ROLLON®
BY TIMKEN

# HVC

Data sheet - rev. 1.0

LINEAR COMPONENTS

# myRollon

myRollon is Rollon's **digital working platform** designed to simplify the selection and configuration of linear and rotary motion solutions. It enables users to identify the most suitable motion system based on their specific application requirements, enhancing design precision and efficiency.

By centralizing essential tools and resources in a unified environment, myRollon empowers users to access necessary services and information — saving time and boosting productivity in search of high-performance motion solutions.

**SCAN ME!**

# Index

# ORDERING KEY

▪ HVC

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HVC** | | 045 | | 500 | 580 | | | | | | | |
| | X | 050 | MG | | | VG | DG | B | Z | | | |
| | | 054 | | | | VO | | BM | | | | |
| | | 058 | | | | VB | | | | | | |
| | | 068 | | | | | | | | | | |
| | | 075 | | | | | | | | | | |

**Surface treatment** - Standard = zinc plating, Z = zinc-nickel

**Stroke direction** - B = double-sided, BM = double-sided with driving disc (see p. 16)

**Damping** - DG = closed position

**Locking position** - VG = closed, VO = opened, VB = both (see p. 16)

**Stroke** - if deviating from standard stroke

**Closed length [mm]**

**Device** - MG = magnetic device (available for size 54 and 68)

**Size** (see from p. 6)

**Material** - Standard = steel, X = stainless steel

**Type**

Ordering example: **HVC045-500-580**

Options cannot be combined one with another.

# FEATURES AND ADVANTAGES


Fig.1

**HVC telescopic rails are full extending rails made of steel or stainless steel, designed to support moderate loads.**

The design consists of three elements with balls guided in cages. The fixed rail is a rolled profile, intermediate element and sliders are extruded profiles, with non-hardened steel. They are zinc electroplated compliant with REACH and RoHS requirements.

The HVC-MG version, available for sizes 54 and 68, features a redesigned ball cage with reduced pitch and end blocks incorporating internal magnets. These magnets ssequentially engage the elements during extension, reducing the force required to open the rail and allowing the handling of higher loads. Damped end-stroke elements contribute to quieter operation and increased durability.

Optional features such as locking mechanisms and catches are available on request.

HVC telescopic rails are suited for use in industrial machinery, robotics and automation systems, as well as motor and rail vehicle applications, particularly for maintenance access and battery compartments.

### Performance characteristics

- Extension: full 100%.
- Stroke direction: single or double.
- Available sizes: 45, 50, 54, 58, 68, 75.
- Available rail lengths: from 250 mm up to 2000 mm.
- Max. extension speed: 0.4 m/s (15.75 in/s)*.
- Max. acceleration: 0.6 m/s² (23.6 in/s²)* .
- Operating temperature range: -20 °C to +170 °C. For details and exceptions see page 18.

*Depending on the application (see page 18).

### Components and materials

- Rails and sliders: steel or stainless steel*.
- Balls material: steel or stainless steel*.
- Ball cage material: steel or stainless steel*.
- Surface treatment: zinc plating, REACH/RoHS compliant.

*Depending on the HVC version.

## MAIN ADVANTAGES

**High load capacity**

HVC rails are designed to withstand heavy loads while maintaining rigidity and minimal deflection.

**Compact design**

Thanks to their optimized structure, HVC rails offer a compact and space-saving solution.

**Universal design**

HVC features a standard design, allowing for interchangeability.

**Uniquely quiet**

In the HVC-MG version, the damped end-stroke enhances quiet and fluid operation.

**Corrosion resistance**

Stainless steel options and the availability of different surface treatments support higher resistance in challenging environments.

# COMPONENTS AND DIMENSIONS

■ Guide sections

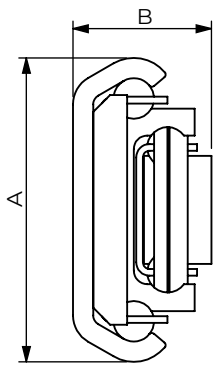
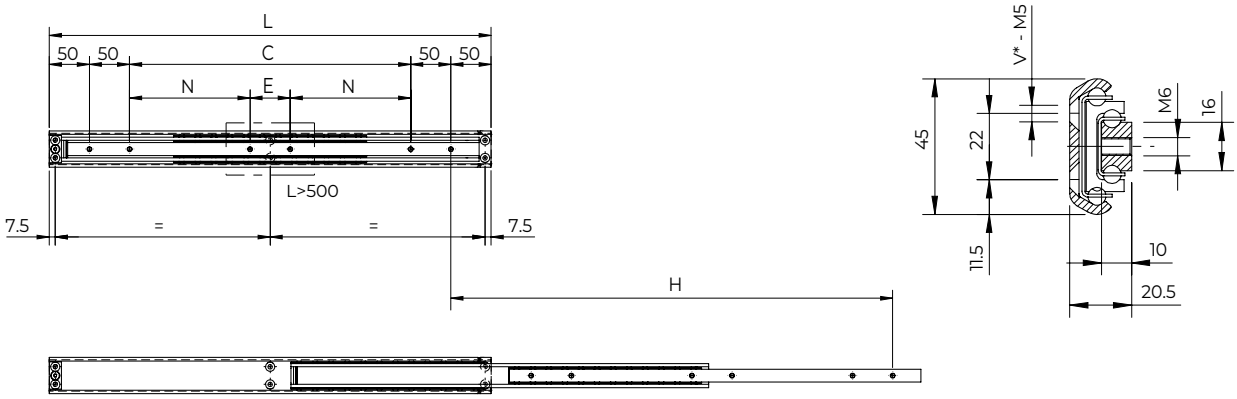



Fig.2

| Type | Size | A [mm] | B [mm] |
|---|---|---|---|
| HVC | 045 | 45 | 20.5 |
| | 050 | 50 | 22.1 |
| | 054MG | 54 | 20.1 |
| | 058 | 58 | 24 |
| | 068MG | 68 | 26 |
| | 075 | 75 | 26 |

Tab.1

## ■ HVC045



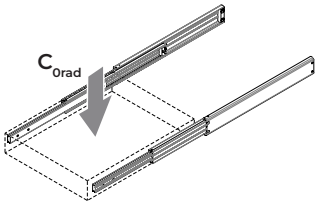

* Mounting holes for countersunk screws according to DIN 7991/ISO 10642.

**Fig.3**

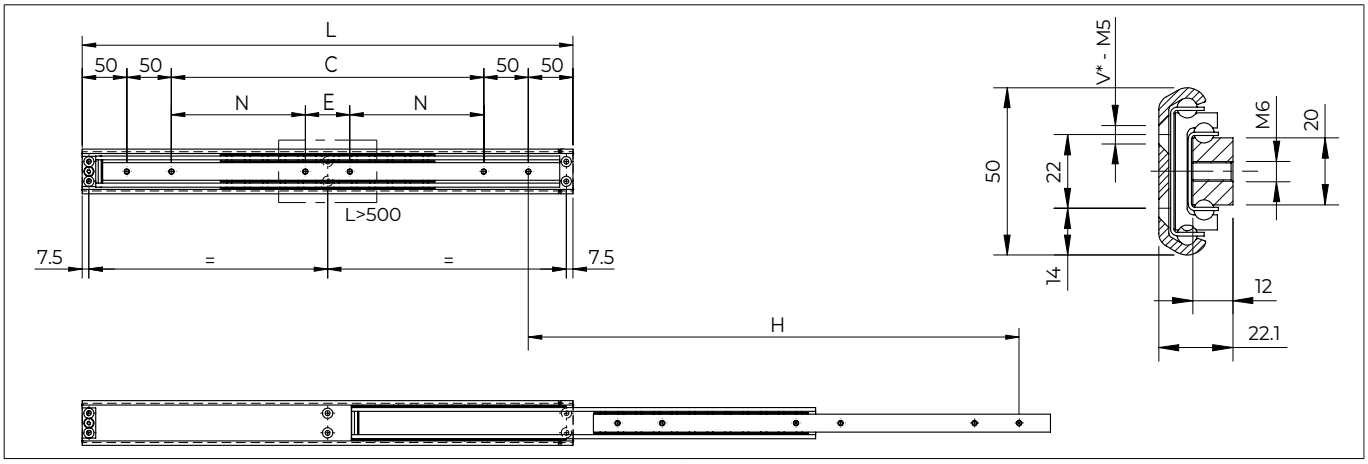
| Type | Size | Length L [mm] | Stroke H [mm] | Load capacity per pair $C_{0rad}$ [N] | C [mm] | N [mm] | E [mm] | Number of holes | Weight per single guide [kg] |
|---|---|---|---|---|---|---|---|---|---|
| HVC | 045 | 300 | 300 | 920 | 100 | - | - | 4 | 1.15 |
| | | 350 | 350 | 1000 | 150 | - | - | 4 | 1.36 |
| | | 400 | 400 | 1050 | 200 | - | - | 4 | 1.56 |
| | | 450 | 450 | 1100 | 250 | - | - | 4 | 1.77 |
| | | 500 | 500 | 1050 | 300 | - | - | 4 | 1.98 |
| | | 550 | 550 | 1050 | 350 | 150 | 50 | 6 | 2.19 |
| | | 600 | 600 | 1000 | 400 | 175 | 50 | 6 | 2.39 |
| | | 650 | 650 | 1000 | 450 | 200 | 50 | 6 | 2.60 |
| | | 700 | 700 | 940 | 500 | 225 | 50 | 6 | 2.81 |
| | | 750 | 750 | 880 | 550 | 250 | 50 | 6 | 3.02 |
| | | 800 | 800 | 820 | 600 | 275 | 50 | 6 | 3.22 |
| | | 850 | 850 | 780 | 650 | 300 | 50 | 6 | 3.44 |
| | | 900 | 900 | 740 | 700 | 325 | 50 | 6 | 3.64 |
| | | 950 | 950 | 700 | 750 | 350 | 50 | 6 | 3.85 |
| | | 1000 | 1000 | 660 | 800 | 375 | 50 | 6 | 4.06 |
| | | 1100 | 1100 | 600 | 900 | 425 | 50 | 6 | 4.47 |
| | | 1200 | 1200 | 540 | 1000 | 475 | 50 | 6 | 4.89 |

**Tab.2**

**Loads**



## ■ HVC050




* Mounting holes for countersunk screws according to DIN 7991/ISO 10642.

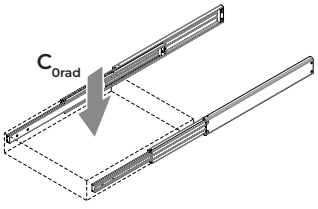
**Fig.4**

| Type | Size | Length L [mm] | Stroke H [mm] | Load capacity per pair $C_{0rad}$ [N] | C [mm] | N [mm] | E [mm] | Number of holes | Weight per single guide [kg] |
|---|---|---|---|---|---|---|---|---|---|
| HVC | 050 | 300 | 300 | 940 | 100 | - | - | 4 | 1.42 |
| | | 350 | 350 | 1050 | 150 | - | - | 4 | 1.69 |
| | | 400 | 400 | 1100 | 200 | - | - | 4 | 1.94 |
| | | 450 | 450 | 1250 | 250 | - | - | 4 | 2.21 |
| | | 500 | 500 | 1200 | 300 | - | - | 4 | 2.46 |
| | | 550 | 550 | 1200 | 350 | 150 | 50 | 6 | 2.72 |
| | | 600 | 600 | 1200 | 400 | 175 | 50 | 6 | 2.97 |
| | | 650 | 650 | 1150 | 450 | 200 | 50 | 6 | 3.24 |
| | | 700 | 700 | 1150 | 500 | 225 | 50 | 6 | 3.49 |
| | | 750 | 750 | 1100 | 550 | 250 | 50 | 6 | 3.76 |
| | | 800 | 800 | 1100 | 600 | 275 | 50 | 6 | 4.01 |
| | | 850 | 850 | 1050 | 650 | 300 | 50 | 6 | 4.28 |
| | | 900 | 900 | 980 | 700 | 325 | 50 | 6 | 4.53 |
| | | 950 | 950 | 940 | 750 | 350 | 50 | 6 | 4.79 |
| | | 1000 | 1000 | 880 | 800 | 375 | 50 | 6 | 5.05 |
| | | 1100 | 1100 | 800 | 900 | 425 | 50 | 6 | 5.57 |
| | | 1200 | 1200 | 740 | 1000 | 475 | 50 | 6 | 6.09 |
| | | 1300 | 1300 | 680 | 1100 | 525 | 50 | 6 | 6.61 |
| | | 1400 | 1400 | 620 | 1200 | 575 | 50 | 6 | 7.13 |
| | | 1500 | 1500 | 580 | 1300 | 625 | 50 | 6 | 7.65 |

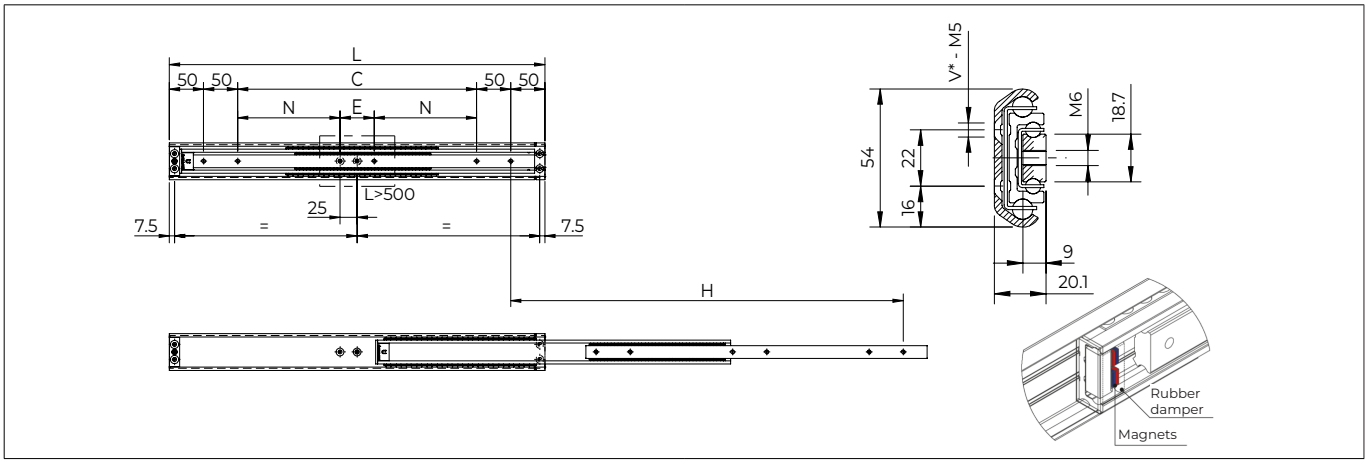
* When using full telescopes with interlocks in the open state (VO) or with interlocks open and closed (VB) the following measures change:
N reduces by 35 mm - E increases to 120 mm.

**Tab.3**

**Loads**



## ▪ HVC054MG



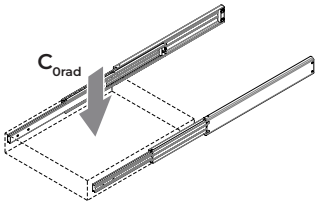

* Mounting holes for countersunk screws according to DIN 7991/ISO 10642.

**Fig.5**

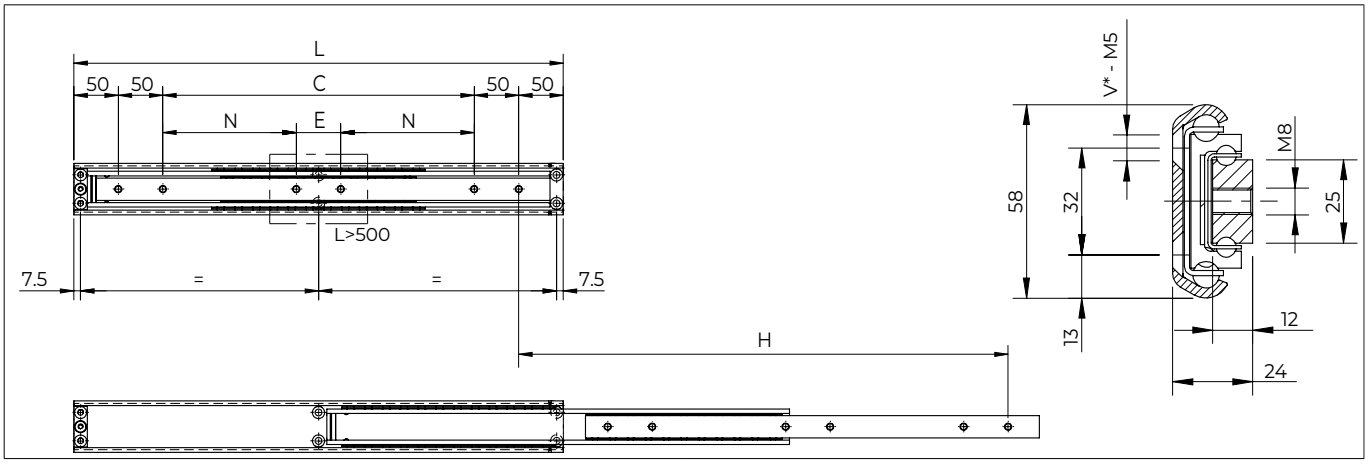
| Type | Size | Length L [mm] | Stroke H [mm] | Load capacity per pair $C_{0rad}$ [N] | C [mm] | N [mm] | E [mm] | Number of holes | Weight per single guide [kg] |
|---|---|---|---|---|---|---|---|---|---|
| HVC | 054MG | 250 | 275 | 1200 | 50 | - | - | 4 | 1.11 |
| | | 300 | 315 | 1500 | 100 | - | - | 4 | 1.35 |
| | | 350 | 375 | 1700 | 150 | - | - | 4 | 1.60 |
| | | 400 | 415 | 1800 | 200 | - | - | 4 | 1.84 |
| | | 450 | 475 | 1900 | 250 | - | - | 4 | 2.08 |
| | | 500 | 515 | 1900 | 300 | - | - | 4 | 2.33 |
| | | 550 | 575 | 1900 | 350 | 150 | 50 | 6 | 2.57 |
| | | 600 | 615 | 1850 | 400 | 175 | 50 | 6 | 2.81 |
| | | 650 | 675 | 1700 | 450 | 200 | 50 | 6 | 3.05 |
| | | 700 | 715 | 1650 | 500 | 225 | 50 | 6 | 3.30 |
| | | 750 | 775 | 1600 | 550 | 250 | 50 | 6 | 3.54 |
| | | 800 | 815 | 1530 | 600 | 275 | 50 | 6 | 3.78 |
| | | 850 | 875 | 1480 | 650 | 300 | 50 | 6 | 4.03 |
| | | 900 | 915 | 1400 | 700 | 325 | 50 | 6 | 4.27 |
| | | 950 | 975 | 1300 | 750 | 350 | 50 | 6 | 4.51 |
| | | 1000 | 1015 | 1200 | 800 | 375 | 50 | 6 | 4.76 |
| | | 1050 | 1075 | 1120 | 850 | 400 | 50 | 6 | 5.00 |
| | | 1100 | 1115 | 1000 | 900 | 425 | 50 | 6 | 5.24 |
| | | 1150 | 1175 | 950 | 950 | 450 | 50 | 6 | 5.48 |
| | | 1200 | 1215 | 880 | 1000 | 475 | 50 | 6 | 5.73 |
| | | 1250 | 1275 | 750 | 1050 | 500 | 50 | 6 | 5.97 |
| | | 1300 | 1315 | 700 | 1100 | 525 | 50 | 6 | 6.21 |
| | | 1350 | 1375 | 650 | 1150 | 550 | 50 | 6 | 6.46 |
| | | 1400 | 1415 | 625 | 1200 | 575 | 50 | 6 | 6.70 |
| | | 1450 | 1475 | 600 | 1250 | 600 | 50 | 6 | 6.94 |
| | | 1500 | 1515 | 550 | 1300 | 625 | 50 | 6 | 7.19 |
| | | 1550 | 1575 | 500 | 1350 | 650 | 50 | 6 | 7.43 |
| | | 1600 | 1615 | 450 | 1400 | 675 | 50 | 6 | 7.67 |

**Tab.4**

**Loads**



## ■ HVC058




* Mounting holes for countersunk screws according to DIN 7991/ISO 10642.

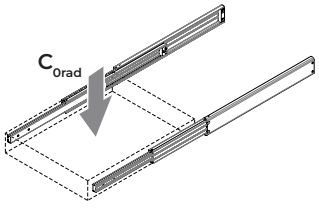
**Fig.6**

| Type | Size | Length L [mm] | Stroke H [mm] | Load capacity per pair $C_{0rad}$ [N] | C [mm] | N* [mm] | E* [mm] | Number of holes | Weight per single guide [kg] |
|---|---|---|---|---|---|---|---|---|---|
| HVC | 058 | 300 | 300 | 1800 | 100 | - | - | 4 | 1.77 |
| | | 350 | 350 | 2050 | 150 | - | - | 4 | 2.09 |
| | | 400 | 400 | 2250 | 200 | - | - | 4 | 2.42 |
| | | 450 | 450 | 2400 | 250 | - | - | 4 | 2.74 |
| | | 500 | 500 | 2600 | 300 | - | - | 4 | 3.08 |
| | | 550 | 550 | 2350 | 350 | 150 | 50 | 6 | 3.40 |
| | | 600 | 600 | 2150 | 400 | 175 | 50 | 6 | 3.72 |
| | | 650 | 650 | 2000 | 450 | 200 | 50 | 6 | 4.04 |
| | | 700 | 700 | 1850 | 500 | 225 | 50 | 6 | 4.38 |
| | | 750 | 750 | 1750 | 550 | 250 | 50 | 6 | 4.70 |
| | | 800 | 800 | 1650 | 600 | 275 | 50 | 6 | 5.02 |
| | | 850 | 850 | 1550 | 650 | 300 | 50 | 6 | 5.34 |
| | | 900 | 900 | 1450 | 700 | 325 | 50 | 6 | 5.68 |
| | | 950 | 950 | 1350 | 750 | 350 | 50 | 6 | 6.00 |
| | | 1000 | 1000 | 1300 | 800 | 375 | 50 | 6 | 6.33 |
| | | 1100 | 1100 | 1200 | 900 | 425 | 50 | 6 | 6.99 |
| | | 1200 | 1200 | 1050 | 1000 | 475 | 50 | 6 | 7.63 |
| | | 1300 | 1300 | 980 | 1100 | 525 | 50 | 6 | 8.29 |
| | | 1400 | 1400 | 920 | 1200 | 575 | 50 | 6 | 8.94 |
| | | 1500 | 1500 | 840 | 1300 | 625 | 50 | 6 | 9.59 |

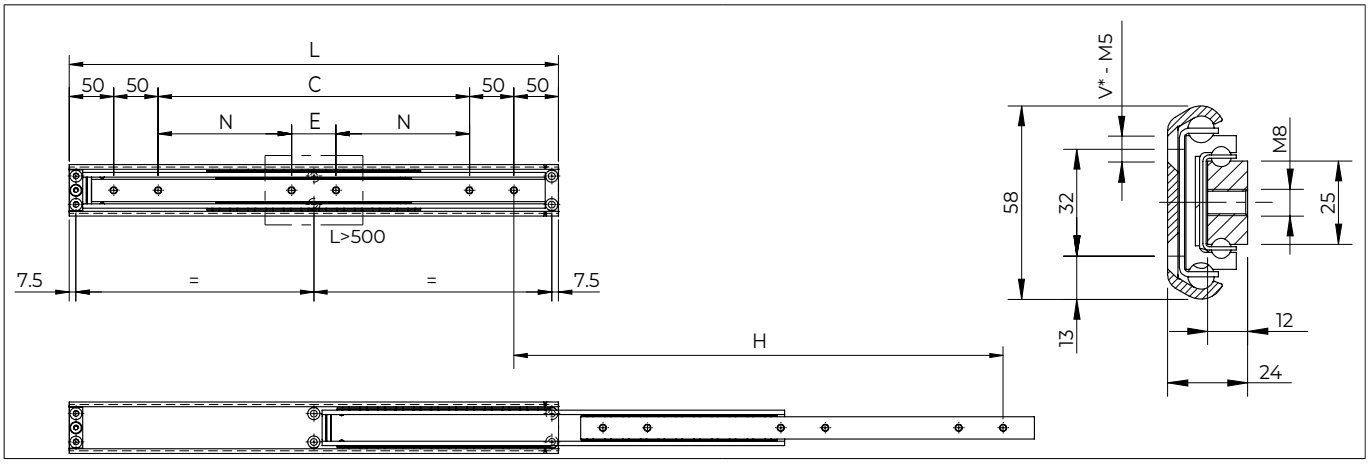
* When using full telescopes with interlocks in the open state (VO) or with interlocks open and closed (VB) the following measures change:
N reduces by 35 mm - E increases to 120 mm.

**Tab.5**

**Loads**



## ▪ HVCX058 stainless steel




* Mounting holes for countersunk screws according to DIN 7991/ISO 10642.
Rail, sliders, and ball cages are made of stainless steel AISI 304.
The balls are made of stainless steel AISI 420C.

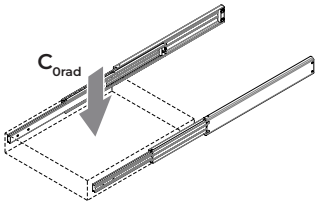
**Fig.7**

| Type | Size | Length L [mm] | Stroke H [mm] | Load capacity per pair $C_{0rad}$ [N] | C [mm] | N* [mm] | E* [mm] | Number of holes | Weight per single guide [kg] |
|---|---|---|---|---|---|---|---|---|---|
| HVCX | 058 | 300 | 300 | 1800 | 100 | - | - | 4 | 1.77 |
| | | 350 | 350 | 2050 | 150 | - | - | 4 | 2.09 |
| | | 400 | 400 | 2250 | 200 | - | - | 4 | 2.42 |
| | | 450 | 450 | 2400 | 250 | - | - | 4 | 2.74 |
| | | 500 | 500 | 2600 | 300 | - | - | 4 | 3.08 |
| | | 550 | 550 | 2350 | 350 | 150 | 50 | 6 | 3.40 |
| | | 600 | 600 | 2150 | 400 | 175 | 50 | 6 | 3.72 |
| | | 650 | 650 | 2000 | 450 | 200 | 50 | 6 | 4.04 |
| | | 700 | 700 | 1850 | 500 | 225 | 50 | 6 | 4.38 |
| | | 750 | 750 | 1750 | 550 | 250 | 50 | 6 | 4.70 |
| | | 800 | 800 | 1650 | 600 | 275 | 50 | 6 | 5.02 |
| | | 850 | 850 | 1550 | 650 | 300 | 50 | 6 | 5.34 |
| | | 900 | 900 | 1450 | 700 | 325 | 50 | 6 | 5.68 |
| | | 950 | 950 | 1350 | 750 | 350 | 50 | 6 | 6.00 |
| | | 1000 | 1000 | 1300 | 800 | 375 | 50 | 6 | 6.33 |
| | | 1100 | 1100 | 1200 | 900 | 425 | 50 | 6 | 6.99 |
| | | 1200 | 1200 | 1050 | 1000 | 475 | 50 | 6 | 7.63 |
| | | 1300 | 1300 | 980 | 1100 | 525 | 50 | 6 | 8.29 |
| | | 1400 | 1400 | 920 | 1200 | 575 | 50 | 6 | 8.94 |
| | | 1500 | 1500 | 840 | 1300 | 625 | 50 | 6 | 9.59 |

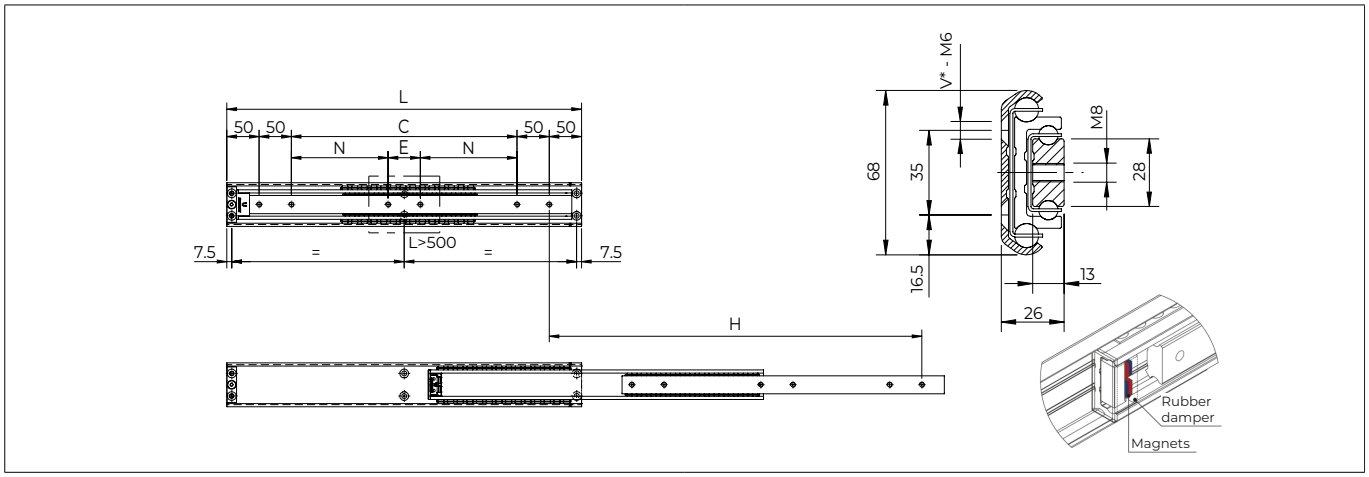
* When using full telescopes with interlocks in the open state (VO) or with interlocks open and closed (VB) the following measures change:
N reduces by 35 mm - E increases to 120 mm.

**Tab.6**

**Loads**



## ■ HVC068MG




* Mounting holes for countersunk screws according to DIN 7991/ISO 10642.

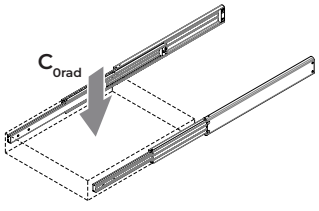
**Fig.8**

| Type | Size | Length L [mm] | Stroke H [mm] | Load capacity per pair $C_{0rad}$ [N] | C [mm] | N* [mm] | E* [mm] | Number of holes | Weight per single guide [kg] |
|---|---|---|---|---|---|---|---|---|---|
| HVC | 068MG | 250 | 278 | 1100 | 50 | - | - | 4 | 1.78 |
| | | 300 | 318 | 2450 | 100 | - | - | 4 | 2.18 |
| | | 350 | 388 | 2650 | 150 | - | - | 4 | 2.59 |
| | | 400 | 428 | 3600 | 200 | - | - | 4 | 2.99 |
| | | 450 | 483 | 3850 | 250 | - | - | 4 | 3.40 |
| | | 500 | 523 | 3850 | 300 | - | - | 4 | 3.80 |
| | | 550 | 578 | 3500 | 350 | 150 | 50 | 6 | 4.21 |
| | | 600 | 618 | 3300 | 400 | 175 | 50 | 6 | 4.61 |
| | | 650 | 688 | 2950 | 450 | 200 | 50 | 6 | 5.02 |
| | | 700 | 728 | 2800 | 500 | 225 | 50 | 6 | 5.42 |
| | | 750 | 783 | 2600 | 550 | 250 | 50 | 6 | 5.83 |
| | | 800 | 823 | 2500 | 600 | 275 | 50 | 6 | 6.23 |
| | | 850 | 878 | 2350 | 650 | 300 | 50 | 6 | 6.64 |
| | | 900 | 918 | 2250 | 700 | 325 | 50 | 6 | 7.04 |
| | | 950 | 988 | 2050 | 750 | 350 | 50 | 6 | 7.45 |
| | | 1000 | 1028 | 2000 | 800 | 375 | 50 | 6 | 7.85 |
| | | 1100 | 1123 | 1850 | 900 | 425 | 50 | 6 | 8.66 |
| | | 1200 | 1218 | 1700 | 1000 | 475 | 50 | 6 | 9.47 |
| | | 1300 | 1328 | 1550 | 1100 | 525 | 50 | 6 | 10.28 |
| | | 1400 | 1423 | 1450 | 1200 | 575 | 50 | 6 | 11.09 |
| | | 1500 | 1518 | 1350 | 1300 | 625 | 50 | 6 | 11.90 |
| | | 1600 | 1628 | 1250 | 1400 | 675 | 50 | 6 | 12.71 |
| | | 1700 | 1723 | 1200 | 1500 | 725 | 50 | 6 | 13.52 |
| | | 1800 | 1818 | 1100 | 1600 | 775 | 50 | 6 | 14.33 |
| | | 1900 | 1928 | 1050 | 1700 | 825 | 50 | 6 | 15.14 |
| | | 2000 | 2023 | 1000 | 1800 | 875 | 50 | 6 | 15.95 |

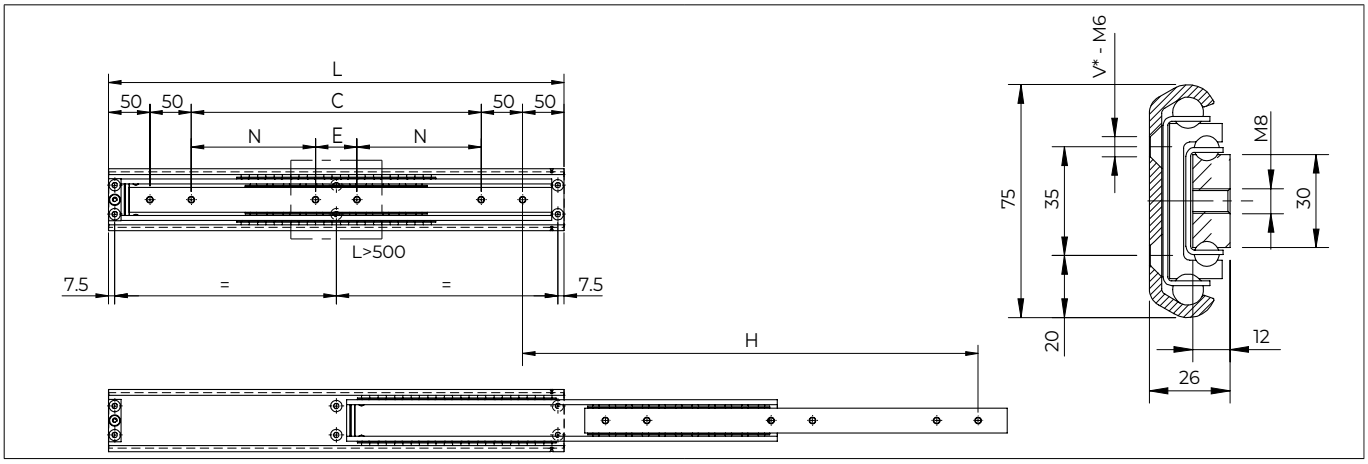
* When using full telescopes with interlocks in the open state (VO) or with interlocks open and closed (VB) the following measures change:
N reduces by 35 mm - E increases to 120 mm.

**Tab.7**

**Loads**



## ▪ HVC075



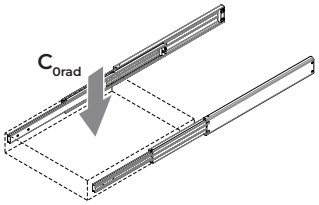

* Mounting holes for countersunk screws according to DIN 7991/ISO 10642.

**Fig.9**

| Type | Size | Length L [mm] | Stroke H [mm] | Load capacity per pair $C_{0rad}$ [N] | C [mm] | N [mm] | E [mm] | Number of holes | Weight per single guide [kg] |
|---|---|---|---|---|---|---|---|---|---|
| HVC | 075 | 300 | 300 | 2750 | 100 | - | - | 4 | 2.57 |
| | | 350 | 350 | 4100 | 150 | - | - | 4 | 3.06 |
| | | 400 | 400 | 4600 | 200 | - | - | 4 | 3.52 |
| | | 450 | 450 | 5100 | 250 | - | - | 4 | 4.00 |
| | | 500 | 500 | 4800 | 300 | - | - | 4 | 4.46 |
| | | 550 | 550 | 4400 | 350 | 150 | 50 | 6 | 4.94 |
| | | 600 | 600 | 4000 | 400 | 175 | 50 | 6 | 5.40 |
| | | 650 | 650 | 3700 | 450 | 200 | 50 | 6 | 5.88 |
| | | 700 | 700 | 3450 | 500 | 225 | 50 | 6 | 6.35 |
| | | 750 | 750 | 3200 | 550 | 250 | 50 | 6 | 6.83 |
| | | 800 | 800 | 3000 | 600 | 275 | 50 | 6 | 7.30 |
| | | 850 | 850 | 2850 | 650 | 300 | 50 | 6 | 7.78 |
| | | 900 | 900 | 2650 | 700 | 325 | 50 | 6 | 8.24 |
| | | 950 | 950 | 2550 | 750 | 350 | 50 | 6 | 8.73 |
| | | 1000 | 1000 | 2400 | 800 | 375 | 50 | 6 | 9.19 |
| | | 1100 | 1100 | 2200 | 900 | 425 | 50 | 6 | 10.13 |
| | | 1200 | 1200 | 2000 | 1000 | 475 | 50 | 6 | 11.08 |
| | | 1300 | 1300 | 1850 | 1100 | 525 | 50 | 6 | 12.03 |
| | | 1400 | 1400 | 1700 | 1200 | 575 | 50 | 6 | 12.98 |
| | | 1500 | 1500 | 1600 | 1300 | 625 | 50 | 6 | 13.92 |
| | | 1600 | 1600 | 1450 | 1400 | 675 | 50 | 6 | 14.87 |
| | | 1700 | 1700 | 1400 | 1500 | 725 | 50 | 6 | 15.81 |
| | | 1800 | 1800 | 1300 | 1600 | 775 | 50 | 6 | 16.76 |
| | | 1900 | 1900 | 1200 | 1700 | 825 | 50 | 6 | 17.7 |
| | | 2000 | 2000 | 1150 | 1800 | 875 | 50 | 6 | 18.66 |

**Tab.8**

**Loads**



## ▪ HVC..MG product description

The HVC-MG version, available for sizes 54 and 68, is equipped with end blocks containing internal magnets.

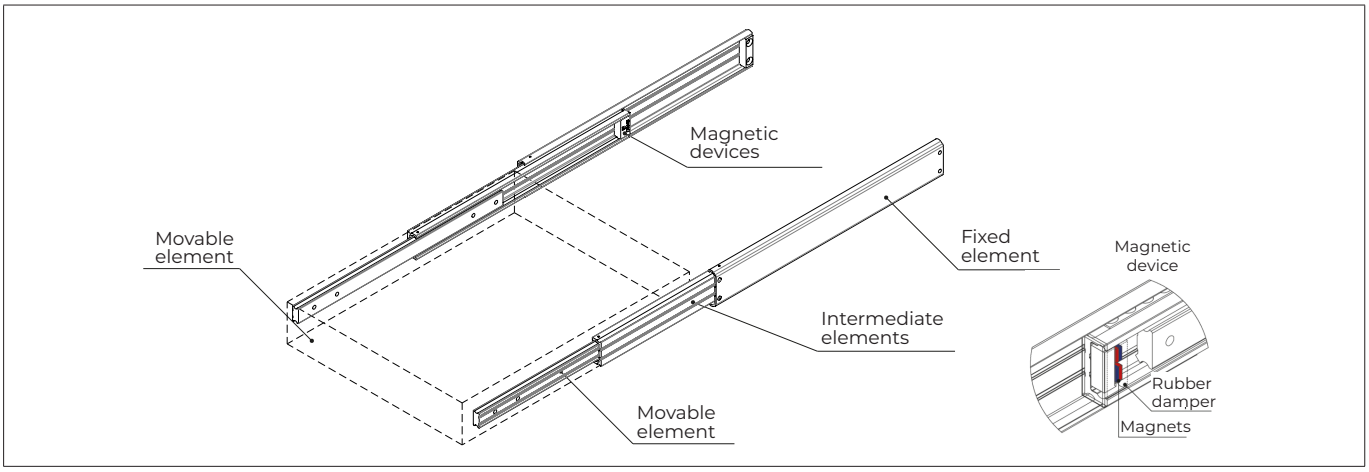



Fig.10

These magnets enable the sequenced opening of the elements, reducing the force required to open the rail and enabling the handling of higher loads.

The picture below shows the opening sequence.

Opening steps:

- Step 1: The movable element and the intermediate elements move together thanks to the connection generated by the magnets. When those elements together reach the first step of stroke, the ball cage on the fixed element experiences load only over the maximum distance X1 during movement. This allows to keep low moving force.
- Step 2: The movable element can extend to its full stroke. The relative distance of the load is again X1 with consequent identical moving force as Step 1. The ball cage in the fixed element now experiences a higher load due to distance X2, but only in the static position, and this does not affect both the lifetime and the moving force.

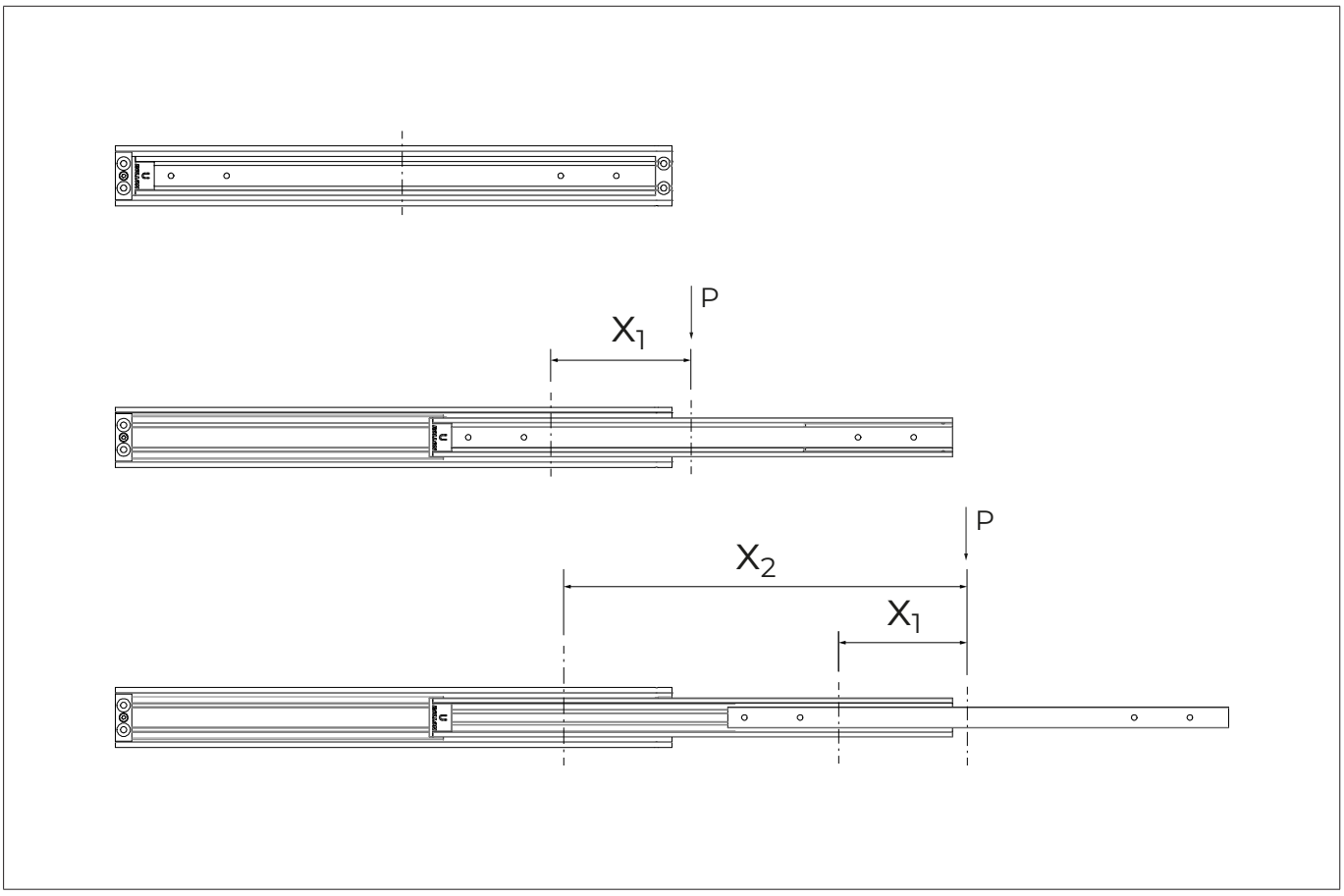



Fig.11

Since the moving force is in the fixed element in static position while the telescopic rail continues to extend, the moving force does not increase during opening step 2.

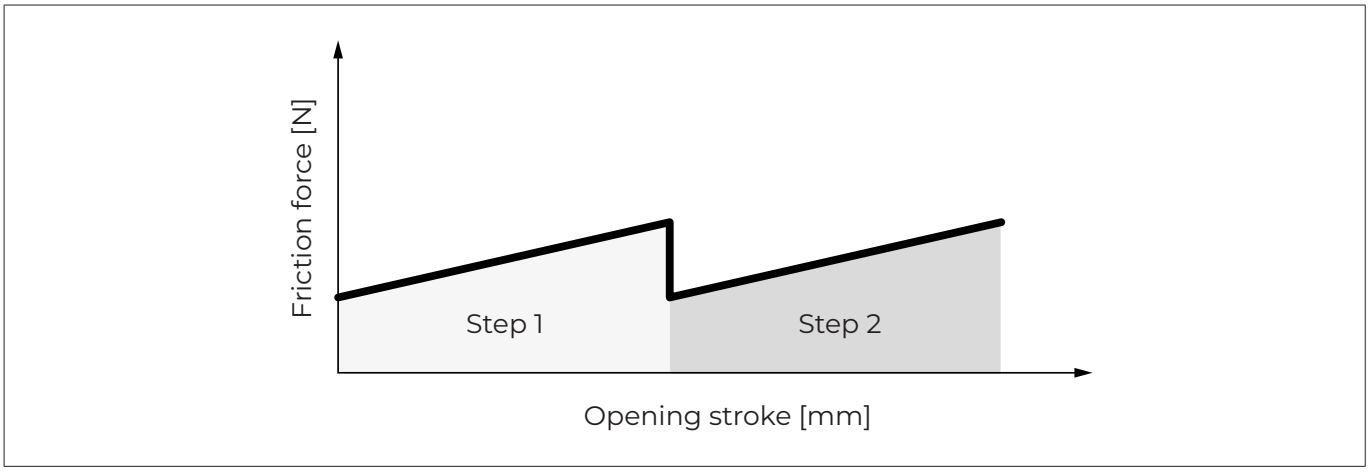



Fig.12

# ACCESSORIES

Accessories are available as options. They are integrated directly into the rails, and their code must be specified in the ordering code (see page 4).

### ■ Locking mechanisms (VG, VO, VB)

Locking mechanisms make it possible to lock the HVC rails in the open, closed, or both positions. This prevents inadvertent extension or retraction of the rail in any case. This ensures personal safety and protection of materials, especially in moving installations, such as vehicles. To unlock the position, the latch must be pressed.

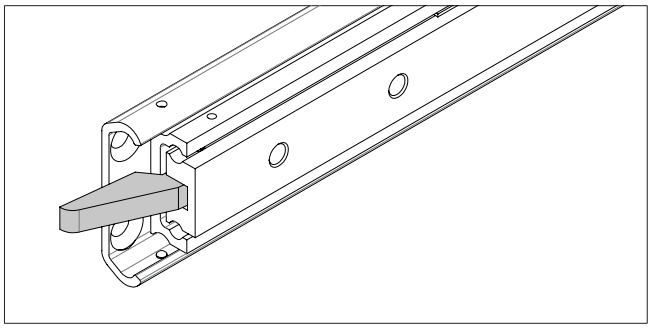


Fig.13

### ■ Driving disc (BM)

In the full-extension rails with dual stroke the intermediate element does not follow a particular order. The exact position of the element is therefore defined only in fully extended condition. The optional driving disc defines the movement of the intermediate element.

This prevents unwanted protrusion of the element. An example of the use of the driving disc is in warehouse rails, which extend in both directions.

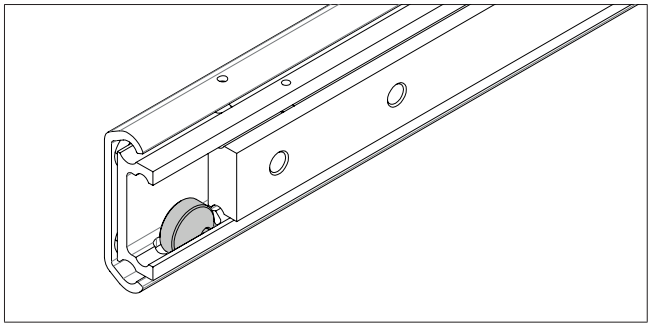


Fig.14

### ■ Damping elements (DG)

HVC telescopic rails can be fitted with damped end-stops in the closed position. The plastic or elastomer damping elements contribute to smoother and quieter operation, reducing impact when closing and increasing resistance at the end of the stroke.

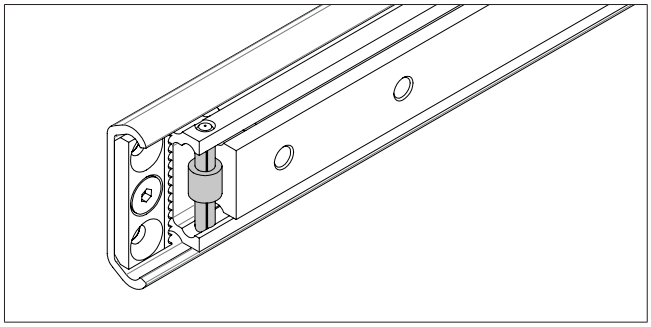


Fig.15

## ■ Accessories overview

| Type | Size | Locking mechanisms | | | Double stroke with driving disc (BM) | Damping elements closed position (DG) | Double stroke (B) |
|---|---|---|---|---|---|---|---|
| | | Closed position (VG) | Opened position (VO) | Both position (VB) | | | |
| HVC | 045 | - | - | - | - | ● | ● |
| | 050 | ● | ● | ● | - | ● | ● |
| | 058 | ● | ● | ● | ● | ● | ● |
| | 075 | ● | ● | ● | ● | ● | ● |
| HVCX | 058 | ● | ● | ● | ● | ● | ● |
| HVC...MG | 054 | ● | ● | ● | ● | ■ | - |
| | 068 | ● | ● | ● | ● | ■ | - |

■ Standard, ● Available. **Tab.9**

For B option, please note that in the closing state, the intermediate element can protrude by half of its length on each side. To avoid that, an external sequencing system BM must be used.
Options cannot be combined one with another.
HVC..MG in option BM are actually with no Magnets.

# USE AND MAINTENANCE

### ■ Lubrication

Recommended lubrication intervals are heavily dependent on the ambient conditions, speed, and temperature. Under normal conditions, lubrication is recommended after 100 km of operational performance or after an operating period of six months. This prevents friction, protects the components and prolongs the life of the system. In critical applications, the interval should be shorter. Please clean the raceways carefully before lubricating. Raceways and spaces of the ball cage are lubricated with a lithium lubricant of average consistency (roller bearing lubricant). HVC telescopic rails made of stainless steel are generally delivered without grease and they should be lubricated by the customer.

Different lubricants are available upon request for special applications:

- FDA-approved lubricant for use in the food industry.
- Specific lubricant for clean rooms.
- Specific lubricant for the marine technology sector.
- Specific lubricant for high- and low-temperature use.

For specific information, please contact our technical department.

### ■ Corrosion protection

As standard features, all series are zinc electroplated, thick-film passivated, and REACH/RoHS compliant. For higher corrosion protection we offer zinc nickel plating with stainless steel balls. Below is an overview of available coatings:

| Treatment | Characteristics |
|---|---|
| **Zinc plating DIN 50979** | Standard coating composed of a galvanic zinc coating and an additional thick-film passivation |
| **Zinc-nickel ISO 19598 (Z)** | Increase corrosion resistance due to a zinc nickel coating and the use of stainless steel balls (AISI 420C) |

**Tab.10**

### ■ Operating temperature

The HVC rails can be used at ambient temperatures from -20 °C to +170 °C (-4 °F to +338 °F). A lithium lubricant for high operating temperatures is recommended for temperatures above +130 °C (+266 °F). Minimum temperature with standard grease is -20 °C (-4 °F). At lower temperatures down to -30 °C (-22 °F) or higher temperatures above up to +250 °C (+482 °F), please contact our application engineers. These ranges always require the use of a special lubricant.

For HVC...MG max working temperatures 80 °C.

When damping (DG) is used, the operating temperature is -20 °C to + 50 °C (-4 °F to +122 °F).

### ■ Speed

The maximum operating speed is determined by the mass of the intermediate element, which moves with the movable rail. This reduces the maximum permissible operating speed with increasing length (Fig.16). Maximum acceleration: 0.6 m/s$^2$

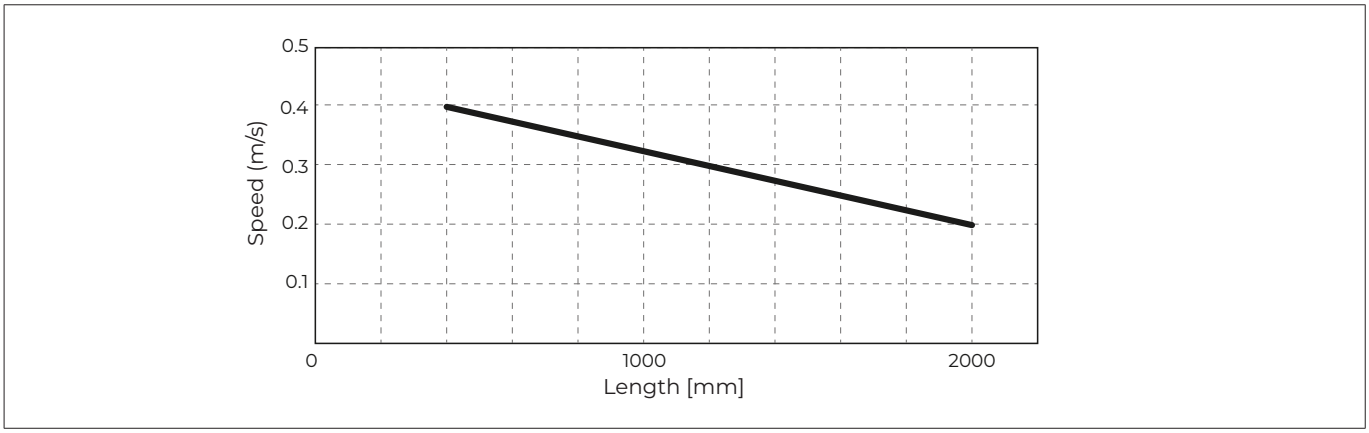



**Fig.16**

### ■ Moving force

The moving force is subject to production-related tolerances and is also defined by the load and the deflection of a telescopic rail. Taking into account the load and deflection of a telescopic rail, the closing force is higher than the opening force, since deflection occurs under load, and closing takes place by pushing against a slanted plane.

### ■ Deflection

When the load acts vertically on the pair of rails, the expected elastic deflection in the extended state can be determined as follows:

$$f = \frac{P}{1000} \cdot k$$

Whereby:

| | |
|---|---|
| $f$ | Expected elastic deflection [mm] |
| $P$ | Actual load acting on the centre of a pair of rails [N] |
| $k$ | Coefficient based on the rail length (see following graphs) |

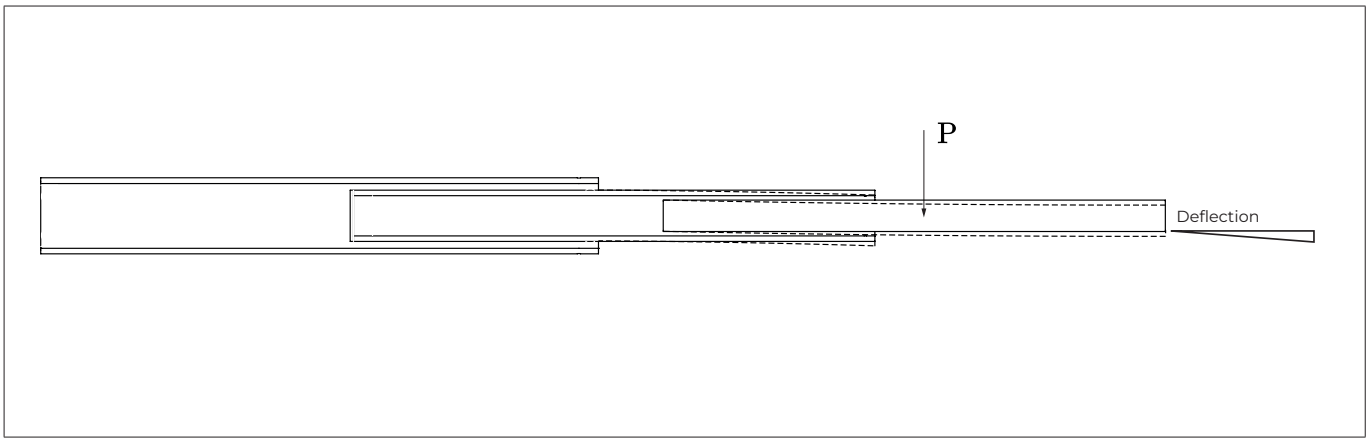



Fig.17

This estimated value assumes an absolutely rigid adjacent construction.
If this rigidity is not present, the actual deflection will deviate from the calculation.

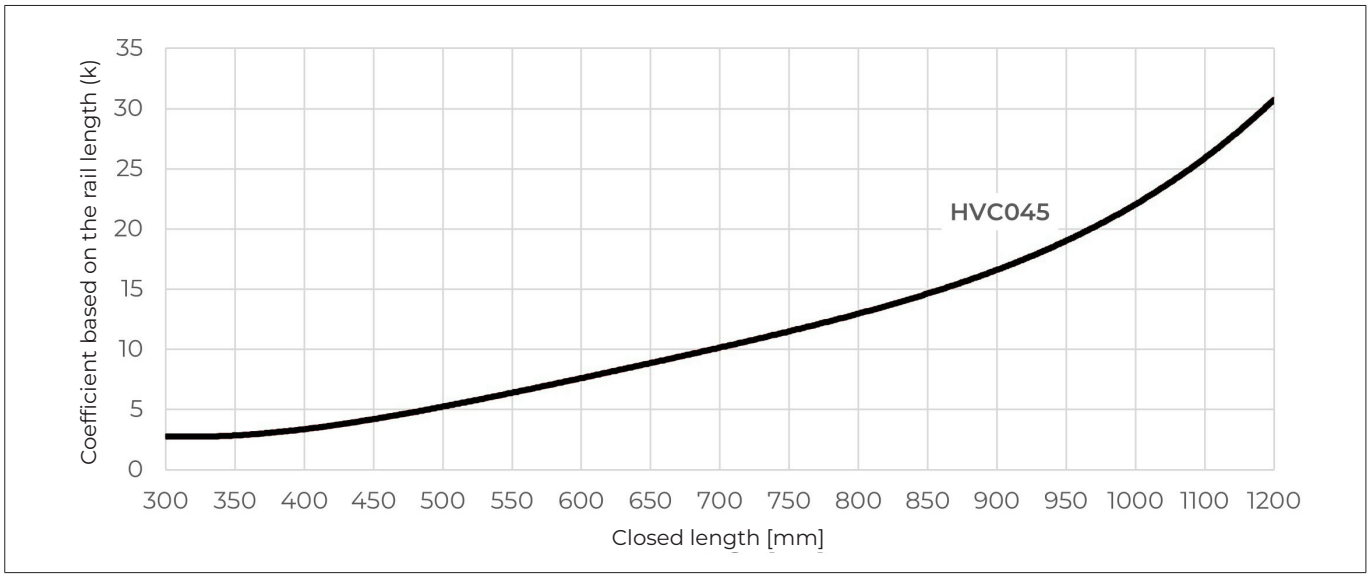



Fig.18

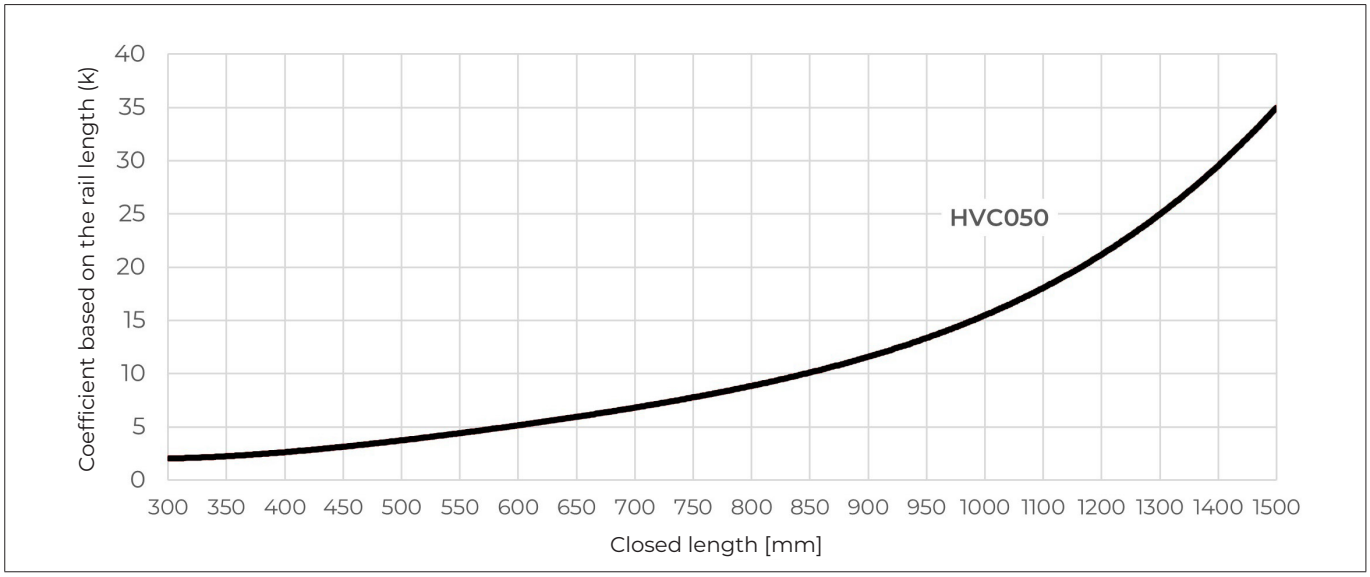



Fig.19

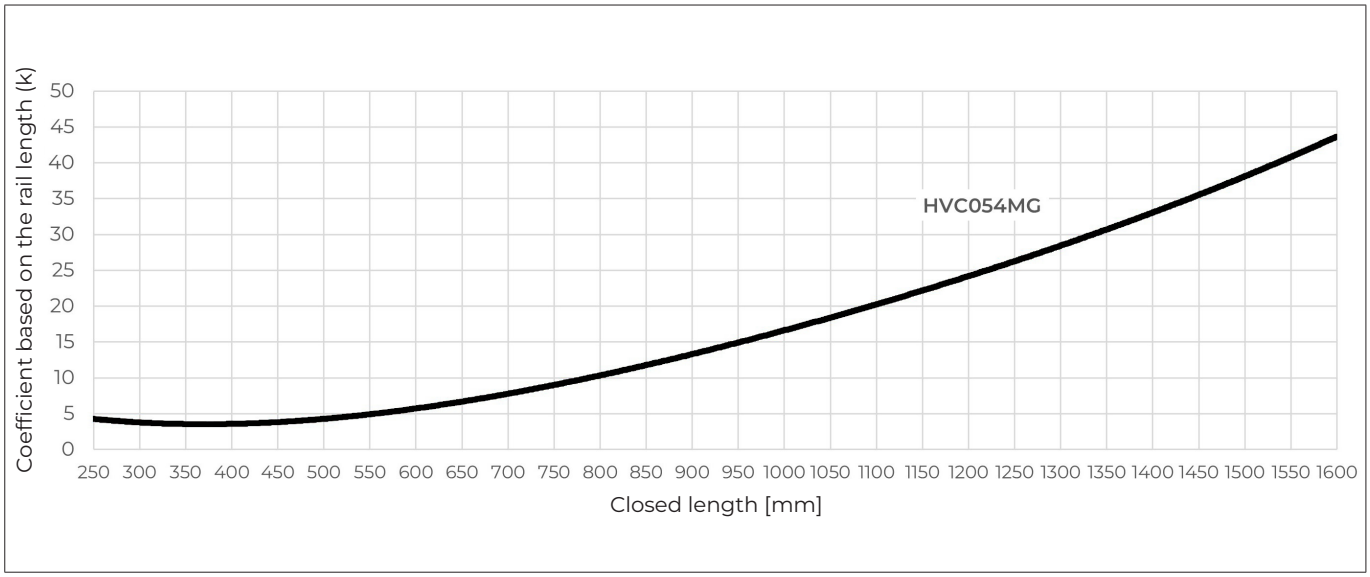



Fig.20

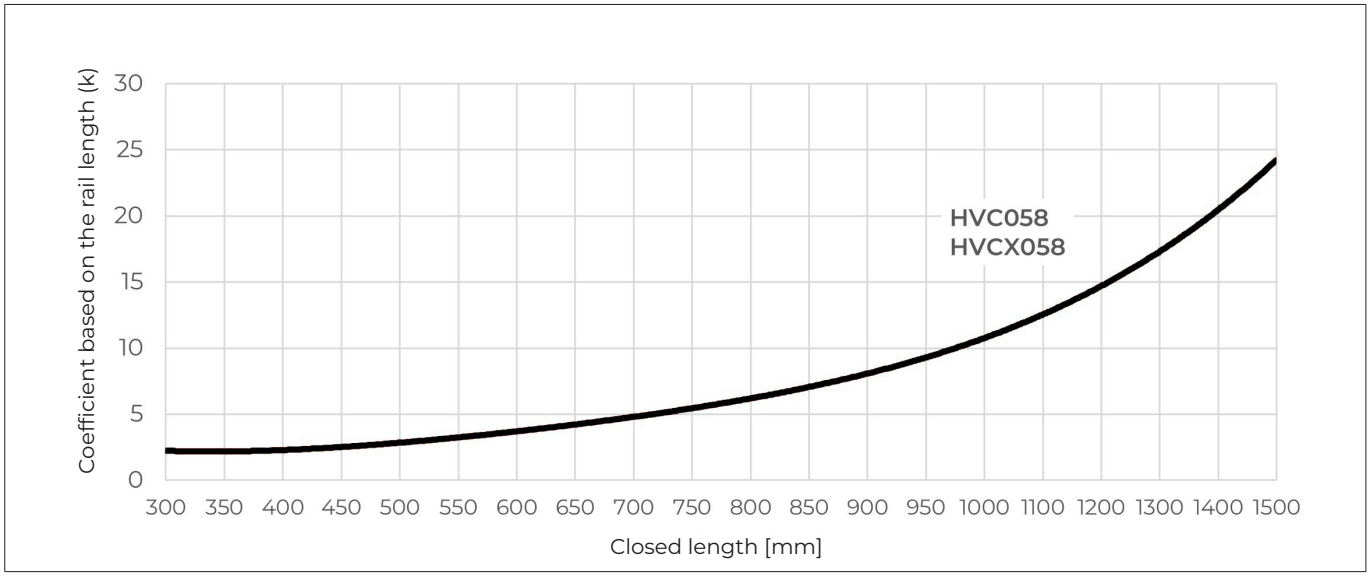



Fig.21

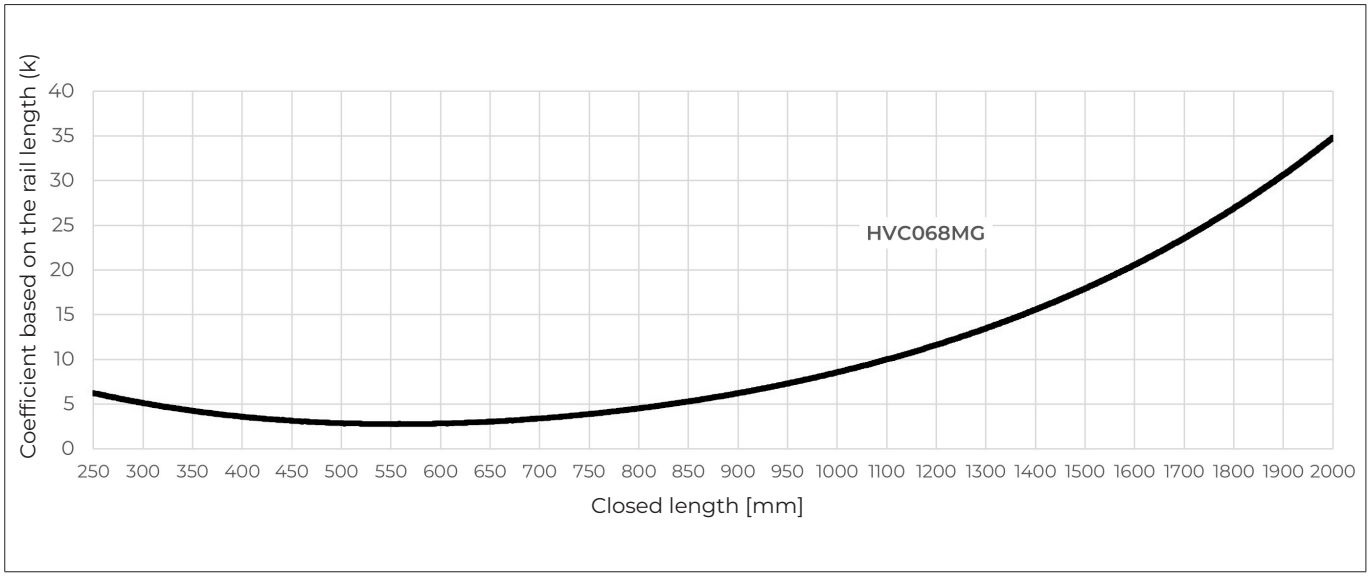

Coefficient based on the rail length (k)
40
35
30
25
20
15
10
5
0
HVC068MG
250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000
Closed length [mm]

**Fig.22**

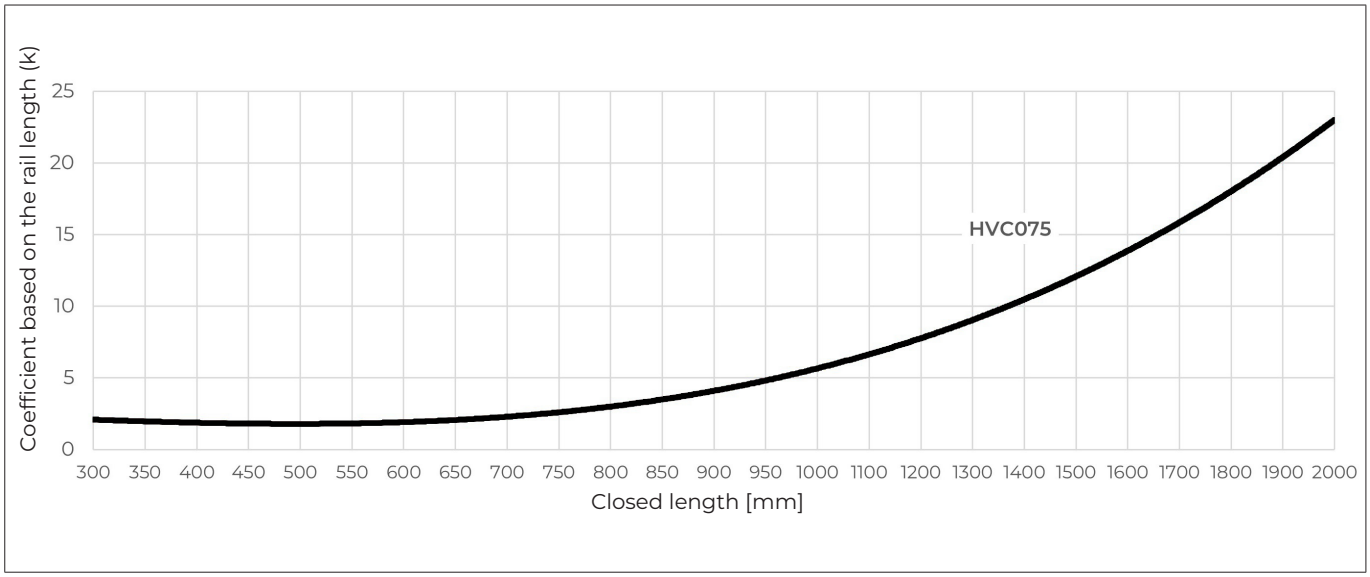

Coefficient based on the rail length (k)
25
20
15
10
5
0
HVC075
300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000
Closed length [mm]

**Fig.23**

## ▪ Installation instructions

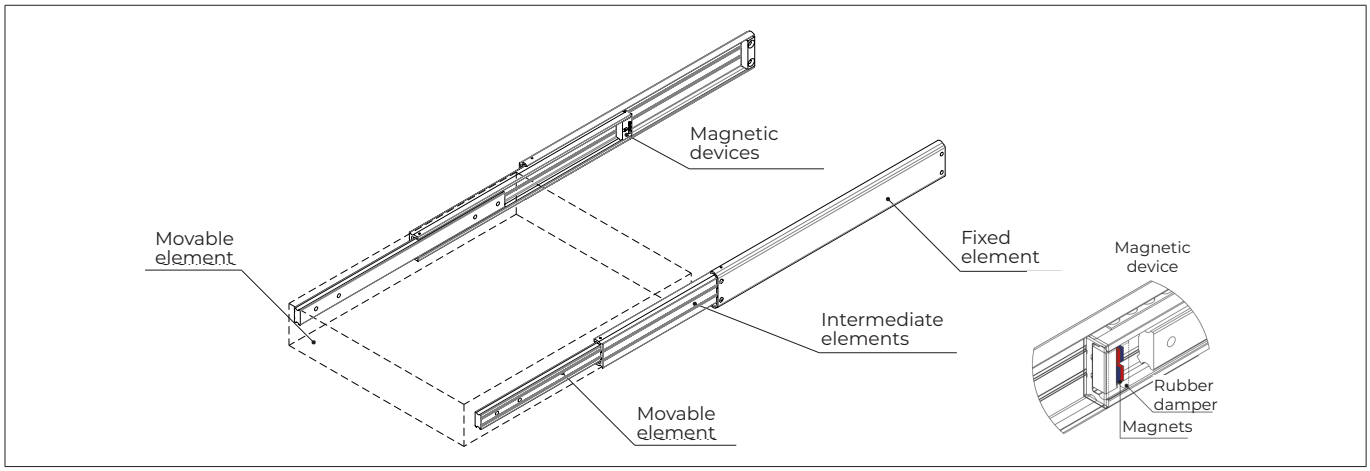



Fig.24

- To achieve optimum running properties and rigidity it is necessary to fix the telescopic rails with all fixing holes.
- Mounting of the telescopic rails on a flat and rigid surface using all provided mounting holes.
- Internal stops are used to stop the unloaded slider and the ball cage. Please use external stops as end stops for a loaded system
- For MG type, respect the position of the Magnet device while assembling the rail on the application.
- Due to the material thickness of our profiles, the head of the countersunk screw protrudes somewhat from the profile, so that the mating piece must have a corresponding minimum chamfer A.

Example HVC68

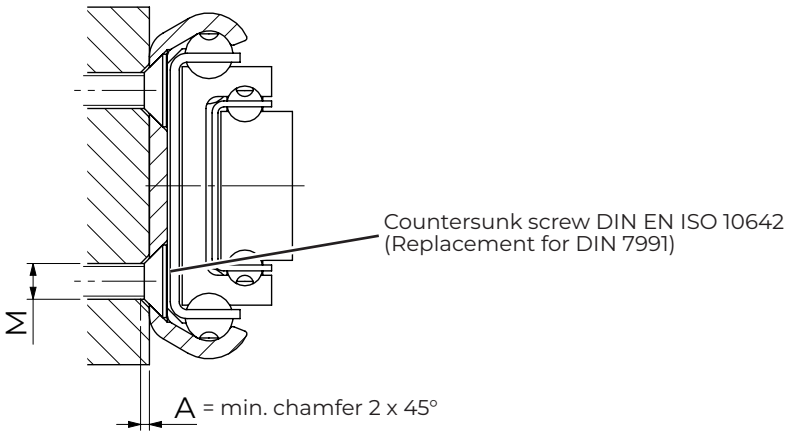



Fig.25

### ■ Distance between the rails

For ideal operation, in applications where it is not possible to apply the opening force in proximity of both rails, it is recommended to maintain a maximum distance between the rails equal to 1.5 times the length of the rails.

### ■ Mounting holes

Please use all mounting holes. Please be sure to use the correct screw length to prevent damage to the ball cage: shank length of screw < thickness of the moving element; see the table below.

| Type | Size | M | A [mm] |
|---|---|---|---|
| HVC | 045 | 6 | 9 |
| | 050 | 6 | 11 |
| | 054MG | 6 | 8 |
| | 058 | 8 | 11 |
| | 068MG | 8 | 12 |
| | 075 | 8 | 11 |

Mounting screws with a strength class of 10.9 must be used for all telescopic rails.

**Tab.11**

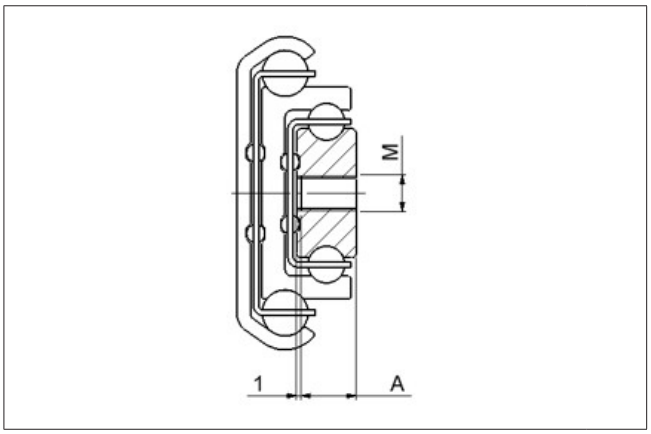



**Fig.26**

### ■ Ball cage displacement

The movement of the telescopic rails is enabled by internal ball cages, which may experience an offset from the original position. This phase offset can have a negative effect on the running properties or limit the stroke. The drive force must be sufficiently dimensioned to appropriately synchronize the ball cage offset. Otherwise, an additional maximum stroke with no load must be planned regularly to ensure the correct position of the ball cage.

Higher risk of cage displacement when the stroke is in the vertical direction, we do not recommend vertical use. For further information, please contact our technical department.

### ■ Special strokes

Special strokes are defined as deviations from the standard stroke H. They are each available as multiples of the values in Tab.12.

These values are depend on the spacing of the ball cage.

Change of stroke affects the load capacity.

| Type | Size | Stroke modification [mm] |
|---|---|---|
| HVC | 045 | 40 |
| | 050 | 40 |
| | 054MG | 25 |
| | 058 | 40 |
| | 068MG | 30 |
| | 075 | 40 |

**Tab.12**

# STATIC LOAD

The values in the load capacity tables of the corresponding series (see Components and Dimensions, p.6) indicate the maximum permissible load of a pair of rails at the middle of the two rails and along the centerline of the moving element, with the rails in the completely extended state and with the vertical installation of the cross section.

Using a pair of rails, the load acts in the center on rails (see Fig.27, P). The load capacity of a rail pair is: $C_{0rad}$

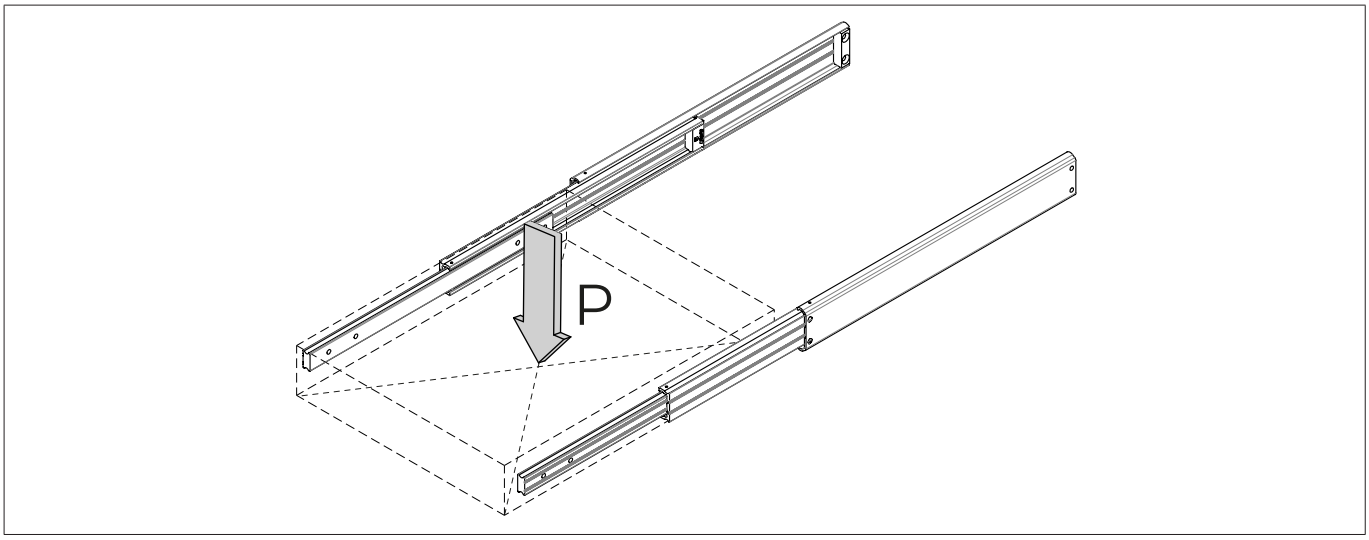



**Fig.27**