.5 L/min.

### 8.5.3 Window point (duo-point)

As well as the switching point, it is also to define a "**duo**" (duo-point), the window point. This must be higher than the switching point. Using the window point and the switching point it is possible to monitor the measurement value in a certain range. The switching point limits the measurement range to smaller values and the window point to larger values.



If the window point (duo-point) is less than or equal to the switching point, an error report (Er4) will be indicated on the display and its value is deleted and its function is invalid (in the case that the window point and switching point out of adjustment).

The value is set in the same way as the switching point.

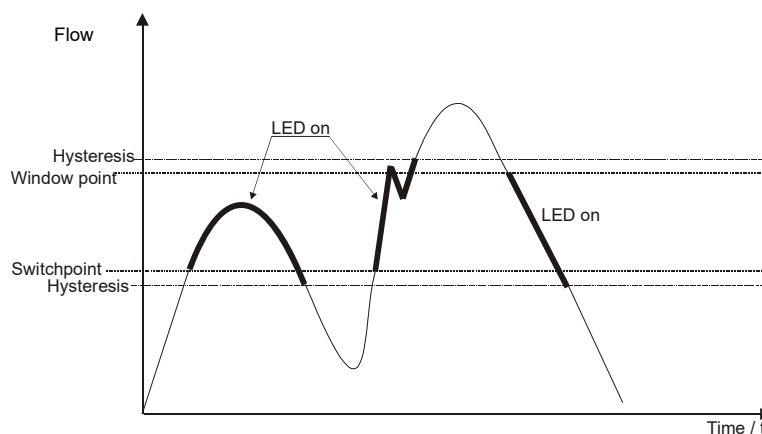
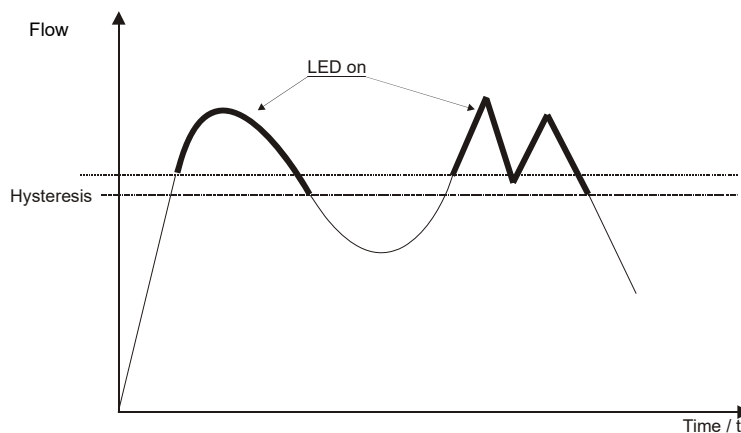
The window point is needed for process, monitoring of a certain temperature range.

**Example:** Switching point: 10 L/min; window point: 20 L/min; hysteresis: -1 L/min  
The electronic switches when 10 L/min is exceeded.

If the switching value remains between 9 L/min (10-1) and 21 L/min (20+1), the contact will also remain in active switching condition (LED on). If it exceeds 21 L/min or is below 9 L/min the electronic switches back.

## Switching behaviour

The following diagram clarifies the switching behaviour of the electronic switch. The contact closes (contact type: no) when it drops below the switching point or the window point. It only opens again if the window point plus hysteresis is exceeded or if it drops below the switching point minus hysteresis. An **LED** indicates the switching condition of the switching point.



#### 8.5.4 Contact type

The function of the transistor switching output is set in menu item "**Con**". The switching function switches from

**no** - N/O contact to

**nc** - N/C to

**Fr** – frequency (Con and Co1 only and for sensors with impulse output)

and back.

N/O contact: contact closes when switching point is exceeded

N/C contact: contact opens when switching point is exceeded

Frequency: frequency output synchronised with the sensor frequency

#### 8.5.5 Voltage output

The voltage output is selected in menu items

**"S-C"** Start voltage indicated value  $< > 0(2)$ -10 VDC

**"E-C"** End voltage indicated value  $< > 10$  VDC

**"SCS"** Start voltage selection (0-10 VDC or 2-10 VDC).

The indicated value at 0(2)-10 VDC output is entered in menu item "Start current".

The indicated value at which 10 V output is entered in menu item "End voltage".

#### 8.5.6 Change Code

The change code option "**CCo**" secures the unit against unauthorised tampering. If the code is different from 000, the user must input the code immediately after entering the adjustment mode.

If you do not remember your code-number, you have to send the unit back to Kobold.

## 9. Maintenance

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The measurement device requires no maintenance if the measurement medium does not cause deposits or include fiber parts, which wrap around the sensor or the gate. In order to avoid problems, we recommend the installation of a filter, such as the magnetic filter, type MFR.

If it is necessary to clean the sensor, the sensor can be rinsed with a suitable liquid. Fiber parts or large particles can be carefully removed with tweezers, etc.



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**Ensure that the sensor is not damaged.**

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Work on the electronics can only be performed by the factory, or the warranty is otherwise voided.

## 10. Technical Information

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Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://www.kobold.com)

## 11. Order Codes

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Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://www.kobold.com)

## 12. Dimensions

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Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://www.kobold.com)

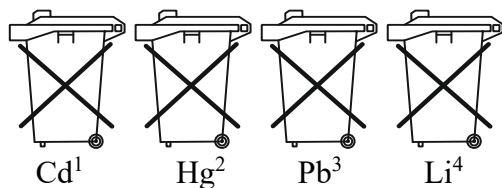
## 13. Disposal

### Note!

- Avoid environmental damage caused by media-contaminated parts
- Dispose of the device and packaging in an environmentally friendly manner
- Comply with applicable national and international disposal regulations and environmental regulations.

### Batteries

Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



1. „Cd" stands for cadmium
2. „Hg" stands for mercury
3. „Pb" stands for lead
4. „Li" stands for lithium

### Electrical and electronic equipment



## 14. EU Declaration of Conformance

---

We, KOBOLD Messring GmbH, Hofheim-Ts, Germany, declare under our sole responsibility that the product:

**Compact Vortex Flow meter      Model: DVZ**

to which this declaration relates is in conformity with the standards noted below:

**EN IEC 61326-1:2021**

Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements, Industrial area (measurement of immunity to RF field up to 1 GHz)

**EN 60529:2014**

Degrees of protection provided by enclosures (IP Code)

**EN IEC 63000:2018** Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Also, the following EU directives are fulfilled:

**2014/30/EU**

**EMC Directive**

**2011/65/EU**

**RoHS**

**2015/863/EU**

Delegated Directive (RoHS III)



Hofheim, 28 June 2023

H. Volz  
General Manager



M. Wenzel  
Proxy Holder



## 15. UK Declaration of Conformity

We, KOBOLD Messring GmbH, Hofheim-Ts, Germany, declare under our sole responsibility that the product:

**Compact Vortex Flow Meter      Model: DVZ**

to which this declaration relates is in conformity with the standards noted below:

**BS EN IEC 61326-1:2021**

Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements, Industrial area (measurement of immunity to RF field up to 1 GHz)

**BS EN 60529:1992+A2:2013**

Degrees of protection provided by enclosures (IP Code)

**BS EN IEC 63000:2018**

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

Also, the following UK guidelines are fulfilled:

**S.I. 2016/1091**

Electromagnetic Compatibility Regulations 2016

**S.I. 2012/3032**

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

H. Volz  
General Manager

M. Wenzel  
Proxy Holder

Hofheim, 28 June 2023