VELTORK

Telescopic rails and compact rails

Product catalogue 2026



VT-L	VT-P	VT-S	VT-X	VT-O	VT-H
Compact rail	Partial extension	Slim full extension	I-beam full extension	Square full extension	Heavy-duty full extension

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Contents

01 **The VT range** 3
- Design and function 4
- Load ratings and operating data 5
- Technical overview of all models 6

02 **Selection guide** 7

03 **VT-L** Compact rail 8

04 **VT-P** Partial extension 14

05 **VT-S** Slim full extension 21

06 **VT-X** I-beam full extension 27

07 **VT-O** Square full extension 33

08 **VT-H** Heavy-duty full extension 38

09 **Technical principles** 46
- Selection and static load 47
- Deflection 48
- Service life 49
- Load-capacity coefficient δ 50
- Speed, forces and environment 51
- Clearance, fastening and installation 52
- VT-L off-centre load and installation 53

10 **Applications** 54

11 **Ordering and inquiry** 57
- Inquiry sheet 58

Index 59

Series



VT-L Compact rail 8



VT-P Partial extension 14



VT-S Slim full extension 21



VT-X I-beam full extension 27



VT-O Square full extension 33



VT-H Heavy-duty full extension 38

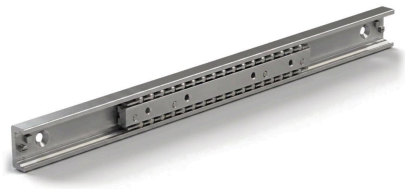
Conventions

Loads in N, moments in N·m, lengths in mm. C_0 = static load rating. Telescopic ratings per **pair** of rails; VT-L per **carriage**. ● standard · O option · – not offered.

01

The VT range

Six ball-bearing series of telescopic slides and compact rails: cold-drawn steel members, captive ball cages, one mounting pattern, one part-number grammar.



VT-L Compact rail

page 8

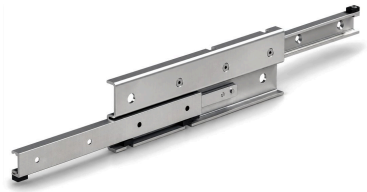
Extension	**Linear**
Sizes	**22 · 28 · 35 · 43 · 63**
Max. C_{0rad} (per carriage)	**122 kN**
Max. rail length	**1970 mm**



VT-P Partial extension

page 14

Extension	**≈ 50 %**
Sizes	**22 · 28 · 35 · 43 · 63**
Max. C_{0rad} (per pair)	**88.5 kN**
Max. rail length	**1970 mm**



VT-S Slim full extension

page 21

Extension	**100 % · S1 / S2**
Sizes	**28 · 35 · 43 · 63**
Max. C_{0rad} (per pair)	**38 kN**
Max. rail length	**1970 mm**



VT-X I-beam full extension

page 27

Extension	**100 %**
Sizes	**22 · 28 · 35 · 43 · 63**
Max. C_{0rad} (per pair)	**14.4 kN**
Max. rail length	**1970 mm**



VT-O Square full extension

page 33

Extension	**100 %**
Sizes	**22 · 28 · 35 · 43**
Max. C_{0rad} (per pair)	**2.7 kN**
Max. rail length	**1970 mm**



VT-H Heavy-duty full extension

page 38

Extension	**≈ 100 %**
Sizes	**30 · 45 · 60 · 80**
Max. C_{0rad} (per pair)	**9.3 kN**
Max. rail length	**2 000 mm**

Max. C_{0rad} = highest static radial capacity across the length range of the series; telescopic series per pair of rails, VT-L per carriage. VT-H: C_{0ax} and deflection data are supplied with the configuration.

RANGE

Design and function

Nested steel members roll on hardened balls. Partial-extension slides have two members; full-extension slides add an intermediate member so the load clears the fixed rail completely.

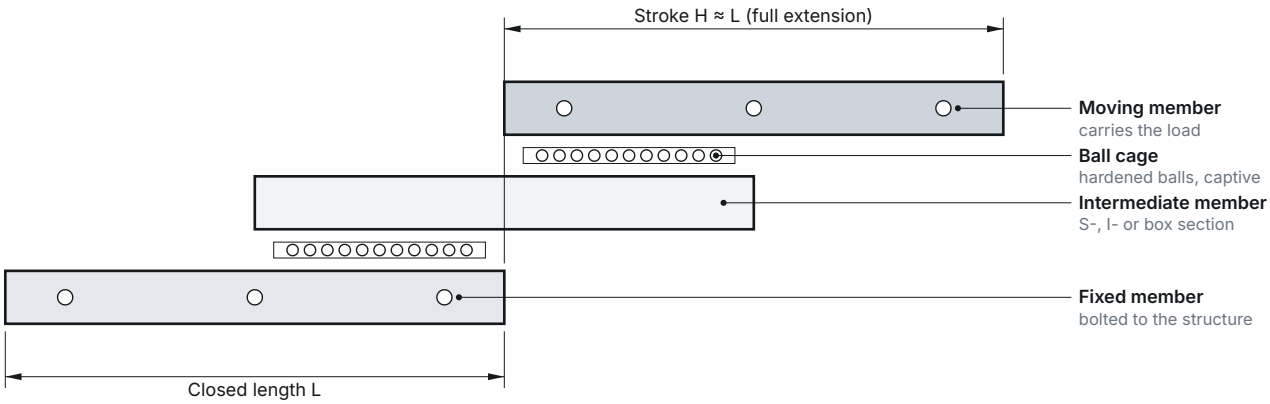
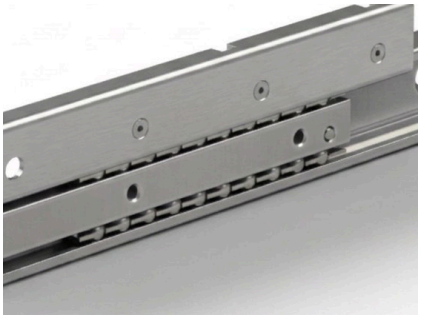


Fig. 1 Full-extension telescopic slide, fully extended (members drawn apart for clarity)

Engineered in every detail



Ball cage & steel balls

Hardened steel balls retained in a precision cage, rolling between the rails for smooth, low-friction travel.



Outer rail profile

Cold-drawn and hardened outer profile with CNC mounting holes and an integrated end stop, guiding the cage along its length.



Mounting interface

Inner-rail end with precision mounting holes for repeatable, accurate fixing to your structure.

Kinematics

- The members are rigid steel parts; only the moving member and, in full-extension slides, the intermediate member translate along the rail axis.
- Each ball cage moves in the same direction as its member but covers exactly **half** the distance, and never leaves the rail that carries it.
- Internal stops arrest the **unloaded** slider and cage. A loaded system needs **external end stops**.
- A constant stroke keeps the cages synchronised; a variable stroke needs enough drive force to re-synchronise them.

Three kinds of travel

Linear	VT-L — carriages run inside a closed C-profile rail
Partial ≈ 50 %	VT-P — two members, the stiffest telescopic build
Full 100 %	VT-S · VT-X · VT-O · VT-H — with intermediate member

Load ratings and operating data

All catalogue loads are static capacities: the maximum permissible load at the midpoint between the two slides of a pair, on the axis of the moving member, with the slides fully extended.

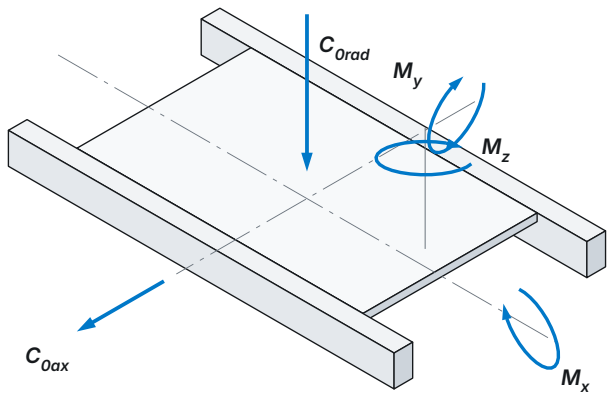


Fig. 2 Load and moment directions on an extended slide pair

Load ratings

C_{0rad}	static radial capacity — load perpendicular to the mounting face
C_{0ax}	static axial capacity — load in the mounting plane, across the rail
M_x	static moment about the longitudinal axis
M_y	static moment about the transverse axis
M_z	static moment about the vertical axis

Telescopic series are rated **per pair of rails** (VT-P M_x* per single rail); the compact rail VT-L is rated **per carriage**, for loads acting at the carriage centre.

Operating data

Parameter	Value
Max. working speed	0.8 m/s, decreasing with slide length (page 51)
Max. acceleration	1.2 m/s²
Operating temperature	−20 … +170 °C · VT-S and damped VT-H executions −20 … +80 °C
Clearance	zero clearance as standard · G1 increased clearance · K1 increased preload
Mounting	horizontal recommended; vertical on request · screws property class 10.9

Materials and finish

Component	Material and finish
Rails, sliders, carriages	cold-drawn CF53 with induction-hardened raceways; VT-H: CF53, raceways not hardened
Balls	hardened high-carbon bearing steel; stainless steel on request
Surface	electrolytic zinc per ISO 2081; zinc-nickel, nickel or E-coat on request
Lubrication	medium lithium grease; FDA, cleanroom, marine and temperature greases on request

Important notes

- External end stops are recommended; internal stops are designed for the unloaded slider and cage only.
- Two-way travel (B) is available for VT-P, VT-S2, VT-X and VT-O; for VT-H on request.
- Non-standard strokes in multiples of the cage step of each size; VT-H right- or left-hand execution must be specified.
- Service-life data are calculated for continuous duty and for the loaded ball rows only.

RANGE

Technical overview of all 35 models

Peak values across the length range of each model. Per-length data, moments, hole counts and weights are in the size tables of the series chapters.

		Features				Static load rating		Length			
Model	**Extension**	**Hardened** raceways	**Self-** aligning	**Two-way** travel	**Damped** stops	**C_{0rad}** N	**C_{0ax}** N	**Max. L** mm	**Max. H** mm	**Rigidity**	**Temperature** °C
VT-L22	linear	●	–	–	–	**9 570**	6 699	1 170	–[1]	–	−20 … +170
VT-L28	linear	●	–	–	–	**26 100**	18 270	1 650	–[1]	–	−20 … +170
VT-L35	linear	●	–	–	–	**45 750**	32 025	1 810	–[1]	–	−20 … +170
VT-L43	linear	●	–	–	–	**65 270**	45 689	1 970	–[1]	–	−20 … +170
VT-L63	linear	●	–	–	–	**122 000**	85 400	1 970	–[1]	–	−20 … +170
VT-P22	≈ 50 %	●	+	●	–	**5 934**	4 154	770	394	+++	−20 … +170
VT-P28	≈ 50 %	●	+	●	–	**15 736**	11 014	1 170	601	+++	−20 … +170
VT-P35	≈ 50 %	●	+	●	–	**26 520**	18 564	1 490	759	+++	−20 … +170
VT-P43	≈ 50 %	●	+	●	–	**48 596**	34 018	1 970	1 013	+++	−20 … +170
VT-P63	≈ 50 %	●	+	●	–	**88 494**	61 946	1 970	1 013	+++	−20 … +170
VT-S1-28	100 %	●	++	–	●	**4 480**	–	1 490	1 518	++++	−20 … +80
VT-S1-35	100 %	●	++	–	●	**7 016**	–	1 730	1 758	++++	−20 … +80
VT-S1-43	100 %	●	++	–	●	**10 208**	–	1 970	2 026	++++	−20 … +80
VT-S1-63	100 %	●	++	–	●	**25 664**	–	1 970	2 026	++++	−20 … +80
VT-S2-28	100 %	●	++	●	●	**5 162**	–	1 490	1 446	++++	−20 … +80
VT-S2-35	100 %	●	++	●	●	**9 736**	–	1 730	1 630	++++	−20 … +80
VT-S2-43	100 %	●	++	●	●	**11 660**	–	1 970	1 916	++++	−20 … +80
VT-S2-63	100 %	●	++	●	●	**38 018**	–	1 970	1 758	++++	−20 … +80
VT-X22	100 %	●	++	●	–	**1 348**	546	770	788	+++	−20 … +170
VT-X28	100 %	●	++	●	–	**2 338**	1 074	1 170	1 202	+++	−20 … +170
VT-X35	100 %	●	++	●	–	**3 816**	1 586	1 490	1 518	+++	−20 … +170
VT-X43	100 %	●	++	●	–	**6 182**	2 868	1 970	2 026	+++	−20 … +170
VT-X63	100 %	●	++	●	–	**14 396**	6 124	1 970	2 026	+++	−20 … +170
VT-O22	100 %	●	++	●	–	**562**	472	770	788	+	−20 … +170
VT-O28	100 %	●	++	●	–	**1 244**	1 074	1 170	1 202	+	−20 … +170
VT-O35	100 %	●	++	●	–	**1 334**	1 120	1 490	1 518	+	−20 … +170
VT-O43	100 %	●	++	●	–	**2 662**	2 558	1 970	2 026	+	−20 … +170
VT-H30F	≈ 100 %	–	++	○	○	**1 470**	on req.	1 200	1 215	++++	−20 … +170[2]
VT-H30V	≈ 100 %	–	++	○	○	**1 470**	on req.	1 200	1 215	++++	−20 … +170[2]
VT-H30S	≈ 100 %	–	++	○	●	**1 498**	on req.	1 200	1 217	++++	−20 … +170[2]
VT-H45F	≈ 100 %	–	++	○	○	**3 346**	on req.	1 500	1 522	++++	−20 … +170[2]
VT-H45V	≈ 100 %	–	++	○	○	**3 346**	on req.	1 500	1 522	++++	−20 … +170[2]
VT-H45S	≈ 100 %	–	++	○	●	**3 084**	on req.	1 500	1 522	++++	−20 … +170[2]
VT-H60	≈ 100 %	–	++	○	○	**5 500**	on req.	1 500	1 500	++++	−20 … +170[2]
VT-H80	≈ 100 %	–	++	○	○	**9 350**	on req.	2 000	2 000	++++	−20 … +170[2]

● standard · ○ option or on request · – not offered. Self-alignment and rigidity are relative ratings (+ … ++++). C_{0rad} / C_{0ax} per pair of rails; VT-L per carriage.
[1] VT-L stroke follows from L = S + H + K. [2] VT-H executions with damped stops −20 … +80 °C. VT-S axial capacity is not rated separately.

02

Selection guide

Start from the travel the application needs, then choose the section family by what matters most — load, deflection, width, contamination or configurability.



Compact rail

VT-L

One or several carriages travel inside a closed C-profile — positioning, gantry and gripper axes; up to 122 kN per carriage.



Partial extension ≈ 50 %

VT-P

Two members, no intermediate — the stiffest and strongest telescopic build, for covers and drawers that need half travel.



Full extension 100 %

VT-S · VT-X · VT-O · VT-H

An intermediate member doubles the reach so the moving member clears the fixed rail completely.

Choose by priority

Application priority	Series	Why
Highest load and rigidity, shock and crash duty	VT-P	Partial extension; deflection governed by the mating structure
Minimal deflection at full extension in a narrow width	VT-S	S-profile intermediate with a high moment of inertia; S1 one-way, S2 two-way
Best load-to-weight ratio, compact square envelope	VT-X	I-beam intermediate; hole types C countersunk / T threaded
Radial or axial load at equal capacity, protected cage	VT-O	Near-square box intermediate; good protection against contamination
Very heavy loads, locks, detents, damping, double stroke	VT-H	Configurable executions F / V / S; specify hand L or R
Positioning of one or several carriages, chip-protected	VT-L	Carriage inside the profile; single, independent or synchronised

Selection procedure

1 **Define the load case**
Load P and its position, moments, cycles, speed, environment and mounting orientation.

2 **Choose the extension**
Linear, partial or full — then the section family from the priorities above.

3 **Check the static load**
$P / C_0 \le 1 / S_0$ with the static safety factor S_0 = 1.5 … 3.5 — page 47.

4 **Estimate the deflection**
f = (q / t) · P for the full-extension series — page 48.

5 **Calculate the service life**
From the load-capacity coefficient δ of the chosen length — page 49.

6 **Check speed and mounting**
Speed derating, hole pattern, threads and class-10.9 screws — pages 51–52.

Sizes

Series	22	28	30	35	43	45	60	63	80
VT-L	●	●		●	●			●	
VT-P	●	●		●	●			●	
VT-S		●		●	●			●	
VT-X	●	●		●	●			●	
VT-O	●	●		●	●				
VT-H			●			●	●		●

Size = nominal section height B in mm (VT-S: width A).

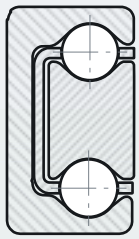
Travel options

Two-way	**VT-P · VT-X · VT-O · VT-S2**
Up to 130 %	**VT-S1 · VT-X · VT-O on request**
Stroke step	**7.5 … 40 mm by size**

03

VT-L

Compact rail



Cross-section



Linear	22 · 28 · 35 · 43 · 63	122 kN	1 970 mm
Extension	Sizes	Max. C_{0rad}, per carriage	Max. rail length

Compact rail with ball carriages — the highest load capacity in the smallest envelope.

One or several carriages run inside a C-profile rail on a ball cage. The carriage travels *inside* the rail profile, so the whole system stays compact while carrying very high loads — up to 12 000 kg per carriage.

Advantages

- **High load per carriage.** Ball-cage travel lets each carriage carry up to 12 000 kg in a compact section.
- **Compact construction.** Carriages run inside the C-profile — significant space saving over external blocks.
- **Configurable carriages.** One, several independent, or several synchronised carriages on a single rail.
- **Long service life.** Cold-drawn steel profiles with induction-hardened raceways for sustained duty.

Technical data

Profile	C-profile + internal carriage
Material	CF53 · hardened raceways
Temperature	−20 … +170 °C
Max. speed	0.8 m/s
Max. acceleration	1.2 m/s²

In this chapter

Design and features	9
Dimensions	10
Ordering code	11
Technical data	12

Design and features

Series **VT-L** is a **compact rail** with ball-guided carriages: a C-shaped cold-drawn steel rail with induction-hardened raceways, inside which one or more carriages travel on a ball cage. Because the carriages run within the rail profile, the solution is exceptionally space-efficient for the load it carries.

Carriages can be supplied as a **single carriage**, as **several independent carriages** (each in its own cage, with individual length and stroke), or as **several synchronised carriages** sharing one cage. Rail length L = S + H + K (carriage length + stroke + end allowance).

Typical applications

- Transport industry
- Construction
- General machine building
- Medical & automotive equipment
- Logistics systems
- Packaging machinery

Features

- Compact rail — carriages travel **inside** a closed C-profile rail on a ball cage
- Single carriage, several independent carriages (own cages) or several synchronised carriages (one shared cage)
- Rail length L = S + H + K — carriage length + stroke + end allowance (K = 30 mm)
- Cold-drawn CF53 steel, induction-hardened raceways; balls in carbon or stainless steel
- Countersunk mounting screws DIN 7991: M4 (22) · M5 (28) · M6 (35) · M8 (43 / 63)
- Max. working speed 0.8 m/s · −20 … +170 °C · horizontal movement

Extension

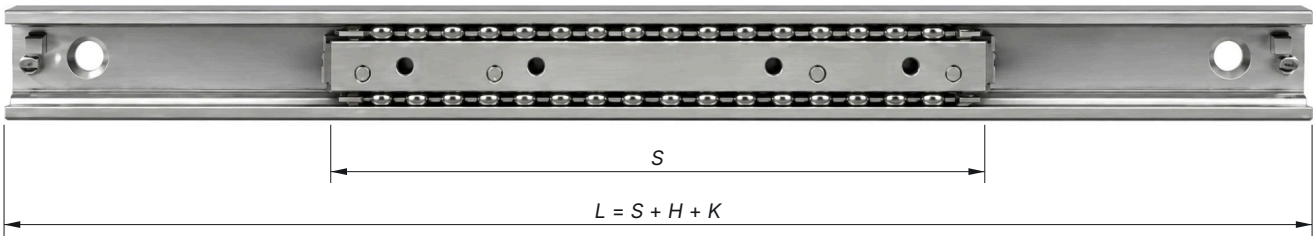


Fig. 3 VT-L side view — rail length L = carriage length S + stroke H + end allowance K

Execution variants

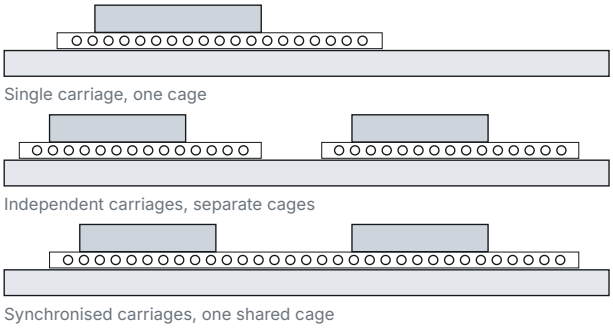


Fig. 4 VT-L carriage configurations

Carriage length S and stroke H may differ between the carriages of one rail. To reach every mounting hole keep S < L / 2 − K; for smooth running keep H ≤ 7 S.

For size 63 with two independent carriages the end allowance K rises from 80 to 110 mm, plus 30 mm for each further carriage.

Dimensions

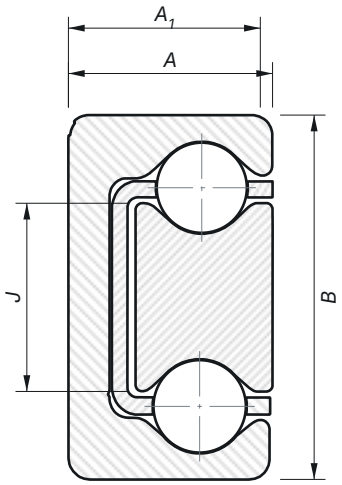


Fig. 5 Cross-section VT-L — rail and carriage

Section dimensions

Size	A mm	A_1 mm	B mm	J mm	G mm	Thread	Corner
22	11	10.25	22	11.3	6.5	M4	R3
28	13	12.25	28	15.0	7.5	M5	R1
35	17	16	35	15.8	10.0	M6	R2
43	22	21	43	23.0	13.5	M8	R2.5
63	29	28	63	29.3	10.5	M8	2×45°

Dimension key

A	overall section width
A_1	inner width — from the same outer face as A, stopping 0.75–1 mm short of the opposite face
B	overall section height
J	height of the carriage
G	thickness of the carriage = usable thread depth (size 63: depth of the blind thread)
Thread	mounting thread in rail and carriage
Corner	corner radius / chamfer of the outer profile

Mounting-hole pattern

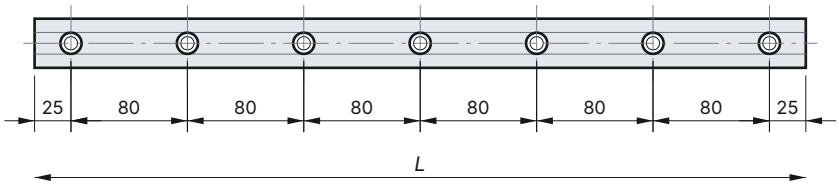


Fig. 6 Rail in plan view, example L = 530 mm: first hole 25 mm from each end, then 80 mm pitch

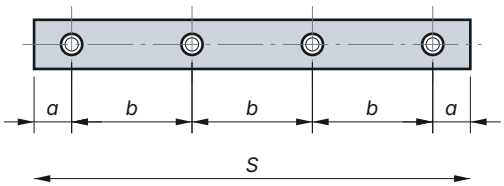


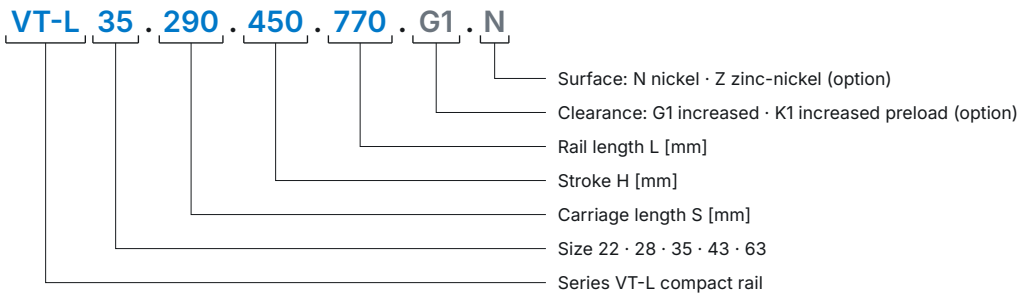
Fig. 7 Carriage in plan view, example S = 290 mm: hole offset a and pitch b for every carriage length in the size tables

The first mounting hole sits **25 mm** from each end of the rail; the remaining holes follow a constant **80 mm** pitch. The hole count for every catalogue length is listed in the specification tables below. Short carriages (S = 40 / 60 / 80 mm) use a tighter pattern — hole offset **a** and pitch **b** are given per carriage length in the carriage table.

Mounting threads: **M4** (size 22) · **M5** (size 28) · **M6** (size 35) · **M8** (size 43 / 63). Countersunk DIN 7991 or cheese-head DIN 7984. Property class 10.9; tightening torques on page 52.

Ordering code

Example: **VT-L35.290.450.770.G1.N**. Lengths and strokes in millimetres; option suffixes only when they differ from standard.



Code fields

Field	Meaning
VT-L	Series — compact rail
35	Size (22 / 28 / 35 / 43 / 63)
290	Carriage length S [mm]
450	Stroke H [mm]
770	Rail length L [mm]
G1 / K1	G1 = increased clearance · K1 = increased preload (blank = zero clearance)
N / Z	Surface ≠ standard zinc: N = nickel · Z = zinc-nickel

Examples

Part number	Meaning
VT-L35.290.450.770	size 35, carriage S = 290 mm, stroke H = 450 mm, rail L = 770 mm; zero clearance, zinc
VT-L43-2.290.350.1330	size 43, two independent carriages of 290 mm, stroke 350 mm each, rail 1330 mm

Surface

Suffix	Finish
—	electrolytic zinc per ISO 2081 (standard)
N	nickel
Z	zinc-nickel
on request	E-coat

QUOTATION

Send series and size, carriage length S, stroke H and rail length L, quantity, load and its position, cycles, environment and mounting orientation — we return a checked selection with a dimensioned drawing.

Configurations

Configuration	Pattern	Example
Single carriage	VT-L size . S . H . L	VT-L35.290.450.770
Independent carriages	VT-L size - qty . S . H . L	VT-L43-2.290.350.1330
Synchronised carriages	VT-L size . S' . S+gap . H . L	VT-L63.850.370+290.400.1330

S' = computed overall carriage length; S + gap = single carriage length plus the gap between carriages.

Technical data

Load ratings and moments **per carriage**, for loads at the carriage centre; a and b = hole offset and pitch on the carriage. Rail length L = S + H + K.

VT-L22 load ratings per carriage

Length	Hole pitch			Static load rating		Static moment		
S mm	**a** mm	**b** mm	**Holes** per rail	C_{0rad} N	C_{0ax} N	M_x N·m	M_y N·m	M_z N·m
40	10	20	2	**1 320**	924	4.4	6	9
60	10	20	3	**1 980**	1 386	6.7	14	20
80	10	20	4	**2 640**	1 848	8.9	25	35
130	25	80	2	**4 290**	3 003	14.4	65	93
210	25	80	3	**6 930**	4 851	23.3	170	243
290	25	80	4	**9 570**	6 699	32.2	324	463

Standard rail lengths L [mm]: 130, 210, 290, 370, 450, 530, 610, 690, 770, 850, 930, 1 010, 1 090, 1 170. End allowance K = 30 mm. Weight: rail 0.7 kg/m, carriage 1.0 kg/m.

VT-L28 load ratings per carriage

Length	Hole pitch			Static load rating		Static moment		
S mm	**a** mm	**b** mm	**Holes** per rail	C_{0rad} N	C_{0ax} N	M_x N·m	M_y N·m	M_z N·m
60	10	20	3	**3 480**	2 436	17.1	24	35
80	10	20	4	**4 640**	3 248	22.7	43	62
130	25	80	2	**7 540**	5 278	36.9	114	163
210	25	80	3	**12 180**	8 526	59.7	298	426
290	25	80	4	**16 820**	11 774	82.4	569	813
370	25	80	5	**21 460**	15 022	105.1	926	1 323
450	25	80	6	**26 100**	18 270	127.9	1 370	1 958

Standard rail lengths L [mm]: 130, 210, 290, 370, 450, 530, 610, 690, 770, 850, 930, 1 010, 1 090, 1 170, 1 250, 1 330, 1 410, 1 490, 1 570, 1 650. End allowance K = 30 mm. Weight: rail 1.0 kg/m, carriage 1.5 kg/m.

VT-L35 load ratings per carriage

Length	Hole pitch			Static load rating		Static moment		
S mm	**a** mm	**b** mm	**Holes** per rail	C_{0rad} N	C_{0ax} N	M_x N·m	M_y N·m	M_z N·m
130	25	80	2	**9 750**	6 825	47.2	148	211
210	25	80	3	**15 750**	11 025	76.3	386	551
290	25	80	4	**21 750**	15 225	105.3	736	1 051
370	25	80	5	**27 750**	19 425	134.4	1 198	1 711
450	25	80	6	**33 750**	23 625	163.4	1 772	2 531
530	25	80	7	**39 750**	27 825	192.5	2 458	3 511
610	25	80	8	**45 750**	32 025	221.6	3 256	4 651

Standard rail lengths L [mm]: 290, 370, 450, 530, 610, 690, 770, 850, 930, 1 010, 1 090, 1 170, 1 250, 1 330, 1 410, 1 490, 1 570, 1 650, 1 730, 1 810. End allowance K = 30 mm. Weight: rail 1.8 kg/m, carriage 2.5 kg/m.

Technical data (continued)

VT-L43 load ratings per carriage

Length	Hole pitch			Static load rating		Static moment		
S mm	a mm	b mm	Holes per rail	C_{0rad} N	C_{0ax} N	M_x N·m	M_y N·m	M_z N·m
130	25	80	2	**13 910**	9 737	96.0	211	301
210	25	80	3	**22 470**	15 729	155.1	551	786
290	25	80	4	**31 030**	21 721	214.1	1 050	1 500
370	25	80	5	**39 590**	27 713	273.2	1 709	2 441
450	25	80	6	**48 150**	33 705	332.3	2 528	3 611
530	25	80	7	**56 710**	39 697	391.4	3 507	5 009
610	25	80	8	**65 270**	45 689	450.4	4 645	6 636

Standard rail lengths L [mm]: 290, 370, 450, 530, 610, 690, 770, 850, 930, 1 010, 1 090, 1 170, 1 250, 1 330, 1 410, 1 490, 1 570, 1 650, 1 730, 1 810, 1 890, 1 970. End allowance K = 30 mm. Weight: rail 2.6 kg/m, carriage 5.0 kg/m.

VT-L63 load ratings per carriage

Length	Hole pitch			Static load rating		Static moment		
S mm	a mm	b mm	Holes per rail	C_{0rad} N	C_{0ax} N	M_x N·m	M_y N·m	M_z N·m
130	25	80	2	**26 000**	18 200	238.8	394	563
210	25	80	3	**42 000**	29 400	385.8	1 029	1 470
290	25	80	4	**58 000**	40 600	532.8	1 962	2 803
370	25	80	5	**74 000**	51 800	679.8	3 194	4 563
450	25	80	6	**90 000**	63 000	826.7	4 725	6 750
530	25	80	7	**106 000**	74 200	973.7	6 554	9 363
610	25	80	8	**122 000**	85 400	1120.7	8 682	12 403

Standard rail lengths L [mm]: 610, 690, 770, 850, 930, 1 010, 1 090, 1 170, 1 250, 1 330, 1 410, 1 490, 1 570, 1 650, 1 730, 1 810, 1 890, 1 970. End allowance K = 30 mm. Weight: rail 6.1 kg/m, carriage 6.9 kg/m.

Standard rail and carriage lengths

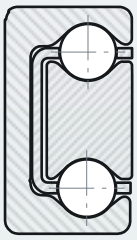
Size	Shortest L mm	Longest L mm	Step mm	Lengths number	Carriage lengths S mm
VT-L22	130	1 170	80	14	40, 60, 80, 130, 210, 290
VT-L28	130	1 650	80	20	60, 80, 130, 210, 290, 370, 450
VT-L35	290	1 810	80	20	130, 210, 290, 370, 450, 530, 610
VT-L43	290	1 970	80	22	130, 210, 290, 370, 450, 530, 610
VT-L63	610	1 970	80	18	130, 210, 290, 370, 450, 530, 610

Rail lengths in steps of 80 mm, matching the hole pitch; any carriage length S with any stroke H within L = S + H + K.

04

VT-P

Partial extension



Cross-section



≈ 50 %	22 · 28 · 35 · 43 · 63	88.5 kN	1970 mm
Extension	Sizes	Max. C_{0rad}, per pair of rails	Max. rail length

Partial extension (~50 %) — maximum rigidity and the highest load capacity in the telescopic range.

An outer C-rail (fixed) and an inner slider (moving) extend on bearing balls. Built from cold-drawn CF53 with induction-hardened raceways, VT-P forms an exceptionally stiff assembly designed for precision under high load, intensive cycling and shock.

Advantages

- **Highest telescopic load.** Hardened raceways and a stiff two-part build give the highest capacity of the telescopic range.
- **Compact & rigid.** Minimal section for the load — ideal for confined, high-stiffness mountings.
- **One- or two-way travel.** Remove the stop screw to allow travel in both directions.
- **Shock & crash rated.** Designed for intensive cycling, shock loads and crash-test duty.

Technical data

Profile	Outer C-rail + inner slider
Material	CF53 · hardened raceways
Temperature	−20 … +170 °C
Max. speed	0.8 m/s
Max. acceleration	1.2 m/s²

In this chapter

Design and features	15
Dimensions	16
Ordering code	17
Technical data	18

Design and features

Series **VT-P** is a **partial-extension** telescopic slide: the outer rail fastens to the supporting structure while the inner carriage extends on bearing balls — typically **50–60 %** of the overall length. When integrated into a load-bearing structure it becomes extremely rigid.

Because it does not carry an intermediate member, deflection is governed almost entirely by the rigidity of the mating structure. Removing the stop screw converts the slide to **two-way travel**. It carries radial and axial loads plus moments in all principal directions.

Typical applications

- Heavy machine building
- Construction technology
- Automotive
- Railway rolling stock
- Logistics complexes
- Food-industry equipment

Features

- Partial extension — typically **50–60 %** of the overall length
- Outer C-rail fastened to the structure; inner slider extends on bearing balls — no intermediate member
- Cold-drawn carbon steel CF53 with induction-hardened raceways; high static and dynamic rigidity
- Carries radial and axial loads as well as moments about all three principal axes
- One-way as standard; two-way travel by removing the stop screw
- Countersunk holes for flush mounting · designed for intensive cycling, shock loads and crash tests
- −20 … +170 °C · max. 0.8 m/s

Extension

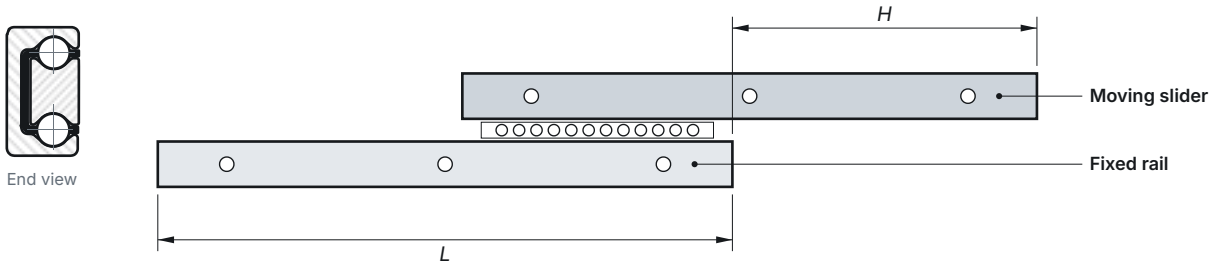


Fig. 8 VT-P extended: the slider travels H ≈ 50–60 % of the closed length L; there is no intermediate member

Travel

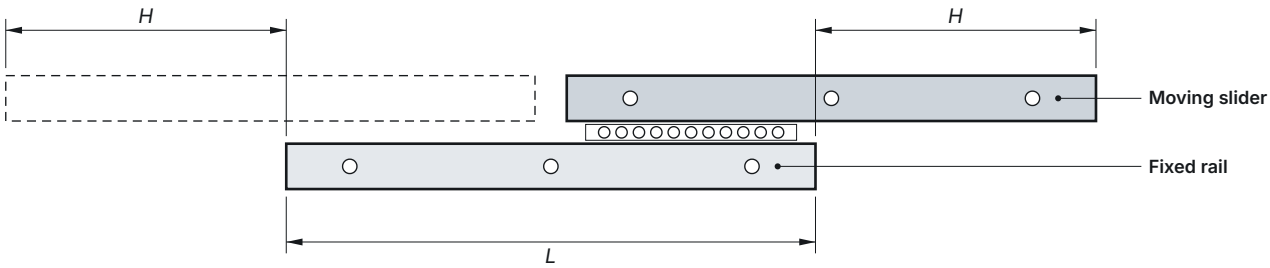


Fig. 9 VT-P two-way: with the stop screw removed the slider extends by H to either side (dashed)

One-way as standard. Removing the stop screw allows travel in both directions — in the extended position the slider then projects to either side. Two partial-extension slides mounted on a single profile form a **full-extension system with high load capacity**; ask our engineers for individual solutions.

Dimensions

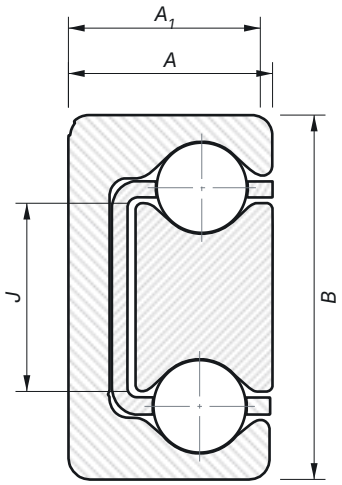


Fig. 10 Cross-section VT-P

Section dimensions

Size	A mm	A_1 mm	B mm	J mm	G mm	Thread	Corner
22	11	10.25	22	11.3	6.5	M4	R3
28	13	12.25	28	15.0	7.5	M5	R1
35	17	16	35	15.8	10.0	M6	R2
43	22	21	43	23.0	13.5	M8	R2.5
63	29	28	63	29.3	10.5	M8	2×45°

Dimension key

A	overall section width
A_1	inner width — from the same outer face as A, stopping 0.75–1 mm short of the opposite face
B	overall section height
J	height of the inner slider
G	thickness of the inner slider = usable thread depth (size 63: depth of the blind thread)
Thread	mounting thread in outer rail and inner slider
Corner	corner radius / chamfer of the outer profile

Mounting-hole pattern

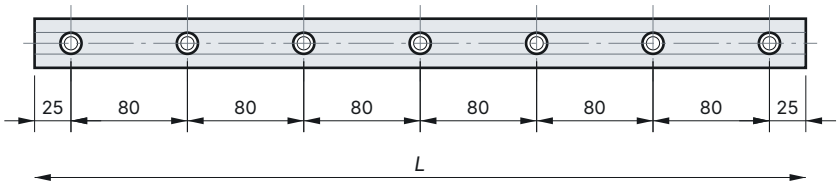


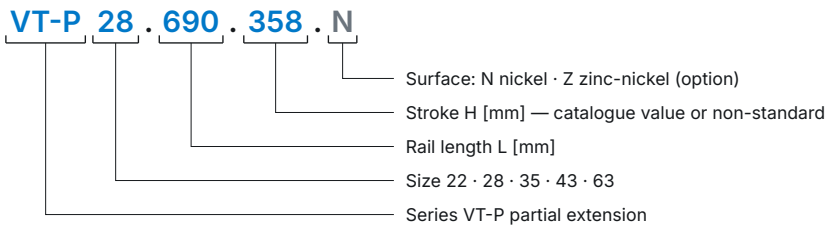
Fig. 11 Rail in plan view, example L = 530 mm: first hole 25 mm from each end, then 80 mm pitch

The first mounting hole sits **25 mm** from each end of the rail; the remaining holes follow a constant **80 mm** pitch. The hole count for every catalogue length is listed in the specification tables below.

Mounting threads: **M4** (size 22) · **M5** (size 28) · **M6** (size 35) · **M8** (size 43 / 63). Countersunk DIN 7991 or cheese-head DIN 7984. Property class 10.9; tightening torques on page 52.

Ordering code

Example: **VT-P28.690.358.N**. Lengths and strokes in millimetres; option suffixes only when they differ from standard.



Code fields

Field	Meaning
VT-P	Series — partial extension
28	Size (22 / 28 / 35 / 43 / 63)
690	Rail length L [mm]
358	Stroke H [mm] (catalogue, or if non-standard)
N	Additional coating if ≠ standard ISO 2081 zinc

Examples

Part number	Meaning
VT-P28.690	VT-P28, rail L = 690 mm, catalogue stroke, zinc
VT-P63.1090.573.N	VT-P63, rail L = 1090 mm, stroke H = 573 mm stated, nickel-plated

Surface

Suffix	Finish
—	electrolytic zinc per ISO 2081 (standard)
N	nickel
Z	zinc-nickel
on request	E-coat

Non-standard stroke

A stroke other than the catalogue value must be a multiple of the cage step below. A changed stroke alters the rated capacity and may make some mounting holes inaccessible.

Size	Stroke step
VT-P22	7.5 mm
VT-P28	9.5 mm
VT-P35	12 mm
VT-P43	15 mm
VT-P63	20 mm

QUOTATION

Send series and size, rail length L and stroke H, quantity, load and its position, cycles, environment and mounting orientation — we return a checked selection with a dimensioned drawing.

Technical data

Load ratings and moments **per pair of rails**; M_x* per single rail. Designation = series, size and rail length; add the stroke only if non-standard.

VT-P22 9 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Static load rating C_{0ax} N	Static moment M_x* N·m	Static moment M_y N·m	Static moment M_z N·m	Holes per rail	Weight kg / rail
VT-P22.130	130	76	**626**	438	5.7	20	30	2	0.2
VT-P22.210	210	111	**1 430**	1 002	10.7	72	102	3	0.3
VT-P22.290	290	154	**1 988**	1 392	14.9	138	198	4	0.4
VT-P22.370	370	196	**2 556**	1 790	19.0	226	324	5	0.5
VT-P22.450	450	231	**3 402**	2 380	24.0	360	516	6	0.6
VT-P22.530	530	274	**3 958**	2 770	28.2	496	710	7	0.7
VT-P22.610	610	316	**4 524**	3 168	32.3	654	934	8	0.8
VT-P22.690	690	351	**5 378**	3 764	37.3	872	1 246	9	0.9
VT-P22.770	770	394	**5 934**	4 154	41.5	1 078	1 538	10	1.0

VT-P28 14 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Static load rating C_{0ax} N	Static moment M_x* N·m	Static moment M_y N·m	Static moment M_z N·m	Holes per rail	Weight kg / rail
VT-P28.130	130	74	**1 226**	858	15.3	40	56	2	0.3
VT-P28.210	210	116	**2 232**	1 562	26.1	114	164	3	0.4
VT-P28.290	290	148	**3 868**	2 708	39.6	264	376	4	0.6
VT-P28.370	370	190	**4 890**	3 422	50.4	426	610	5	0.7
VT-P28.450	450	232	**5 910**	4 138	61.2	628	898	6	0.9
VT-P28.530	530	274	**6 932**	4 852	72.0	870	1 242	7	1.1
VT-P28.610	610	316	**7 952**	5 566	82.8	1 150	1 642	8	1.2
VT-P28.690	690	358	**8 974**	6 282	93.6	1 470	2 100	9	1.4
VT-P28.770	770	400	**9 994**	6 996	104.4	1 828	2 612	10	1.6
VT-P28.850	850	433	**11 656**	8 160	117.9	2 330	3 330	11	1.7
VT-P28.930	930	475	**12 676**	8 872	128.7	2 778	3 968	12	1.9
VT-P28.1010	1 010	517	**13 696**	9 586	139.5	3 262	4 660	13	2.0
VT-P28.1090	1 090	559	**14 716**	10 300	150.3	3 788	5 410	14	2.2
VT-P28.1170	1 170	601	**15 736**	11 014	161.1	4 350	6 216	15	2.4

Technical data (continued)

VT-P35 17 standard lengths

Designation	Length L mm	H mm	Static load rating C_{0rad} N	C_{0ax} N	Static moment M_x* N·m	M_y N·m	M_z N·m	Holes per rail	Weight kg / rail
VT-P35.210	210	127	2 130	1 492	29.4	114	164	3	0.6
VT-P35.290	290	159	4 120	2 884	46.9	292	416	4	0.9
VT-P35.370	370	203	5 276	3 694	59.9	476	680	5	1.1
VT-P35.450	450	247	6 434	4 504	73.0	708	1 010	6	1.4
VT-P35.530	530	279	8 564	5 994	90.4	1 086	1 550	7	1.6
VT-P35.610	610	323	9 716	6 802	103.5	1 422	2 030	8	1.9
VT-P35.690	690	367	10 870	7 608	116.6	1 804	2 576	9	2.1
VT-P35.770	770	399	13 042	9 130	134.0	2 382	3 404	10	2.3
VT-P35.850	850	443	14 190	9 932	147.1	2 870	4 100	11	2.6
VT-P35.930	930	487	15 338	10 736	160.2	3 404	4 862	12	2.8
VT-P35.1010	1 010	519	17 530	12 272	177.6	4 184	5 978	13	3.1
VT-P35.1090	1 090	563	18 674	13 072	190.7	4 824	6 890	14	3.3
VT-P35.1170	1 170	607	19 818	13 874	203.8	5 508	7 868	15	3.6
VT-P35.1250	1 250	639	22 024	15 416	221.2	6 490	9 272	16	3.8
VT-P35.1330	1 330	683	23 164	16 214	234.3	7 280	10 400	17	4.1
VT-P35.1410	1 410	727	24 306	17 014	247.4	8 116	11 594	18	4.3
VT-P35.1490	1 490	759	26 520	18 564	264.8	9 300	13 286	19	4.5

VT-P43 23 standard lengths

Designation	Length L mm	H mm	Static load rating C_{0rad} N	C_{0ax} N	Static moment M_x* N·m	M_y N·m	M_z N·m	Holes per rail	Weight kg / rail
VT-P43.210	210	123	3 190	2 234	60.6	168	240	3	1.1
VT-P43.290	290	158	5 744	4 020	93.8	402	576	4	1.5
VT-P43.370	370	208	6 754	4 728	115.9	616	880	5	1.9
VT-P43.450	450	243	9 380	6 566	149.2	1 018	1 456	6	2.4
VT-P43.530	530	278	12 078	8 454	182.4	1 524	2 176	7	2.8
VT-P43.610	610	313	14 822	10 376	215.6	2 128	3 042	8	3.2
VT-P43.690	690	363	15 726	11 008	237.8	2 588	3 698	9	3.6
VT-P43.770	770	398	18 464	12 926	271.0	3 362	4 804	10	4.0
VT-P43.850	850	433	21 230	14 862	304.2	4 238	6 054	11	4.5
VT-P43.930	930	483	22 108	15 476	326.4	4 878	6 968	12	4.9
VT-P43.1010	1 010	518	24 868	17 408	359.6	5 922	8 460	13	5.3
VT-P43.1090	1 090	568	25 754	18 028	381.8	6 674	9 534	14	5.7
VT-P43.1170	1 170	603	28 508	19 956	415.0	7 886	11 266	15	6.1
VT-P43.1250	1 250	638	31 276	21 894	448.2	9 198	13 142	16	6.6
VT-P43.1330	1 330	688	32 150	22 504	470.4	10 130	14 472	17	7.0
VT-P43.1410	1 410	723	34 912	24 438	503.6	11 612	16 590	18	7.4
VT-P43.1490	1 490	758	37 690	26 382	536.8	13 196	18 850	19	7.8
VT-P43.1570	1 570	793	40 476	28 334	570.1	14 880	21 256	20	8.2
VT-P43.1650	1 650	843	41 322	28 926	592.2	16 058	22 940	21	8.7
VT-P43.1730	1 730	878	44 104	30 872	625.5	17 912	25 588	22	9.1
VT-P43.1810	1 810	928	44 958	31 472	647.6	19 202	27 432	23	9.5
VT-P43.1890	1 890	963	47 734	33 414	680.8	21 224	30 320	24	9.9
VT-P43.1970	1 970	1 013	48 596	34 018	703.0	22 628	32 324	25	10.3

Technical data (continued)

VT-P63 18 standard lengths

Designation	Length L mm	H mm	Static load rating C_{0rad} N	C_{0ax} N	Static moment M_x* N·m	M_y N·m	M_z N·m	Holes per rail	Weight kg / rail
VT-P63.610	610	333	**21 182**	14 828	474.0	3 106	4 438	8	6.3
VT-P63.690	690	373	**25 068**	17 548	547.5	4 144	5 920	9	7.1
VT-P63.770	770	413	**28 978**	20 284	621.0	5 332	7 616	10	7.9
VT-P63.850	850	453	**32 904**	23 032	694.5	6 668	9 526	11	8.8
VT-P63.930	930	493	**36 842**	25 790	768.0	8 154	11 648	12	9.6
VT-P63.1010	1 010	533	**40 790**	28 554	841.4	9 788	13 984	13	10.4
VT-P63.1090	1 090	573	**44 746**	31 322	914.9	11 574	16 534	14	11.2
VT-P63.1170	1 170	613	**48 708**	34 096	988.4	13 508	19 296	15	12.1
VT-P63.1250	1 250	653	**52 674**	36 872	1061.9	15 590	22 272	16	12.9
VT-P63.1330	1 330	693	**56 644**	39 650	1135.4	17 824	25 462	17	13.7
VT-P63.1410	1 410	733	**60 618**	42 432	1208.9	20 204	28 864	18	14.5
VT-P63.1490	1 490	773	**64 594**	45 216	1282.4	22 736	32 480	19	15.3
VT-P63.1570	1 570	813	**68 574**	48 002	1355.9	25 416	36 310	20	16.2
VT-P63.1650	1 650	853	**72 554**	50 788	1429.4	28 246	40 352	21	17.0
VT-P63.1730	1 730	893	**76 536**	53 576	1502.8	31 226	44 608	22	17.8
VT-P63.1810	1 810	933	**80 522**	56 364	1576.3	34 354	49 078	23	18.6
VT-P63.1890	1 890	973	**84 506**	59 154	1649.8	37 632	53 760	24	19.5
VT-P63.1970	1 970	1 013	**88 494**	61 946	1723.3	41 060	58 656	25	20.3

Standard lengths and strokes

L mm	VT-P22 H mm	VT-P28 H mm	VT-P35 H mm	VT-P43 H mm	VT-P63 H mm
130	76	74			
210	111	116	127	123	
290	154	148	159	158	
370	196	190	203	208	
450	231	232	247	243	
530	274	274	279	278	
610	316	316	323	313	333
690	351	358	367	363	373
770	394	400	399	398	413
850		433	443	433	453
930		475	487	483	493
1010		517	519	518	533
1090		559	563	568	573
1170		601	607	603	613
1250			639	638	653
1330			683	688	693
1410			727	723	733
1490			759	758	773
1570				793	813
1650				843	853
1730				878	893
1810				928	933
1890				963	973
1970				1 013	1 013

Stroke H in mm for each standard rail length L; empty = length not offered in that size.

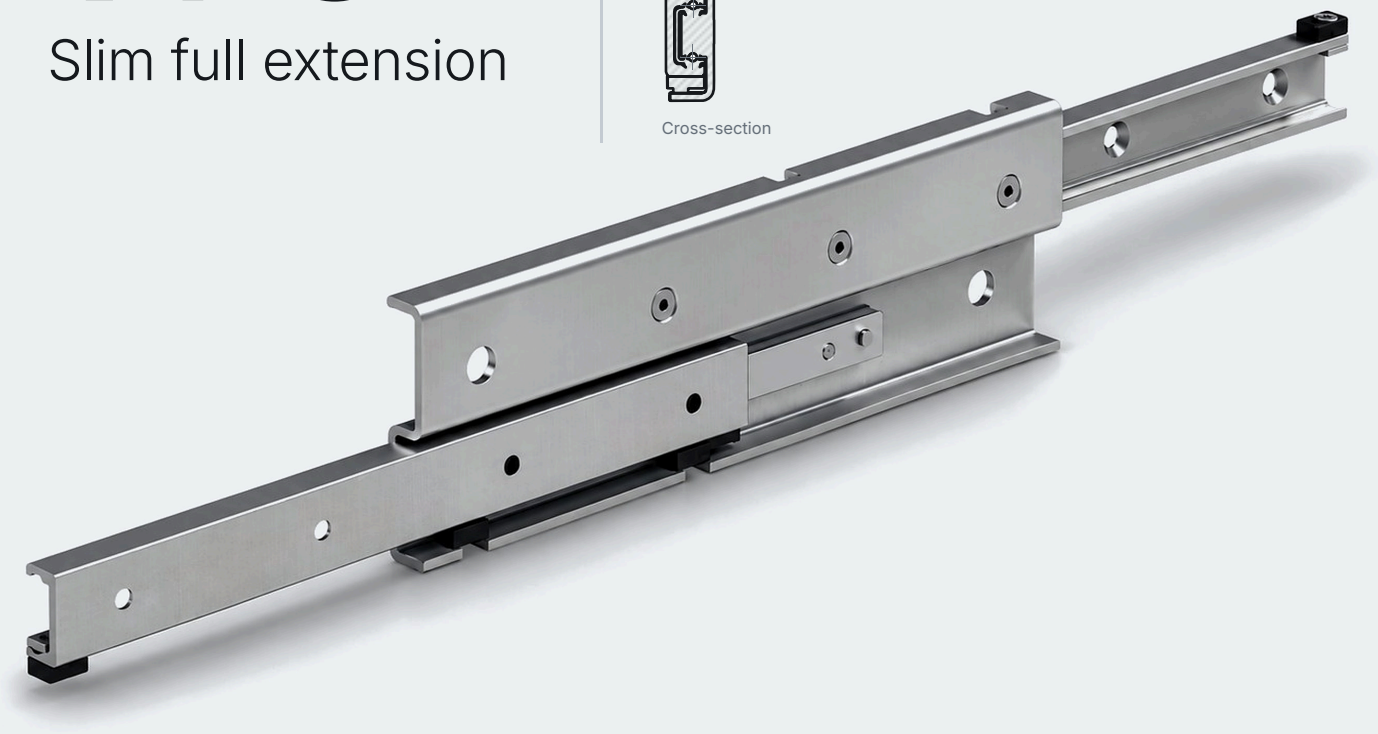
05

VT-S

Slim full extension



Cross-section



100 %	28 · 35 · 43 · 63	38 kN	1970 mm
Extension	Sizes	Max. C_{0rad}, per pair of rails	Max. rail length

Slim S-profile, full extension, minimal deflection.

A fixed part, an identical moving part and an **S-shaped intermediate member**. The S-section gives a very high moment of inertia, so the rail can be made slim yet extremely strong — minimal deflection even fully extended.

Advantages

- **Minimal deflection.** High structural rigidity keeps deflection small even at full extension.
- **Slim profile.** The S-section packs high stiffness into a narrow envelope.
- **Full + extended stroke.** 100 % access; S1 special order to 130 % of rail length.
- **One- or two-way.** S1 one-way or S2 two-way travel to suit the layout.

Technical data

Profile	S-profile intermediate
Material	CF53 · hardened raceways
Temperature	−20 … +80 °C
Max. speed	0.8 m/s
Max. acceleration	1.2 m/s²

In this chapter

Design and features	**22**
Dimensions	**23**
Ordering code	**24**
Technical data	**25**

Design and features

Series **VT-S** achieves **100 % extension** through an S-shaped intermediate member whose section shape delivers a high moment of inertia. The result is a **very narrow yet very rigid** slide with minimal deflection across both short and long strokes. It is built to carry load **radially** onto the moving rail.

Available **one-way (S1)** — the moving part extends from one side, stroke slightly exceeding rail length — or **two-way (S2)**, extending to both sides. One-way versions can be ordered with extended stroke to **130 %** on request. Built-in rubber-damped stops arrest slow manual travel; **external end stops are mandatory** for fast or automatic motion.

Typical applications

- Drawer & rack systems
- Server / electronics racks
- Medical equipment
- Access panels & covers
- Industrial furniture

Features

- Full extension (100 %) with an **S-shaped intermediate member** — very high moment of inertia in a narrow width
- Fixed and moving parts identical, both with hardened internal raceways
- S1 one-way (stroke slightly exceeds the rail length) · S2 two-way (extends to both sides)
- Extended stroke up to **130 %** of the rail length on special order (S1)
- Built-in rubber-damped stops for slow manual movement
- Load must act radially onto the moving (lower) rail
- −20 … +80 °C (rubber stops) · max. 0.8 m/s

Extension

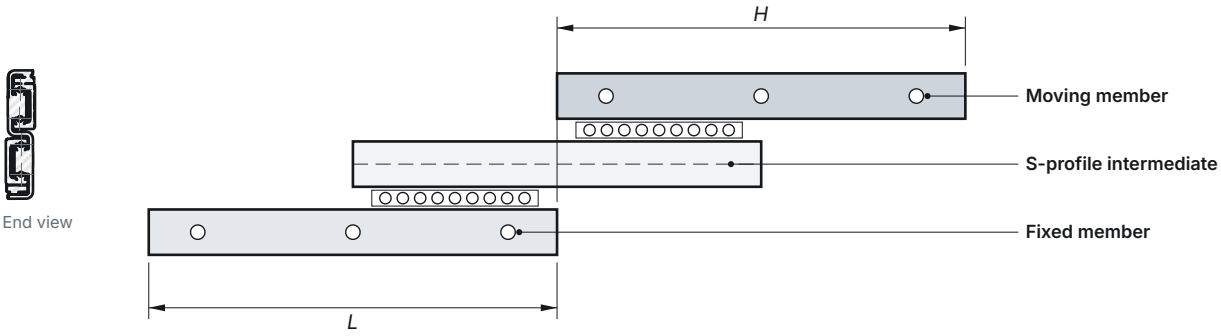


Fig. 12 VT-S1 extended: stroke H ≈ rail length L (slightly more, see the size tables); VT-S2 extends to both sides

Versions S1 and S2

S1 — one-way. The moving part extends from one side only; the stroke slightly exceeds the rail length. Extended stroke to 130 % on special order.

S2 — two-way. The moving part extends to both sides; travel to each side is a little less than the rail length. The intermediate member returns only when picked up by the reversing moving part. The S2 stroke cannot be changed.

⚠ CAUTION

The rubber-damped stops are designed for slow manual movement. For fast or automatic travel, external end stops are mandatory.

Dimensions

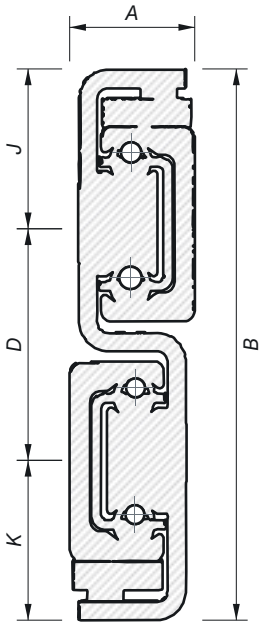


Fig. 13 Cross-section VT-S

Section dimensions

Size	A mm	B mm	K mm	D mm	J mm	Thread
28	17.0	84	24.5	35	24.5	M5
35	22.5	104	30.5	43	30.5	M6
43	28.0	120	34.0	52	34.0	M8
63	40.0	208	64.0	80	64.0	M10

Section values as rated for VT-S1.

Dimension key

A	overall section width
B	overall section height
J	top edge → upper mounting-hole axis
D	spacing between the two mounting-hole axes
K	lower mounting-hole axis → bottom edge
Thread	mounting thread

Mounting-hole pattern

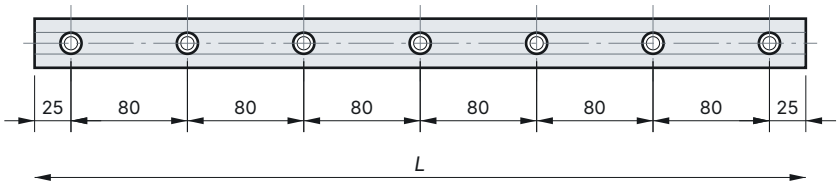


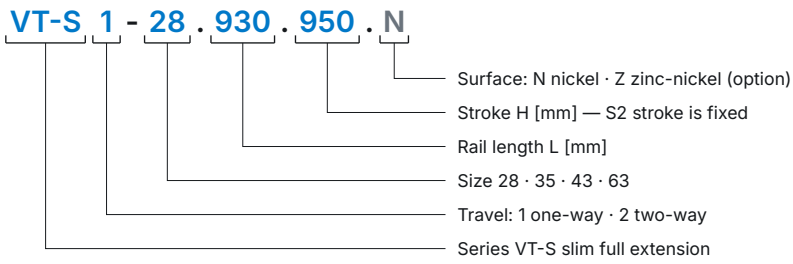
Fig. 14 Rail in plan view, example L = 530 mm: first hole 25 mm from each end, then 80 mm pitch

The first mounting hole sits **25 mm** from each end of the rail; the remaining holes follow a constant **80 mm** pitch. The hole count for every catalogue length is listed in the specification tables below.

Mounting threads: **M5** (size 28) · **M6** (size 35) · **M8** (size 43) · **M10** (size 63). Countersunk DIN 7991 or cheese-head DIN 7984. Property class 10.9; tightening torques on page 52.

Ordering code

Example: **VT-S1-28.930.950.N**. Lengths and strokes in millimetres; option suffixes only when they differ from standard.



Code fields

Field	Meaning
VT-S	Series — slim full extension
1 / 2	Travel: 1 = one-way · 2 = two-way
28	Size (28 / 35 / 43 / 63)
930	Rail length L [mm]
950	Stroke H [mm] (S2 stroke is fixed)
N	Additional coating if ≠ standard ISO 2081 zinc

Examples

Part number	Meaning
VT-S1-35.1090	VT-S1-35 (one-way S1), rail L = 1090 mm, catalogue stroke, zinc
VT-S2-63.1090.878.N	VT-S2-63, rail L = 1090 mm, stroke H = 878 mm stated, nickel-plated

Surface

Suffix	Finish
—	electrolytic zinc per ISO 2081 (standard)
N	nickel
Z	zinc-nickel
on request	E-coat

Non-standard stroke

A stroke other than the catalogue value must be a multiple of the cage step below. A changed stroke alters the rated capacity and may make some mounting holes inaccessible. The VT-S2 stroke cannot be changed.

Size	Stroke step
VT-S1-28	19 mm
VT-S1-35	24 mm
VT-S1-43	30 mm
VT-S1-63	40 mm

Standard lengths and strokes

L mm	VT-S1-28 H mm	VT-S1-35 H mm	VT-S1-43 H mm	VT-S1-63 H mm
290	296			
370	380			
450	464	494		
530	548	558	556	
610	630	646	626	666
690	714	734	726	746
770	798	798	796	826
850	864	886	866	906
930	950	974	966	986
1010	1 034	1 038	1 036	1 066
1090	1 118	1 126	1 106	1 146
1170	1 202	1 214	1 206	1 226
1250	1 266	1 278	1 276	1 306
1330	1 350	1 366	1 376	1 386
1410	1 434	1 454	1 446	1 466
1490	1 518	1 518	1 516	1 546
1570		1 606	1 616	1 626
1650		1 694	1 686	1 706
1730		1 758	1 756	1 786
1810			1 856	1 866
1890			1 926	1 946
1970			2 026	2 026

Stroke H in mm for each standard rail length L; empty = length not offered in that size. S1 one-way; VT-S2 strokes are fixed — see the size tables.

QUOTATION

Send series and size, rail length L and stroke H, quantity, load and its position, cycles, environment and mounting orientation — we return a checked selection with a dimensioned drawing.

Technical data

Load rating **per pair of rails**. Holes = hole count of the fixed / moving rail (e.g. 3 / 4).
Designations shown for S1; for the two-way version read S2.

VT-S1-28 16 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Holes per rail	Weight kg / rail
VT-S1-28.290	290	296	1 140	3 / 4	1.9
VT-S1-28.370	370	380	1 538	4 / 5	2.4
VT-S1-28.450	450	464	1 938	4 / 6	2.9
VT-S1-28.530	530	548	2 340	6 / 7	3.4
VT-S1-28.610	610	630	2 752	6 / 8	3.9
VT-S1-28.690	690	714	3 154	7 / 9	4.4
VT-S1-28.770	770	798	3 556	7 / 10	4.9
VT-S1-28.850	850	864	4 222	9 / 11	5.4
VT-S1-28.930	930	950	4 480	9 / 12	6.0
VT-S1-28.1010	1 010	1 034	4 108	10 / 13	6.5
VT-S1-28.1090	1 090	1 118	3 792	10 / 14	7.0
VT-S1-28.1170	1 170	1 202	3 522	12 / 15	7.5
VT-S1-28.1250	1 250	1 266	3 390	12 / 16	8.0
VT-S1-28.1330	1 330	1 350	3 172	13 / 17	8.5
VT-S1-28.1410	1 410	1 434	2 980	13 / 18	9.0
VT-S1-28.1490	1 490	1 518	2 810	15 / 19	9.5

VT-S1-35 17 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Holes per rail	Weight kg / rail
VT-S1-35.450	450	494	2 500	5 / 6	4.5
VT-S1-35.530	530	558	3 370	6 / 7	5.4
VT-S1-35.610	610	646	3 816	6 / 8	6.2
VT-S1-35.690	690	734	4 264	7 / 9	7.0
VT-S1-35.770	770	798	5 158	8 / 10	7.8
VT-S1-35.850	850	886	5 602	9 / 11	8.6
VT-S1-35.930	930	974	6 048	9 / 12	9.4
VT-S1-35.1010	1 010	1 038	6 952	10 / 13	10.2
VT-S1-35.1090	1 090	1 126	7 016	11 / 14	11.0
VT-S1-35.1170	1 170	1 214	6 480	12 / 15	11.8
VT-S1-35.1250	1 250	1 278	6 242	12 / 16	12.6
VT-S1-35.1330	1 330	1 366	5 814	13 / 17	13.4
VT-S1-35.1410	1 410	1 454	5 442	14 / 18	14.2
VT-S1-35.1490	1 490	1 518	5 272	15 / 19	15.0
VT-S1-35.1570	1 570	1 606	4 964	15 / 20	15.9
VT-S1-35.1650	1 650	1 694	4 690	16 / 21	16.7
VT-S1-35.1730	1 730	1 758	4 564	17 / 22	17.5

VT-S1-43 19 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Holes per rail	Weight kg / rail
VT-S1-43.530	530	556	4 122	6 / 7	7.7
VT-S1-43.610	610	626	5 206	6 / 8	8.9
VT-S1-43.690	690	726	5 550	7 / 9	10.1
VT-S1-43.770	770	796	6 638	7 / 10	11.2
VT-S1-43.850	850	866	7 746	9 / 11	12.4
VT-S1-43.930	930	966	8 072	9 / 12	13.6
VT-S1-43.1010	1 010	1 036	9 180	10 / 13	14.7
VT-S1-43.1090	1 090	1 106	10 208	10 / 14	15.9
VT-S1-43.1170	1 170	1 206	9 220	12 / 15	17.1
VT-S1-43.1250	1 250	1 276	8 796	12 / 16	18.3
VT-S1-43.1330	1 330	1 376	8 054	13 / 17	19.4
VT-S1-43.1410	1 410	1 446	7 728	14 / 18	20.6
VT-S1-43.1490	1 490	1 516	7 426	15 / 19	21.8
VT-S1-43.1570	1 570	1 616	6 890	15 / 20	22.9
VT-S1-43.1650	1 650	1 686	6 650	16 / 21	24.1
VT-S1-43.1730	1 730	1 756	6 426	17 / 22	25.3
VT-S1-43.1810	1 810	1 856	6 022	18 / 23	26.4
VT-S1-43.1890	1 890	1 926	5 838	18 / 24	27.6
VT-S1-43.1970	1 970	2 026	5 500	19 / 25	28.8

VT-S1-63 18 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Holes per rail	Weight kg / rail
VT-S1-63.610	610	666	7 004	6 / 8	19.9
VT-S1-63.690	690	746	8 504	8 / 9	22.5
VT-S1-63.770	770	826	10 024	8 / 10	25.1
VT-S1-63.850	850	906	11 560	9 / 11	27.7
VT-S1-63.930	930	986	13 104	9 / 12	30.3
VT-S1-63.1010	1 010	1 066	14 658	11 / 13	32.9
VT-S1-63.1090	1 090	1 146	16 218	11 / 14	35.5
VT-S1-63.1170	1 170	1 226	17 784	12 / 15	38.1
VT-S1-63.1250	1 250	1 306	19 354	12 / 16	40.8
VT-S1-63.1330	1 330	1 386	20 928	14 / 17	43.4
VT-S1-63.1410	1 410	1 466	22 504	14 / 18	46.0
VT-S1-63.1490	1 490	1 546	24 082	15 / 19	48.6
VT-S1-63.1570	1 570	1 626	25 664	15 / 20	51.2
VT-S1-63.1650	1 650	1 706	24 728	17 / 21	53.8
VT-S1-63.1730	1 730	1 786	23 654	17 / 22	56.4
VT-S1-63.1810	1 810	1 866	22 668	18 / 23	59.0
VT-S1-63.1890	1 890	1 946	21 762	18 / 24	61.6
VT-S1-63.1970	1 970	2 026	20 926	20 / 25	64.2

Technical data (continued)

VT-S2-28 16 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Holes per rail	Weight kg / rail
VT-S2-28.290	290	246	1 790	4 / 4	1.9
VT-S2-28.370	370	326	2 210	4 / 5	2.4
VT-S2-28.450	450	406	2 634	6 / 6	2.9
VT-S2-28.530	530	486	3 252	6 / 7	3.4
VT-S2-28.610	610	566	3 674	8 / 8	3.9
VT-S2-28.690	690	646	4 100	8 / 9	4.4
VT-S2-28.770	770	726	4 524	10 / 10	4.9
VT-S2-28.850	850	806	4 950	10 / 11	5.4
VT-S2-28.930	930	886	5 162	12 / 12	6.0
VT-S2-28.1010	1 010	966	4 714	12 / 13	6.5
VT-S2-28.1090	1 090	1 046	4 336	14 / 14	7.0
VT-S2-28.1170	1 170	1 126	4 016	14 / 15	7.5
VT-S2-28.1250	1 250	1 206	3 740	16 / 16	8.0
VT-S2-28.1330	1 330	1 286	3 498	16 / 17	8.5
VT-S2-28.1410	1 410	1 366	3 288	18 / 18	9.0
VT-S2-28.1490	1 490	1 446	3 100	18 / 19	9.5

VT-S2-35 17 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Holes per rail	Weight kg / rail
VT-S2-35.450	450	350	6 050	4 / 6	4.5
VT-S2-35.530	530	430	6 382	6 / 7	5.4
VT-S2-35.610	610	510	6 762	6 / 8	6.2
VT-S2-35.690	690	590	7 600	8 / 9	7.0
VT-S2-35.770	770	670	8 016	8 / 10	7.8
VT-S2-35.850	850	750	8 446	10 / 11	8.6
VT-S2-35.930	930	830	9 292	10 / 12	9.4
VT-S2-35.1010	1 010	910	9 736	12 / 13	10.2
VT-S2-35.1090	1 090	990	9 160	12 / 14	11.0
VT-S2-35.1170	1 170	1 070	8 404	14 / 15	11.8
VT-S2-35.1250	1 250	1 150	7 764	14 / 16	12.6
VT-S2-35.1330	1 330	1 230	7 214	16 / 17	13.4
VT-S2-35.1410	1 410	1 310	6 738	16 / 18	14.2
VT-S2-35.1490	1 490	1 390	6 320	18 / 19	15.0
VT-S2-35.1570	1 570	1 470	5 950	18 / 20	15.9
VT-S2-35.1650	1 650	1 550	5 622	20 / 21	16.7
VT-S2-35.1730	1 730	1 630	5 328	20 / 22	17.5

VT-S2-43 19 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Holes per rail	Weight kg / rail
VT-S2-43.530	530	476	6 036	6 / 7	7.7
VT-S2-43.610	610	556	6 530	8 / 8	8.9
VT-S2-43.690	690	636	7 562	8 / 9	10.1
VT-S2-43.770	770	716	8 594	10 / 10	11.2
VT-S2-43.850	850	796	9 094	10 / 11	12.4
VT-S2-43.930	930	876	10 126	12 / 12	13.6
VT-S2-43.1010	1 010	956	11 156	12 / 13	14.7
VT-S2-43.1090	1 090	1 036	11 660	14 / 14	15.9
VT-S2-43.1170	1 170	1 116	10 784	14 / 15	17.1
VT-S2-43.1250	1 250	1 196	10 028	16 / 16	18.3
VT-S2-43.1330	1 330	1 276	9 372	16 / 17	19.4
VT-S2-43.1410	1 410	1 356	8 796	18 / 18	20.6
VT-S2-43.1490	1 490	1 436	8 286	18 / 19	21.8
VT-S2-43.1570	1 570	1 516	7 834	20 / 20	22.9
VT-S2-43.1650	1 650	1 596	7 426	20 / 21	24.1
VT-S2-43.1730	1 730	1 676	7 060	22 / 22	25.3
VT-S2-43.1810	1 810	1 756	6 728	22 / 23	26.4
VT-S2-43.1890	1 890	1 836	6 426	24 / 24	27.6
VT-S2-43.1970	1 970	1 916	6 150	24 / 25	28.8

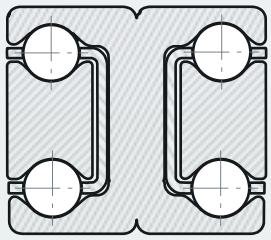
VT-S2-63 18 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Holes per rail	Weight kg / rail
VT-S2-63.610	610	398	23 716	6 / 8	19.9
VT-S2-63.690	690	478	24 484	6 / 9	22.5
VT-S2-63.770	770	558	25 434	8 / 10	25.1
VT-S2-63.850	850	638	26 500	8 / 11	27.7
VT-S2-63.930	930	718	27 646	10 / 12	30.3
VT-S2-63.1010	1 010	798	28 848	10 / 13	32.9
VT-S2-63.1090	1 090	878	30 092	12 / 14	35.5
VT-S2-63.1170	1 170	958	31 368	12 / 15	38.1
VT-S2-63.1250	1 250	1 038	32 668	14 / 16	40.8
VT-S2-63.1330	1 330	1 118	33 988	14 / 17	43.4
VT-S2-63.1410	1 410	1 198	35 322	16 / 18	46.0
VT-S2-63.1490	1 490	1 278	36 670	16 / 19	48.6
VT-S2-63.1570	1 570	1 358	38 018	18 / 20	51.2
VT-S2-63.1650	1 650	1 438	35 538	18 / 21	53.8
VT-S2-63.1730	1 730	1 518	33 360	20 / 22	56.4
VT-S2-63.1810	1 810	1 598	31 436	20 / 23	59.0
VT-S2-63.1890	1 890	1 678	29 720	22 / 24	61.6
VT-S2-63.1970	1 970	1 758	28 182	22 / 25	64.2

06

VT-X

I-beam full extension



Cross-section

100 %	22 · 28 · 35 · 43 · 63	14.4 kN	1970 mm
Extension	Sizes	Max. C_{0rad}, per pair of rails	Max. rail length

Square section, I-beam core — high radial capacity at 100 % extension.

Identical fixed and moving parts plus an **I-beam intermediate member** in a near-square section. The I-beam carries high loads — especially radial (vertical) — at minimal deflection, in a compact full-extension slide.

Advantages

- **High radial capacity.** The I-beam core carries significant vertical load at minimal deflection.
- **Compact square section.** Close-to-square envelope gives a compact system at high strength.
- **One- or two-way.** Standard one-way; two-way by removing the end-stop screws.
- **C or T hole types.** Countersunk (C, sizes 22–43) or threaded through-hole (T).

Technical data

Profile	Square section · I-beam core
Material	CF53 · hardened raceways
Temperature	−20 … +170 °C
Max. speed	0.8 m/s
Max. acceleration	1.2 m/s²

In this chapter

Design and features	**28**
Dimensions	**29**
Ordering code	**30**
Technical data	**31**

Design and features

Series **VT-X** reaches **100 % extension** using an I-beam intermediate member between two square rail halves. The geometry favours **radial (vertical) load** at low deflection; axial capacity is lower. In standard form the slide is one-way, the extended length slightly exceeding the closed length.

Two-way travel is obtained by removing the end-stop screws; built-in pins prevent the slide from coming apart. The pins stop the cage and return the intermediate member but are **not rated to stop the moving part under load** — fit external end stops. Mounting holes are offered countersunk (**C**) or threaded through-hole (**T**).

Typical applications

- Machine building
- Automation cells
- Pull-out trays
- Inspection drawers
- Vehicle equipment

Features

- Full extension (100 %) with an **I-beam intermediate member**; near-square cross-section
- High radial (vertical) load capacity at minimal deflection; axial capacity lower
- One-way as standard; two-way by removing the end-stop screws (built-in pins keep the slide together)
- Hole executions **C** countersunk (sizes 22–63) · **T** threaded through-hole M4 / M5 / M6 / M8 (sizes 22–43)
- Special stroke up to 130 % of the closed length on request
- Cold-drawn CF53, induction-hardened raceways · −20 … +170 °C · max. 0.8 m/s

Extension

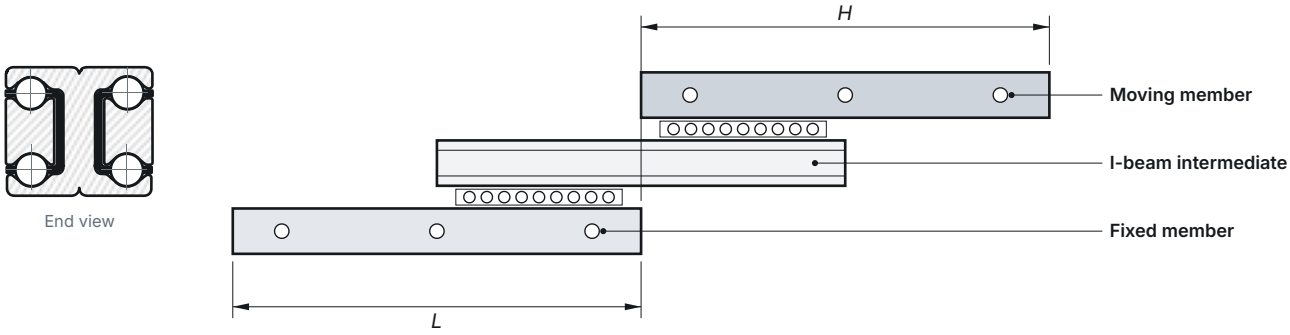


Fig. 15 VT-X extended: stroke H = closed length L (one-way); two-way with the end-stop screws removed

Hole executions

Code	Execution	Sizes
C	Countersunk holes for countersunk screw heads	22 · 28 · 35 · 43 · 63
T	Threaded through-holes M4 (22) · M5 (28) · M6 (35) · M8 (43)	22 · 28 · 35 · 43

⚠ CAUTION

Two-way travel: remove the end-stop screws at both ends of the intermediate member. The built-in pins stop the cage and return the intermediate member but are not rated to stop the moving part under load — fit external end stops.

Dimensions

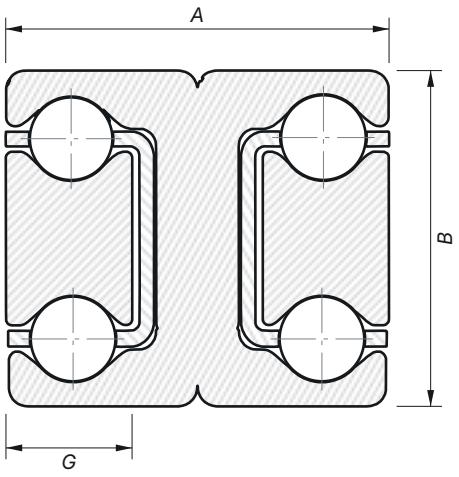


Fig. 16 Cross-section VT-X

Section dimensions

Size	A mm	B mm	G mm	Thread C	Thread T	Weight kg/m
22	22	22	6.5	M4	M4	2.64
28	26	28	7.5	M5	M5	4.04
35	34	35	10.0	M6	M6	6.10
43	44	43	13.5	M8	M8	10.50
63	58	63	10.5	M8	–	20.60

Dimension key

A	overall section width (fixed + moving rail)
B	overall section height
G	thickness of the fixed and moving rail = usable thread depth
Thread C	mounting thread, countersunk execution C
Thread T	mounting thread, threaded execution T

Mounting-hole pattern

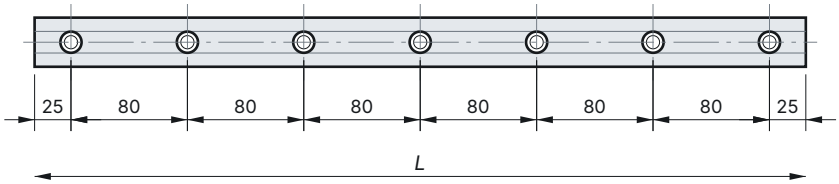


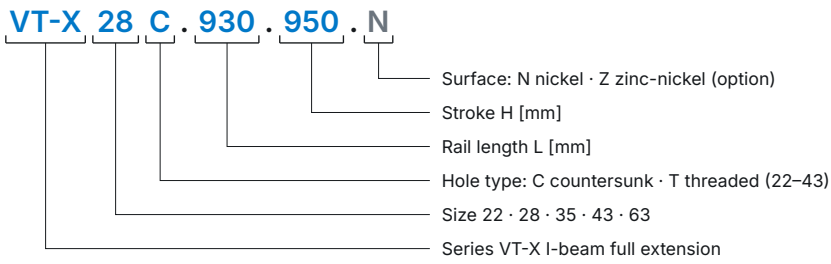
Fig. 17 Rail in plan view, example L = 530 mm: first hole 25 mm from each end, then 80 mm pitch

The first mounting hole sits **25 mm** from each end of the rail; the remaining holes follow a constant **80 mm** pitch. The hole count for every catalogue length is listed in the specification tables below. Sizes 22–43 are available with countersunk holes (execution C) or threaded through-holes (execution T); size 63 is countersunk only.

Mounting threads: **M4** (size 22) · **M5** (size 28) · **M6** (size 35) · **M8** (size 43 / 63). Countersunk DIN 7991 or cheese-head DIN 7984. Property class 10.9; tightening torques on page 52.

Ordering code

Example: **VT-X28C.930.950.N**. Lengths and strokes in millimetres; option suffixes only when they differ from standard.



Code fields

Field	Meaning
VT-X	Series — I-beam full extension
C / T	Hole type: C = countersunk · T = threaded through-hole
28	Size (22 / 28 / 35 / 43 / 63)
930	Rail length L [mm]
950	Stroke H [mm] (catalogue, or if non-standard)
N	Additional coating if ≠ standard ISO 2081 zinc

Examples

Part number	Meaning
VT-X28C.690	VT-X28 (countersunk holes C), rail L = 690 mm, catalogue stroke, zinc
VT-X63C.1090.1146.N	VT-X63, rail L = 1090 mm, stroke H = 1146 mm stated, nickel-plated

Surface

Suffix	Finish
—	electrolytic zinc per ISO 2081 (standard)
N	nickel
Z	zinc-nickel
on request	E-coat

Non-standard stroke

A stroke other than the catalogue value must be a multiple of the cage step below. A changed stroke alters the rated capacity and may make some mounting holes inaccessible.

Size	Stroke step
VT-X22	15 mm
VT-X28	19 mm
VT-X35	24 mm
VT-X43	30 mm
VT-X63	40 mm

QUOTATION

Send series and size, rail length L and stroke H, quantity, load and its position, cycles, environment and mounting orientation — we return a checked selection with a dimensioned drawing.

Technical data

Load ratings **per pair of rails**. Designation shown for hole type C; for threaded holes replace C by T (sizes 22–43). Hole type does not change the ratings.

VT-X22 9 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Static load rating C_{0ax} N	Holes per rail	Weight kg / rail
VT-X22C.130	130	152	**238**	166	2	0.3
VT-X22C.210	210	222	**562**	392	3	0.6
VT-X22C.290	290	308	**780**	546	4	0.8
VT-X22C.370	370	392	**1 002**	526	5	1.0
VT-X22C.450	450	462	**1 348**	460	6	1.2
VT-X22C.530	530	548	**1 142**	386	7	1.4
VT-X22C.610	610	632	**988**	334	8	1.6
VT-X22C.690	690	702	**906**	306	9	1.8
VT-X22C.770	770	788	**802**	270	10	2.0

VT-X28 14 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Static load rating C_{0ax} N	Holes per rail	Weight kg / rail
VT-X28C.130	130	148	**470**	328	2	0.5
VT-X28C.210	210	232	**864**	604	3	0.8
VT-X28C.290	290	296	**1 534**	1 074	4	1.2
VT-X28C.370	370	380	**1 936**	942	5	1.5
VT-X28C.450	450	464	**2 338**	770	6	1.8
VT-X28C.530	530	548	**2 214**	650	7	2.1
VT-X28C.610	610	633	**1 910**	560	8	2.5
VT-X28C.690	690	717	**1 684**	494	9	2.8
VT-X28C.770	770	801	**1 506**	442	10	3.1
VT-X28C.850	850	866	**1 420**	416	11	3.4
VT-X28C.930	930	950	**1 292**	378	12	3.8
VT-X28C.1010	1 010	1 034	**1 184**	348	13	4.1
VT-X28C.1090	1 090	1 118	**1 094**	320	14	4.4
VT-X28C.1170	1 170	1 202	**1 016**	298	15	4.7

VT-X35 17 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Static load rating C_{0ax} N	Holes per rail	Weight kg / rail
VT-X35C.210	210	254	**804**	562	3	1.3
VT-X35C.290	290	318	**1 600**	1 120	4	1.8
VT-X35C.370	370	406	**2 050**	1 436	5	2.3
VT-X35C.450	450	494	**2 500**	1 586	6	2.7
VT-X35C.530	530	558	**3 370**	1 456	7	3.2
VT-X35C.610	610	646	**3 816**	1 252	8	3.7
VT-X35C.690	690	734	**3 378**	1 096	9	4.2
VT-X35C.770	770	798	**3 182**	1 032	10	4.7
VT-X35C.850	850	886	**2 850**	926	11	5.2
VT-X35C.930	930	974	**2 582**	838	12	5.7
VT-X35C.1010	1 010	1 038	**2 466**	800	13	6.2
VT-X35C.1090	1 090	1 126	**2 262**	734	14	6.6
VT-X35C.1170	1 170	1 214	**2 090**	678	15	7.1
VT-X35C.1250	1 250	1 278	**2 012**	654	16	7.6
VT-X35C.1330	1 330	1 366	**1 874**	608	17	8.1
VT-X35C.1410	1 410	1 454	**1 754**	570	18	8.6
VT-X35C.1490	1 490	1 518	**1 700**	552	19	9.1

VT-X43 23 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Static load rating C_{0ax} N	Holes per rail	Weight kg / rail
VT-X43C.210	210	246	**1 210**	848	3	2.2
VT-X43C.290	290	316	**2 228**	1 560	4	3.0
VT-X43C.370	370	416	**2 600**	1 820	5	3.9
VT-X43C.450	450	486	**3 656**	2 558	6	4.7
VT-X43C.530	530	556	**4 750**	2 868	7	5.6
VT-X43C.610	610	626	**5 868**	2 600	8	6.4
VT-X43C.690	690	726	**6 182**	2 192	9	7.2
VT-X43C.770	770	796	**6 110**	2 032	10	8.1
VT-X43C.850	850	866	**5 694**	1 892	11	8.9
VT-X43C.930	930	966	**5 012**	1 666	12	9.8
VT-X43C.1010	1 010	1 036	**4 728**	1 572	13	10.6
VT-X43C.1090	1 090	1 106	**4 476**	1 488	14	11.4
VT-X43C.1170	1 170	1 206	**4 044**	1 344	15	12.3
VT-X43C.1250	1 250	1 276	**3 856**	1 282	16	13.1
VT-X43C.1330	1 330	1 376	**3 532**	1 174	17	14.0
VT-X43C.1410	1 410	1 446	**3 388**	1 126	18	14.8
VT-X43C.1490	1 490	1 516	**3 256**	1 082	19	15.6
VT-X43C.1570	1 570	1 586	**3 134**	1 042	20	16.5
VT-X43C.1650	1 650	1 686	**2 916**	970	21	17.3
VT-X43C.1730	1 730	1 756	**2 818**	936	22	18.2
VT-X43C.1810	1 810	1 856	**2 640**	878	23	19.0
VT-X43C.1890	1 890	1 926	**2 560**	850	24	19.8
VT-X43C.1970	1 970	2 026	**2 412**	802	25	20.7

Technical data (continued)

VT-X63 18 standard lengths

Designation	Length L mm	H mm	Static load rating C_{0rad} N	C_{0ax} N	Holes per rail	Weight kg / rail
VT-X63C.610	610	666	**8 180**	5 726	8	12.6
VT-X63C.690	690	746	**9 718**	6 124	9	14.2
VT-X63C.770	770	826	**11 270**	5 568	10	15.9
VT-X63C.850	850	906	**12 830**	5 106	11	17.5
VT-X63C.930	930	986	**14 396**	4 714	12	19.2
VT-X63C.1010	1 010	1 066	**13 770**	4 378	13	20.8
VT-X63C.1090	1 090	1 146	**12 854**	4 086	14	22.5
VT-X63C.1170	1 170	1 226	**12 052**	3 832	15	24.1
VT-X63C.1250	1 250	1 306	**11 344**	3 606	16	25.8
VT-X63C.1330	1 330	1 386	**10 714**	3 406	17	27.4
VT-X63C.1410	1 410	1 466	**10 152**	3 228	18	29.0
VT-X63C.1490	1 490	1 546	**9 644**	3 066	19	30.7
VT-X63C.1570	1 570	1 626	**9 186**	2 920	20	32.3
VT-X63C.1650	1 650	1 706	**8 768**	2 788	21	34.0
VT-X63C.1730	1 730	1 786	**8 388**	2 666	22	35.6
VT-X63C.1810	1 810	1 866	**8 038**	2 556	23	37.3
VT-X63C.1890	1 890	1 946	**7 718**	2 454	24	38.9
VT-X63C.1970	1 970	2 026	**7 420**	2 360	25	40.6

Standard lengths and strokes

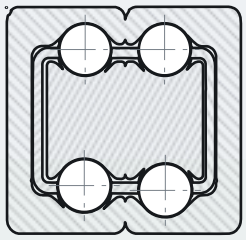
L mm	VT-X22 H mm	VT-X28 H mm	VT-X35 H mm	VT-X43 H mm	VT-X63 H mm
130	152	148			
210	222	232	254	246	
290	308	296	318	316	
370	392	380	406	416	
450	462	464	494	486	
530	548	548	558	556	
610	632	633	646	626	666
690	702	717	734	726	746
770	788	801	798	796	826
850		866	886	866	906
930		950	974	966	986
1 010		1 034	1 038	1 036	1 066
1 090		1 118	1 126	1 106	1 146
1 170		1 202	1 214	1 206	1 226
1 250			1 278	1 276	1 306
1 330			1 366	1 376	1 386
1 410			1 454	1 446	1 466
1 490			1 518	1 516	1 546
1 570				1 586	1 626
1 650				1 686	1 706
1 730				1 756	1 786
1 810				1 856	1 866
1 890				1 926	1 946
1 970				2 026	2 026

Stroke H in mm for each standard rail length L; empty = length not offered in that size.

07

VT-O

Square full extension



Cross-section



100 %	22 · 28 · 35 · 43	2.7 kN	1970 mm
Extension	Sizes	Max. C_{0rad}, per pair of rails	Max. rail length

Near-square section with a protected ball cage — compact full extension.

Two guide rails and two joined carriages form a near-square intermediate member. The rigid section can be mounted to take load radially or axially at practically the same capacity, while the closed box gives **good protection of the ball cage** against contamination.

Advantages

- **Protected ball cage.** The near-square box section shields the cage from contamination.
- **Radial or axial mount.** Mount the rigid intermediate either way at practically equal capacity.
- **Full extension.** 100 % access to the moving unit; special stroke to 130 % on request.
- **One- or two-way.** Standard one-way; two-way by removing the end-stop screws.

Technical data

Profile	Near-square · box intermediate
Material	CF53 · hardened raceways
Temperature	−20 … +170 °C
Max. speed	0.8 m/s
Max. acceleration	1.2 m/s²

In this chapter

Design and features	34
Dimensions	35
Ordering code	36
Technical data	37

Design and features

Series **VT-O** is a **full-extension** slide of near-square section, closely related to VT-X but with a box-form intermediate that shields the ball cage. The rigid intermediate allows mounting in either the **radial or axial** direction with almost the same load capacity.

Standard execution is one-way, the extended length slightly exceeding the closed length. **Two-way travel** is achieved by removing the end-stop screws — built-in pins keep the slide from separating. On request, special stroke to **130 %** of the closed length is available. External end stops are required to arrest a moving load.

Typical applications

- Contamination-prone environments
- Food & packaging
- Workshop drawers
- Vehicle storage
- Outdoor equipment

Features

- Full extension (100 %) — two guide rails plus two joined carriages forming a **near-square box intermediate**
- Good protection of the ball cage against contamination
- Rigid intermediate: mount for **radial or axial** load at practically the same capacity
- One-way as standard; two-way by removing the end-stop screws — total stroke then 2 H
- Special stroke up to 130 % of the closed length on request
- Cold-drawn CF53, induction-hardened raceways · −20 … +170 °C · max. 0.8 m/s

Extension

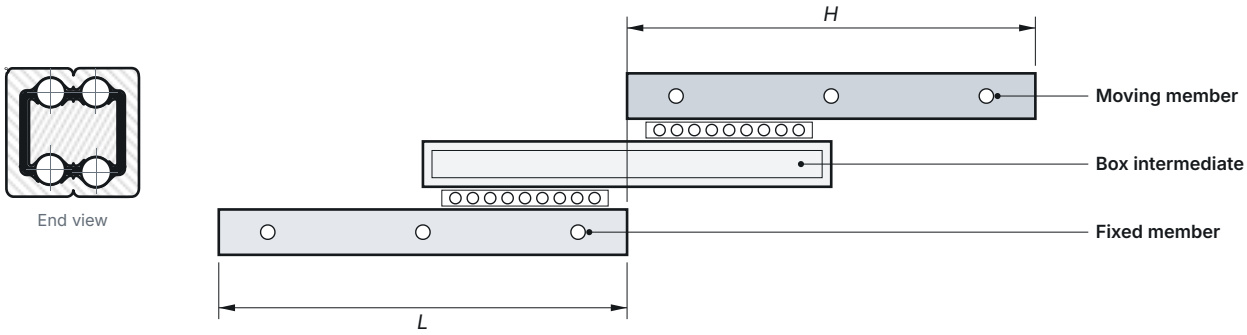


Fig. 18 VT-O extended: stroke H = closed length L; two guide rails with the box intermediate between them

Travel

Standard execution is one-way; the extended length slightly exceeds the closed length. Removing the end-stop screws at the ends of the fixed and moving parts gives **two-way travel**; built-in pins keep the slide together. Stroke H in the tables is one-way travel; with the screws removed it becomes 2 H.

⚠ CAUTION

The pins stop the ball cage and return the intermediate member but are not rated to stop the moving part under load — fit external end stops.

Dimensions

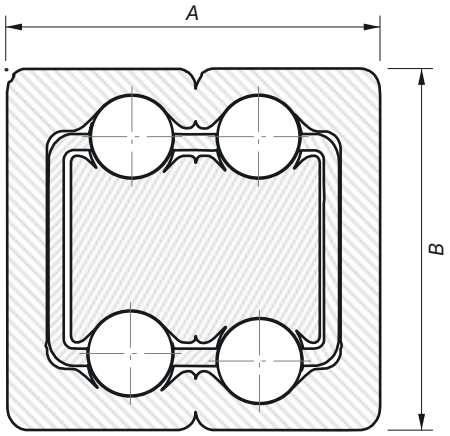


Fig. 19 Cross-section VT-O

Section dimensions

Size	A mm	B mm	E mm	Thread	Weight kg/m
22	22	22	3.0	M4	2.64
28	26	28	1.0	M5	4.04
35	34	35	2.0	M6	6.10
43	44	43	2.5	M8	10.50

Dimension key

A	overall section width (fixed + moving rail)
B	overall section height
E	corner radius
Thread	mounting thread

Mounting-hole pattern

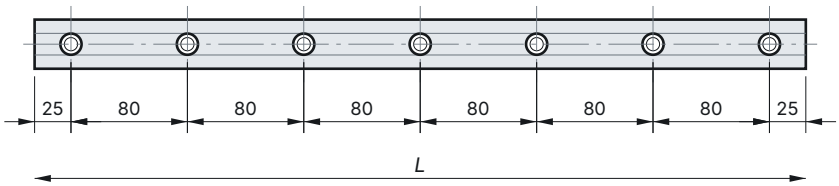


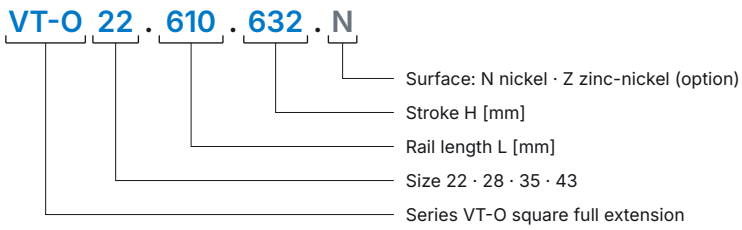
Fig. 20 Rail in plan view, example L = 530 mm: first hole 25 mm from each end, then 80 mm pitch

The first mounting hole sits **25 mm** from each end of the rail; the remaining holes follow a constant **80 mm** pitch. The hole count for every catalogue length is listed in the specification tables below.

Mounting threads: **M4** (size 22) · **M5** (size 28) · **M6** (size 35) · **M8** (size 43). Countersunk DIN 7991 or cheese-head DIN 7984. Property class 10.9; tightening torques on page 52.

Ordering code

Example: **VT-O22.610.632.N**. Lengths and strokes in millimetres; option suffixes only when they differ from standard.



Code fields

Field	Meaning
VT-O	Series — square full extension
22	Size (22 / 28 / 35 / 43)
610	Rail length L [mm]
632	Stroke H [mm] (catalogue, or if non-standard)
N	Additional coating if ≠ standard ISO 2081 zinc

Examples

Part number	Meaning
VT-O28.690	VT-O28, rail L = 690 mm, catalogue stroke, zinc
VT-O43.770.796.N	VT-O43, rail L = 770 mm, stroke H = 796 mm stated, nickel-plated

Surface

Suffix	Finish
—	electrolytic zinc per ISO 2081 (standard)
N	nickel
Z	zinc-nickel
on request	E-coat

Non-standard stroke

A stroke other than the catalogue value must be a multiple of the cage step below. A changed stroke alters the rated capacity and may make some mounting holes inaccessible.

Size	Stroke step
VT-O22	15 mm
VT-O28	19 mm
VT-O35	24 mm
VT-O43	30 mm

Standard lengths and strokes

L mm	VT-O22 H mm	VT-O28 H mm	VT-O35 H mm	VT-O43 H mm
130	152	148		
210	222	232	254	246
290	308	296	318	316
370	392	380	406	416
450	462	464	494	486
530	548	548	558	556
610	632	633	646	626
690	702	717	734	726
770	788	801	798	796
850		866	886	866
930		950	974	966
1010		1 034	1 038	1 036
1090		1 118	1 126	1 106
1170		1 202	1 214	1 206
1250			1 278	1 276
1330			1 366	1 376
1410			1 454	1 446
1490			1 518	1 516
1570				1 586
1650				1 686
1730				1 756
1810				1 856
1890				1 926
1970				2 026

Stroke H in mm for each standard rail length L; empty = length not offered in that size.

QUOTATION

Send series and size, rail length L and stroke H, quantity, load and its position, cycles, environment and mounting orientation — we return a checked selection with a dimensioned drawing.

Technical data

Load ratings **per pair of rails**. Stroke H is one-way travel; with the stop screws removed the total stroke is 2 H.

VT-O22 9 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Static load rating C_{0ax} N	Holes per rail	Weight kg / rail
VT-O22.130	130	152	**238**	166	2	0.3
VT-O22.210	210	222	**562**	392	3	0.6
VT-O22.290	290	308	**472**	472	4	0.8
VT-O22.370	370	392	**372**	372	5	1.0
VT-O22.450	450	462	**324**	324	6	1.2
VT-O22.530	530	548	**272**	272	7	1.4
VT-O22.610	610	632	**234**	234	8	1.6
VT-O22.690	690	702	**216**	216	9	1.8
VT-O22.770	770	788	**190**	190	10	2.0

VT-O28 14 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Static load rating C_{0ax} N	Holes per rail	Weight kg / rail
VT-O28.130	130	148	**470**	328	2	0.5
VT-O28.210	210	232	**864**	604	3	0.8
VT-O28.290	290	296	**1 244**	1 074	4	1.2
VT-O28.370	370	380	**964**	964	5	1.5
VT-O28.450	450	464	**786**	786	6	1.8
VT-O28.530	530	548	**664**	664	7	2.1
VT-O28.610	610	633	**572**	572	8	2.5
VT-O28.690	690	717	**504**	504	9	2.8
VT-O28.770	770	801	**452**	452	10	3.1
VT-O28.850	850	866	**426**	426	11	3.4
VT-O28.930	930	950	**388**	388	12	3.8
VT-O28.1010	1 010	1 034	**356**	356	13	4.1
VT-O28.1090	1 090	1 118	**328**	328	14	4.4
VT-O28.1170	1 170	1 202	**304**	304	15	4.7

VT-O35 17 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Static load rating C_{0ax} N	Holes per rail	Weight kg / rail
VT-O35.210	210	254	**804**	562	3	1.3
VT-O35.290	290	318	**1 334**	1 120	4	1.8
VT-O35.370	370	406	**1 044**	1 044	5	2.3
VT-O35.450	450	494	**858**	858	6	2.7
VT-O35.530	530	558	**788**	788	7	3.2
VT-O35.610	610	646	**676**	676	8	3.7
VT-O35.690	690	734	**594**	594	9	4.2
VT-O35.770	770	798	**558**	558	10	4.7
VT-O35.850	850	886	**500**	500	11	5.2
VT-O35.930	930	974	**454**	454	12	5.7
VT-O35.1010	1 010	1 038	**434**	434	13	6.2
VT-O35.1090	1 090	1 126	**398**	398	14	6.6
VT-O35.1170	1 170	1 214	**366**	366	15	7.1
VT-O35.1250	1 250	1 278	**354**	354	16	7.6
VT-O35.1330	1 330	1 366	**330**	330	17	8.1
VT-O35.1410	1 410	1 454	**308**	308	18	8.6
VT-O35.1490	1 490	1 518	**298**	298	19	9.1

VT-O43 23 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Static load rating C_{0ax} N	Holes per rail	Weight kg / rail
VT-O43.210	210	246	**1 210**	848	3	2.2
VT-O43.290	290	316	**2 228**	1 560	4	3.0
VT-O43.370	370	416	**2 600**	1 820	5	3.9
VT-O43.450	450	486	**2 662**	2 558	6	4.7
VT-O43.530	530	556	**2 386**	2 386	7	5.6
VT-O43.610	610	626	**2 164**	2 164	8	6.4
VT-O43.690	690	726	**1 824**	1 824	9	7.2
VT-O43.770	770	796	**1 690**	1 690	10	8.1
VT-O43.850	850	866	**1 576**	1 576	11	8.9
VT-O43.930	930	966	**1 386**	1 386	12	9.8
VT-O43.1010	1 010	1 036	**1 308**	1 308	13	10.6
VT-O43.1090	1 090	1 106	**1 238**	1 238	14	11.4
VT-O43.1170	1 170	1 206	**1 118**	1 118	15	12.3
VT-O43.1250	1 250	1 276	**1 066**	1 066	16	13.1
VT-O43.1330	1 330	1 376	**976**	976	17	14.0
VT-O43.1410	1 410	1 446	**938**	938	18	14.8
VT-O43.1490	1 490	1 516	**900**	900	19	15.6
VT-O43.1570	1 570	1 586	**868**	868	20	16.5
VT-O43.1650	1 650	1 686	**806**	806	21	17.3
VT-O43.1730	1 730	1 756	**780**	780	22	18.2
VT-O43.1810	1 810	1 856	**730**	730	23	19.0
VT-O43.1890	1 890	1 926	**708**	708	24	19.8
VT-O43.1970	1 970	2 026	**668**	668	25	20.7

08

VT-H

Heavy-duty full extension



Cross-section



≈ 100 %	30 · 45 · 60 · 80	9.3 kN	2 000 mm
Extension	Sizes	Max. C_{0rad}, per pair of rails	Max. rail length

Heavy loads, full extension, fully configurable.

High-capacity telescopic slides built from VT-P elements with a high-strength **double-T (I-beam) intermediate** and two carriages, extending close to **100 %**. Engineered to move very heavy loads at minimal deflection with high overall rigidity.

Advantages

- **Very heavy loads.** I-beam core and twin carriages move heavy loads at minimal deflection.
- **Fully configurable.** Detents, locks, damping, double-stroke and L/R hand to match the application.
- **Rigid full extension.** ~100 % access with high system rigidity for precise pull-out units.
- **Largest sections.** Sizes to 80 — the largest, strongest profiles in the VT range.

Technical data

Profile	Double-T (I-beam), heavy
Material	CF53 · not hardened
Temperature	−20 … +170 °C (damped-stop executions −20 … +80 °C)
Max. speed	0.8 m/s
Max. acceleration	1.2 m/s²

In this chapter

Design and features	**39**
Dimensions	**40**
Ordering code	**41**
Technical data	**42**

Design and features

Series **VT-H** is the heavy-duty family — a special execution reaching ~100 % extension on a high-strength I-beam intermediate. It is built to move **very heavy loads at minimal deflection**, with high mechanical rigidity and long service life under intensive use. **Right-hand or left-hand execution must be specified.**

VT-H is defined less by a single peak rating than by its **build and configurability**: executions **F** (fixed hole pitch), **V** (variable hole pitch) and **S** (reinforced stainless damped stops), plus detents, locks, closed-position damping, double-stroke and synchronising-disc options. Materials and coatings are tailored to the project; radial load capacity per pair is quoted per configuration, and **C_{0ax} is on request**.

Typical applications

- Railway service & battery compartments
- Automotive equipment
- Construction & machine-building equipment
- Special machine building

Features

- Heavy-duty full extension (≈ 100 %) — VT-P elements plus a high-strength **double-T intermediate** and two carriages
- Very heavy loads at minimal deflection; high overall rigidity for stable pull-out units
- Executions **F** fixed hole pitch · **V** variable hole pitch · **S** reinforced, damped stainless end stops (sizes 30 / 45)
- Accessories: detents, locks, closed-position damping, double stroke with or without synchronising disc
- **Right- or left-hand execution must be specified** · for steady loads without shock
- Stroke change and two-way travel on request · −20 … +170 °C (damped −20 … +80 °C)

Extension

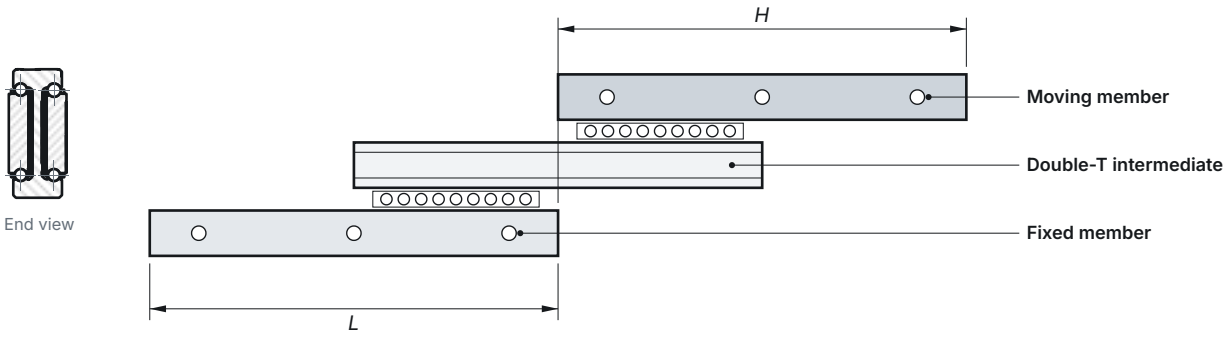


Fig. 21 VT-H extended: stroke H ≈ closed length L; intermediate member with double-T section

Executions

Code	Execution	Sizes
F	Fixed mounting-hole pitch	30 · 45 · 60 · 80
V	Variable mounting-hole pitch, specified per order	30 · 45
S	Reinforced, damped end stops in stainless steel	30 · 45

Sizes 60 and 80 are supplied without an execution letter. Right-hand (R) or left-hand (L) system must be stated on every order.

Dimensions

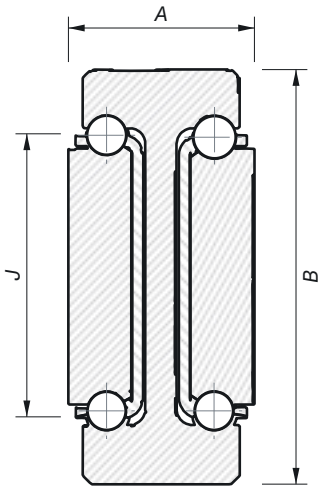


Fig. 22 Cross-section VT-H

Section dimensions

Size	A mm	B mm	J mm	G mm	K mm	Thread F	Weight kg/m
30	20	30	16.2	5.0	15.0	M6	3.50
45	26	45	25.5	6.1	22.5	M8	6.00

Size	A mm	B mm	J mm	G mm	K mm	D mm	Thread F	Weight kg/m
60	32	60	40	10	19	22	M6	11.70
80	36	80	50	12	25	30	M10	17.50

Dimension key

A	overall section width
B	overall section height
J	height of the fixed and moving rail
G	usable thread depth in the fixed and moving rail
K	base → nearest mounting-hole axis
D	spacing between the two mounting-hole axes (sizes 60 / 80)
Thread F	mounting thread

Mounting-hole pattern

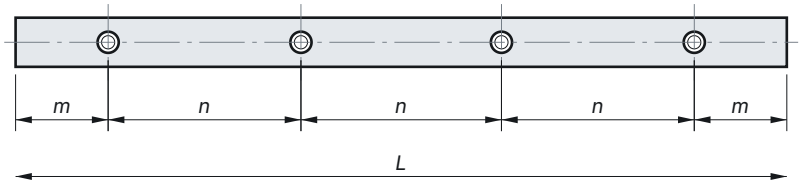


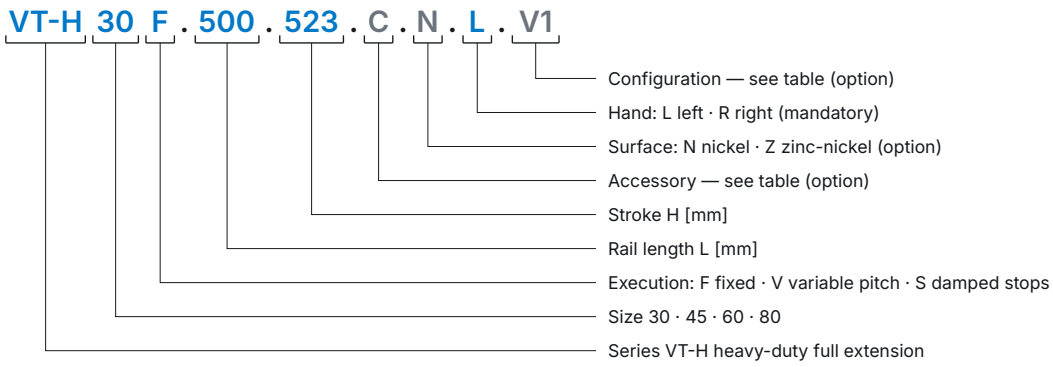
Fig. 23 VT-H rail in plan view: end distance m and pitch n per length, see the size tables

Hole pitches **m** and **n** depend on the length and execution and are listed for every length in the size tables — execution **F** with a fixed pitch, **V** with a pitch specified per order. Sizes 60 and 80 use the pitches Y, E and C of the installation drawing supplied with the quotation.

Mounting threads: **M6** (size 30 / 60) · **M8** (size 45) · **M10** (size 80). Countersunk DIN 7991 or cheese-head DIN 7984. Property class 10.9; tightening torques on page 52.

Ordering code

Example: **VT-H30F.500.523.C.N.L.V1**. Lengths and strokes in millimetres; option suffixes only when they differ from standard.



Code fields

Field	Meaning
VT-H	Series — heavy-duty full extension
30F	Size + execution: F fixed pitch · V variable pitch · S stainless damped stops
500	Rail length L [mm]
523	Stroke H [mm] (change on request)
C	Accessory — detents O/C/OC · locks BO/BC/BCO · damping DC · double-stroke DS/DSS
N	Additional coating if ≠ standard ISO 2081 zinc
L / R	Hand: L = left · R = right (must be specified)
V1 / V2	Config: V1 countersunk DIN 7991 holes · V2 special stroke + stainless balls + special grease

Examples

Part number	Meaning
VT-H45F.900.916.R	size 45, fixed pitch, L = 900 mm, H = 916 mm, zinc, right-hand
VT-H30F.500.523.C.N.L.V1	size 30, fixed pitch, L = 500 mm, H = 523 mm, closed-position detent, nickel, left-hand, countersunk holes

Surface

Suffix	Finish
—	electrolytic zinc per ISO 2081 (standard)
N	nickel
Z	zinc-nickel
on request	E-coat

Accessories

Code	Meaning
O · C · OC	detent in extended · closed · both positions
BO · BC · BCO	lock in extended · closed · both positions
DC	damping in closed position
DS	double stroke
DSS	double stroke with synchronising disc

Configurations

Code	Meaning
V1	countersunk holes for screws per DIN 7991 / ISO 10642
V2	non-standard stroke, stainless balls, special lubrication

QUOTATION

Send series and size, rail length L and stroke H, quantity, load and its position, cycles, environment and mounting orientation — we return a checked selection with a dimensioned drawing.

Technical data

Radial rating C_{0rad} **per pair of rails**; C_{0ax} on request for every VT-H model. m, n (Y, E, C for sizes 60 / 80) are hole-pitch dimensions along the rail as marked on the installation drawing supplied with the quotation.

VT-H30F 20 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Hole pitch m mm	Hole pitch n mm	Holes per rail
VT-H30F.250	250	285	**404**	25	100	3
VT-H30F.300	300	323	**1 008**	50	100	3
VT-H30F.350	350	377	**1 042**	25	100	4
VT-H30F.400	400	416	**1 136**	50	100	4
VT-H30F.450	450	485	**1 164**	25	100	5
VT-H30F.500	500	523	**1 470**	50	100	5
VT-H30F.550	550	577	**1 464**	25	100	6
VT-H30F.600	600	615	**1 402**	50	100	6
VT-H30F.650	650	685	**1 230**	25	100	7
VT-H30F.700	700	723	**1 186**	50	100	7
VT-H30F.750	750	777	**1 100**	25	100	8
VT-H30F.800	800	815	**1 066**	50	100	8
VT-H30F.850	850	884	**962**	25	100	9
VT-H30F.900	900	923	**936**	50	100	9
VT-H30F.950	950	977	**882**	25	100	10
VT-H30F.1000	1 000	1 015	**858**	50	100	10
VT-H30F.1050	1 050	1 084	**792**	25	100	11
VT-H30F.1100	1 100	1 123	**772**	50	100	11
VT-H30F.1150	1 150	1 176	**736**	25	100	12
VT-H30F.1200	1 200	1 215	**720**	50	100	12

VT-H30V 20 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Hole pitch m mm	Hole pitch n mm	Holes per rail
VT-H30V.250	250	285	**404**	–	150	4
VT-H30V.300	300	323	**1 008**	–	200	4
VT-H30V.350	350	377	**1 042**	–	250	4
VT-H30V.400	400	416	**1 136**	175	300	6
VT-H30V.450	450	485	**1 164**	200	350	6
VT-H30V.500	500	523	**1 470**	225	400	6
VT-H30V.550	550	577	**1 464**	250	450	6
VT-H30V.600	600	615	**1 402**	275	500	6
VT-H30V.650	650	685	**1 230**	300	550	6
VT-H30V.700	700	723	**1 186**	325	600	6
VT-H30V.750	750	777	**1 100**	350	650	6
VT-H30V.800	800	815	**1 066**	375	700	6
VT-H30V.850	850	884	**962**	400	750	6
VT-H30V.900	900	923	**936**	425	800	6
VT-H30V.950	950	977	**882**	450	850	6
VT-H30V.1000	1 000	1 015	**858**	475	900	6
VT-H30V.1050	1 050	1 084	**792**	500	950	6
VT-H30V.1100	1 100	1 123	**772**	525	1 000	6
VT-H30V.1150	1 150	1 176	**736**	550	1 050	6
VT-H30V.1200	1 200	1 215	**720**	575	1 100	6

Technical data (continued)

VT-H30S 19 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Hole pitch m mm	Hole pitch n mm	Holes per rail
VT-H30S.300	300	310	**816**	50	100	3
VT-H30S.350	350	364	**880**	75	100	3
VT-H30S.400	400	402	**994**	50	100	4
VT-H30S.450	450	472	**1 032**	75	100	4
VT-H30S.500	500	510	**1 330**	50	100	5
VT-H30S.550	550	564	**1 498**	75	100	5
VT-H30S.600	600	618	**1 392**	50	100	6
VT-H30S.650	650	671	**1 276**	75	100	6
VT-H30S.700	700	725	**1 178**	50	100	7
VT-H30S.750	750	764	**1 138**	75	100	7
VT-H30S.800	800	817	**1 060**	50	100	8
VT-H30S.850	850	871	**992**	75	100	8
VT-H30S.900	900	925	**932**	50	100	9
VT-H30S.950	950	979	**878**	75	100	9
VT-H30S.1000	1 000	1 017	**856**	50	100	10
VT-H30S.1050	1 050	1 071	**810**	75	100	10
VT-H30S.1100	1 100	1 109	**790**	50	100	11
VT-H30S.1150	1 150	1 179	**732**	75	100	11
VT-H30S.1200	1 200	1 217	**718**	50	100	12

VT-H45F 26 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Hole pitch m mm	Hole pitch n mm	Holes per rail
VT-H45F.250	250	276	**2 610**	25	100	3
VT-H45F.300	300	310	**2 824**	50	100	3
VT-H45F.350	350	388	**2 820**	25	100	4
VT-H45F.400	400	422	**2 842**	50	100	4
VT-H45F.450	450	478	**2 864**	25	100	5
VT-H45F.500	500	512	**2 900**	50	100	5
VT-H45F.550	550	590	**2 764**	25	100	6
VT-H45F.600	600	624	**3 032**	50	100	6
VT-H45F.650	650	680	**3 252**	25	100	7
VT-H45F.700	700	714	**3 346**	50	100	7
VT-H45F.750	750	770	**3 084**	25	100	8
VT-H45F.800	800	826	**2 860**	50	100	8
VT-H45F.850	850	882	**2 666**	25	100	9
VT-H45F.900	900	916	**2 614**	50	100	9
VT-H45F.950	950	972	**2 450**	25	100	10
VT-H45F.1000	1 000	1 028	**2 306**	50	100	10
VT-H45F.1050	1 050	1 084	**2 178**	25	100	11
VT-H45F.1100	1 100	1 118	**2 144**	50	100	11
VT-H45F.1150	1 150	1 174	**2 034**	25	100	12
VT-H45F.1200	1 200	1 230	**1 934**	50	100	12
VT-H45F.1250	1 250	1 286	**1 842**	25	100	13
VT-H45F.1300	1 300	1 320	**1 818**	50	100	13
VT-H45F.1350	1 350	1 376	**1 738**	25	100	14
VT-H45F.1400	1 400	1 410	**1 716**	50	100	14
VT-H45F.1450	1 450	1 488	**1 596**	25	100	15
VT-H45F.1500	1 500	1 522	**1 578**	50	100	15

Technical data (continued)

VT-H45V 26 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Hole pitch m mm	Hole pitch n mm	Holes per rail
VT-H45V.250	250	276	**2 610**	–	150	4
VT-H45V.300	300	310	**2 824**	–	200	4
VT-H45V.350	350	388	**2 820**	–	250	4
VT-H45V.400	400	422	**2 842**	175	300	6
VT-H45V.450	450	478	**2 864**	200	350	6
VT-H45V.500	500	512	**2 900**	225	400	6
VT-H45V.550	550	590	**2 764**	250	450	6
VT-H45V.600	600	624	**3 032**	275	500	6
VT-H45V.650	650	680	**3 252**	300	550	6
VT-H45V.700	700	714	**3 346**	325	600	6
VT-H45V.750	750	770	**3 084**	350	650	6
VT-H45V.800	800	826	**2 860**	375	700	6
VT-H45V.850	850	882	**2 666**	400	750	6
VT-H45V.900	900	916	**2 614**	425	800	6
VT-H45V.950	950	972	**2 450**	450	850	6
VT-H45V.1000	1 000	1 028	**2 306**	475	900	6
VT-H45V.1050	1 050	1 084	**2 178**	500	950	6
VT-H45V.1100	1 100	1 118	**2 144**	525	1 000	6
VT-H45V.1150	1 150	1 174	**2 034**	550	1 050	6
VT-H45V.1200	1 200	1 230	**1 934**	575	1 100	6
VT-H45V.1250	1 250	1 286	**1 842**	600	1 150	6
VT-H45V.1300	1 300	1 320	**1 818**	625	1 200	6
VT-H45V.1350	1 350	1 376	**1 738**	650	1 250	6
VT-H45V.1400	1 400	1 410	**1 716**	675	1 300	6
VT-H45V.1450	1 450	1 488	**1 596**	700	1 350	6
VT-H45V.1500	1 500	1 522	**1 578**	725	1 400	6

VT-H45S 25 standard lengths

Designation	Length L mm	Length H mm	Static load rating C_{0rad} N	Hole pitch m mm	Hole pitch n mm	Holes per rail
VT-H45S.300	300	310	**1 316**	50	100	3
VT-H45S.350	350	366	**1 832**	75	100	3
VT-H45S.400	400	422	**1 666**	50	100	4
VT-H45S.450	450	456	**2 154**	75	100	4
VT-H45S.500	500	512	**1 972**	50	100	5
VT-H45S.550	550	568	**2 200**	75	100	5
VT-H45S.600	600	624	**2 204**	50	100	6
VT-H45S.650	650	680	**2 426**	75	100	6
VT-H45S.700	700	714	**2 942**	50	100	7
VT-H45S.750	750	770	**3 084**	75	100	7
VT-H45S.800	800	826	**2 860**	50	100	8
VT-H45S.850	850	882	**2 666**	75	100	8
VT-H45S.900	900	916	**2 614**	50	100	9
VT-H45S.950	950	972	**2 450**	75	100	9
VT-H45S.1000	1 000	1 028	**2 306**	50	100	10
VT-H45S.1050	1 050	1 084	**2 178**	75	100	10
VT-H45S.1100	1 100	1 118	**2 144**	50	100	11
VT-H45S.1150	1 150	1 174	**2 034**	75	100	11
VT-H45S.1200	1 200	1 230	**1 934**	50	100	12
VT-H45S.1250	1 250	1 286	**1 842**	75	100	12
VT-H45S.1300	1 300	1 320	**1 818**	50	100	13
VT-H45S.1350	1 350	1 376	**1 738**	75	100	13
VT-H45S.1400	1 400	1 410	**1 716**	50	100	14
VT-H45S.1450	1 450	1 488	**1 596**	75	100	14
VT-H45S.1500	1 500	1 522	**1 578**	50	100	15

Technical data (continued)

VT-H60 18 standard lengths

Designation	Length L mm	H mm	Static load rating C_{0rad} N	Hole pitch Y mm	m mm	n mm	E mm	C mm	Holes per rail
VT-H60.400	400	400	5 250	50	50	–	–	200	8
VT-H60.450	450	450	5 350	50	50	–	–	250	8
VT-H60.500	500	500	5 400	50	50	–	–	300	8
VT-H60.550	550	550	5 500	50	50	150	50	–	12
VT-H60.600	600	600	5 400	50	50	175	50	–	12
VT-H60.650	650	650	5 350	50	50	200	50	–	12
VT-H60.700	700	700	5 250	50	50	225	50	–	12
VT-H60.750	750	750	5 100	50	50	250	50	–	12
VT-H60.800	800	800	4 900	50	50	275	50	–	12
VT-H60.850	850	850	4 700	50	50	300	50	–	12
VT-H60.900	900	900	4 500	50	50	325	50	–	12
VT-H60.950	950	950	4 300	50	50	350	50	–	12
VT-H60.1000	1 000	1 000	4 050	50	50	375	50	–	12
VT-H60.1100	1 100	1 100	3 700	50	50	425	50	–	12
VT-H60.1200	1 200	1 200	3 300	50	50	475	50	–	12
VT-H60.1300	1 300	1 300	2 900	50	50	525	50	–	12
VT-H60.1400	1 400	1 400	2 500	50	50	575	50	–	12
VT-H60.1500	1 500	1 500	2 100	50	50	625	50	–	12

VT-H80 21 standard lengths

Designation	Length L mm	H mm	Static load rating C_{0rad} N	Hole pitch Y mm	m mm	n mm	E mm	C mm	Holes per rail
VT-H80.500	500	500	9 000	100	100	–	–	100	8
VT-H80.550	550	550	9 250	100	100	–	–	150	8
VT-H80.600	600	600	9 350	100	100	–	–	200	8
VT-H80.650	650	650	9 200	100	100	–	–	250	8
VT-H80.700	700	700	9 050	100	100	–	–	300	8
VT-H80.750	750	750	8 800	100	100	–	–	350	8
VT-H80.800	800	800	8 600	100	100	–	–	400	8
VT-H80.850	850	850	8 350	100	100	–	–	450	8
VT-H80.900	900	900	8 100	100	100	–	–	500	8
VT-H80.950	950	950	7 850	100	100	–	–	550	8
VT-H80.1000	1 000	1 000	7 550	100	100	–	–	600	8
VT-H80.1100	1 100	1 100	7 150	100	100	300	100	–	12
VT-H80.1200	1 200	1 200	6 700	100	100	350	100	–	12
VT-H80.1300	1 300	1 300	6 200	100	100	400	100	–	12
VT-H80.1400	1 400	1 400	5 700	100	100	450	100	–	12
VT-H80.1500	1 500	1 500	5 200	100	100	500	100	–	12
VT-H80.1600	1 600	1 600	4 600	100	100	550	100	–	12
VT-H80.1700	1 700	1 700	4 100	100	100	600	100	–	12
VT-H80.1800	1 800	1 800	3 600	100	100	650	100	–	12
VT-H80.1900	1 900	1 900	3 000	100	100	700	100	–	12
VT-H80.2000	2 000	2 000	2 500	100	100	750	100	–	12



09

Technical principles

How to prove a selection: static check, deflection, service life, speed and the rules for mounting.

Selection and static load	47
Deflection	48
Service life	49
Load-capacity coefficient δ	50
Speed, forces and environment	51
Clearance, fastening and installation	52
VT-L off-centre load and installation	53

Selection and static load

Which series carries the load — and how to prove it.

Guide selection

Select a telescopic slide for the **load** and for the **permissible deflection** in the extended position. Its capacity depends on the load-bearing capacity of the ball cage and on the rigidity of the intermediate member: for short travel the cage governs, for medium and long travel the intermediate member. Series built from otherwise identical components can therefore carry different rated loads.

Static load check

The size tables give the maximum permissible load on a **pair** of slides, applied at the midpoint between the slides and on the axis of the moving member, with the slides **fully extended**.

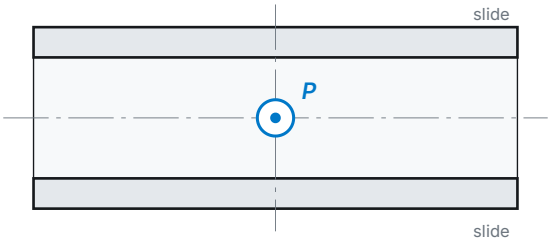


Fig. 24 Load P acting on a pair of slides

Worked example

A pair of **VT-P43.930** carries a central load P = 8 000 N under normal conditions (S_0 = 2). From the size table C_{0rad} = 22 108 N:

$$\frac{P_{0rad}}{C_{0rad}} = \frac{8\,000}{22\,108} = 0.36 \le \frac{1}{2} = 0.5$$

The pair is adequate; its service life follows on page 49.

Static safety factor

C_{0rad}, C_{0ax} and the moments M_x, M_y, M_z are the maximum permissible static loads; higher loads impair running behaviour and strength. The safety factor S_0 accounts for the application:

Operating conditions	S_0
No shocks or vibration, smooth low-frequency reversing, high assembly accuracy, no elastic deformation	1.5
Normal installation conditions	1.5 – 2
Shocks and vibration, high-frequency reversing, significant elastic deformation	2 – 3.5

For a single load, the ratio of actual to permissible load must not exceed 1 / S_0:

$$\frac{P_{0rad}}{C_{0rad}} \le \frac{1}{S_0} \qquad \frac{M_1}{M_x} \le \frac{1}{S_0} \tag{1}$$

For several simultaneous loads:

$$\frac{P_{0rad}}{C_{0rad}} + \frac{P_{0ax}}{C_{0ax}} + \frac{M_1}{M_x} + \frac{M_2}{M_y} + \frac{M_3}{M_z} \le \frac{1}{S_0} \tag{2}$$

P_{0rad}, P_{0ax}	actual radial / axial load [N]
C_{0rad}, C_{0ax}	permissible radial / axial load [N]
M_1, M_2, M_3	actual moments about X, Y, Z [N·m]
M_x, M_y, M_z	permissible moments [N·m]

TECHNICAL

Deflection

Elastic deflection of full-extension slides in the extended position.

Deflection estimate

If a load P acts vertically on a pair of slides, the elastic deflection in the extended position is estimated as

$$f = \frac{q}{t} \cdot P \ \text{[mm]} \qquad (3)$$

f	expected elastic deflection [mm]
q	travel coefficient (Fig. below)
t	model coefficient (table)
P	load at the centre of the pair [N]

The value assumes an absolutely rigid mating structure. **For VT-P, deflection depends almost entirely on the rigidity of the mating structure.**

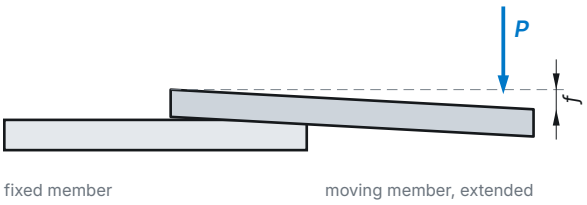


Fig. 25 Deflection f under load P, slide pair fully extended

Model coefficient t

Model	t
VT-X22	16
VT-X28	34
VT-X35	108
VT-X43	240
VT-X63	1 080
VT-O22	6
VT-O28	16
VT-O35	26
VT-O43	112

No t is defined for VT-P (mating structure) or VT-S (on request); for VT-H it is supplied with the configuration.

NOTE

Mount through every hole on a flat, rigid surface and keep the load central between the slides — most excess deflection in the field comes from the mounting.

Travel coefficient q

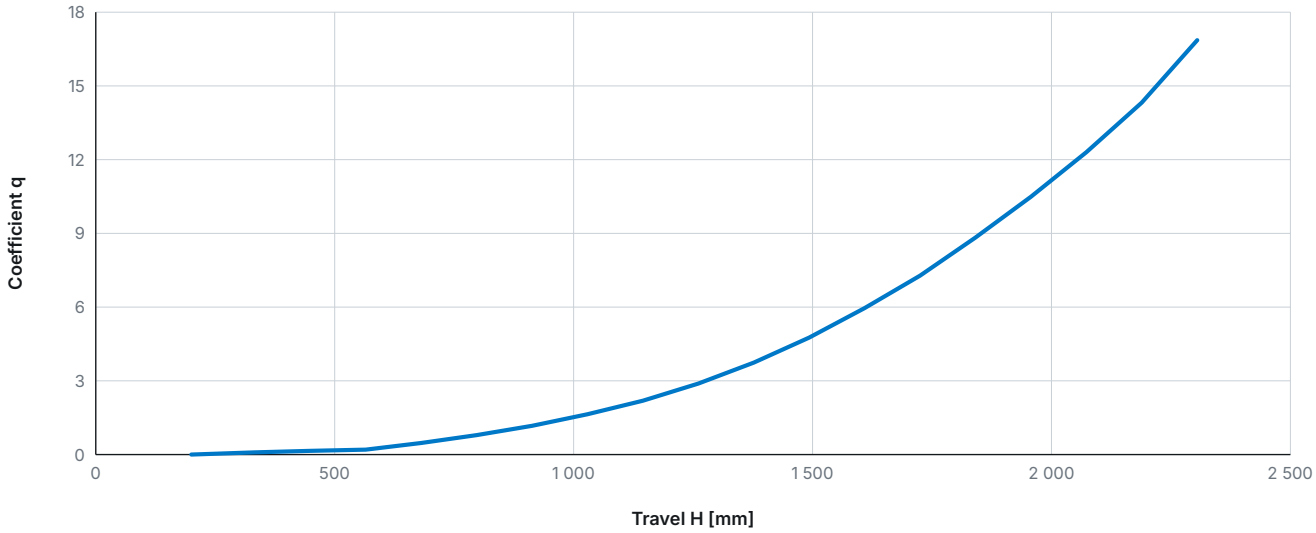


Fig. 26 Travel coefficient q as a function of the travel H — VT-X, VT-O and VT-H

Service life

Fatigue life from the load-capacity coefficient δ.

Service life

Service life is the travel until the first signs of fatigue or wear on the raceways. It depends on the actual load, assembly accuracy, shocks and vibration, temperature, environment and lubrication, and is calculated **only for the loaded ball rows**.

$$L_{km} = 100 \cdot \left(\frac{\delta}{W} \cdot \frac{1}{f_i} \right)^3 \qquad (4)$$

L_{km}	calculated service life [km]
δ	load-capacity coefficient [N], table on the next page
W	equivalent load on the slide pair [N]
f_i	application coefficient (table)

At P = C_{0rad} — which must never be exceeded — the life under ideal conditions (f_i = 1) is 100 km. For a single load W = P; for combined loads:

$$W = P_{rad} + \left(\frac{P_{ax}}{C_{0ax}} + \frac{M_1}{M_x} + \frac{M_2}{M_y} + \frac{M_3}{M_z} \right) \cdot C_{0rad} \qquad (5)$$

Application coefficient f_i

Operating conditions	VT-P · X · O	VT-L
No shocks or vibration, smooth low-frequency change of direction, clean environment	1.3 – 1.8	1 – 1.5
Light vibration and medium-frequency change of direction	1.8 – 2.3	1.5 – 2
Shocks and vibration, high-frequency change of direction, heavy contamination	2.3 – 3.5	2.0 – 3.5

VT-S and VT-H: application coefficients per project.

Worked example

A pair of **VT-P43.930** (δ = 30 858 N) carries a single central load W = 8 000 N under light vibration, f_i = 2.0:

$$L_{km} = 100 \cdot \left(\frac{30\,858}{8\,000} \cdot \frac{1}{2.0} \right)^3 \approx 717 \text{ km}$$

Service life as a function of the load

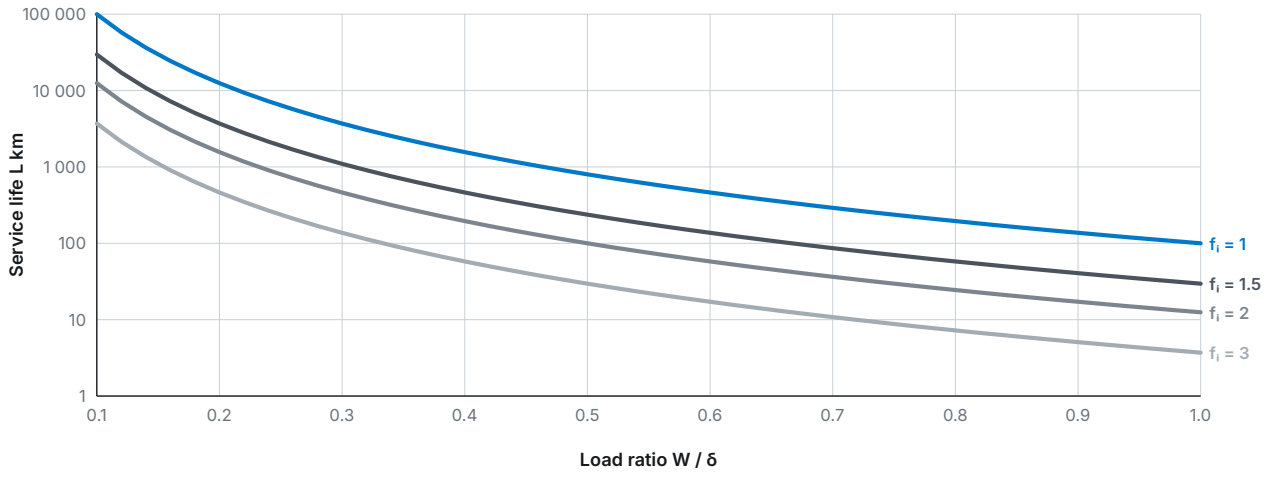


Fig. 27 Calculated service life from formula (4) for application coefficients f_i = 1 … 3

TECHNICAL

Load-capacity coefficient δ

δ [N] as a function of the slide length L, for use in the service-life formula (4).

L mm	VT-P22	VT-P28	VT-P35	VT-P43	VT-P63	VT-S28	VT-S35	VT-S43	VT-S63	VT-X/O22	VT-X/O28	VT-X/O35	VT-X/O43	VT-X63
130	830	1 744								330	714			
210	1 864	3 154	3 066	4 576						772	1 310	1 228	1 846	
290	2 590	5 384	5 812	8 110		1 726				1 074	2 306	2 422	3 374	
370	3 330	6 810	7 442	9 588		2 328				1 380	2 912	3 104	3 948	
450	4 410	8 238	9 074	13 204		2 932	3 784			1 850	3 518	3 784	5 528	
530	5 134	9 664	11 980	16 902		3 536	5 080	6 240		2 150	4 126	5 080	7 160	
610	5 872	11 114	13 606	20 650	30 006	4 156	5 756	7 858	10 656	2 458	4 744	5 756	8 828	12 406
690	6 960	12 542	15 234	22 010	35 416	4 762	6 434	8 394	12 918	2 934	5 350	6 434	9 322	14 722
770	7 684	13 968	18 186	25 754	40 854	5 368	7 762	10 020	15 208	3 232	5 958	7 762	10 986	17 054
850		16 222	19 806	29 524	46 310	6 360	8 436	11 672	17 518		6 974	8 436	12 670	19 398
930		17 622	21 428	30 858	51 778	6 948	9 110	12 180	19 842		7 566	9 110	13 144	21 750
1010		19 048	24 402	34 620	57 258	7 556	10 452	13 832	22 178		8 172	10 452	14 822	24 110
1090		20 474	26 018	35 962	62 748	8 162	11 122	15 500	24 522		8 776	11 122	16 514	26 476
1170		21 900	27 636	39 720	68 242	8 768	11 794	15 292	26 874		9 382	11 794	16 978	28 846
1250			30 622	43 494	73 742	9 792	13 146	17 658	29 232			13 146	18 664	31 220
1330			32 236	44 822	79 246	10 386	13 814	18 154	31 596			13 814	19 136	33 596
1410			33 850	48 590	84 754	10 992	14 484	19 818	33 962			14 484	20 818	35 974
1490			36 846	52 372	90 266	11 612	15 840	21 492	36 332			15 840	22 510	38 356
1570				56 166	95 780		16 506	21 976	38 706				24 210	40 738
1650				57 466	101 296		17 176	23 650	41 080				24 660	43 122
1730				61 252	106 814		18 536	25 330	43 458				26 356	45 508
1810				62 562	112 332			25 808	45 838				26 812	47 896
1890				66 344	117 854			27 486	48 218				28 504	50 284
1970				67 658	123 376			27 966	50 602				28 966	52 672
2 050														
2 130														
2 210														

δ for VT-H is supplied per configuration. Empty cells: size not rated at that length. Values reproduced as rated.

Speed, forces and environment

Operating limits, finishes and lubrication.

Speed

The permissible speed is set by the mass of the intermediate member, which moves with the moving slide — it therefore **decreases with length**: 0.8 m/s up to about 400 mm, falling to about 0.2 m/s at 2 000 mm. Max. acceleration **1.2 m/s²**.

Opening and closing force

Opening is governed by the friction coefficient of the slide — **0.01** with correct assembly and lubrication — and decreases as the slide extends. Closing needs a higher force: owing to the deflection, the moving rail is pushed back up an inclined plane.

Two-way travel

In every two-way design the intermediate member is located only in the extended state and may project by half its length to each side. VT-P, without an intermediate member, is the exception.

Temperature

VT-P, VT-X, VT-O and VT-L run at up to **+170 °C**; above +130 °C use a high-temperature lithium grease. The minimum with standard grease is **−20 °C**. VT-S and damped VT-H executions: **−20 … +80 °C** (rubber stops).

Corrosion protection

Finish	Characteristics
Zinc, ISO 2081	standard; ideal for indoor use
Zinc-nickel	wash-down and road-salt exposure
Nickel	e.g. food industry
E-coat	on request
Stainless balls	on request, combinable with any finish

Lubrication

Re-lubricate every **100 km** of travel or every **six months** under normal conditions; shorten the interval under severe conditions and clean the raceways first. Standard: medium-consistency lithium grease. On request: FDA-approved, cleanroom, marine and high- or low-temperature greases.

Speed and slide length

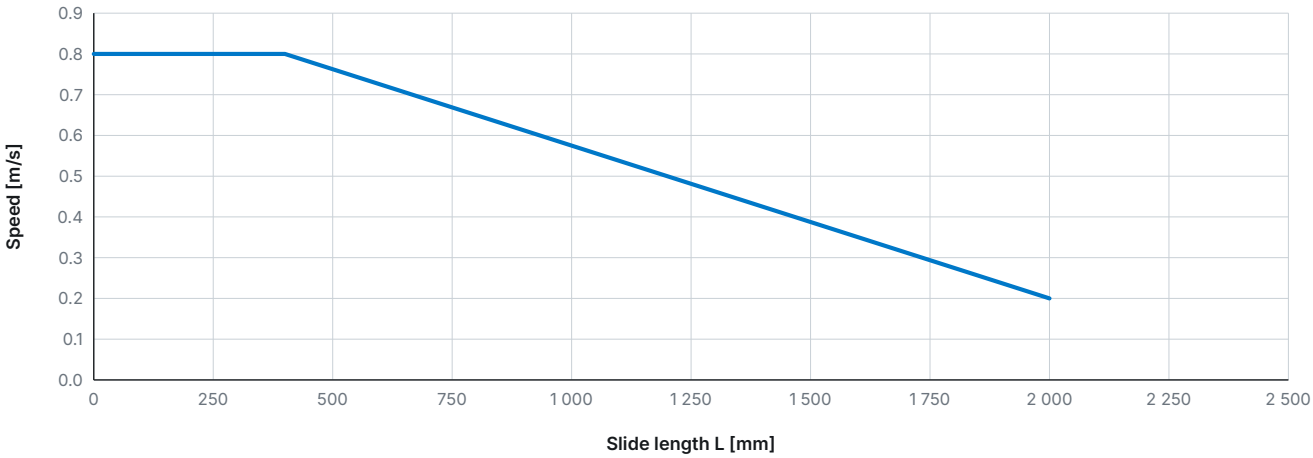


Fig. 28 Maximum operating speed as a function of the slide length

Clearance, fastening and installation

Preload classes, screws and torques, mounting rules.

Clearance and preload

Standard slides are set with **zero clearance**. Order increased clearance with **G1** or increased preload with **K1**; for higher preloads consult our engineers.

Fastening screws

Countersunk screws per **DIN 7991** or cheese-head screws per **DIN 7984**, property class **10.9**. Example size 63: M8 × 20, head Ø 13 mm, T40 drive.

Size	Class	Torque N·m	Chamfer threaded holes
22	10.9	**3**	0.5 × 45°
28	10.9	**6**	1 × 45°
35	10.9	**10**	1 × 45°
43	10.9	**25**	1 × 45°
63	10.9	**30**	1 × 45°
VT-H	10.9	**on request**	on request

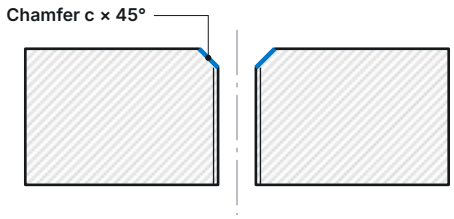


Fig. 29 Chamfer at the threaded fastening holes

Installation of telescopic slides

- Internal stops stop the **unloaded** slider and cage only — use external end stops for a loaded system.
- Fasten through **all holes** to rigid, flat, parallel surfaces; fixed and moving rails must sit tightly against the structure.
- VT-P, VT-X, VT-O: remove the stop screw to reach every hole during assembly, then refit it.
- Automatic systems: keep the **travel constant** or run a full stroke regularly so the cages re-synchronise.
- VT-S and VT-H carry radial loads onto the moving (lower) rail — install with the load on the moving member.

Installation example

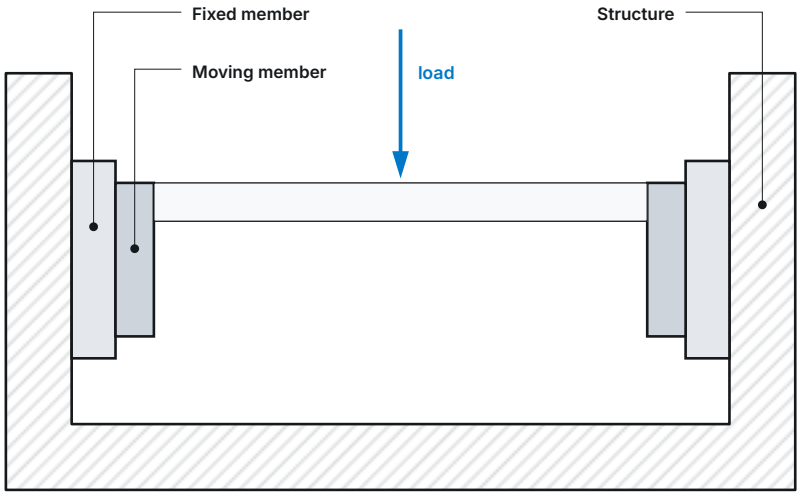


Fig. 30 Slide pair in a supporting structure: fixed members on the structure, load on the moving members

VT-L off-centre load and installation

Position coefficient, cage synchronisation, access holes.

Off-centre load

With the load off the carriage centre, the uneven load distribution over the balls is taken into account by the position coefficient q, a function of the distance d as a fraction of the carriage length S:

$$P = q \cdot C_{0rad} \qquad P = q \cdot C_{0ax} \tag{6}$$

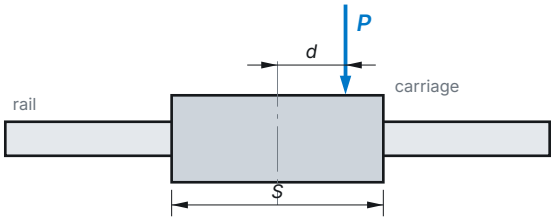


Fig. 31 Off-centre load P on the carriage

For the static check and the service life, replace P_{0rad} and P_{0ax} by the equivalent values P / q.

Cage synchronisation

The carriages move inside the rail on a ball cage, which travels **half** the carriage stroke. Slip disturbs this synchronism; the cage then reaches the internal stops early (**cage displacement**) and the usable travel shrinks. Pushing the carriage to the stop against the halted cage normalises the travel.

- Keep the stroke **constant** and close to the nominal stroke.
- With a varying stroke, size the drive for a friction coefficient of **0.1**, or run one unloaded maximum stroke per cycle.
- Parallelism errors and poor mounting surfaces increase cage displacement.
- Use VT-L guides for **horizontal** movement only.

Access to the fastening holes

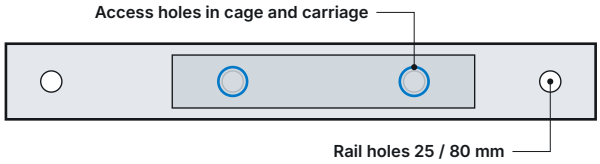


Fig. 32 Access holes in cage and carriage line up with the rail holes

If the cage covers rail holes, access holes are provided in the cage; position the cage so they line up with the rail holes to reach every screw.

Position coefficient q

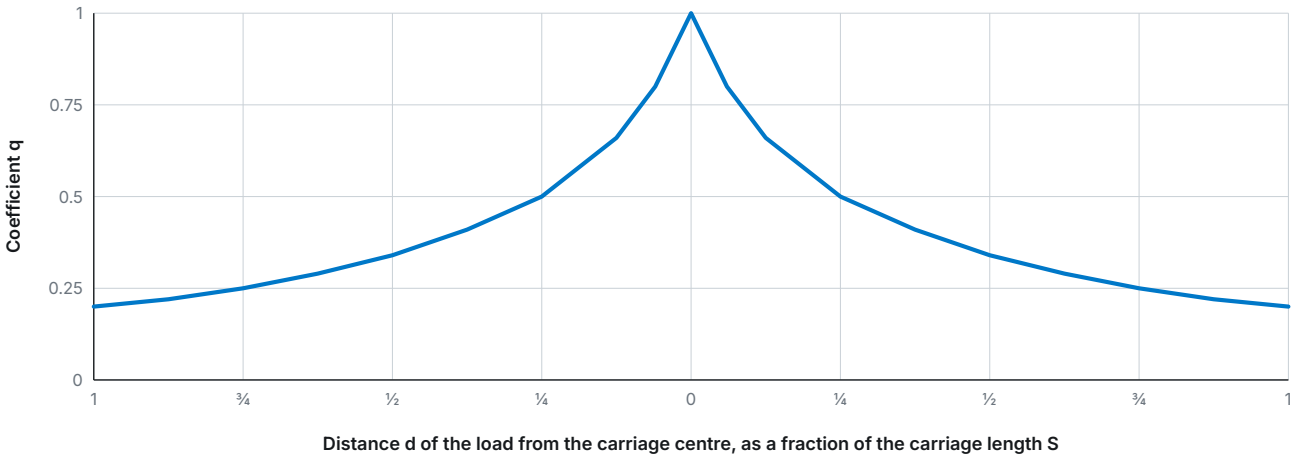


Fig. 33 Position coefficient q: 1 at the carriage centre, falling symmetrically towards each end

TECHNICAL

10

Applications

Eight industries, one rail system. The recommended series per industry follow the priorities of the selection guide; every application is checked individually against load, stroke, cycles and environment.

Industry	VT-L	VT-P	VT-S	VT-X	VT-O	VT-H
01 Automated storage	●			●		●
02 Vehicle equipment		●		●		●
03 Machine tools	●	●			●	
04 Electronics		●	●	●		
05 Medical tech	●	●	●			
06 Catering		●		●	●	
07 Transport		●			●	●
08 Aerospace			●	●		●

● recommended series for the industry.



01 Automated storage

Automated storage & AS/RS

The load-handling device is the heart of every shuttle and stacker crane: a telescopic rail set that reaches deep into the rack, picks the payload and retracts — thousands of cycles a day, year after year. The VT range is built for exactly this duty.

VT-H	Modular heavy-duty sets (executions F / V / S) are the natural basis for shuttle and crane load-handling devices — configured per device, sizes 30–80.
VT-X	I-beam intermediate gives the stiffest full extension per kilogram — the right choice for fast LHDs where moving mass matters.
VT-L	Compact rail for mast, carriage and gripper axes — up to 12 000 kg per carriage inside a C-profile.



02 Vehicle equipment

Emergency & service vehicles

When the crew arrives, every second of access counts. VT telescopic rails bring pumps, generators, hydraulic tools and racking out of the locker to the crew — fully extended, at full load, in any weather, for the life of the vehicle.

VT-H	Heavy equipment trays and generator slides: modular executions F / V / S, hand and accessory options, sizes 30–80 — configured per locker.
VT-X	Full 100 % extension with an I-beam backbone — maximum access at minimum added weight on the vehicle.
VT-P	Partial-extension workhorse rated for shock and crash-test duty — ideal for drawers and racking that must survive the road.

Applications (continued)



03 Machine tools

Machine tools & automation

Inside a machining center everything vibrates, everything is covered in chips and coolant, and every service panel has to move on command. VT rails guide covers, magazines and maintenance pull-outs with machine-tool rigidity — at up to +170 °C.

VT-P	The rigidity benchmark of the range — partial extension that becomes part of the machine structure; rated for shock and intensive cycling at −20…+170 °C.
VT-L	Carriage inside a closed C-profile — inherently protected against chips, with up to 12 t per carriage for heavy stations.
VT-O	Closed square profile resists torsion — right where covers and pull-outs are loaded off-axis.



04 Electronics

Electronics & server technology

Racks live or die by serviceability: a 60 kg server, a 120 kg battery module or a test insert has to glide out to full depth, hold position dead-still, and go back in — thousands of times, in a 19-inch grid where every millimetre of width is spoken for.

VT-S	The rack specialist: slim S-profile, 100 % extension (130 % on request), minimal deflection — sizes 28–63 for everything from switches to battery modules.
VT-P	Partial extension for cable-side panels and drawers where 50–60 % travel is enough and stiffness is everything.
VT-X	I-beam full extension when module mass outgrows slim slides — best capacity per added width.



05 Medical tech

Medical technology

In an OR or imaging suite, motion has to be silent, smooth and absolutely predictable. VT rails move patient-table extensions, instrument drawers and device modules with constant low force — finished and lubricated for the clinical environment.

VT-S	Slim, quiet, minimal deflection at 100 % extension — the default for table extensions and device drawers, sizes 28–63.
VT-L	Compact rail with the carriage protected inside the profile — precise positioning for detector and accessory axes.
VT-P	Rigid partial extension for bed mechanisms and service panels where 50–60 % travel suffices.

Applications (continued)



06 Catering

Catering & commercial kitchens

From a 250 °C oven interior to a −20 °C freezer drawer, kitchen hardware works at the temperature extremes of the catalogue — under grease, steam and cleaning chemicals. VT rails are specified for exactly this span.

VT-P	Partial extension rated to +170 °C — the oven-side choice, compact and extremely stiff, with FDA grease options.
VT-O	Closed square profile shrugs off torsion from off-centre drawer loads — full 100 % extension, sizes 22–43.
VT-X	I-beam full extension for heavy warming drawers and appliance pull-outs — high capacity, low added weight.



07 Transport

Rail & public transport

Rolling stock is a 40-year vibration test with scheduled maintenance windows measured in minutes. VT rails put underfloor converters, battery boxes and interior modules on smooth full-extension travel — shock-rated and corrosion-protected for the track environment.

VT-H	Heavy underfloor modules and battery boxes: configurable executions F / V / S, sizes 30–80, sized per module and shock spectrum.
VT-P	Railway-proven partial extension for seats, doors and interior mechanisms — the shock-duty benchmark of the range.
VT-O	Closed square profile for torsion-loaded drawers and catering modules, full 100 % extension.



08 Aerospace

Aerospace & defense

Every gram on board is budgeted, and everything that moves has to keep working under vibration, temperature swings and decades of duty. The VT range delivers full-extension access at the best stiffness-to-weight ratio in the catalogue.

VT-X	The load-to-weight champion: I-beam intermediate, 100 % extension, sizes 22–63 — the default for airborne pull-outs.
VT-S	Slimmest section in the range for galley and rack envelopes, minimal deflection fully extended.
VT-H	Configurable heavy-duty sets for ground-support equipment, shelters and test infrastructure.

11

Ordering and inquiry

Every VT product is fully described by its part number — lengths and strokes in millimetres, option suffixes only where they differ from standard.

Code structure

Series	Code structure	Example
VT-L	VT-L[size].[S].[H].[L] [.G1 | .K1] [.N | .Z]	VT-L35.290.450.770
VT-P	VT-P[size].[L] [.H] [.N | .Z]	VT-P28.690.358.N
VT-S	VT-S[1|2]-[size].[L] [.H] [.N | .Z]	VT-S1-28.930.950
VT-X	VT-X[size][C|T].[L] [.H] [.N | .Z]	VT-X43C.930.966
VT-O	VT-O[size].[L] [.H] [.N | .Z]	VT-O22.610.632
VT-H	VT-H[size][F|V|S].[L].[H] [.acc] [.N].[L|R] [.cfg]	VT-H30F.500.523.C.N.L.V1

Boxed = value to be inserted; grey [ ] = optional field.

Option suffixes

Option	Suffixes
Surface	N nickel · Z zinc-nickel · E-coat on request (none = zinc per ISO 2081)
Clearance (VT-L)	G1 increased clearance · K1 increased preload (none = zero clearance)
Hole type (VT-X)	C countersunk · T threaded through-hole
Travel (VT-S)	1 one-way · 2 two-way
Execution (VT-H)	F fixed pitch · V variable pitch · S damped stainless stops
Hand (VT-H)	L left · R right — mandatory
Accessories (VT-H)	O / C / OC detents · BO / BC / BCO locks · DC damping · DS / DSS double stroke
Configuration (VT-H)	V1 countersunk DIN 7991 / ISO 10642 holes · V2 special stroke, stainless balls, special grease

Custom executions

Non-catalogue lengths within the cage step, special strokes to 130 %, custom hole patterns, finishes, greases and stainless balls are quoted on request. Send the interface drawing and we return a checked selection with a dimensioned drawing.

Contact

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Guangdong Province, China
Tel. +86-750-3400308
info@veltork.de · veltork.com

All data are nominal values for guidance. Load ratings are static capacities under the stated conditions; verify each application with the static check, deflection estimate and service-life calculation (pages 47–49). Confirm dimensions against the released drawing before machining mating parts. Subject to technical changes. Edition 2026 · EN.

Inquiry sheet

Copy, complete and send to info@veltork.de — or use the inquiry form on every product page at veltork.com.

Company

Contact · e-mail · phone

Application / machine

Series and size
or “please advise”

Rail length L · stroke H
mm

Quantity
pairs / carriages · annual volume

Load P and its position
N · distance from the centre

Moments
N·m

Cycles · speed
per day · m/s · stroke constant or variable

Environment
temperature · contamination · wash-down

Mounting
horizontal / vertical · hand L / R (VT-H)

Surface · lubrication

Options
locks · detents · damping · two-way travel

Installation sketch

Index

Size tables by model, and subjects by page.

Models

VT-L22	12	VT-X22	31
VT-L28	12	VT-X28	31
VT-L35	12	VT-X35	31
VT-L43	13	VT-X43	31
VT-L63	13	VT-X63	32
VT-P22	18	VT-O22	37
VT-P28	18	VT-O28	37
VT-P35	19	VT-O35	37
VT-P43	19	VT-O43	37
VT-P63	20	VT-H30F	42
VT-S1-28	25	VT-H30V	42
VT-S1-35	25	VT-H30S	43
VT-S1-43	25	VT-H45F	43
VT-S1-63	25	VT-H45V	44
VT-S2-28	26	VT-H45S	44
VT-S2-35	26	VT-H60	45
VT-S2-43	26	VT-H80	45
VT-S2-63	26		

Subjects

Access holes (VT-L)	53
Cage synchronisation	53
Clearance and preload	52
Corrosion protection	51
Deflection	48
Fastening screws, torques	52
Installation	52
Load-capacity coefficient δ	50
Lubrication	51
Off-centre load (VT-L)	53
Opening and closing force	51
Safety factor S_0	47
Service life	49
Speed and acceleration	51
Static load check	47
Temperature	51
Two-way travel	51

Chapters and forms

Applications	54
Inquiry sheet	58
Load ratings	5
Ordering, code structure	57
Selection guide	7
Technical overview	6

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