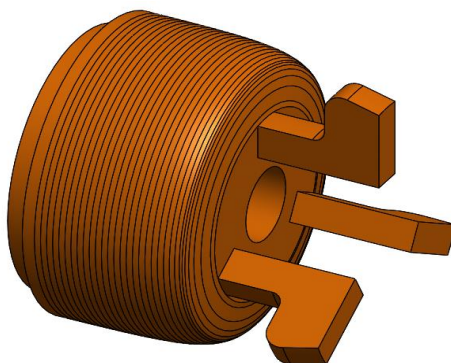


Flow plugs



Datasheet

Rev.
28.02.2025

Certified according
ISO 9001

0.006

Certified according
PED

Certified according
ATEX/IECE_x

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Valve Flow Coefficient Kv or Cv

The flow coefficient of a valve is a relative measure of its efficiency at allowing fluid flow. It describes the relationship between the pressure drop across an orifice, valve or other assembly and the corresponding flow rate.

Kv: SI units: Numerical value in m³/h of H₂O at 5-40 °C flowing through the valve at Δp = 1 bar

Cv: Customary US units: Numerical value in US gal/min of H₂O at 60 °F - 16 °C flowing through the valve at Δp = 1 psi

Conversion: $Cv = 1.16 \cdot Kv$
 $Kv = 0.86 \cdot Cv$

To control the fluid flow in a pipe an energy drop is required. At least 10 % of the system pressure drop should be performed by the control valve for an acceptable fluid control and up to 30% for a good fluid control.

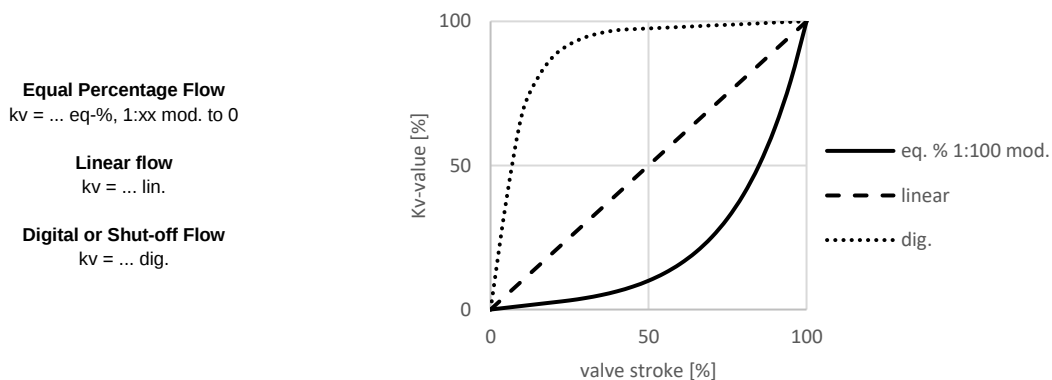
Rules for calculation the valve flow coefficient Kv are standardised in the international standard IEC 534.

For sizing of control valves by Kv value WEKA is using the CONVAL 10 software pack by F.I.R.S.T. GmbH, Germany.

Flow Characteristics

The flow characteristic is the relationship between the valve travel and the throughput. The inherent flow characteristic represents the relationship with constant pressure drop across the valve.

The different flow plug characteristics are displayed in the diagram below.



Equal percentage flow characteristics (eq-%, = %)

The eq-% flow characteristic is standard for all flow plugs from DN6 to DN150.

An ideal equal percentage flow characteristic would yield to the same percentage of Kv-flow increase for each percentage of valve stroke. Often, control valves have a maximum throughput at full stroke (Kv_s value) and a minimum throughput at minimum stroke (Kv₀ value).

Because WEKA control valves are fully closing at 0 stroke the equal percentage flow plugs are linear modified at the beginning of the valve travel for an exact fine flow control down to the closed valve position (eq-% mod., = % mod.).

The rangeability is the ratio of Kv_s : Kv₀ which defines the shape of the equal percentage flow characteristic. It is for standard flow plugs 1:100. Smaller or higher values are available on request.

Linear flow characteristics (lin.)

The linear flow characteristic is standard for all flow plugs from DN2 to DN4.

If the pressure drop across the valve remains constant independent of the flow, the linear flow characteristic will be an optimal inherent flow characteristic, because in that case the inherent flow characteristic equals in the installed flow characteristic.

In an ideal linear flow characteristics the Kv values increases by the same increment for each fraction of travel.

Flow plugs with linear character for DN6 - 150 are available on request and is possible for all kv-values.

Digital flow characteristics (dig.)

Digital flow plugs are marked with the "dig." tag in the flow plug type description.

If a fast opening and a large kv value at full stroke (kvs-value) is needed a digital flow plug is recommended. These flow plugs are designed with a parabolic shape for highest possible flow value.

Material:

Standard material for flow plugs is CuAl10Fe5Ni5 (Al-Bz)

Other materials are available on request.

Correction factors for different body patterns

The standard valve housing has a E-pattern. Following correction factors are applicable for valves in other body pattern:

- D-pattern i.e. globe pattern: Correction factor = 0,85 - 1,0 (depending on size of kv-value and valve DN)
- Z-pattern i.e. inlet and outlet on different levels: Correction factor = 0,9 - 1,0 (depending on size of kv-value and valve DN)
- Y-pattern i.e. slanted globe pattern: Correction factor = 0,95 - 1,15 (depending on size of kv-value and valve DN)

Size of correction factor is depending on kv-value on the valve DN. This means as smaller the kv-value as a higher factor is possible.

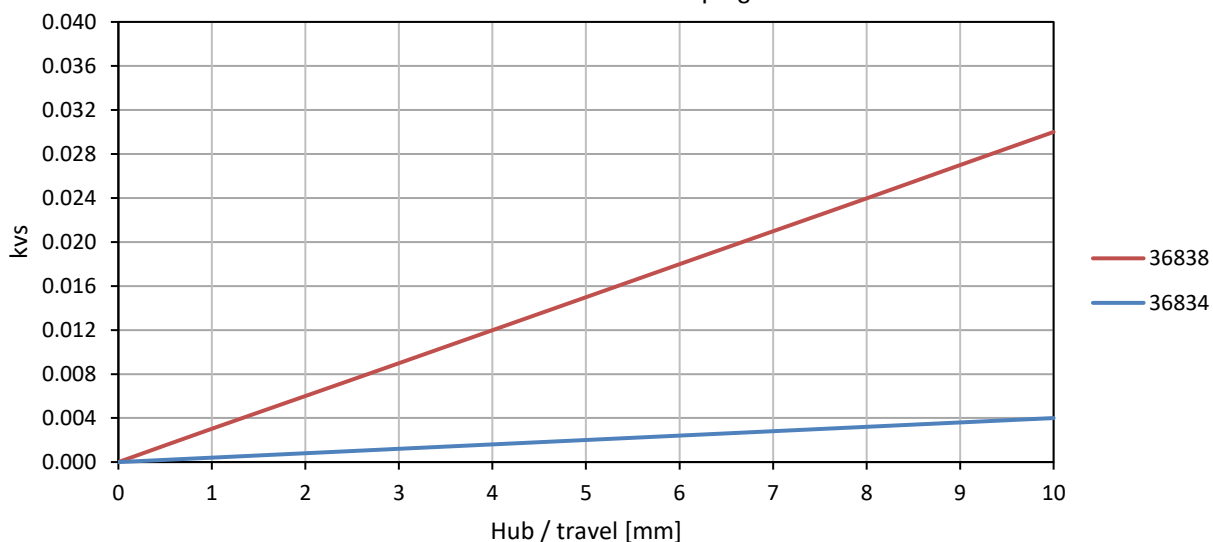
For other valve body patterns see WEKA catalogue no. 911003

Ventilgrösse / Valve size	DN2
Durchmesser der Ventilbohrung / Diameter of valve bore	2mm
Ventilhub / Valve travel	10mm
Kvs max. / kvs max.	0.1
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	34091

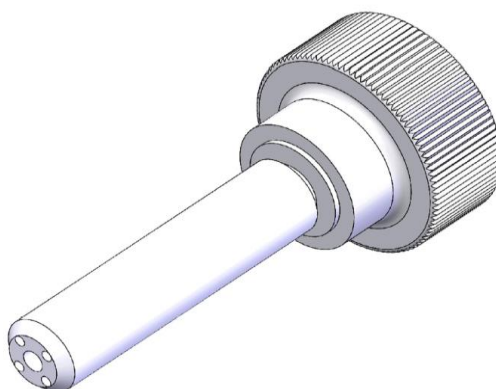
Art.-Nr. Art.-no.	Typ Type	kvs	cvs
36834	2/10	0.004	0.005
36838	2/10-1.2	0.030	0.035



Flow characteristic of control plugs



Mounting tool 34091



Ventilgrösse / Valve size
DN4

Durchmesser der Ventilbohrung / Diameter of valve bore

4mm

Ventilhub / Valve travel

10mm

Kvs max. / kvs max.

0.6

Kvs min. / kvs min.

0.006

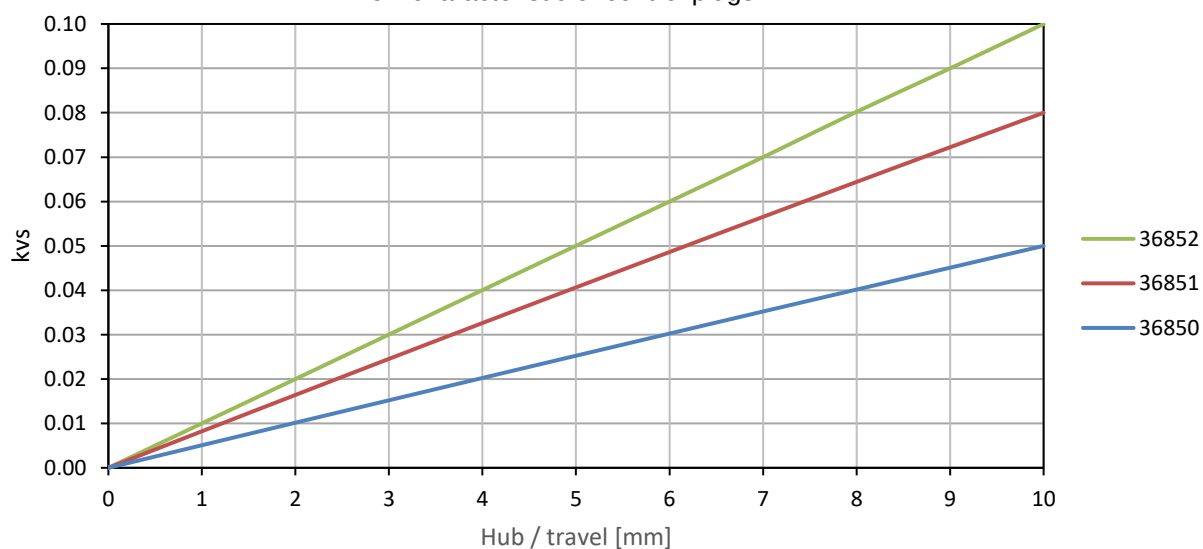
Montagewerkzeug: / Mounting tool

34092

Art.-Nr. Art.-no.	Typ Type	kvs	cvs
36850	4/10	0.05	0.06
36851	4/10	0.08	0.09
36852	4/10	0.10	0.12



Flow characteristic of control plugs



Mounting tool 34092

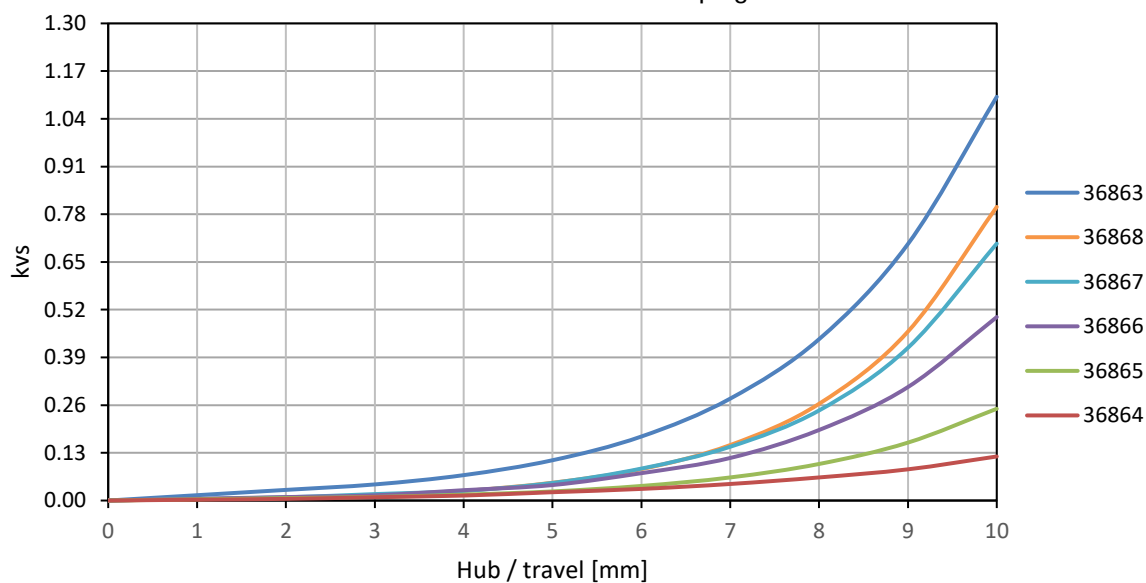


Ventilgrösse / Valve size	DN6
Durchmesser der Ventilbohrung / Diameter of valve bore	6mm
Ventilhub / Valve travel	10mm (+1mm)
Kvs max. / kvs max.	1.2
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	34093

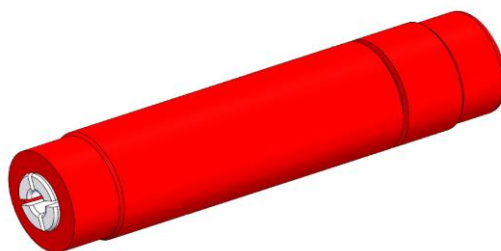
Art.-Nr. Art.-no.	Typ Type	kvs	cvs
36864	6/10	0.12	0.14
36865	6/10	0.25	0.29
36866	6/10	0.50	0.58
36867	6/10	0.70	0.81
36868	6/10	0.80	0.93
36863	6/10	1.10	1.28
36858	6/dig	1.2 dig	1.39 dig



Flow characteristic of control plugs



Mounting tool 34093

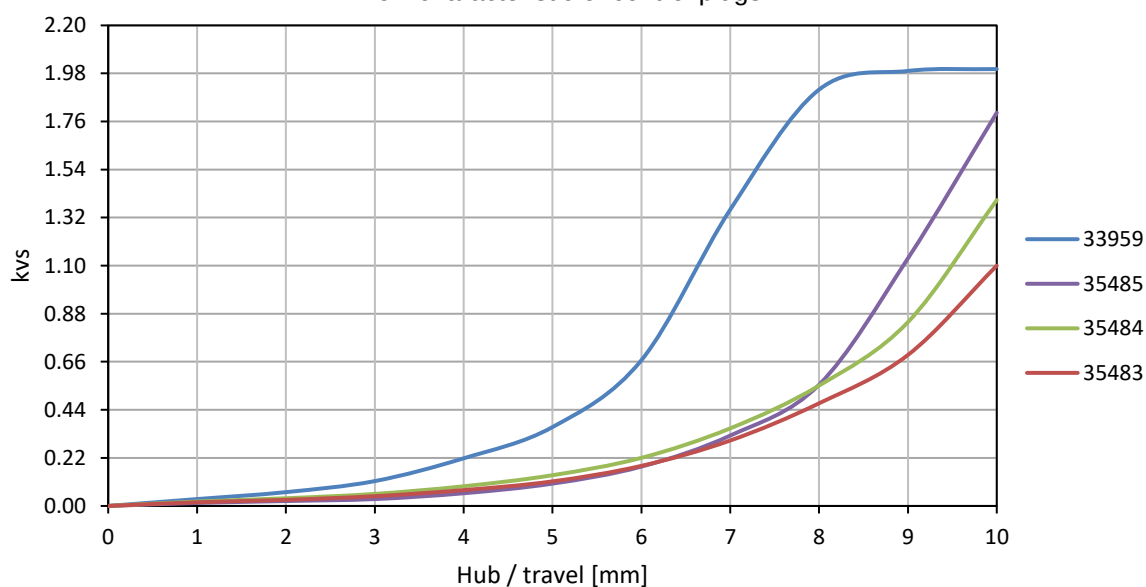


Ventilgrösse / Valve size	DN8
Durchmesser der Ventilbohrung / Diameter of valve bore	8mm
Ventilhub / Valve travel	10mm (+1mm)
Kvs max. / kvs max.	2.1
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	34094

Art.-Nr. Art.-no.	Typ Type	kvs	cvs
33959	8/8	2.00	2.32
35483	8/10	1.10	1.28
35484	8/10	1.40	1.62
35485	8/10	1.80	2.09
83308	8/dig	2.1 dig	2.44 dig



Flow characteristic of control plugs



Mounting tool 34094

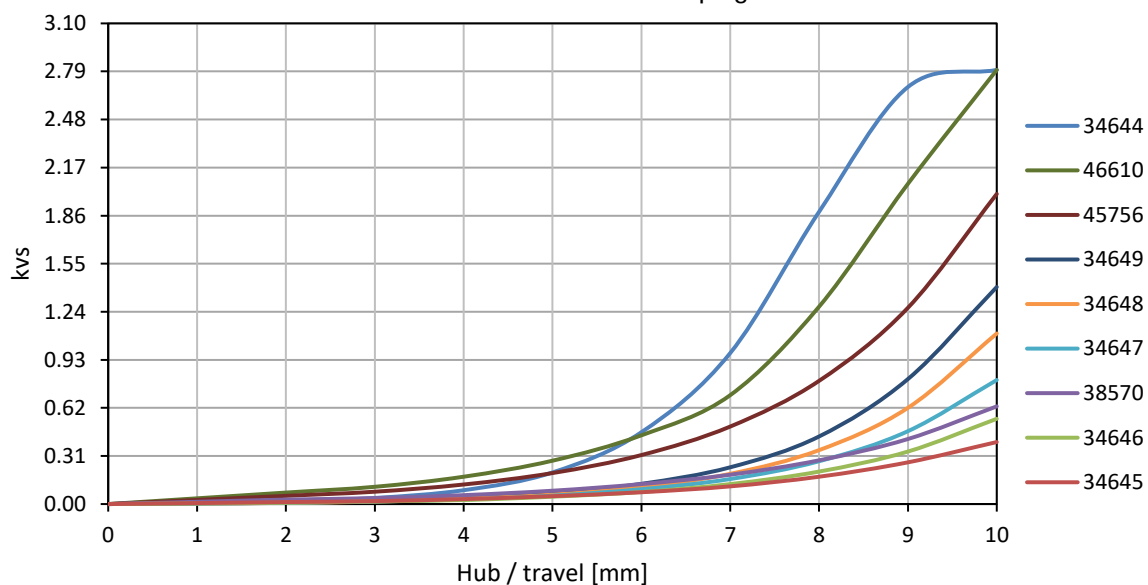


Ventilgrösse / Valve size	DN10
Durchmesser der Ventilbohrung / Diameter of valve bore	10mm
Ventilhub / Valve travel	10mm (+1mm)
Kvs max. / kvs max.	3.0
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	34051

Art.-Nr. Art.-no.	Typ Type	kvs	cvs
34644	10/8	2.80	3.25
34645	10/10	0.40	0.46
34646	10/10	0.55	0.64
38570	10/10	0.63	0.73
34647	10/10	0.80	0.93
34648	10/10	1.10	1.28
34649	10/10	1.40	1.62
45756	10/10	2.00	2.32
46610	10/10	2.80	3.25
34658	10/dig	3 dig	3.48 dig



Flow characteristic of control plugs

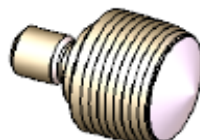


Mounting tool 34051

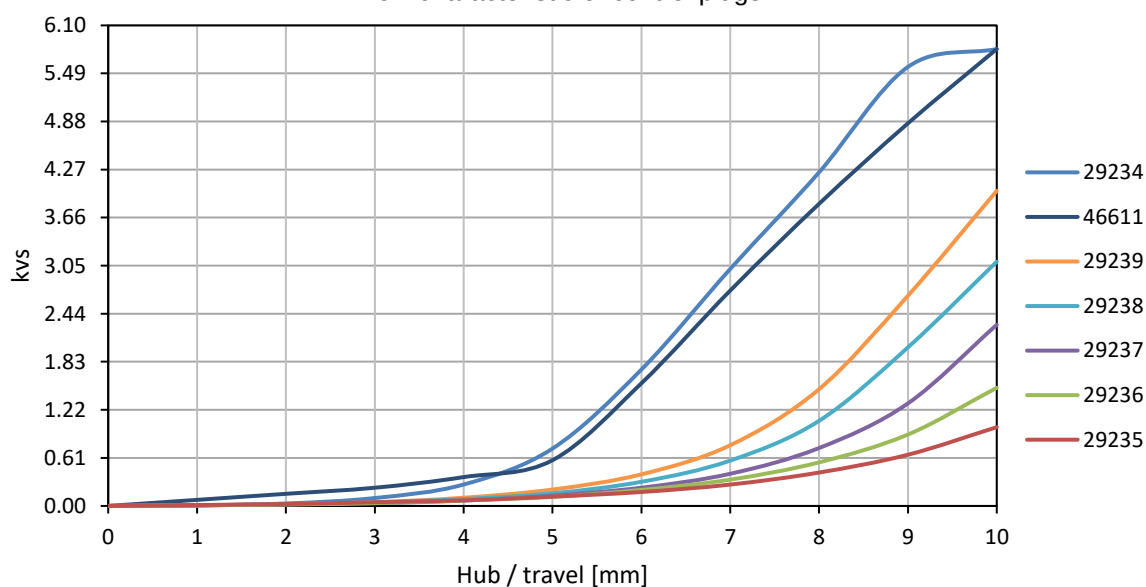


Ventilgrösse / Valve size	DN15
Durchmesser der Ventilbohrung / Diameter of valve bore	15mm
Ventilhub / Valve travel	10mm (+1mm)
Kvs max. / kvs max.	6.0
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	34055

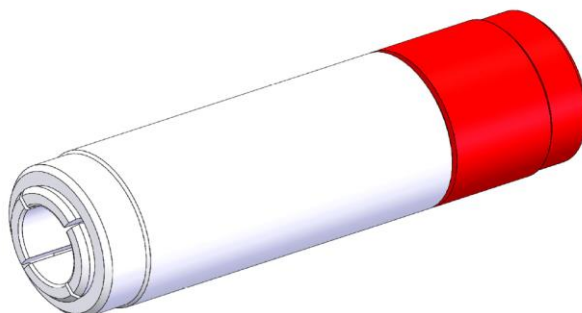
Art.-Nr. Art.-no.	Typ Type	kvs	cvs
29234	15/7	5.80	6.73
29235	15/10	1.00	1.16
29236	15/10	1.50	1.74
29237	15/10	2.30	2.67
29238	15/10	3.10	3.60
29239	15/10	4.00	4.64
46611	15/10	5.80	6.73
27983	15/dig	6 dig	6.96 dig



Flow characteristic of control plugs

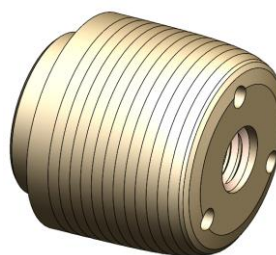


Mounting tool 34055

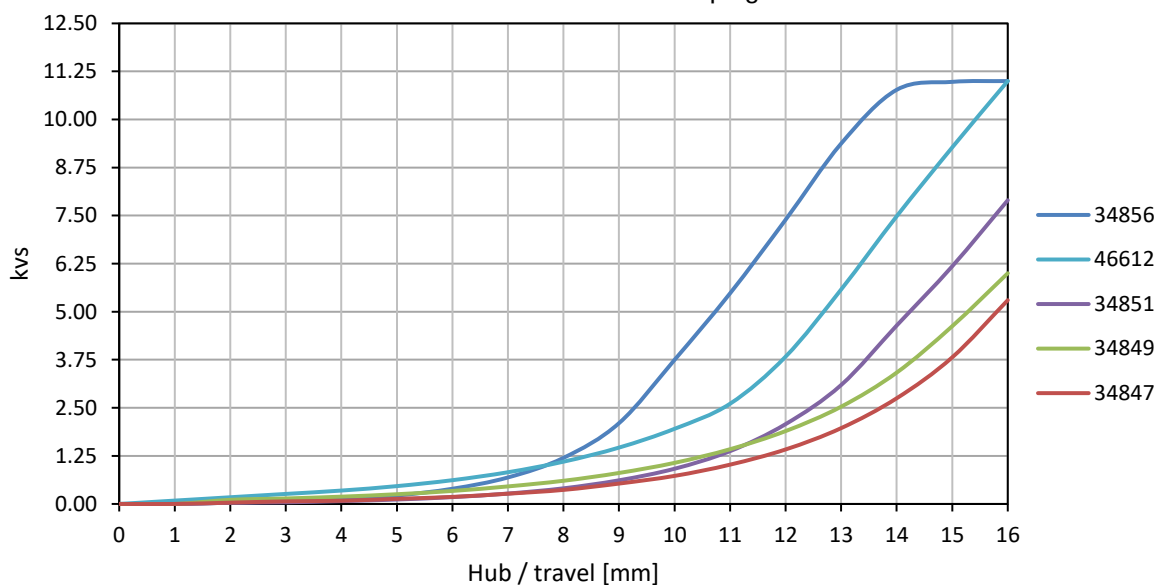


Ventilgrösse / Valve size	DN20
Durchmesser der Ventilbohrung / Diameter of valve bore	20mm
Ventilhub / Valve travel	16mm (+1mm)
Kvs max. / kvs max.	12
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	34305

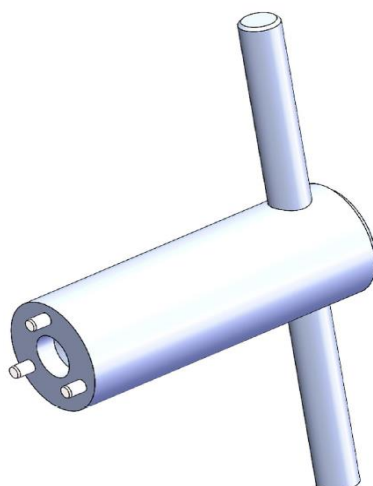
Art.-Nr. Art.-no.	Typ Type	kvs	cvs
34856	20/12	11.00	12.76
34847	20/16	5.30	6.15
34849	20/16	6.00	6.96
34851	20/16	7.90	9.16
46612	20/16	11.00	12.76
34304	20/dig	12 dig	13.92 dig



Flow characteristic of control plugs

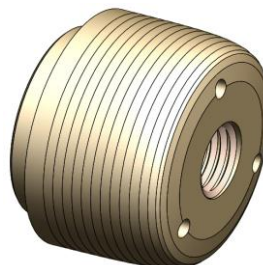


Mounting tool 34305

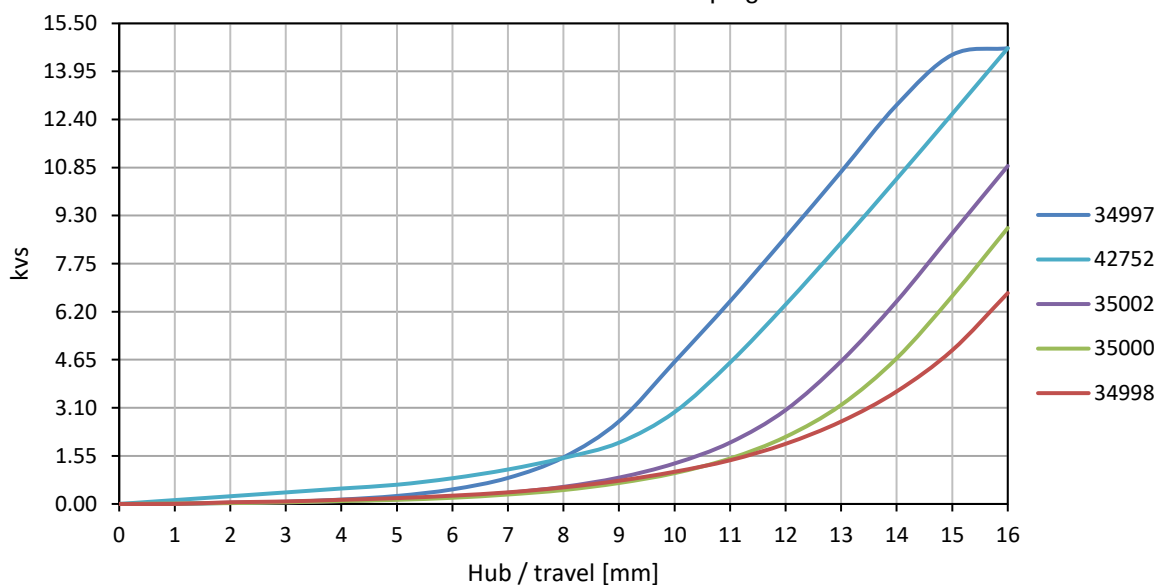


Ventilgrösse / Valve size	DN25
Durchmesser der Ventilbohrung / Diameter of valve bore	25mm
Ventilhub / Valve travel	16mm (+1mm)
Kvs max. / kvs max.	15
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	34992

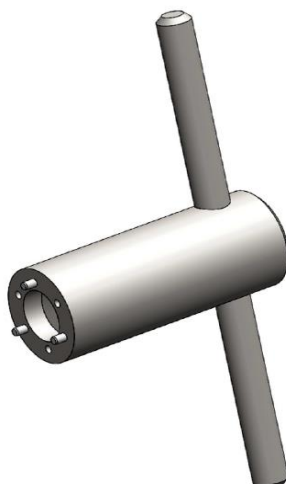
Art.-Nr. Art.-no.	Typ Type	kvs	cvs
34997	25/12	14.70	17.05
34998	25/16	6.80	7.89
35000	25/16	8.90	10.32
35002	25/16	10.90	12.64
42752	25/16	14.70	17.05
35900	25/dig	15 dig	17.4 dig



Flow characteristic of control plugs

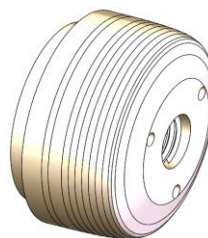


Mounting tool 34992

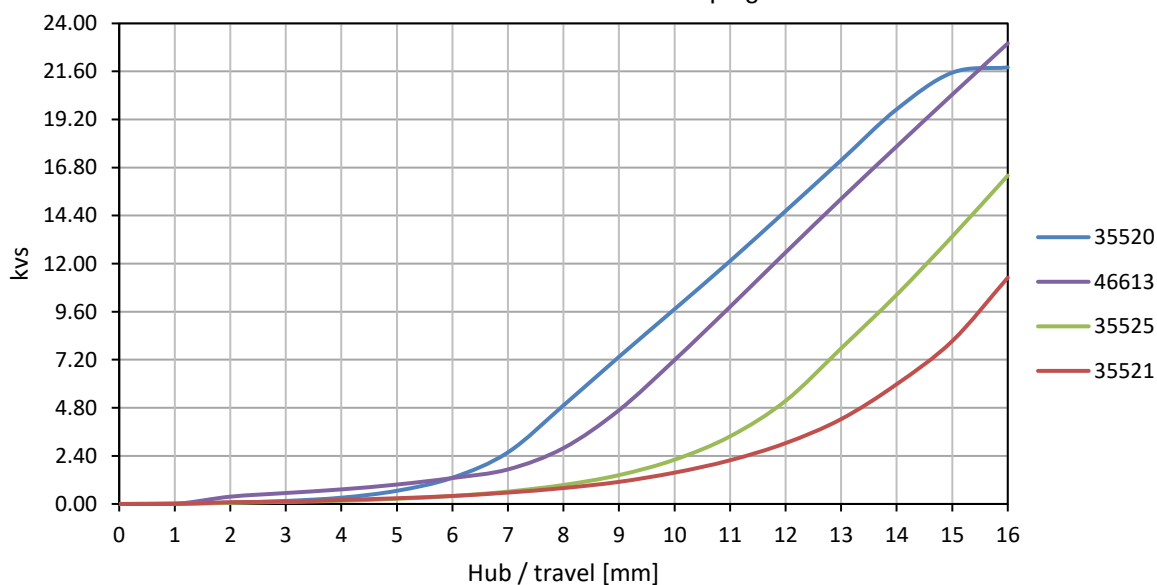


Ventilgrösse / Valve size	DN32
Durchmesser der Ventilbohrung / Diameter of valve bore	32mm
Ventilhub / Valve travel	16mm (+1mm)
Kvs max. / kvs max.	23.5
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	34992

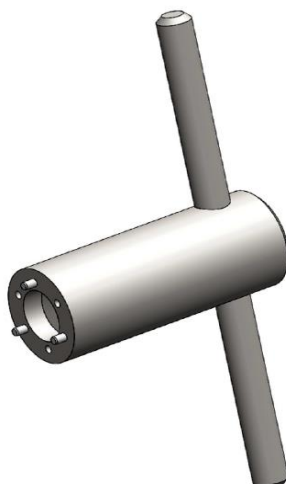
Art.-Nr. Art.-no.	Typ Type	kvs	cvs
35520	32/10	21.80	25.29
35521	32/16	11.30	13.11
35525	32/16	16.40	19.02
46613	32/16	23.00	26.68
35526	32/dig	23.5 dig	27.26 dig



Flow characteristic of control plugs

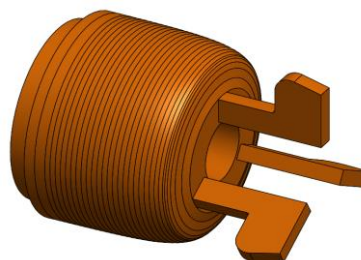


Mounting tool 34992

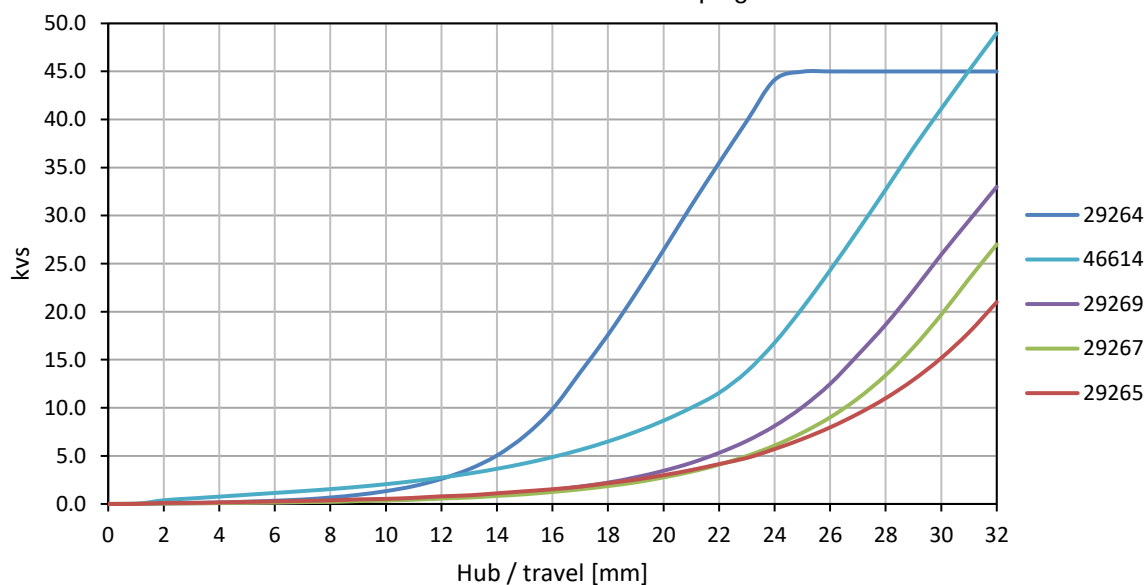


Ventilgrösse / Valve size	DN40
Durchmesser der Ventilbohrung / Diameter of valve bore	40mm
Ventilhub / Valve travel	32mm (+1mm)
Kvs max. / kvs max.	50
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	31490

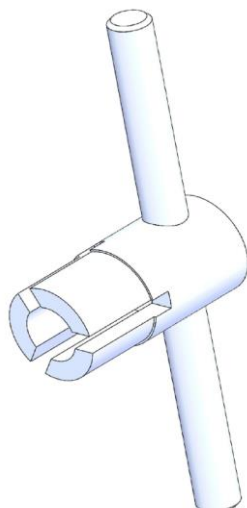
Art.-Nr. Art.-no.	Typ Type	kvs	cvs
29264	40/21	45.00	52.20
29265	40/32	21.00	24.36
29267	40/32	27.00	31.32
29269	40/32	33.00	38.28
46614	40/32	49.00	56.84
26455	40/dig	50 dig	58 dig



Flow characteristic of control plugs

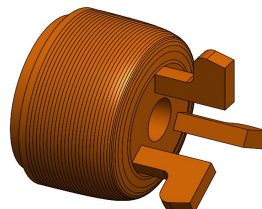


Mounting tool 31490

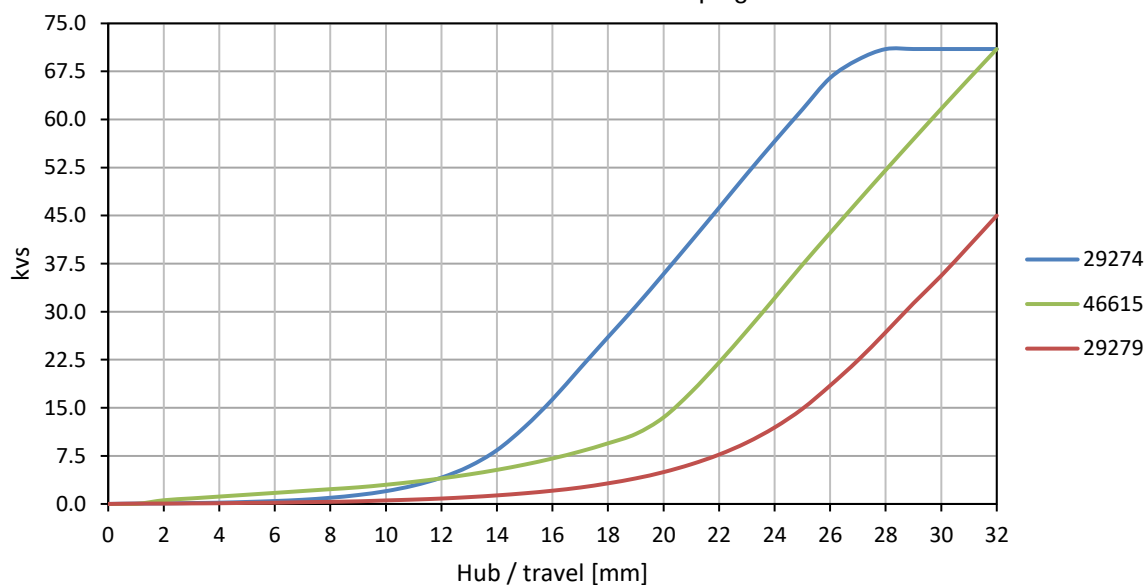


Ventilgrösse / Valve size	DN50
Durchmesser der Ventilbohrung / Diameter of valve bore	50mm
Ventilhub / Valve travel	32mm (+1mm)
Kvs max. / kvs max.	75
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	31491

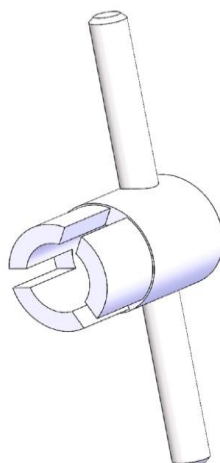
Art.-Nr. Art.-no.	Typ Type	kvs	cvs
29274	50/20	71.00	82.36
29279	50/32	45.00	52.20
46615	50/32	71.00	82.36
26469	50/dig	75 dig	87 dig



Flow characteristic of control plugs

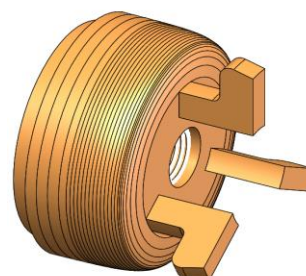


Mounting tool 31491

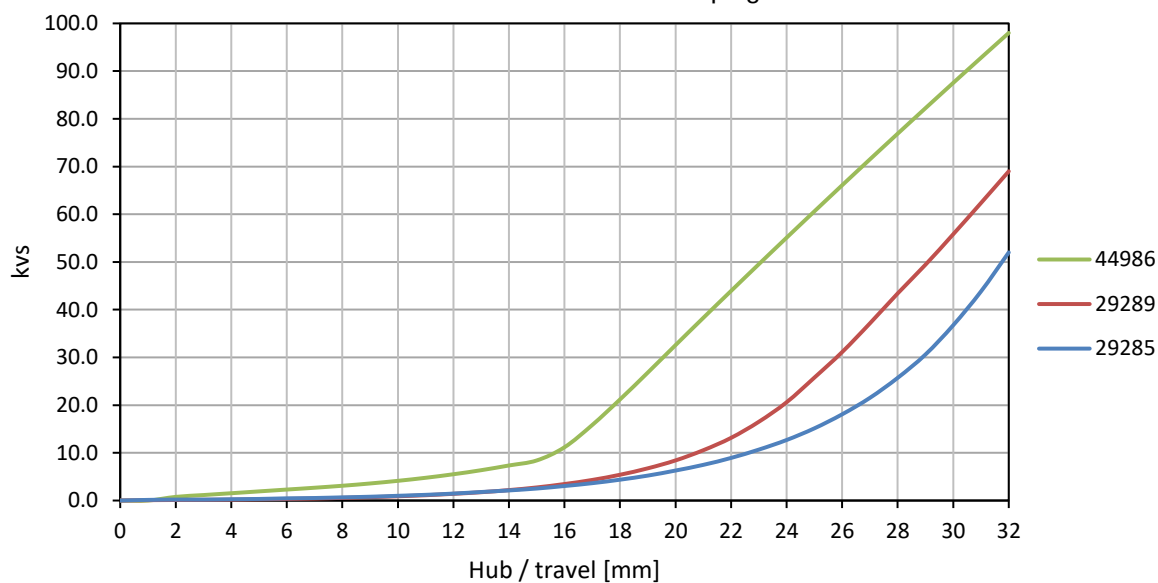


Ventilgrösse / Valve size	DN65
Durchmesser der Ventilbohrung / Diameter of valve bore	65mm
Ventilhub / Valve travel	32mm (+1mm)
Kvs max. / kvs max.	100
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	31492

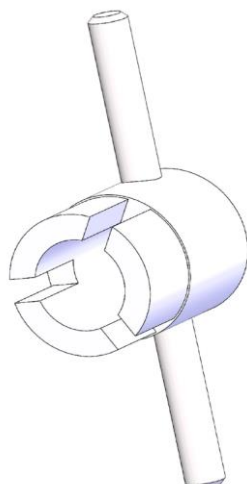
Art.-Nr. Art.-no.	Typ Type	kvs	cvs
29285	65/32	52.00	60.32
29289	65/32	69.00	80.04
44986	65/32	98.00	113.68
28186	65/dig	100 dig	116 dig



Flow characteristic of control plugs

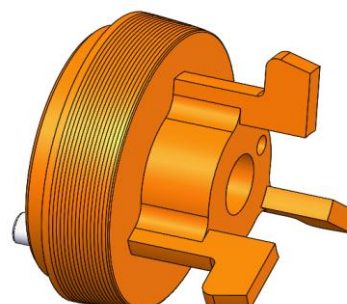


Mounting tool 31492

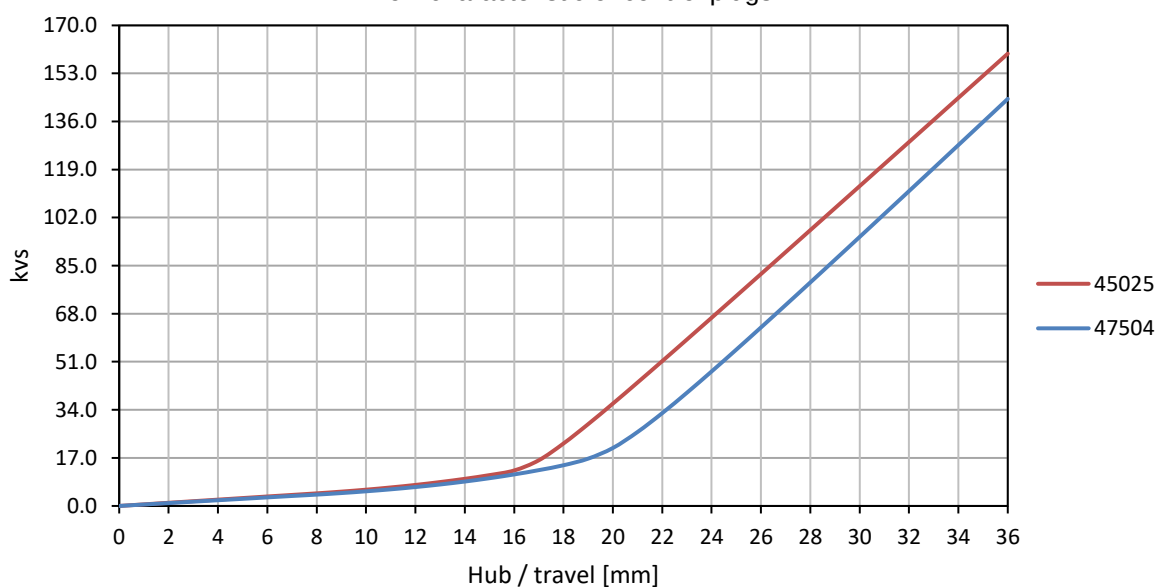


Ventilgrösse / Valve size	DN80
Durchmesser der Ventilbohrung / Diameter of valve bore	80mm
Ventilhub / Valve travel	36mm (+1mm)
Kvs max. / kvs max.	170
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	open end wrench 24mm

Art.-Nr. Art.-no.	Typ Type	kvs	cvs
47504	80/36	144.00	167.04
45025	80/36	160.00	185.60
31719	80/dig	170 dig	197.2 dig



Flow characteristic of control plugs

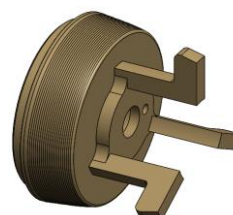


Mounting tool open end wrench 24mm

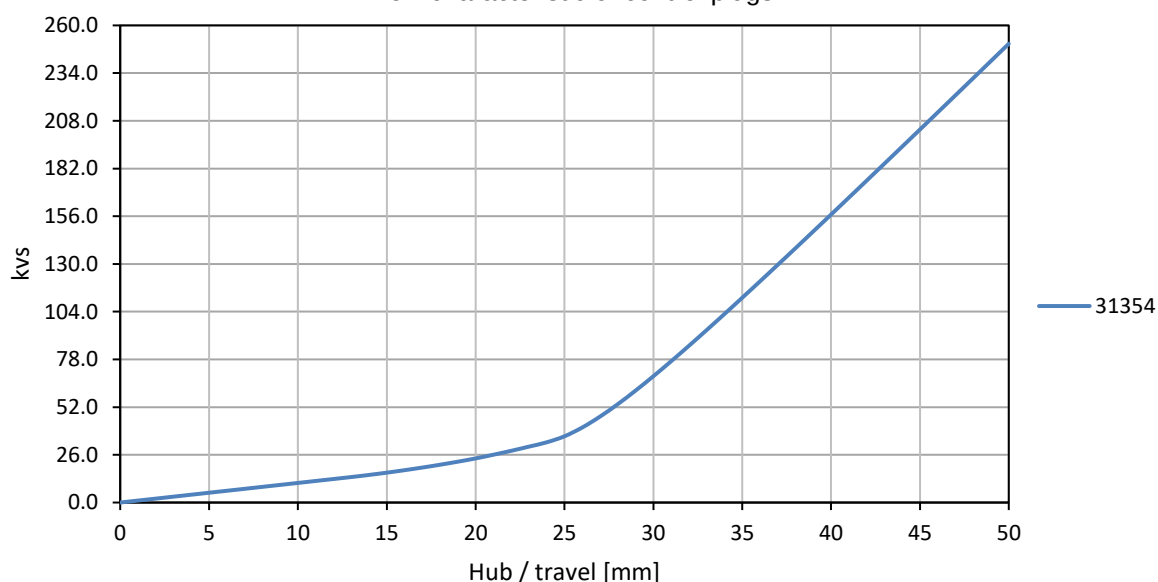


Ventilgrösse / Valve size	DN100
Durchmesser der Ventilbohrung / Diameter of valve bore	100mm
Ventilhub / Valve travel	50mm (+1mm)
Kvs max. / kvs max.	260
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	open end wrench 24mm

Art.-Nr. Art.-no.	Typ Type	kvs	cvs
31354	100/50	250.00	290.00
41904	100/dig	260 dig	301.6 dig



Flow characteristic of control plugs

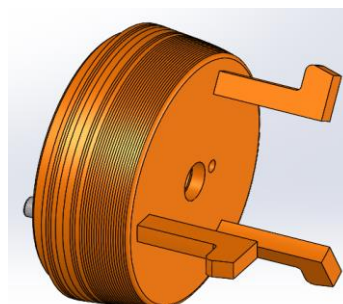


Mounting tool open end wrench 24mm

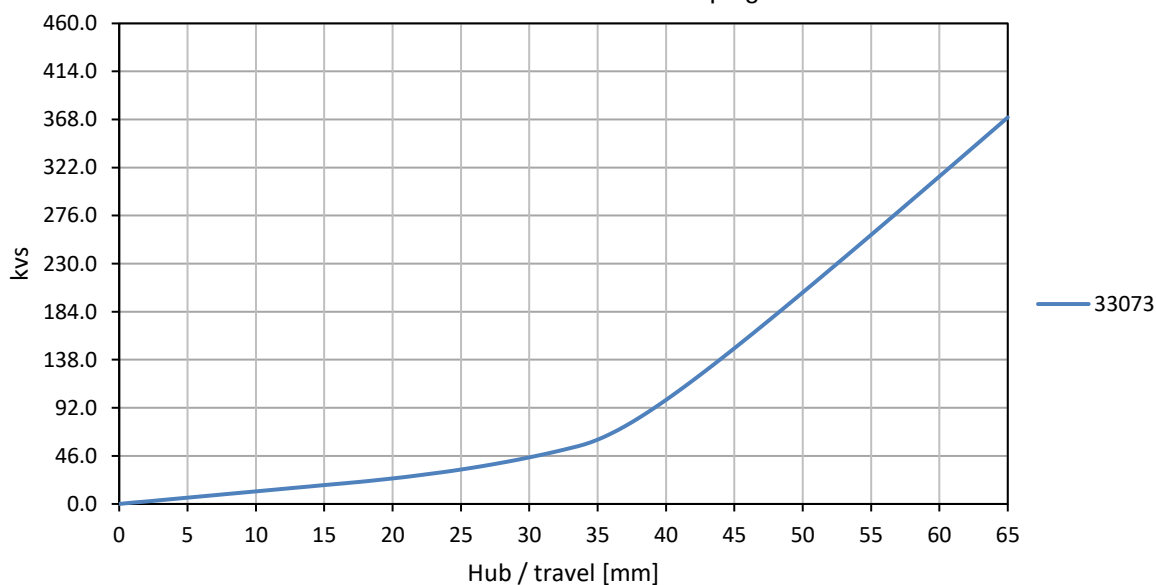


Ventilgrösse / Valve size	DN125
Durchmesser der Ventilbohrung / Diameter of valve bore	120mm
Ventilhub / Valve travel	65mm (+1mm)
Kvs max. / kvs max.	390
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	open end wrench 24mm

Art.-Nr. Art.-no.	Typ Type	kvs	cvs
33073	120/65	370.00	429.20
33879	120/dig	390 dig	452.4 dig



Flow characteristic of control plugs

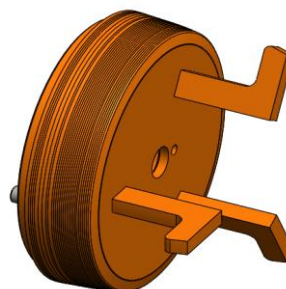


Mounting tool open end wrench 24mm

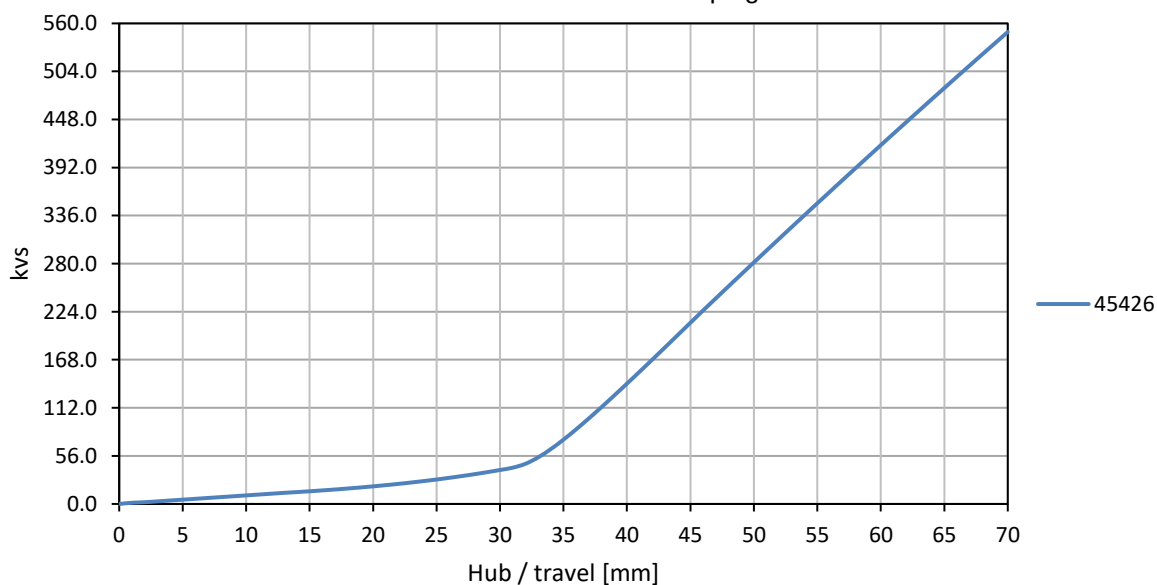


Ventilgrösse / Valve size	DN150
Durchmesser der Ventilbohrung / Diameter of valve bore	144mm
Ventilhub / Valve travel	70mm (+1mm)
Kvs max. / kvs max.	600
Kvs min. / kvs min.	0.006
Montagewerkzeug: / Mounting tool	open end wrench 24mm

Art.-Nr. Art.-no.	Typ Type	kvs	cvs
45426	144/70	550.00	638.00
41901	144/dig	600 dig	696 dig



Flow characteristic of control plugs



Mounting tool open end wrench 24mm

