



THE SPECIALIST
FOR MOTION
TECHNOLOGY

HARDENED TELESCOPIC RAILS





SUMMARY

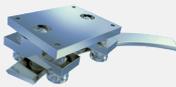
PAGE 04	1.0 NADELLA GROUP
PAGE 06	2.0 PRODUCT OVERVIEW
PAGE 13	3.0 PRODUCT DETAILS
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THE SPECIALIST FOR MOTION TECHNOLOGY

Nadella Group is an expert system partner for all areas of **motion technology**, with specialized manufacturer companies and a worldwide sales network.

Wherever innovative ideas, customized solutions, precision and reliability are required, developers and design engineers rely on products and solutions from the **Nadella Group**.

COMPANIES, BRANDS AND PRODUCTS OVERVIEW



Linear Guides



Telescopic Rails



Linear Modules



Linear Axes and Systems



Circular Systems



Bearings and Cam Followers



Adjusting Nuts & Rings



Rod Ends and Spherical Plain Bearings



Clevises and Ball/Axial Joints



Precision Ball Screws



Rolled Ball Screws

MILESTONES

1930

NADELLA foundation in France

1958

Founding of NADELLA GMBH in Germany

1963

Founding of NADELLA S.P.A. in Italy

1984

Start of development and sale of Nadella Linear

2012

New Nadella subsidiaries in China and USA

2014

Acquisition of DURBAL

2018

Acquisition of CHIAVETTE UNIFICATE

2019

Founding of Nadella Motion Technology Changxing Co. Ltd.

2020

New Nadella subsidiaries in France and Spain
Acquisition of SHUTON and IPIRANGA

2021

Acquisition of DAMO

KEY NUMBERS

1 Group

8 manufacturing plants

14 main locations
Italy, Germany, France, Poland, Spain, United Kingdom, U.S.A., China

leading the way in the international markets

in over **60** countries

for more than **90** years

APPLICATION SECTORS



RAILWAY TECHNOLOGY



WAREHOUSE & LOGISTICS



MEDICAL ENGINEERING



FOUNDRY & IRONWORKS



ROBOTICS AUTOMATION



PACKAGING INDUSTRY



AEROSPACE TECHNOLOGY



PHARMACEUTICAL PRODUCTION



CUTTING & WELDING



HI-TECH PRODUCTION



PRODUCT OVERVIEW

HARDENED TELESCOPIC LINE

The Hardened Telescopic Line of Nadella is the ideal solution for those applications requiring high duty cycles, heavy loads and continuous processes. Made entirely of steel, with cold drawn profiles and induction hardened raceways, it enables you to move heavy loads with a smooth rolling and reduced clearance thanks to the new optimized shape.

Each product is composed of:

- Linear guide made of cold drawn steel, to ensure a high load capacity and low deflection.
- Internal raceways produced with the new engineered shape to reduce friction and clearance, induction hardened for a high wear resistance and durability.
- New designed ball-cage made of steel, to allow a smoother sliding of the elements, controlled clearance and very high load capacity.

The hardened telescopic line includes:

PART EXTENSION

- Part extension telescopic rails NTA-H, with a stroke equal to 50%-70% of the installation length.



FULL EXTENSION

- Full Extension telescopic rails NTS-H, with a stroke equal to 100% of the installation length.



-Full extension telescopic rails NTVZ-S (single) with a stroke equal to 100% of the installation length

-Full extension telescopic rails NTVZ-D (double) with a stroke equal to 100% of the installation length on both directions.



OVER EXTENSION

- Over extension telescopic rails NTUZ with a stroke bigger than 100% of the installation length.



LINEAR GUIDES

- NTSF Linear guides rails, with one or more sliders running inside a fixed length.



Nadella telescopic rails can be supplied in standard length and holes pitch as per our catalogue specifications or in several different configurations according to customer needs.

See technical specifications for more information regarding available solutions and options.

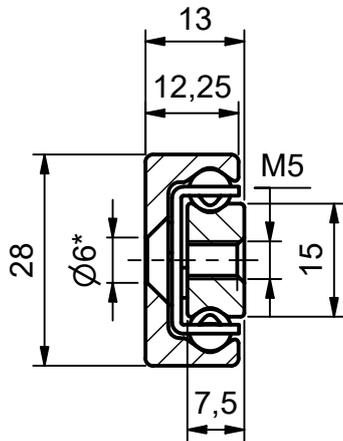
PRODUCT OVERVIEW

PART EXTENSION NTA-H

2.0

NTA28-13H

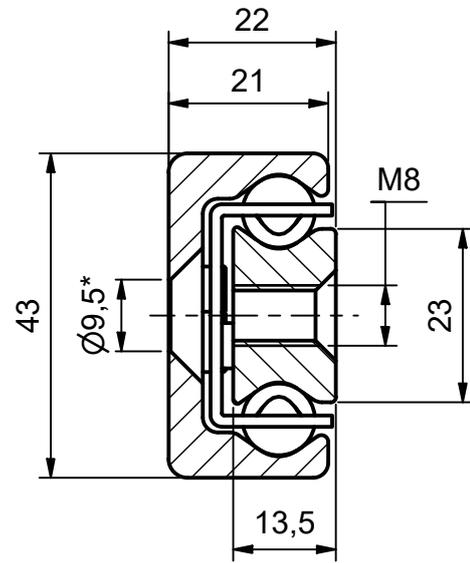
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* for M5 ISO 10642 screw

NTA43-22H

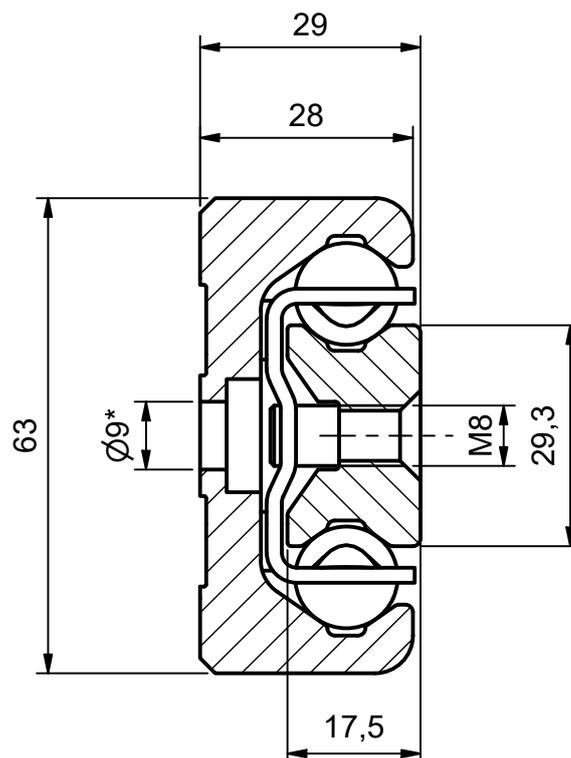
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* for M8 ISO 10642 screw

NTA63-29H

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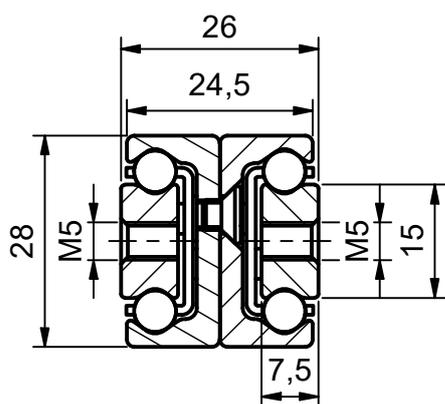
* for M8 ISO 4762 screw

PRODUCT OVERVIEW

FULL EXTENSION NTS-H

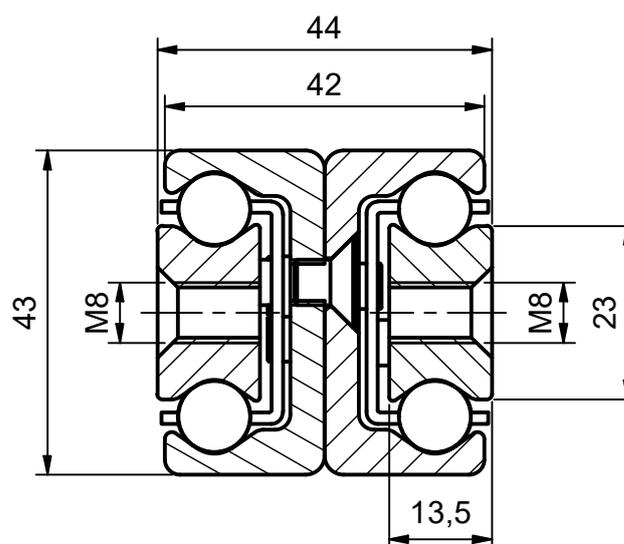
NTS28-26H

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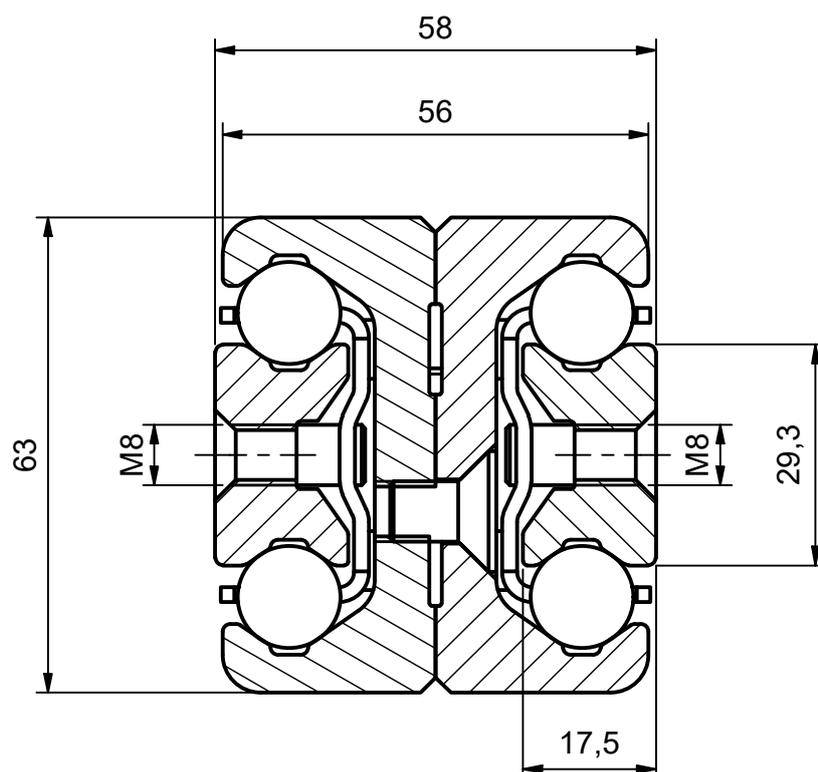
NTS43-44H

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NTS63-58H

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PRODUCT OVERVIEW

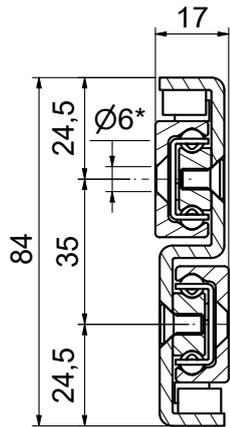
FULL EXTENSION NTVZ-H

2.0

NTVZ84-17H

(INCLUDES BOTH -S AND -D VERSIONS)

See page 26 for -S version
See page 27 for -D version

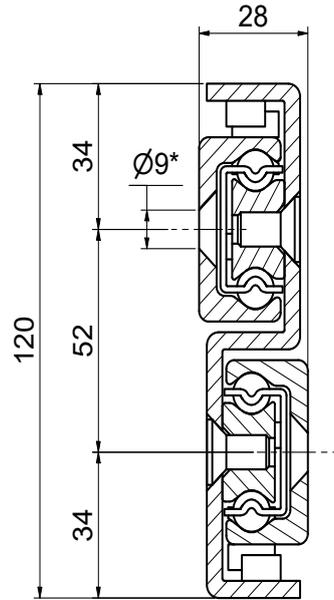


* for M5 ISO 10642 screw

NTVZ120-28H

(INCLUDES BOTH -S AND -D VERSIONS)

See page 28 for -S version
See page 29 for -D version

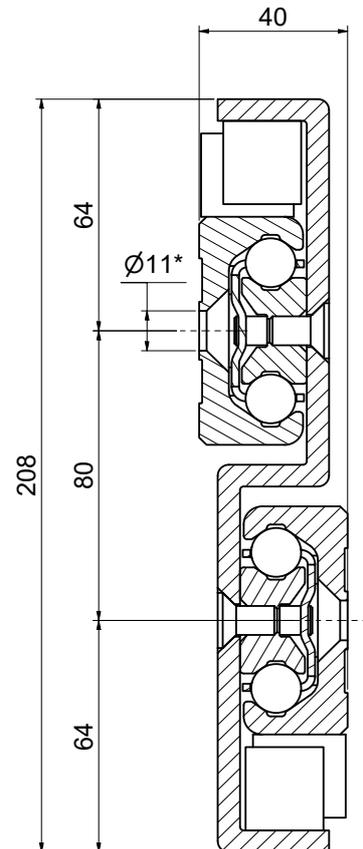


* for M8 ISO 10642 screw

NTVZ208-40H

(INCLUDES BOTH -S AND -D VERSIONS)

See page 30 for -S version
See page 31 for -D version



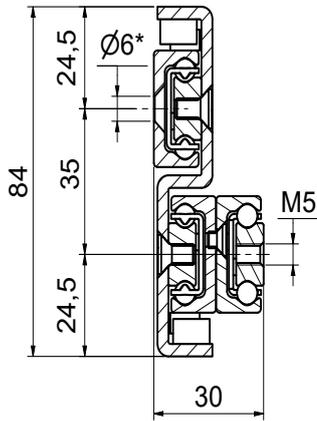
* for M10 ISO 10642 screw

PRODUCT OVERVIEW

OVER EXTENSION NTUZ-H

NTUZ84-30H

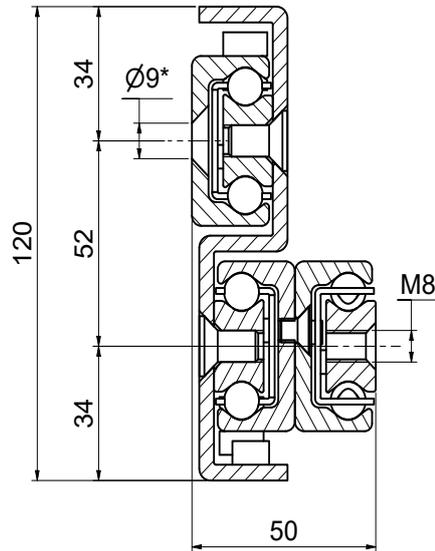
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* for M5 ISO 10642 screw

NTUZ120-50H

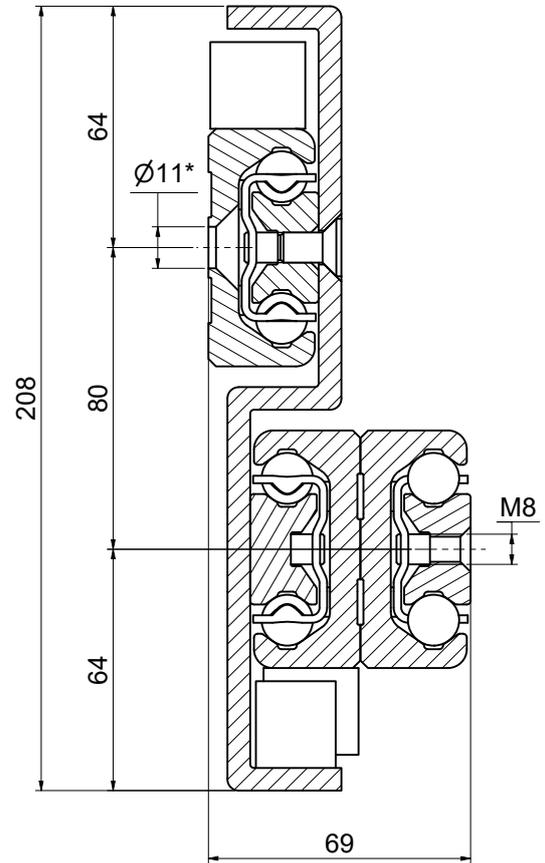
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* for M8 ISO 10642 screw

NTUZ208-69H

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* for M10 ISO 10642 screw

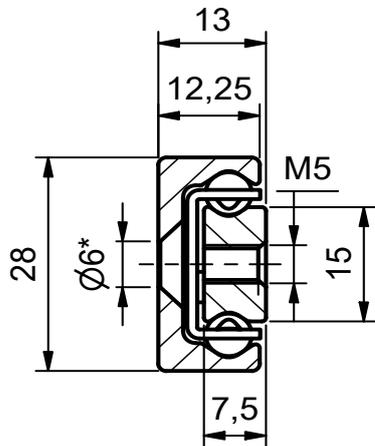
PRODUCT OVERVIEW

LINEAR GUIDES NTSF-H

2.0

NTSF28H

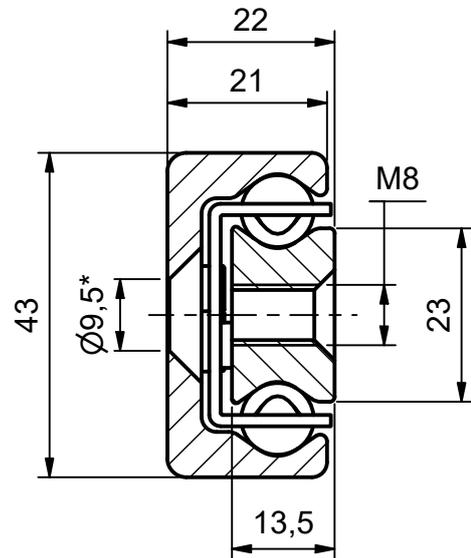
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* for M5 ISO 10642 screw

NTSF43H

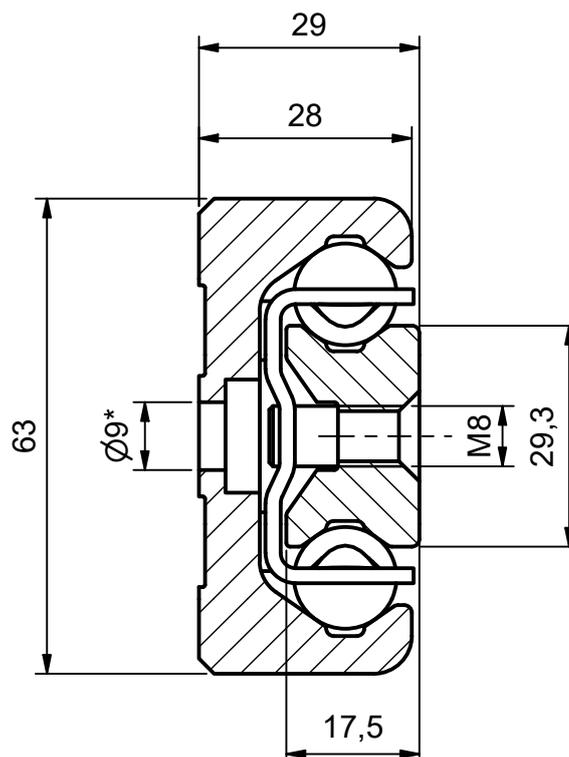
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* for M8 ISO 10642 screw

NTSF63H

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* for M8 ISO 4762 screw



PRODUCT DETAILS

3

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3.1 PART EXTENSION

- NTA28-13H
- NTA43-22H
- NTA63-29H

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3.2 FULL EXTENSION

- NTS28-26H
- NTS28-26H..VRM
- NTS43-44H
- NTS43-44H..VRM
- NTS63-58H
- NTS63-58H..VRM
- NTVZ84-17H..S
- NTVZ84-17H..D
- NTVZ120-28H..S
- NTVZ120-28H..D
- NTVZ208-40H..S
- NTVZ208-40H..D

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3.3 OVER EXTENSION

- NTUZ84-30H..R/L
- NTUZ120-50H..R/L
- NTUZ208-69H..R/L

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3.4 LINEAR GUIDES

- NTSF28H
- NTSF43H
- NTSF63H

PART EXTENSIONS



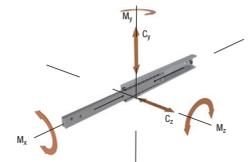
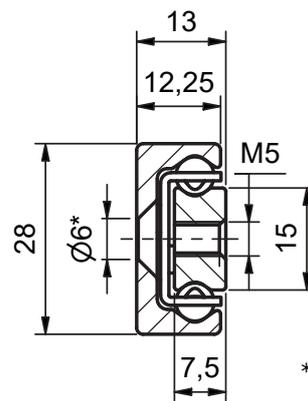
PART EXTENSION

NTA28-13H

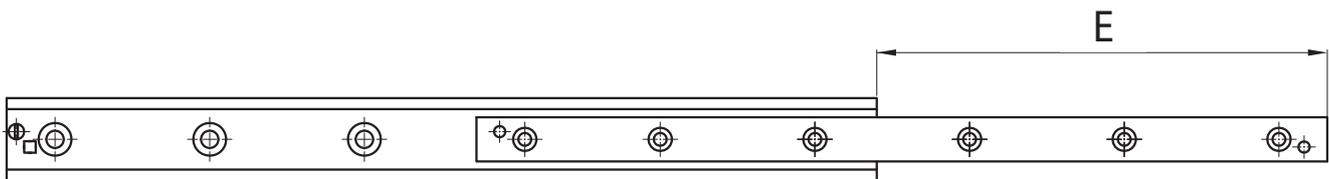
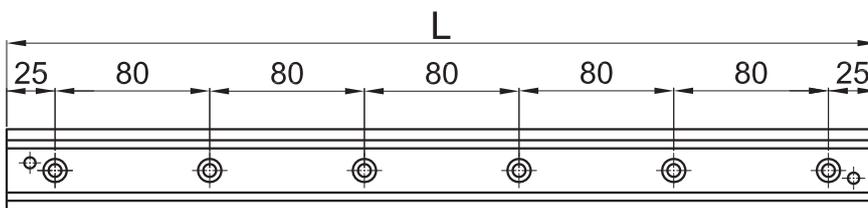
MATERIAL
Zinc-plated steel

NC4 VR

L_{min}130 L_{max}1170



* for M5 ISO 10642 screw



Order Number	Length	Extension	Cy ¹⁾	Cz ¹⁾	Mx ³⁾	My ¹⁾	Mz ¹⁾	Cdyn ^{1) 2)}	Net Weight
	[mm]								
NTA28-13H-130	130	73	1452	1013	15	41	58	4226	0.28
NTA28-13H-210	210	113	2604	1829	27	122	173	6459	0.45
NTA28-13H-290	290	153	3756	2633	39	245	350	8366	0.62
NTA28-13H-370	370	193	4903	3446	52	413	586	10069	0.80
NTA28-13H-450	450	233	6055	4250	64	622	876	11650	0.97
NTA28-13H-530	530	273	7164	5047	76	874	1214	13051	1.14
NTA28-13H-610	610	323	8016	5640	85	1087	1500	13935	1.31
NTA28-13H-690	690	363	9036	6432	97	1402	1886	15076	1.49
NTA28-13H-770	770	403	10032	7200	109	1745	2287	16137	1.66
NTA28-13H-850	850	433	11232	8155	124	2220	2748	17481	1.84
NTA28-13H-930	930	473	11976	8976	137	2585	3086	18089	2.01
NTA28-13H-1010	1010	523	12569	9470	146	2890	3300	18469	2.18
NTA28-13H-1090	1090	263	13138	10159	158	3276	3514	18820	2.36
NTA28-13H-1170	1170	603	13589	10831	170	3667	3694	19013	2.53

1) Cy, Cz, My, Mz and Cdyn= load and torque capacities for c pair of rails

2) Cdyn is used for lifetime calculation

3) Mx = torque capacity for single rail

- If you are planning to combine several options, please contact our application engineering division.
- For technical information see Chapter 4 (page 40).
- **Double stroke (option VR):** In order to obtain the double stroke and allow the slider to extend in both directions, please remove the screws at the edge of the rail or order with VR suffix.

PART EXTENSION

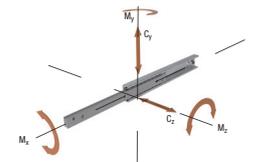
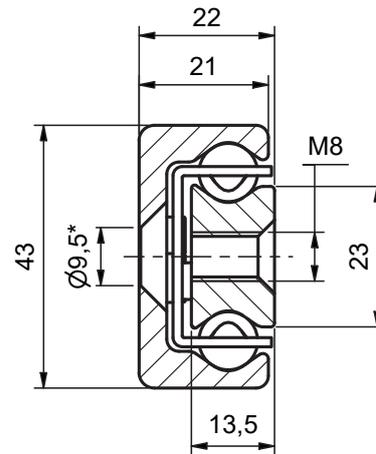
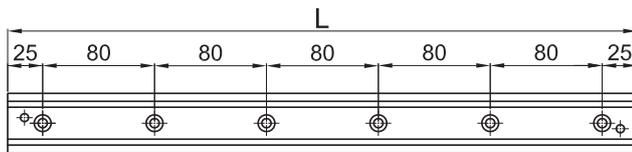
NTA43-22H

3.1

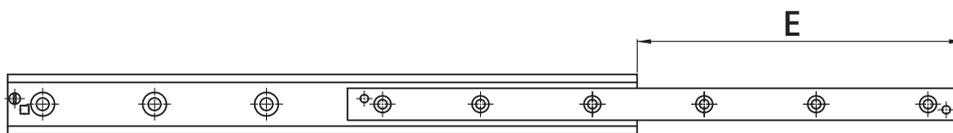
MATERIAL
Zinc-plated steel

NC4 VR

L_{min}210 L_{max}1970



* for M8 ISO 10642 screw



Order Number	Length	Extension	Cy ¹⁾	Cz ¹⁾	Mx ³⁾	My ¹⁾	Mz ¹⁾	Cdyn ¹⁾²⁾	Net Weight
	[mm]								
NTA43-22H-210	210	123	5460	3031	66	182	262	11447	1.10
NTA43-22H-290	290	158	6917	4850	106	437	624	16278	1.53
NTA43-22H-370	370	208	8657	6062	132	667	950	18784	1.95
NTA43-22H-450	450	243	11208	7879	172	1102	1565	22783	2.39
NTA43-22H-530	530	278	13673	9689	211	1644	2311	26318	2.82
NTA43-22H-610	610	313	16073	11503	251	2282	3168	29522	3.26
NTA43-22H-690	690	363	17856	12665	277	2758	3773	31477	3.67
NTA43-22H-770	770	398	20124	14458	317	3545	4704	34201	4.11
NTA43-22H-850	850	433	22308	16166	357	4397	5609	36684	4.54
NTA43-22H-930	930	483	23604	17309	383	4992	6163	37669	4.96
NTA43-22H-1010	1010	518	25277	18696	423	5899	6898	39244	5.40
NTA43-22H-1090	1090	568	26345	20014	449	6523	7303	39876	5.82
NTA43-22H-1170	1170	603	27576	21504	489	7416	7778	40766	6.25
NTA43-22H-1250	1250	638	28548	22961	529	8270	8122	41282	6.68
NTA43-22H-1330	1330	688	29102	23770	555	8786	8282	41223	7.10
NTA43-22H-1410	1410	723	29652	25015	595	9492	8431	41191	7.54
NTA43-22H-1490	1490	758	30029	26064	634	10094	8532	40954	7.97
NTA43-22H-1570	1570	793	30240	27053	674	10608	8556	40530	8.41
NTA43-22H-1650	1650	843	30420	27559	700	10884	8563	40101	8.82
NTA43-22H-1730	1730	878	30470	28224	740	11222	8568	39539	9.26
NTA43-22H-1810	1810	928	30509	28649	766	11398	8570	38996	9.68
NTA43-22H-1890	1890	963	30610	29150	806	11669	8573	38565	10.11
NTA43-22H-1970	1970	1013	30617	29383	832	11688	8573	38045	10.53

1) Cy, Cz, My, Mz and Cdyn = load and torque capacities for pair of rails

2) Cdyn is used for lifetime calculation

3) Mx = torque capacity for single rail

- If you are planning to combine several options, please contact our application engineering division.
- For technical information see Chapter 4 (page 40).
- **Double stroke (option VR):** In order to obtain the double stroke and allow the slider to extend in both directions, please remove the screw at the edge of the rail or order with VR suffix.

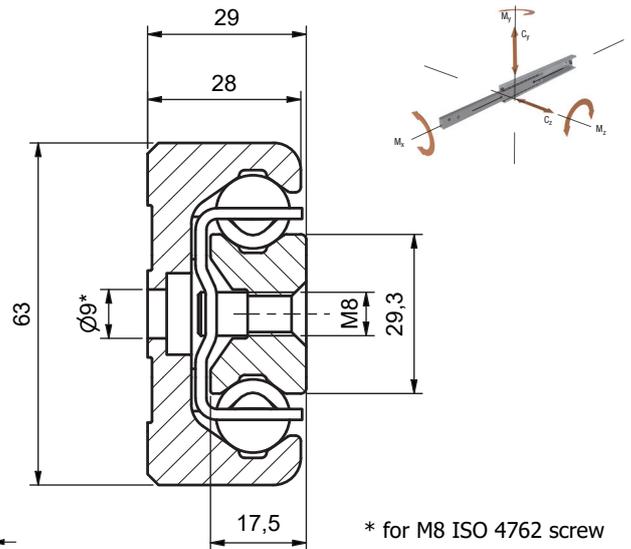
PART EXTENSION

NTA63-29H

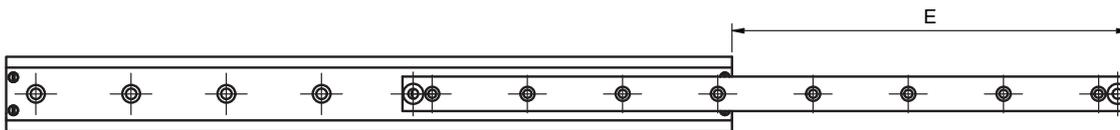
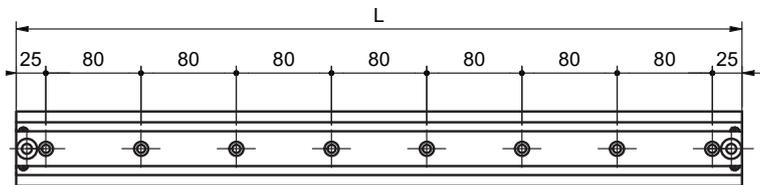
MATERIAL
Zinc-plated steel

NC4 VR

L_{min}610 L_{max}1970



* for M8 ISO 4762 screw



Order Number	Length	Extension	C_y ¹⁾	C_z ¹⁾	M_x ³⁾	M_y ¹⁾	M_z ¹⁾	C_{dyn} ^{1) 2)}	Net Weight
	[mm]		[N]		[Nm]			[N]	[kg]
NTA63-29H-610	610	333	21648	15180	496	2952	4217	23522	5,99
NTA63-29H-690	690	373	25116	17623	573	3888	5544	26192	6,78
NTA63-29H-770	770	413	28560	20033	649	4966	7049	28714	7,56
NTA63-29H-850	850	453	32081	22478	725	6149	8724	31209	8,35
NTA63-29H-930	930	493	35386	24898	802	7488	10548	33407	9,13
NTA63-29H-1010	1010	533	38743	27288	878	8921	12514	35585	9,92
NTA63-29H-1090	1090	573	42067	29707	954	10466	14578	37668	10,70
NTA63-29H-1170	1170	613	45322	32083	1031	12144	16764	39635	11,49
NTA63-29H-1250	1250	653	48504	34474	1107	13920	19015	41494	12,27
NTA63-29H-1330	1330	693	51667	36893	1183	15802	21300	43295	13,06
NTA63-29H-1410	1410	733	54689	39242	1260	17774	23609	44943	13,85
NTA63-29H-1490	1490	773	57574	41520	1336	19800	25860	46452	14,63
NTA63-29H-1570	1570	813	60420	43855	1412	21929	28042	47906	15,42
NTA63-29H-1650	1650	853	63096	46145	1489	24156	30149	49205	16,20
NTA63-29H-1730	1730	893	65532	48403	1565	26362	32112	50305	16,99
NTA63-29H-1810	1810	933	67896	50525	1641	28589	33948	51340	17,77
NTA63-29H-1890	1890	973	70099	52661	1718	30850	35582	52247	18,56
NTA63-29H-1970	1970	1013	72000	54802	1794	33151	37049	52928	19,34

1) C_y , C_z , M_y , M_z and C_{dyn} = load and torque capacities for pair of rails

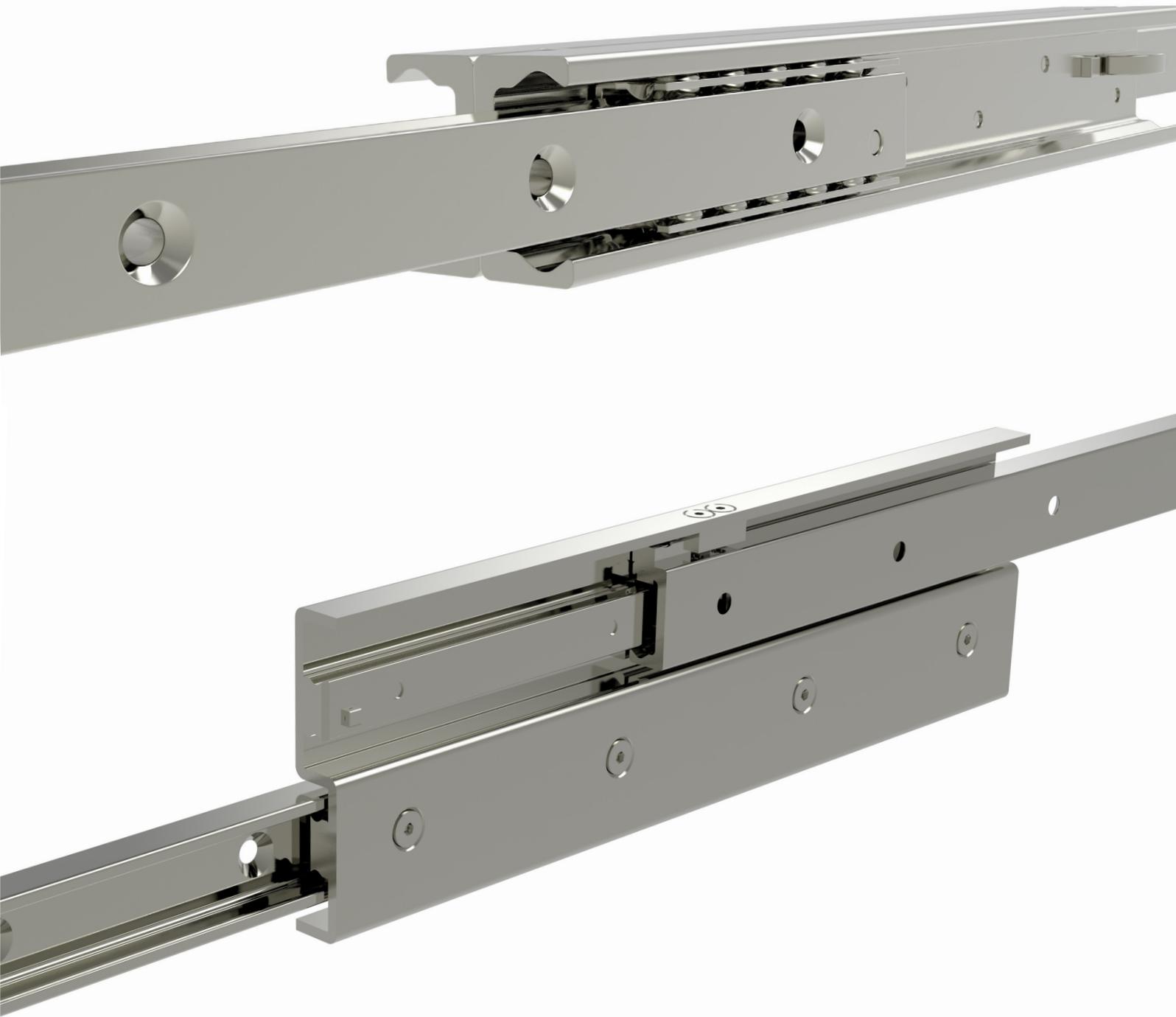
2) C_{dyn} is used for lifetime calculation

3) M_x = torque capacity for single rail

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FULL EXTENSIONS

3.2



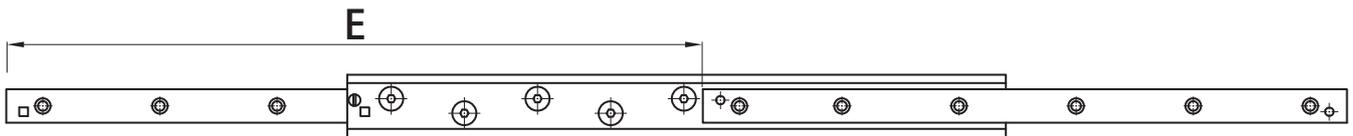
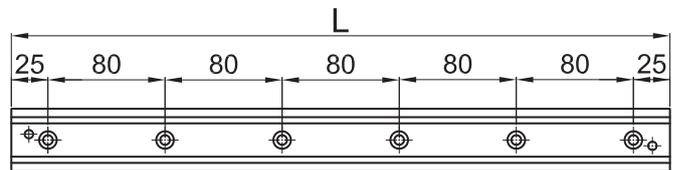
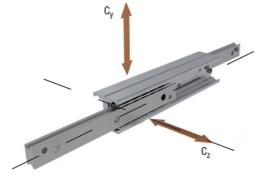
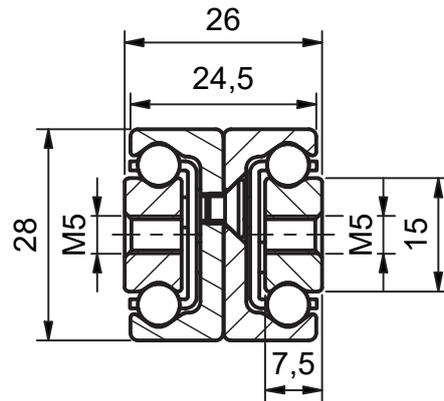
FULL EXTENSION

NTS28-26H

MATERIAL
Zinc-plated steel

NC4 VR

L_{min}130 L_{max}1170



Order Number	Length	Extension	Cy ¹⁾	Cz ¹⁾	Cdyn ^{1) 2)}	Net Weight
	[mm]		[N]			[kg]
NTS28-26H-130	130	147	536	354	1248	0.55
NTS28-26H-210	210	227	990	616	1786	0.90
NTS28-26H-290	290	307	1547	830	2447	1.25
NTS28-26H-370	370	387	1980	940	3098	1.60
NTS28-26H-450	450	467	2112	908	3940	1.94
NTS28-26H-530	530	547	1872	840	4263	2.29
NTS28-26H-610	610	647	1677	760	3975	2.63
NTS28-26H-690	690	727	1501	688	3756	2.98
NTS28-26H-770	770	797	1376	630	3320	3.32
NTS28-26H-850	850	867	1270	580	2966	3.68
NTS28-26H-930	930	947	1178	536	2668	4.02
NTS28-26H-1010	1010	1047	1101	502	2426	4.36
NTS28-26H-1090	1090	1127	1034	468	2221	4.71
NTS28-26H-1170	1170	1207	966	442	2028	5.06

1) Cy, Cz and Cdyn = load capacities for pair of rails

2) Cdyn is used for lifetime calculation

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FULL EXTENSION

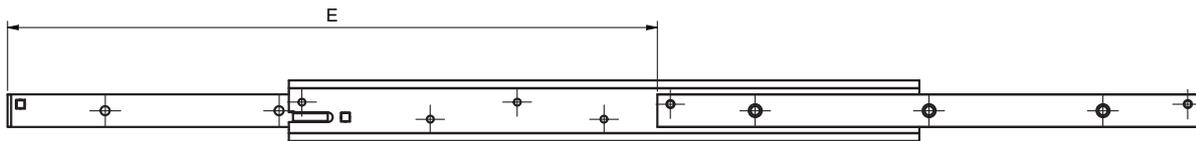
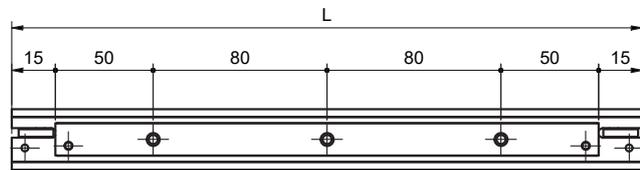
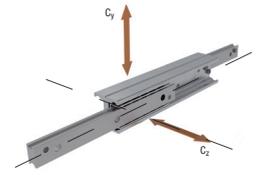
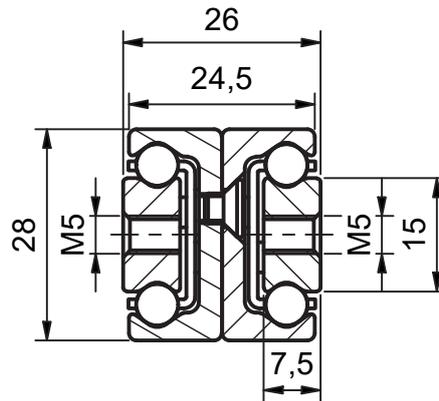
NTS28-26H..VRM

3.2

MATERIAL
Zinc-plated steel

NC4

L_{min}290 **L_{max}1170**



Order Number	Length	Extension	Cy ¹⁾	Cz ¹⁾	Cdyn ^{1)2)w}	Net Weight
	[mm]		[N]			[kg]
NTS28-26H-290-VRM	290	299	882	473	2447	1,11
NTS28-26H-370-VRM	370	379	1327	630	3098	1,42
NTS28-26H-450-VRM	450	479	1732	745	3940	1,72
NTS28-26H-530-VRM	530	559	1891	848	4263	2,03
NTS28-26H-610-VRM	610	639	1710	775	3975	2,34
NTS28-26H-690-VRM	690	719	1486	681	3756	2,64
NTS28-26H-770-VRM	770	799	1348	617	3320	2,95
NTS28-26H-850-VRM	850	899	1283	586	2966	3,26
NTS28-26H-930-VRM	930	979	1154	525	2668	3,56
NTS28-26H-1010-VRM	1010	1059	1079	492	2426	3,87
NTS28-26H-1090-VRM	1090	1139	1044	473	2221	4,18
NTS28-26H-1170-VRM	1170	1219	957	438	2028	4,48

1) Cy, Cz and Cdyn = load capacities for pair of rails
2) Cdyn is used for lifetime calculation

- If you are planning to combine several options, please contact our application engineering division.
- **VRM option** allows the slider to extend in both directions in a synchronized way.
- For technical information see Chapter 4 (page 40).

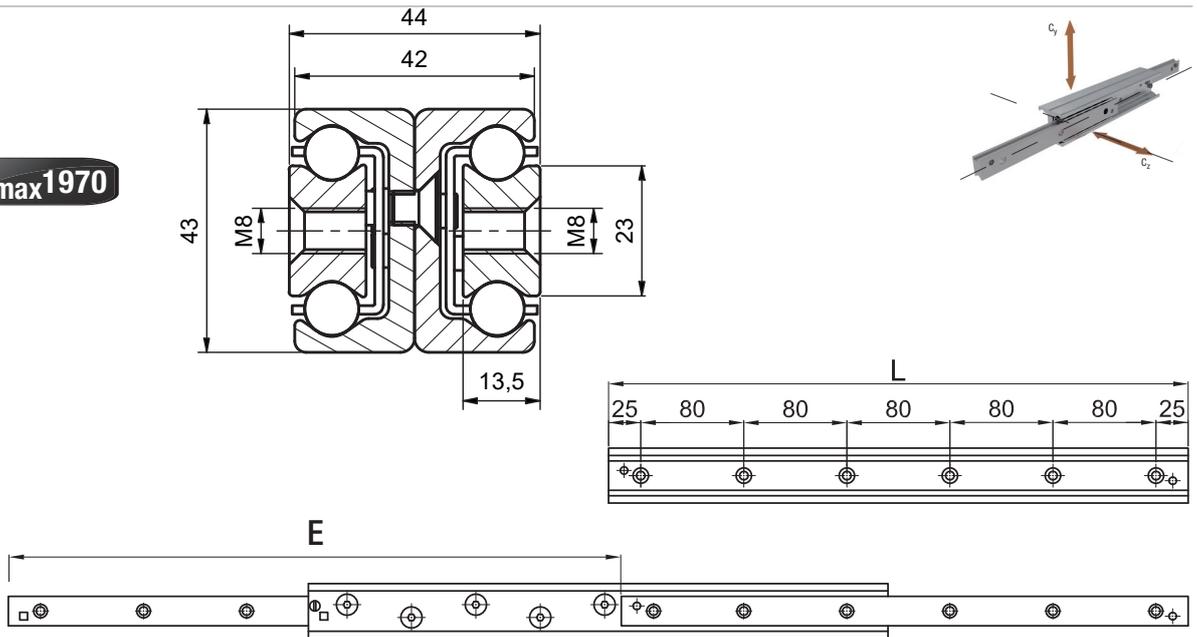
FULL EXTENSION

NTS43-44H

MATERIAL
Zinc-plated steel

NC4 VR

L_{min}210 L_{max}1970



Order Number	Length	Extension	Cy ¹⁾	Cz ¹⁾	Cdyn ¹⁾²⁾	Net Weight
	[mm]		[N]			[kg]
NTS43-44H-210	210	246	1438	1008	814	2.20
NTS43-44H-290	290	316	2440	1630	1181	3.07
NTS43-44H-370	370	416	3238	1912	2286	3.90
NTS43-44H-450	450	486	4234	2366	2582	4.77
NTS43-44H-530	530	556	5107	2612	4068	5.64
NTS43-44H-610	610	626	5796	2644	4600	6.51
NTS43-44H-690	690	726	5724	2508	5684	7.35
NTS43-44H-770	770	796	5022	2362	8102	8.22
NTS43-44H-850	850	866	4658	2200	8759	9.10
NTS43-44H-930	930	966	4335	2052	12917	9.92
NTS43-44H-1010	1010	1036	4066	1920	15063	10.80
NTS43-44H-1090	1090	1106	3822	1804	14883	11.63
NTS43-44H-1170	1170	1206	3604	1708	11753	12.50
NTS43-44H-1250	1250	1276	3400	1616	11731	13.37
NTS43-44H-1330	1330	1376	3233	1536	10927	14.20
NTS43-44H-1410	1410	1446	3067	1460	10165	15.07
NTS43-44H-1490	1490	1516	2927	1394	9526	15.90
NTS43-44H-1570	1570	1586	2798	1336	8948	16.81
NTS43-44H-1650	1650	1686	2676	1276	8416	17.65
NTS43-44H-1730	1730	1756	2570	1226	7958	18.52
NTS43-44H-1810	1810	1856	2468	1178	7528	19.36
NTS43-44H-1890	1890	1926	2373	1134	7134	20.22
NTS43-44H-1970	1970	2026	2271	1092	6734	21.06

1) Cy, Cz and Cdyn= load capacities for pair of rails

2) Cdyn is used for lifetime calculation

- If you are planning to combine several options, please contact our application engineering division.
- **Double stroke (option VR):** In order to obtain the double stroke and allow the slider to extend in both directions, please remove the screws at the edge of the rail or order with VR suffix.
- For technical information see Chapter 4 (page 40).

FULL EXTENSION

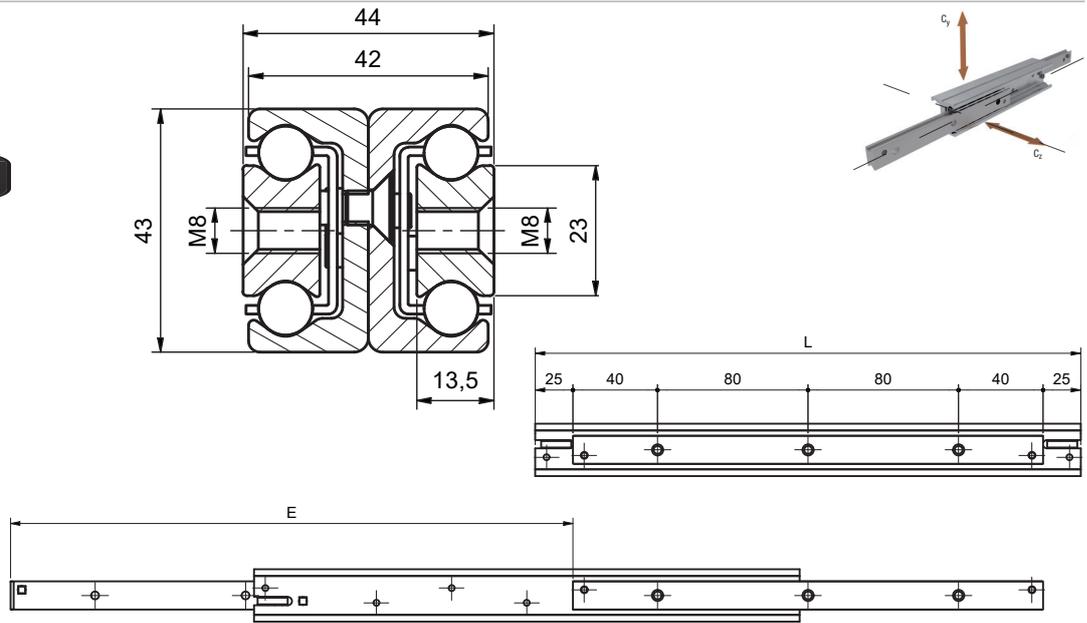
NTS43-44H..VRM

3.2

MATERIAL
Zinc-plated steel

NC4 VRM

L_{min}290 L_{max}1970



Order Number	Length	Extension	Cy ¹⁾	Cz ¹⁾	Cdyn ¹⁾²⁾	Net Weight
	[mm]		[N]			
NTS43-44H-290-VRM	290	302	976	652	3938	2,76
NTS43-44H-370-VRM	370	402	1619	956	5716	3,52
NTS43-44H-450-VRM	450	472	2964	1656	6455	4,28
NTS43-44H-530-VRM	530	542	3575	1828	8135	5,04
NTS43-44H-610-VRM	610	642	4057	2247	8365	5,81
NTS43-44H-690-VRM	690	712	4865	2307	8745	6,57
NTS43-44H-770-VRM	770	782	5022	2268	9880	7,33
NTS43-44H-850-VRM	850	882	4751	2244	9732	8,09
NTS43-44H-930-VRM	930	952	4248	2011	11232	8,85
NTS43-44H-1010-VRM	1010	1022	4107	1901	11587	9,61
NTS43-44H-1090-VRM	1090	1122	3745	1768	11024	10,37
NTS43-44H-1170-VRM	1170	1192	3640	1657	9402	11,14
NTS43-44H-1250-VRM	1250	1262	3502	1568	9023	11,90
NTS43-44H-1330-VRM	1330	1362	3266	1544	8406	12,66
NTS43-44H-1410-VRM	1410	1432	2944	1431	7819	13,42
NTS43-44H-1490-VRM	1490	1502	2869	1352	7327	14,18
NTS43-44H-1570-VRM	1570	1602	2742	1309	6883	14,94
NTS43-44H-1650-VRM	1650	1672	2729	1250	6474	15,70
NTS43-44H-1730-VRM	1730	1742	2519	1201	6121	16,46
NTS43-44H-1810-VRM	1810	1842	2493	1154	5791	17,23
NTS43-44H-1890-VRM	1890	1912	2326	1111	5488	17,99
NTS43-44H-1970-VRM	1970	2012	2317	1070	5180	18,75

1) Cy, Cz and Cdyn= load capacities for pair of rails

2) Cdyn is used for lifetime calculation

- If you are planning to combine several options, please contact our application engineering division.
- **VRM option** allows the slider to extend in both directions in a synchronized way.
- For technical information see Chapter 4 (page 40).

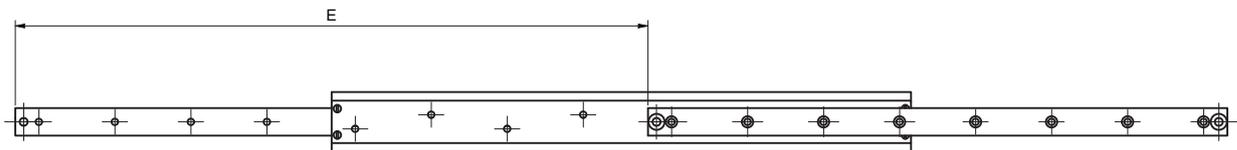
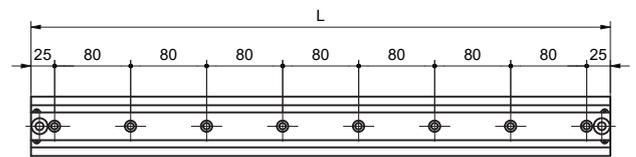
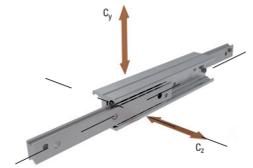
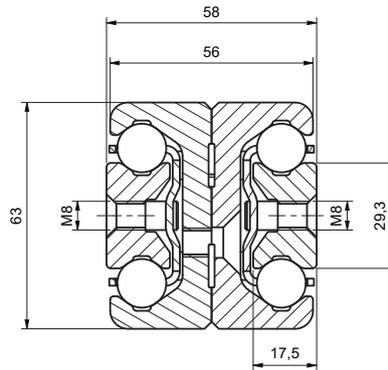
FULL EXTENSION

NTS63-58H

MATERIAL
Zinc-plated steel

NC4 VR

L_{min}610 L_{max}1970



Order Number	Length	Extension	Cy ¹⁾	Cz ¹⁾	Cdyn ^{1) 2)}	Net Weight
	[mm]		[N]			
NTS63-58H-610	610	666	8625	4982	2624	11,64
NTS63-58H-690	690	746	9744	5720	3468	13,17
NTS63-58H-770	770	826	11581	5954	3965	14,69
NTS63-58H-850	850	906	12726	5352	4209	16,22
NTS63-58H-930	930	986	13104	4748	5773	17,75
NTS63-58H-1010	1010	1066	13325	4337	6211	19,27
NTS63-58H-1090	1090	1146	12634	4000	6929	20,80
NTS63-58H-1170	1170	1226	12000	3732	8264	22,33
NTS63-58H-1250	1250	1306	11424	3550	8551	23,85
NTS63-58H-1330	1330	1386	10886	3390	9036	25,38
NTS63-58H-1410	1410	1466	10416	3240	8239	26,91
NTS63-58H-1490	1490	1546	9984	3110	7330	28,43
NTS63-58H-1570	1570	1626	9586	2986	6650	29,96
NTS63-58H-1650	1650	1706	9216	2868	6289	31,49
NTS63-58H-1730	1730	1786	8856	2766	5948	33,01
NTS63-58H-1810	1810	1866	8568	2664	5669	34,54
NTS63-58H-1890	1890	1946	8266	2570	5391	36,06
NTS63-58H-1970	1970	2026	7992	2490	5141	37,59

1) Cy, Cz and Cdyn = load capacities for pair of rails
2) Cdyn is used for lifetime calculation

- If you are planning to combine several options, please contact our application engineering division.
- For technical information see Chapter 4 (page 40).
- **Double stroke (option VR):** In order to obtain the double stroke and allow the slider to extend in both directions, please remove the screws at the edge of the rail or order with VR suffix.

FULL EXTENSION

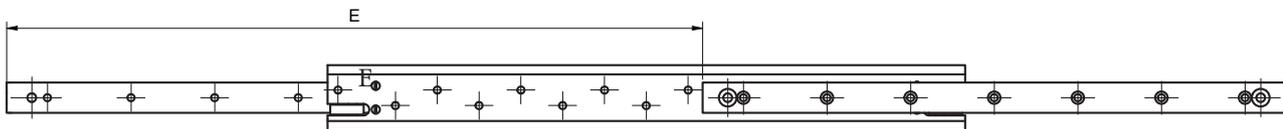
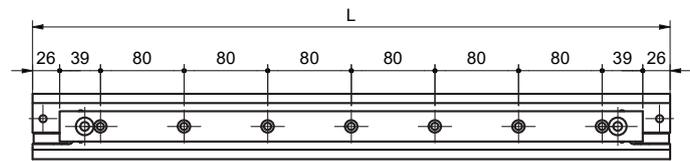
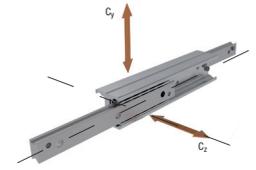
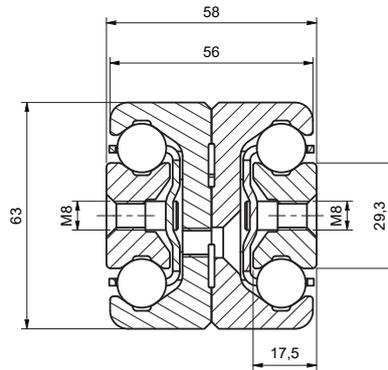
NTS63-58H..VRM

3.2

MATERIAL
Zinc-plated steel

NC4 VRM

L_{min}610 L_{max}1970



Order Number	Length	Extension	C _y ¹⁾	C _z ¹⁾	C _{dyn} ^{1) 2)}	Net Weight
	[mm]		[N]			[kg]
NTS63-58H-610-VRM	610	602	7763	4982	2624	11,08
NTS63-58H-690-VRM	690	682	8770	5606	3468	12,53
NTS63-58H-770-VRM	770	762	10423	5894	3965	13,99
NTS63-58H-850-VRM	850	842	11581	5513	4209	15,44
NTS63-58H-930-VRM	930	922	12187	4843	5773	16,89
NTS63-58H-1010-VRM	1010	1002	12659	4293	6211	18,35
NTS63-58H-1090-VRM	1090	1082	13265	4080	6929	19,80
NTS63-58H-1170-VRM	1170	1162	12720	3844	8264	21,25
NTS63-58H-1250-VRM	1250	1242	11881	3692	8551	22,70
NTS63-58H-1330-VRM	1330	1322	11213	3492	9036	24,16
NTS63-58H-1410-VRM	1410	1402	10624	3305	8239	25,61
NTS63-58H-1490-VRM	1490	1482	10084	3141	7330	27,06
NTS63-58H-1570-VRM	1570	1562	9586	2986	6650	28,52
NTS63-58H-1650-VRM	1650	1642	9124	2839	6289	29,97
NTS63-58H-1730-VRM	1730	1722	8679	2711	5948	31,42
NTS63-58H-1810-VRM	1810	1802	8311	2584	5669	32,88
NTS63-58H-1890-VRM	1890	1882	7935	2467	5391	34,33
NTS63-58H-1970-VRM	1970	1962	7592	2366	5141	35,78

1) C_y, C_z and C_{dyn} = load capacities for pair of rails

2) C_{dyn} is used for lifetime calculation

- If you are planning to combine several options, please contact our application engineering division.
- **VRM option** allows the slider to extend in both directions in a synchronized way.
- For technical information see Chapter 4 (page 40).

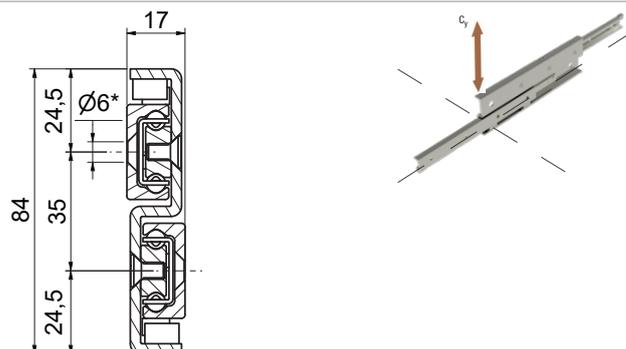
FULL EXTENSION

NTVZ84-17H..S

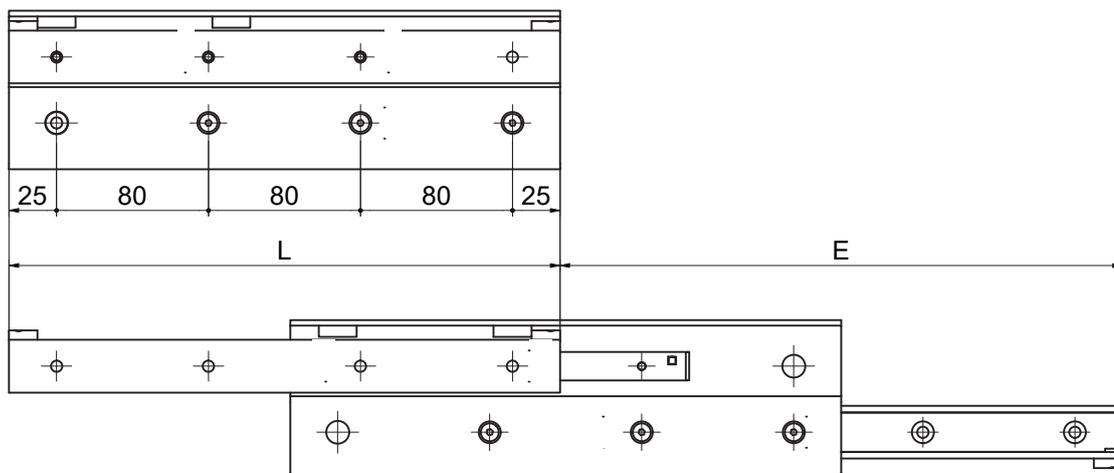
MATERIAL
Zinc-plated steel

NC4

L_{min}290 L_{max}1490



* for M5 ISO 10642 screw



Order Number	Length	Extension	Cy ¹⁾	Cdyn ^{1) 2)}	Net Weight
	[mm]		[N]		
NTVZ84-17H-290-S	290	296	1030	1967	1,88
NTVZ84-17H-370-S	370	380	1714	3016	2,40
NTVZ84-17H-450-S	450	464	2145	3537	2,92
NTVZ84-17H-530-S	530	548	2145	3439	3,44
NTVZ84-17H-610-S	610	630	2820	3922	3,95
NTVZ84-17H-690-S	690	714	3277	4135	4,47
NTVZ84-17H-770-S	770	798	3417	4656	4,99
NTVZ84-17H-850-S	850	864	3413	5317	5,51
NTVZ84-17H-930-S	930	950	3456	5359	6,03
NTVZ84-17H-1010-S	1010	1034	3382	4706	6,55
NTVZ84-17H-1090-S	1090	1118	3186	4322	7,07
NTVZ84-17H-1170-S	1170	1202	2990	3961	7,58
NTVZ84-17H-1250-S	1250	1266	2908	3769	8,10
NTVZ84-17H-1330-S	1330	1350	2771	3518	8,62
NTVZ84-17H-1410-S	1410	1434	2638	3285	9,14
NTVZ84-17H-1490-S	1490	1518	2494	3048	9,66

1) Cy and Cdyn= load capacities for pair of rails

2) Cdyn is used for lifetime calculation

• For technical information see Chapter 4 (page 40).

• This guide allows stroke in a single direction; in order to have double stroke, please select -D suffix version.

FULL EXTENSION

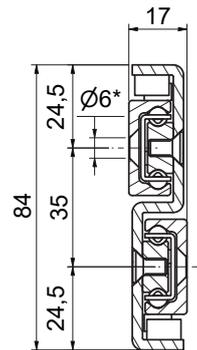
NTVZ84-17H..D

3.2

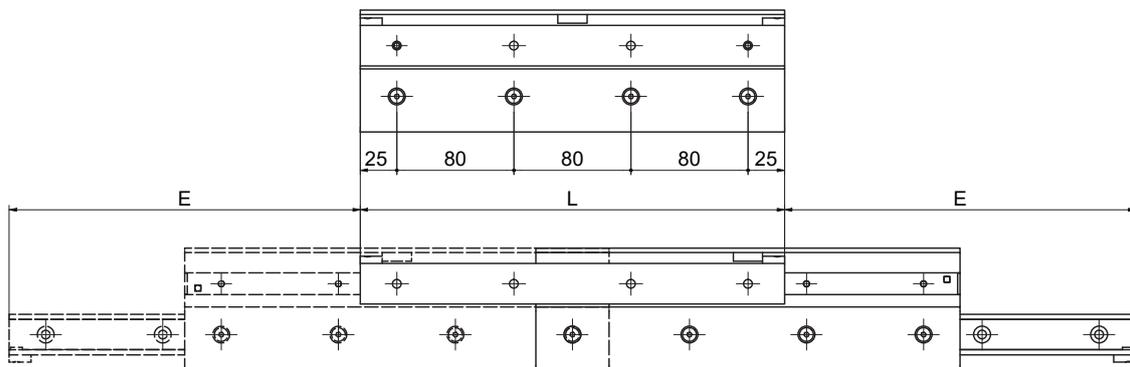
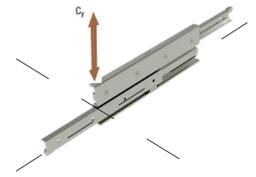
MATERIAL
Zinc-plated steel

NC4

L_{min}290 L_{max}1490



* for M5 ISO 10642 screw



Order Number	Length	Extension	C _y ¹⁾	C _{dyn} ¹⁾²⁾	Net Weight
	[mm]		[N]		[kg]
NTVZ84-17H-290-D	290	240	1968	1967	2,01
NTVZ84-17H-370-D	370	320	2352	2654	2,56
NTVZ84-17H-450-D	450	400	2683	3395	3,12
NTVZ84-17H-530-D	530	480	3402	3439	3,67
NTVZ84-17H-610-D	610	560	3780	4157	4,23
NTVZ84-17H-690-D	690	640	4145	4135	4,78
NTVZ84-17H-770-D	770	720	4134	4656	5,34
NTVZ84-17H-850-D	850	800	4057	5317	5,89
NTVZ84-17H-930-D	930	880	3931	5359	6,45
NTVZ84-17H-1010-D	1010	960	3793	4964	7,00
NTVZ84-17H-1090-D	1090	1040	3563	4440	7,55
NTVZ84-17H-1170-D	1170	1120	3360	3961	8,11
NTVZ84-17H-1250-D	1250	1200	3186	3873	8,66
NTVZ84-17H-1330-D	1330	1280	3023	3518	9,22
NTVZ84-17H-1410-D	1410	1360	2879	3285	9,77
NTVZ84-17H-1490-D	1490	1440	2749	3090	10,33

1) C_y and C_{dyn} = load capacities for pair of rails

2) C_{dyn} is used for lifetime calculation

• For technical information see Chapter 4 (page 40).

• This guide allows double stroke; in order to have single stroke, please select -S suffix version.

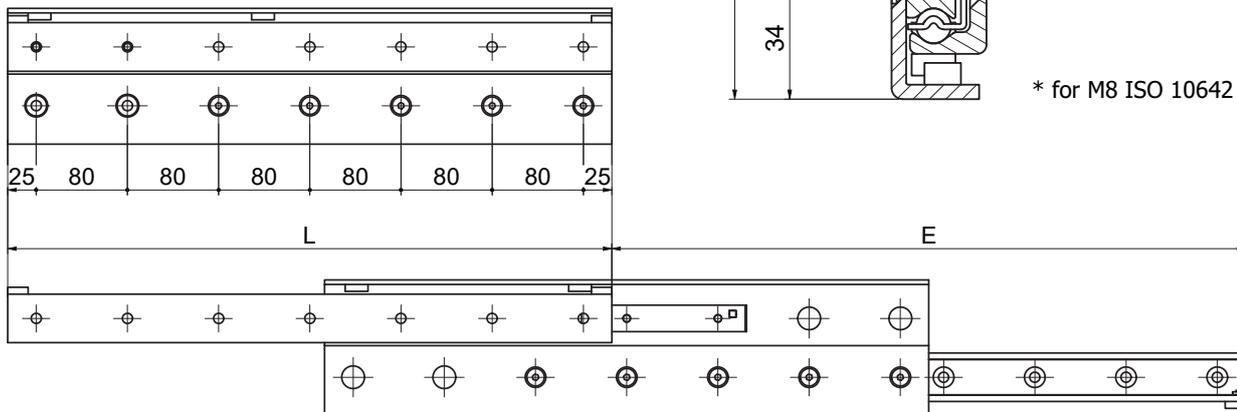
FULL EXTENSION

NTVZ120-28H..S

MATERIAL
Zinc-plated steel

NC4

L_{min}530 **L_{max}1970**



* for M8 ISO 10642 screw

Order Number	Length	Extension	Cy ¹⁾	Cdyn ¹⁾²⁾	Net Weight
	[mm]		[N]		[kg]
NTVZ120-28H-530-S	530	556	4004	5946	7,79
NTVZ120-28H-610-S	610	626	5291	7535	8,97
NTVZ120-28H-690-S	690	726	5857	8325	10,14
NTVZ120-28H-770-S	770	796	6872	9343	11,32
NTVZ120-28H-850-S	850	866	7416	9366	12,49
NTVZ120-28H-930-S	930	966	8326	9663	13,67
NTVZ120-28H-1010-S	1010	1036	8584	10792	14,85
NTVZ120-28H-1090-S	1090	1106	8483	11343	16,02
NTVZ120-28H-1170-S	1170	1206	7743	12134	17,20
NTVZ120-28H-1250-S	1250	1276	7285	11744	18,37
NTVZ120-28H-1330-S	1330	1376	6586	10892	19,55
NTVZ120-28H-1410-S	1410	1446	6234	10111	20,72
NTVZ120-28H-1490-S	1490	1516	6089	9696	21,90
NTVZ120-28H-1570-S	1570	1616	5831	9125	23,08
NTVZ120-28H-1650-S	1650	1686	5668	8724	24,25
NTVZ120-28H-1730-S	1730	1756	5408	8193	25,43
NTVZ120-28H-1810-S	1810	1856	5165	7708	26,60
NTVZ120-28H-1890-S	1890	1926	5070	7459	27,78
NTVZ120-28H-1970-S	1970	2026	4860	7052	28,96

1) Cy and Cdyn = load capacities for pair of rails

2) Cdyn is used for lifetime calculation

• For technical information see Chapter 4 (page 40).

• This guide allows stroke in a single direction; in order to have double stroke, please select -D suffix version.

FULL EXTENSION

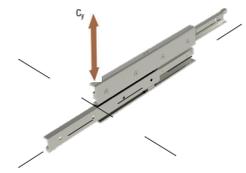
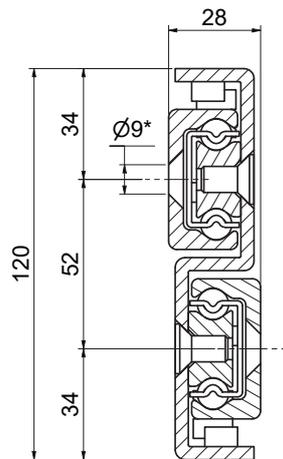
NTVZ120-28H..D

3.2

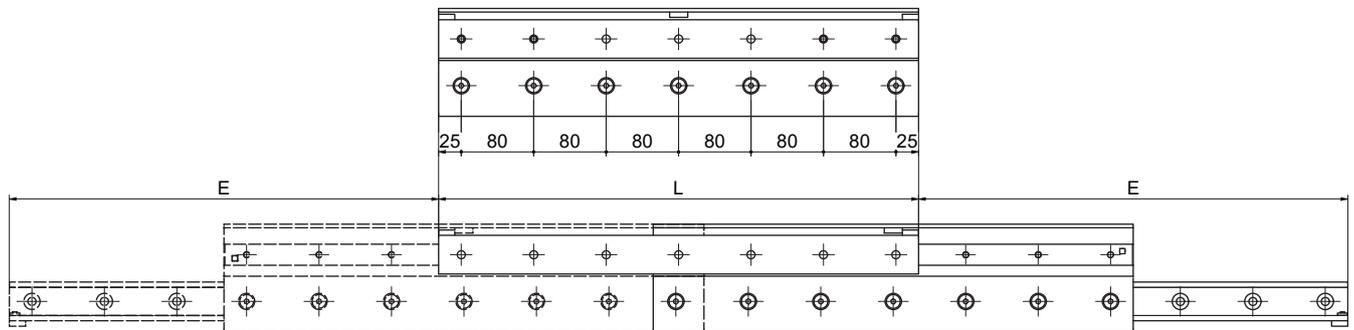
MATERIAL
Zinc-plated steel

NC4

L_{min}530 **L_{max}1970**



* for M8 ISO 10642 screw



Order Number	Length	Extension	C _y ¹⁾	C _{dyn} ²⁾	Net Weight
	[mm]				
NTVZ120-28H-530-D	530	474	5258	6073	8,56
NTVZ120-28H-610-D	610	554	6778	7275	9,85
NTVZ120-28H-690-D	690	634	7748	7817	11,14
NTVZ120-28H-770-D	770	714	8263	8937	12,44
NTVZ120-28H-850-D	850	794	9531	10031	13,73
NTVZ120-28H-930-D	930	874	10098	11017	15,02
NTVZ120-28H-1010-D	1010	954	9747	11141	16,31
NTVZ120-28H-1090-D	1090	1034	9395	11516	17,60
NTVZ120-28H-1170-D	1170	1114	8890	13158	18,90
NTVZ120-28H-1250-D	1250	1194	8079	13566	20,19
NTVZ120-28H-1330-D	1330	1274	7370	13036	21,48
NTVZ120-28H-1410-D	1410	1354	6992	11970	22,77
NTVZ120-28H-1490-D	1490	1434	6701	10819	24,06
NTVZ120-28H-1570-D	1570	1514	6441	10359	25,36
NTVZ120-28H-1650-D	1650	1594	6145	9721	26,65
NTVZ120-28H-1730-D	1730	1674	5935	9241	27,94
NTVZ120-28H-1810-D	1810	1754	5719	8653	29,23
NTVZ120-28H-1890-D	1890	1834	5488	7961	30,53
NTVZ120-28H-1970-D	1970	1914	5313	7602	31,82

1) C_y = load capacities for pair of rails

2) C_{dyn} is used for lifetime calculation

- For technical information see Chapter 4 (page 40).
- This guide allows double stroke; in order to have single stroke, please select -S suffix version.

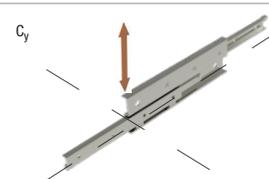
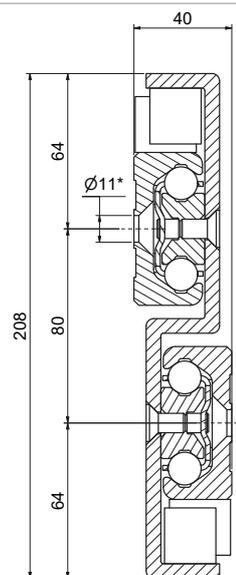
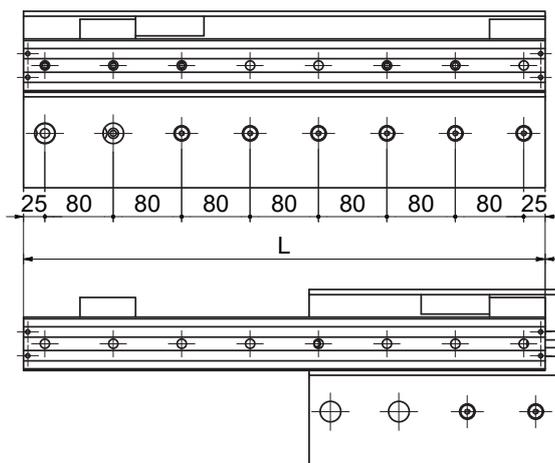
FULL EXTENSION

NTVZ208-40H..S

MATERIAL
Zinc-plated steel

NC4

L_{min}610 **L_{max}1970**



* for M10 ISO 10642 screw

Order Number	Length	Extension	Cy ¹⁾	Cdyn ¹⁾²⁾	Net Weight
	[mm]		[N]		
NTVZ208-40H-610-S	610	668	7197	9715	20,33
NTVZ208-40H-690-S	690	748	8214	12576	23,00
NTVZ208-40H-770-S	770	828	10125	13701	25,66
NTVZ208-40H-850-S	850	908	11836	15773	28,33
NTVZ208-40H-930-S	930	988	12981	16788	30,99
NTVZ208-40H-1010-S	1010	1068	14630	18351	33,66
NTVZ208-40H-1090-S	1090	1148	16803	20547	36,33
NTVZ208-40H-1170-S	1170	1228	18428	21052	38,99
NTVZ208-40H-1250-S	1250	1308	19908	21011	41,66
NTVZ208-40H-1330-S	1330	1388	20852	20283	44,33
NTVZ208-40H-1410-S	1410	1468	22718	19742	46,99
NTVZ208-40H-1490-S	1490	1548	23008	17845	49,66
NTVZ208-40H-1570-S	1570	1628	22537	17178	52,32
NTVZ208-40H-1650-S	1650	1708	21420	16059	54,99
NTVZ208-40H-1730-S	1730	1788	21206	15649	57,66
NTVZ208-40H-1810-S	1810	1868	20840	15149	60,32
NTVZ208-40H-1890-S	1890	1948	20231	14496	62,99
NTVZ208-40H-1970-S	1970	2028	19341	13668	65,66

1) Cy and Cdyn= load capacities for pair of rails

2) Cdyn is used for lifetime calculation

- For technical information see Chapter 4 (page 40).

- This guide allows stroke in a single direction; in order to have double stroke, please select -D suffix version

FULL EXTENSION

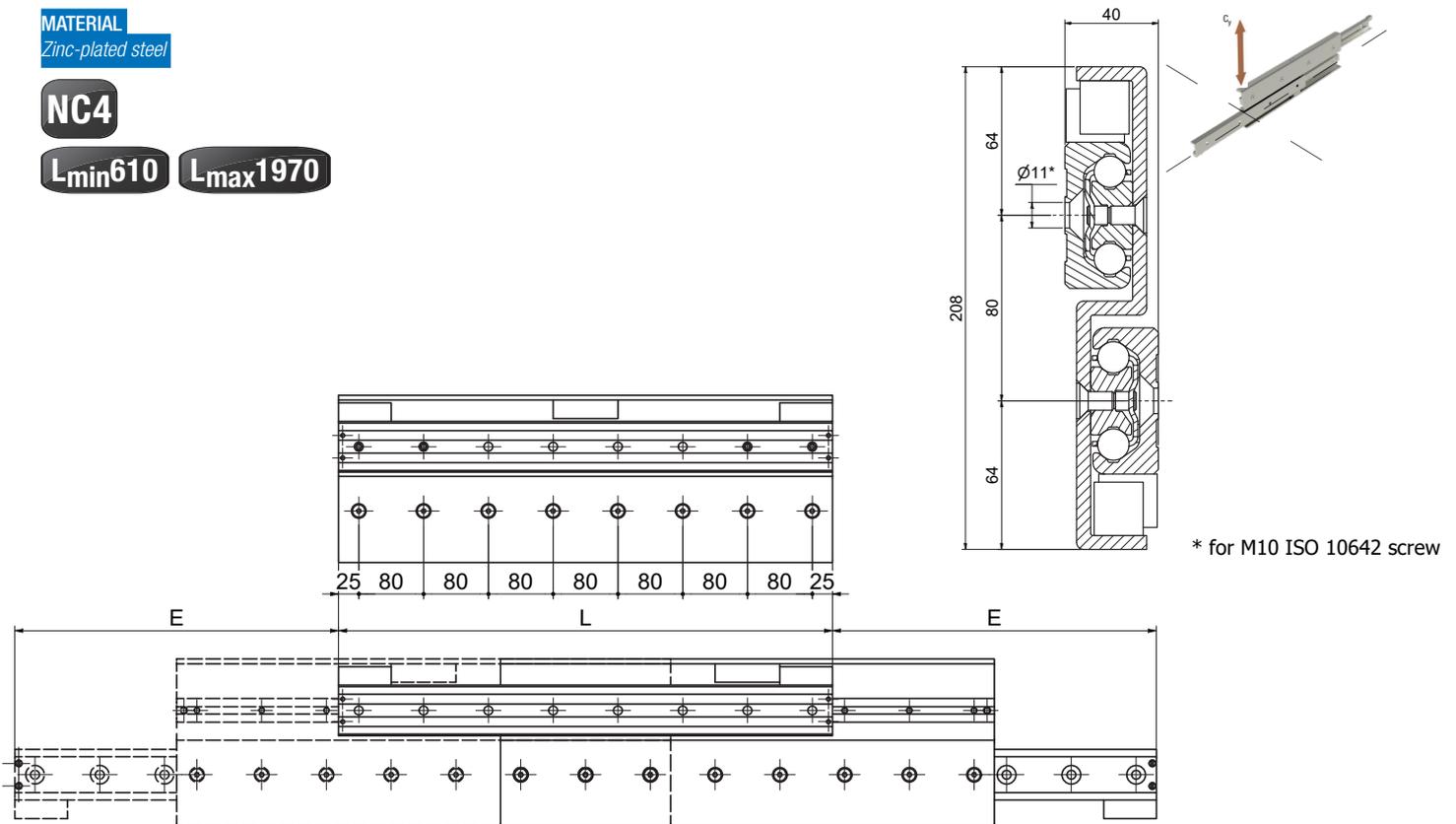
NTVZ208-40H..D

3.2

MATERIAL
Zinc-plated steel

NC4

L_{min}610 **L_{max}1970**



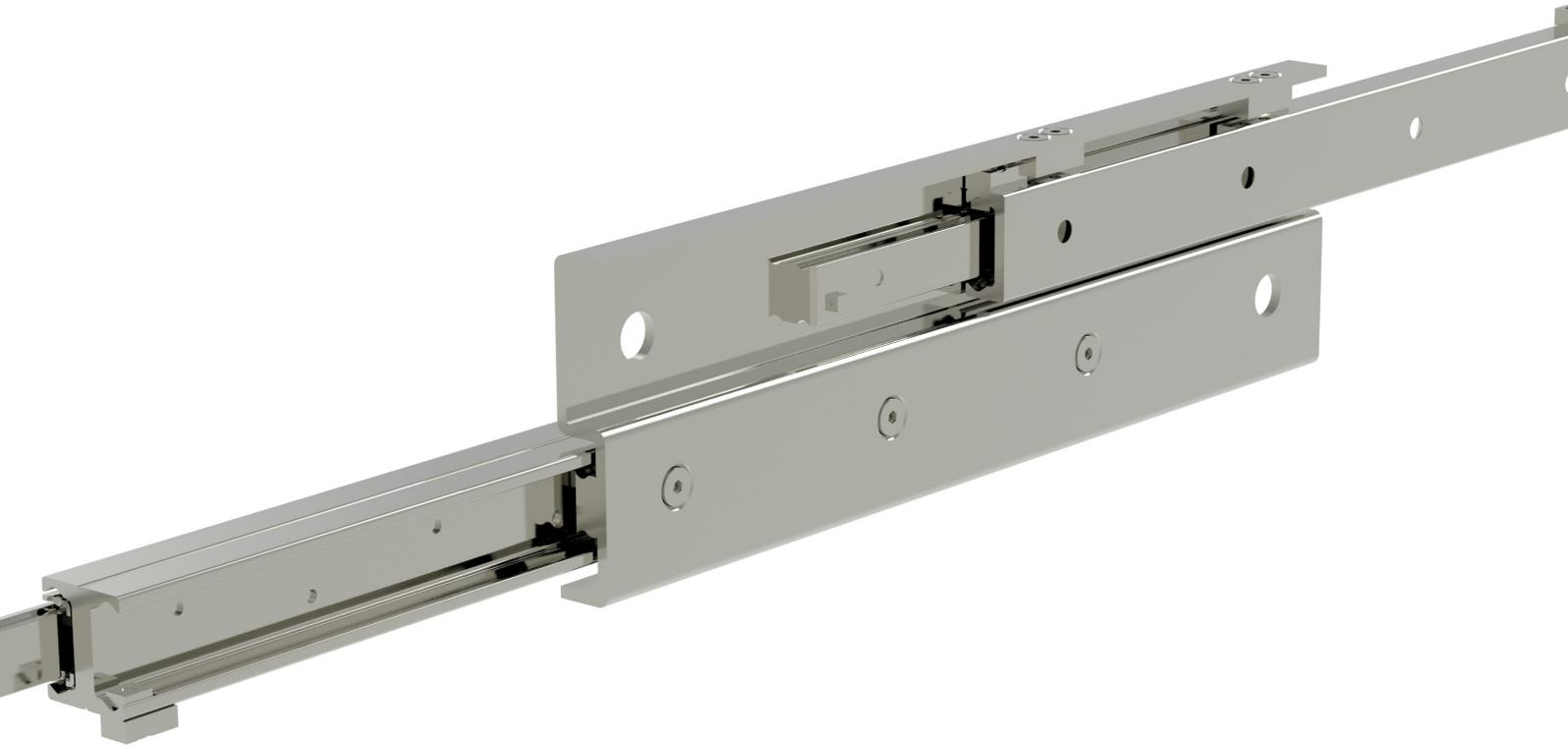
Order Number	Length	Extension	Cy ¹⁾	Cdyn ¹⁾²⁾	Net Weight
	[mm]		[N]		
NTVZ208-40H-610-D	610	400	23328	10661	21,9
NTVZ208-40H-690-D	690	480	24300	12278	24,77
NTVZ208-40H-770-D	770	560	25220	13388	27,64
NTVZ208-40H-850-D	850	640	26441	15162	30,52
NTVZ208-40H-930-D	930	720	27851	17088	33,39
NTVZ208-40H-1010-D	1010	800	28820	18391	36,26
NTVZ208-40H-1090-D	1090	880	30083	19445	39,13
NTVZ208-40H-1170-D	1170	960	31910	20543	42,00
NTVZ208-40H-1250-D	1250	1040	32957	22591	44,88
NTVZ208-40H-1330-D	1330	1120	34774	22371	47,75
NTVZ208-40H-1410-D	1410	1200	35480	20745	50,62
NTVZ208-40H-1490-D	1490	1280	35315	19011	53,49
NTVZ208-40H-1570-D	1570	1360	35118	18355	56,37
NTVZ208-40H-1650-D	1650	1440	34427	17275	59,24
NTVZ208-40H-1730-D	1730	1520	33017	16308	62,11
NTVZ208-40H-1810-D	1810	1600	31055	15417	64,98
NTVZ208-40H-1890-D	1890	1680	29398	14623	67,85
NTVZ208-40H-1970-D	1970	1760	27228	13874	70,73

1) Cy and Cdyn = load and torque capacities for pair of rails

2) Cdyn is used for lifetime calculation

- For technical information see Chapter 4 (page 40).
- This guide allows double stroke; in order to have single stroke, please select -S suffix version

OVER EXTENSION



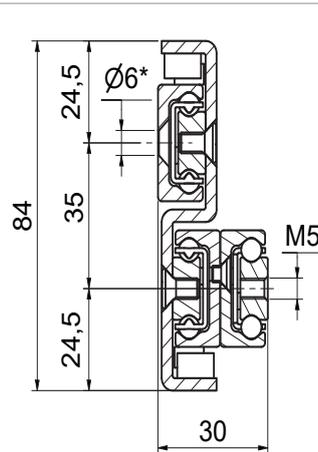
OVER EXTENSION

NTUZ84-30H..R / NTUZ84-30H..L

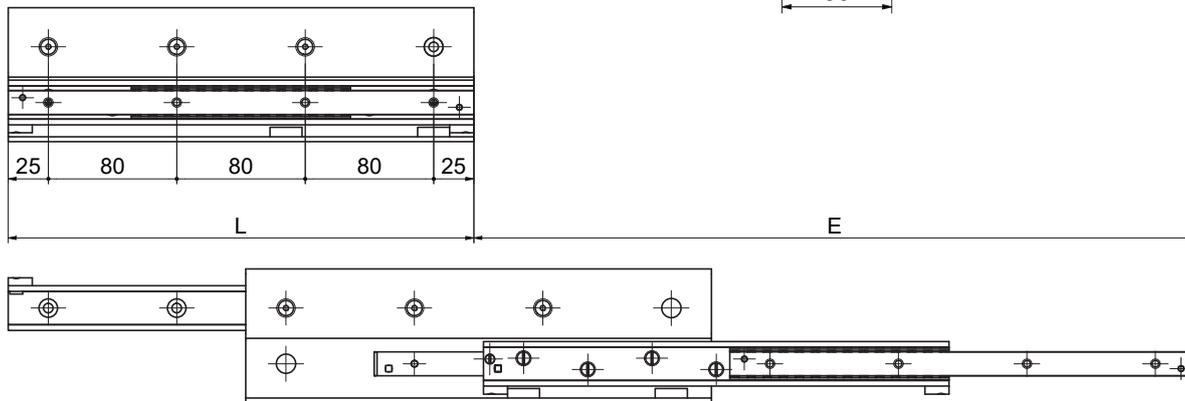
MATERIAL
Zinc-plated steel

NC4

L_{min}290 **L_{max}1170**



* for M5 ISO 10642 screw



Order Number	Right	Left	Length	Extension	Cy ¹⁾	Cdyn ^{1) 2)}	Net Weight
			[mm]		[N]		[kg]
NTUZ84-30H-290	-R	-L	290	449,5	668	1197	2,48
NTUZ84-30H-370	-R	-L	370	573,5	1005	1863	3,16
NTUZ84-30H-450	-R	-L	450	697,5	1265	2230	3,85
NTUZ84-30H-530	-R	-L	530	821,5	1389	1985	4,53
NTUZ84-30H-610	-R	-L	610	953,5	1549	2545	5,22
NTUZ84-30H-690	-R	-L	690	1077,5	1499	2679	5,90
NTUZ84-30H-770	-R	-L	770	1201,5	1404	2710	6,58
NTUZ84-30H-850	-R	-L	850	1297,5	1382	2581	7,27
NTUZ84-30H-930	-R	-L	930	1423,5	1426	2585	7,95
NTUZ84-30H-1010	-R	-L	1010	1557,5	1362	2402	8,64
NTUZ84-30H-1090	-R	-L	1090	1681,5	1300	2235	9,32
NTUZ84-30H-1170	-R	-L	1170	1805,5	1220	2048	10,01

1) Cy and Cdyn= load capacities for pair of rails

2) Cdyn is used for lifetime calculation

• For technical information see Chapter 4 (page 40).

• Choose R suffix for right side guide or L suffix for left side one.

Example code for right version: NTUZ84-30H-770-R;

Example code for left version: NTUZ84-30H-770-L.

OVER EXTENSION

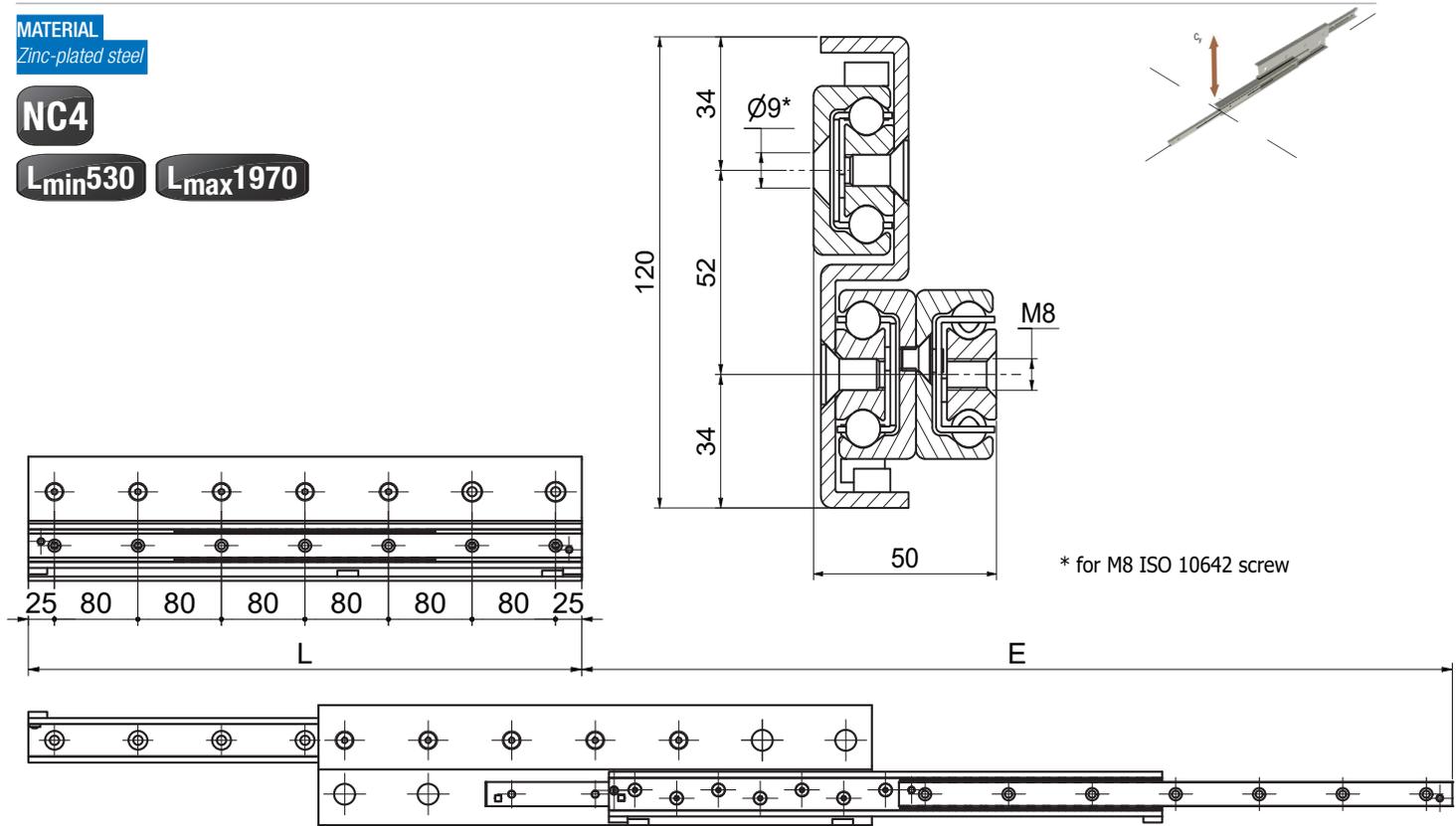
NTUZ120-50H..R / NTUZ120-50H..L

3.3

MATERIAL
Zinc-plated steel

NC4

L_{min}530 L_{max}1970



Order Number	Right	Left	Length	Extension	Cy ¹⁾	Cdyn ¹⁾²⁾	Net Weight
			[mm]				
NTUZ120-50H-530	-R	-L	530	834	2141	4121	11,30
NTUZ120-50H-610	-R	-L	610	939	3098	4894	13,01
NTUZ120-50H-690	-R	-L	690	1089	3547	5253	14,71
NTUZ120-50H-770	-R	-L	770	1194	4034	6034	16,42
NTUZ120-50H-850	-R	-L	850	1299	3953	6500	18,12
NTUZ120-50H-930	-R	-L	930	1449	4152	6626	19,83
NTUZ120-50H-1010	-R	-L	1010	1554	4483	6960	21,53
NTUZ120-50H-1090	-R	-L	1090	1659	4517	6837	23,24
NTUZ120-50H-1170	-R	-L	1170	1809	4140	6120	24,95
NTUZ120-50H-1250	-R	-L	1250	1914	4159	6014	26,65
NTUZ120-50H-1330	-R	-L	1330	2064	3965	5616	28,36
NTUZ120-50H-1410	-R	-L	1410	2169	3763	5228	30,06
NTUZ120-50H-1490	-R	-L	1490	2274	3672	5008	31,77
NTUZ120-50H-1570	-R	-L	1570	2409	3528	4728	33,47
NTUZ120-50H-1650	-R	-L	1650	2529	3384	4461	35,18
NTUZ120-50H-1730	-R	-L	1730	2634	3240	4204	36,88
NTUZ120-50H-1810	-R	-L	1810	2784	3079	3936	38,59
NTUZ120-50H-1890	-R	-L	1890	2889	3000	3780	40,30
NTUZ120-50H-1970	-R	-L	1970	3039	2868	3564	42,00

1) Cy and Cdyn= load capacities for pair of rails

2) Cdyn is used for lifetime calculation

• For technical information see Chapter 4 (page 40).

- Choose R suffix for right side guide or L suffix for left side one.
Example code for right version: NTUZ120-50H-770-R;
Example code for left version: NTUZ120-50H-770-L.

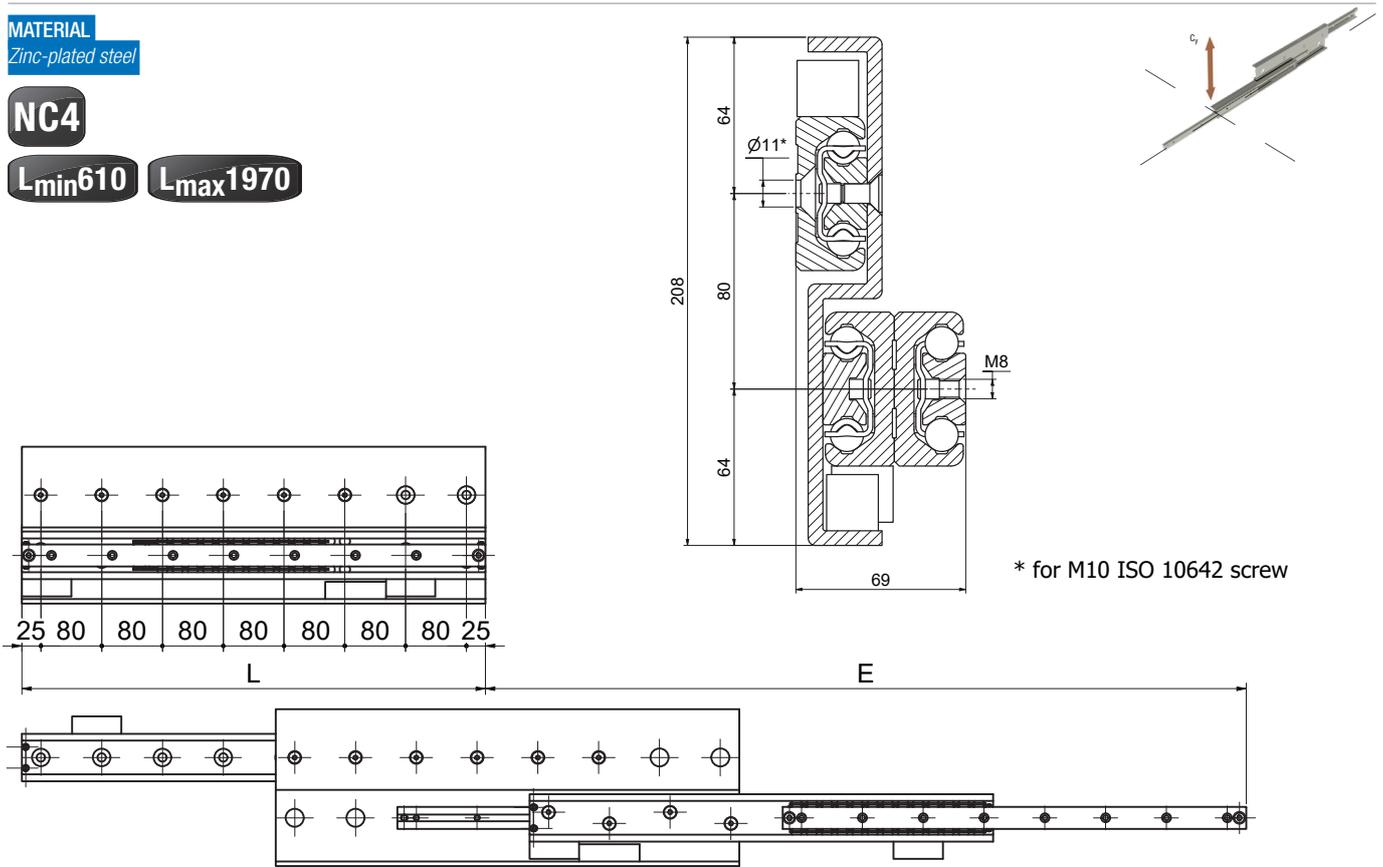
OVER EXTENSION

NTUZ208-69H..R / NTUZ208-69H..L

MATERIAL
Zinc-plated steel

NC4

L_{min}610 L_{max}1970



Order Number	Right	Left	Length	Extension	Cy ¹⁾	Cdyn ¹⁾²⁾	Net Weight
			[mm]		[N]		[kg]
NTUZ208-69H-610	-R	-L	610	1001	4121	7533	26,47
NTUZ208-69H-690	-R	-L	690	1121	4312	6484	29,94
NTUZ208-69H-770	-R	-L	770	1241	5512	8606	33,41
NTUZ208-69H-850	-R	-L	850	1361	6955	10507	36,88
NTUZ208-69H-930	-R	-L	930	1481	7688	11272	40,36
NTUZ208-69H-1010	-R	-L	1010	1601	7137	10180	43,83
NTUZ208-69H-1090	-R	-L	1090	1721	8359	11624	47,30
NTUZ208-69H-1170	-R	-L	1170	1841	9376	12733	50,77
NTUZ208-69H-1250	-R	-L	1250	1961	9721	12915	54,24
NTUZ208-69H-1330	-R	-L	1330	2081	9173	11936	57,71
NTUZ208-69H-1410	-R	-L	1410	2201	9750	12443	61,18
NTUZ208-69H-1490	-R	-L	1490	2321	10072	12620	64,66
NTUZ208-69H-1570	-R	-L	1570	2441	9989	12300	68,13
NTUZ208-69H-1650	-R	-L	1650	2561	9519	11528	71,60
NTUZ208-69H-1730	-R	-L	1730	2681	9529	11359	75,07
NTUZ208-69H-1810	-R	-L	1810	2801	9412	11052	78,54
NTUZ208-69H-1890	-R	-L	1890	2921	9168	10611	82,01
NTUZ208-69H-1970	-R	-L	1970	3041	8785	10029	85,49

1) Cy and Cdyn= load capacities for pair of rails

2) Cdyn is used for lifetime calculation

• For technical information see Chapter 4 (page 40).

• Choose R suffix for right side guide or L suffix for left side one.
Example code for right version: NTUZ208-69H-770-R;
Example code for left version: NTUZ208-69H-770-L.



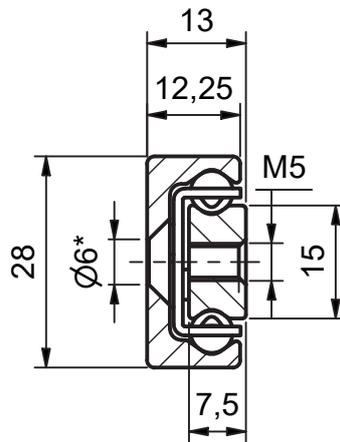
LINEAR GUIDES

NTSF28H

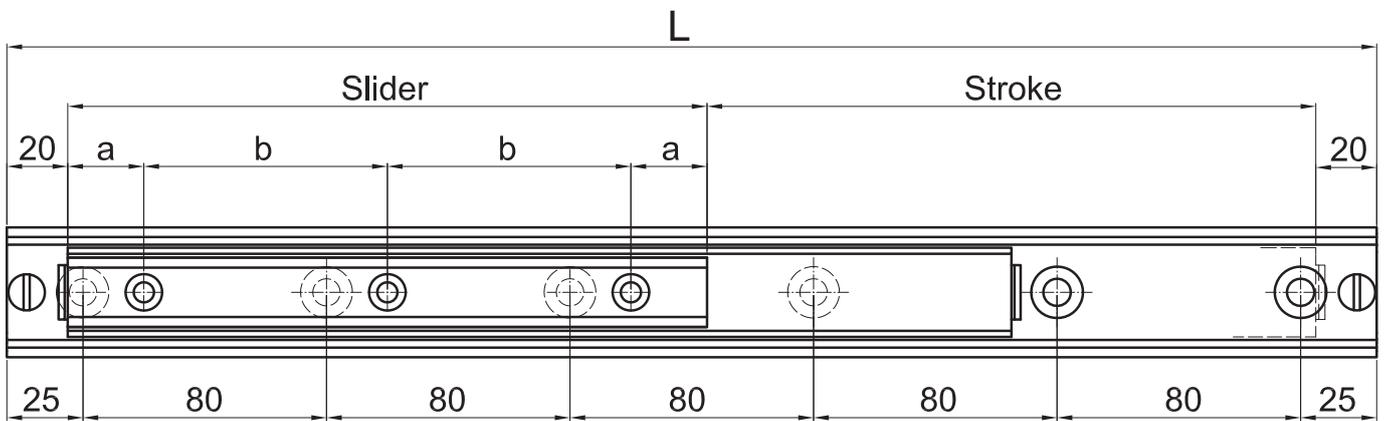
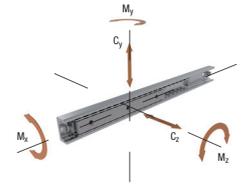
MATERIAL
Zinc-plated steel

NC4

L_{min}150 L_{max}1650



* for M5 ISO 10642 screw



Slider [mm]	a	b	C _y ¹⁾ [N]	C _z ¹⁾	M _x ³⁾ [Nm]	M _y ¹⁾	M _z ¹⁾	C ₁₀₀ ¹⁾²⁾ [N]
60	10	20	4817	3373	15	32	48	8947
80	10	60	6744	4722	21	64	88	11349
130	25	80	11561	8095	36	176	252	16587
210	25	80	19268	13492	61	472	672	23746
290	25	80	26975	18889	85	912	1304	30067
370	25	80	34682	24286	109	1498	2138	35860
450	25	80	42390	29682	134	2226	3180	41276

1) C_y, C_z, M_y, M_z and C₁₀₀ = load and torque capacities for pair of rails

2) C₁₀₀ is used for lifetime calculation

3) M_x = torque capacity for single rail

- If you are planning to combine several options, please contact our application engineering division.
- For technical information see Chapter 4 (page 40).
- **L = Available lengths [mm]:** 150, 210, 290, 370, 450, 530, 610, 690, 770, 850, 930, 1010, 1170, 1330, 1490, 1650. Other lengths are available on request up to a maximum length of 2000 mm.

- Calculate the overall NTSF net weight by using the following formulas:

Slider weight [kg] = 0.81 [kg/m] * slider length [m]

Guide weight [kg] = 1.05 [kg/m] * guide length [m]

Cage weight [kg] = 0.4 [kg/m] * (slider length + stroke/2) [m]

NTSF weight [kg] = slider weight + guide weight + cage weight

Code example: **NTSF28H 290 690**

Slider length: 290mm

Rails length: 690mm

(stroke = 360 mm = 690 - 290 mm – stop length 2 x 20)

LINEAR GUIDES

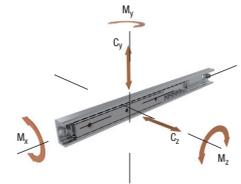
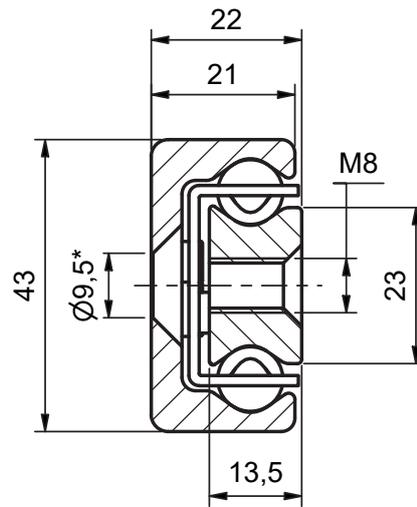
NTSF43H

3.4

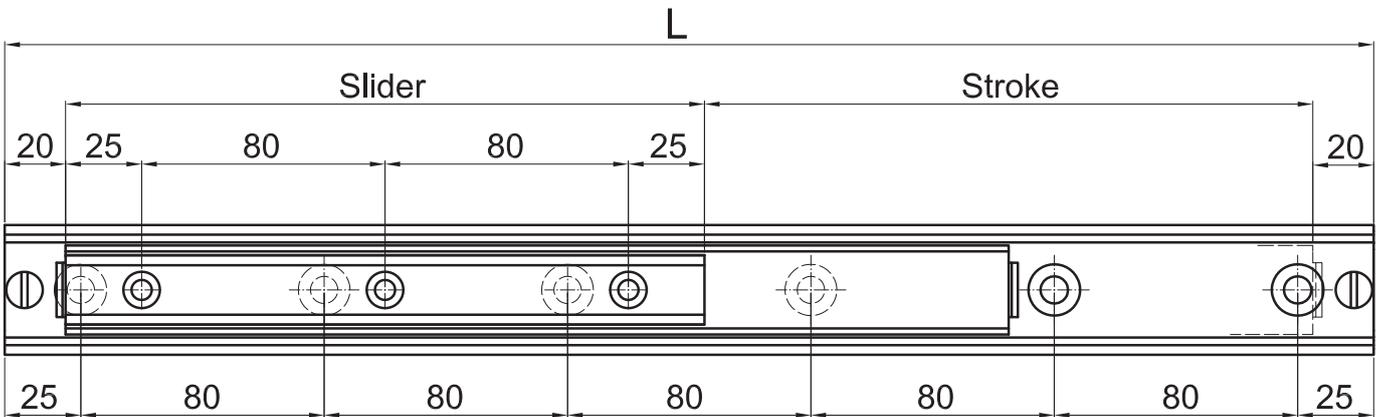
MATERIAL
Zinc-plated steel

NC4

L_{min}290 **L_{max}1970**



* for M8 ISO 10642 screw



Slider [mm]	C _y ¹⁾ [N]	C _z ¹⁾	M _x ³⁾ [Nm]	M _y ¹⁾	M _z ¹⁾	C ₁₀₀ ¹⁾²⁾ [N]
130	23093	16170	106	242	346	40002
210	37526	26276	172	614	876	56293
290	54845	38403	251	1280	1828	73485
370	69278	48509	317	2022	2886	86574
450	83711	58615	383	2930	4186	98861
530	101031	70742	462	4244	6062	112793
610	115464	80848	529	5524	7890	123860

1) C_y, C_z, M_y, M_z and C₁₀₀= load and torque capacities for pair of rails

2) C₁₀₀ is used for lifetime calculation

3) M_x = torque capacity for single rail

- If you are planning to combine several options, please contact our application engineering division.
- For technical information see Chapter 4 (page 40).
- Calculate the overall NTSF net weight by using the following formulas:
Slider weight [kg] = 2.10 [kg/m] * slider length [m]
Guide weight [kg] = 2.61 [kg/m] * guide length [m]
Cage weight [kg] = 0.77 [kg/m] * (slider length + stroke/2) [m]
NTSF weight [kg] = slider weight + guide weight + cage weight
- **L = Available lengths [mm]:** 290, 370, 450, 530, 610, 690, 770, 850, 930, 1010, 1170, 1330, 1490, 1650, 1810, 1970. Other lengths are available on request up to a maximum length of 2000 mm.

Code example: **NTSF43H 290 690**

Rail NTSF43H: slider length 290 mm, length 690 mm
(stroke = 360 mm = 690 - 290 mm – stop length 2 x 20)

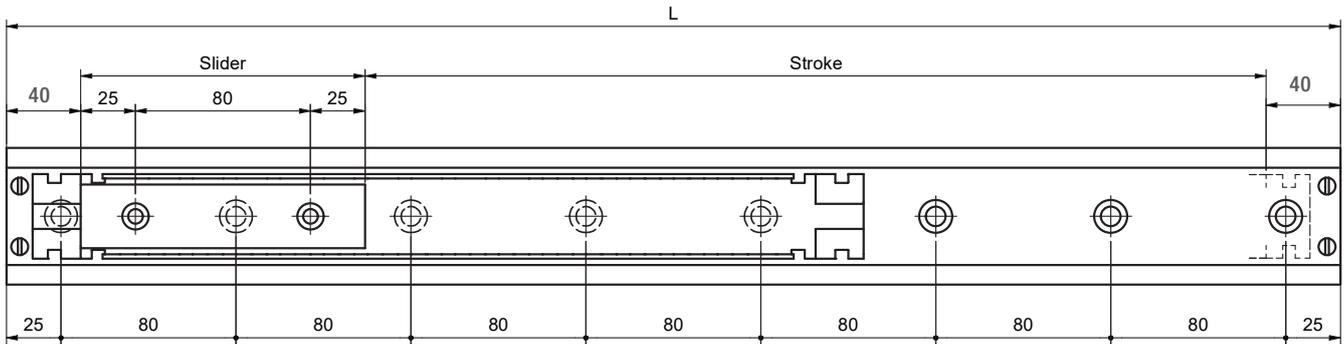
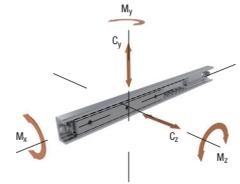
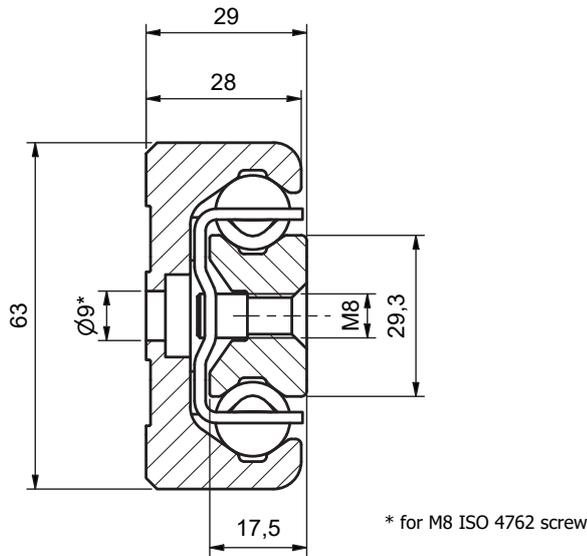
LINEAR GUIDES

NTSF63H

MATERIAL
Zinc-plated steel

NC4

L_{min}610 L_{max}1970



Slider [mm]	C _y ¹⁾ [N]	C _z ¹⁾	M _x ³⁾ [Nm]	M _y ¹⁾	M _z ¹⁾	C ₁₀₀ ¹⁾²⁾ [N]
130	34798	24366	229	284	406	32653
210	57996	40610	382	744	1064	46809
290	81194	56854	534	1422	2030	59302
370	104393	73098	687	2314	3306	70749
450	127591	89342	840	3424	4890	81448
530	150790	105586	992	4750	6786	91573
610	173988	121830	1145	6294	8988	101240

1) C_y, C_z, M_y, M_z and C₁₀₀ = load and torque capacities for pair of rails

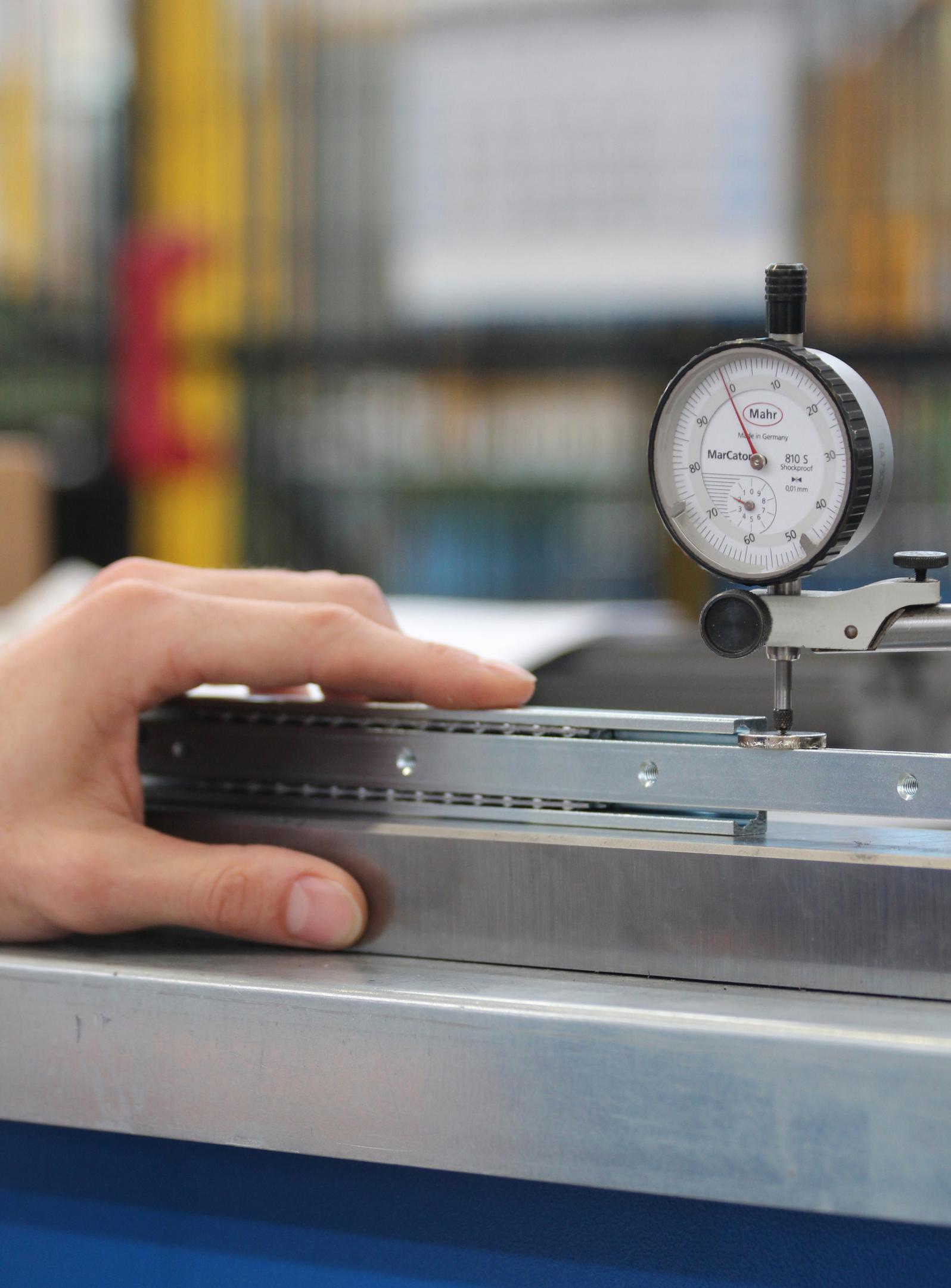
2) C₁₀₀ is used for lifetime calculation

3) M_x = torque capacity for single rail

- If you are planning to combine several options, please contact our application engineering division.
- For technical information see Chapter 4 (page 40).
- Calculate the overall NTSF net weight by using the following formulas:
Slider weight [kg] = 2.90 [kg/m] * slider length [m]
Guide weight [kg] = 6.06 [kg/m] * guide length [m]
Cage weight [kg] = 1.4 [kg/m] * (slider length + stroke/2) [m]
NTSF weight [kg] = slider weight + guide weight + cage weight
- **L = Available lengths [mm]:** 610, 690, 770, 850, 930, 1010, 1170, 1330, 1490, 1650, 1810, 1970. Other lengths are available on request up to a maximum length of 2000 mm.

Code example: **NTSF63H 370 930**

Rail NTSF63H: slider length 370 mm, rail length 930 mm (stroke=480 mm = 930 - 370 mm - stop length 2 x 40)



TECHNICAL SPECIFICATIONS



PAGE 44

4.1 NTA-H, NTS-H, NTSF-H, NTVZ-H, NTUZ-H

PAGE 50

4.2 APPLICATION CASES

- Component magazine
- Medical technology
- Door rail guide
- Battery pack drawer
- Protective equipment

PAGE 53

4.3 PRODUCT MATRIX

PAGE 54

4.4 ORDER CODE / OPTIONS

TECHNICAL SPECIFICATIONS

NTA-H, NTS-H, NTSF-H, NTVZ-H, NTUZ-H

Telescopic rails are ball guided slides used when reduced encumbrances are required. Hardened telescopic line is the range of Nadella rails developed for those applications requiring high loads, heavy duty cycles and smooth running.

Thanks to the cold drawn profiles and induction hardened raceways, Nadella Hardened Telescopic Line allows a smoother sliding and a low deflection also for the most exigent applications.

Nadella telescopic rails NTA-H, NTS-H, NTVZ-H and NTUZ-H are respectively available with ~60%, 100% and 150% extension, according to customer needs. Linear guides NTSF-H, using the same optimised profile with hardened raceways, plus an inner slider running inside the rail, provides a linear motion solution for applications demanding compact dimensions and heavy duty dynamics. Our rails are available in size 28, 43 and 63.

STROKE

The extension length values in the catalogue represent the nominal stroke.

The actual stroke can change from $\pm 2\text{mm}$ up to $\pm 10\text{mm}$ depending on the rail type and length. Ask technical department for additional information.

SURFACE TREATMENT

All standard rails are supplied in steel with zinc-plating surface. Other treatments, such as NC4 zinc-nickel alloy coating, are available upon request and can be required as special execution.

LUBRICATION AND TEMPERATURE

To ensure proper operation and to guarantee an adequate lifetime, a lubricant layer must always be provided in the contact area between the balls and the raceways.

The guides are normally supplied with barium-soap-based bearing grease, which allows to work in a temperature range between -30°C and $+120^{\circ}\text{C}$. Please contact our technical support if you plan application with higher temperatures. We recommend to lubricate the raceways at least every 50 000 cycles.

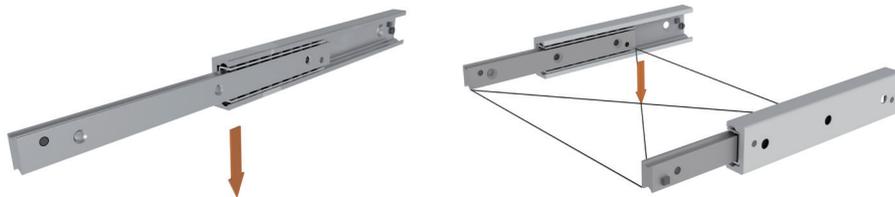
The maximum working temperature for rails NTA-H NTS-H NTSF-H is 170°C , for higher temperature specific settings are required; take into account a considerable reduction of the load capacity (at high temperatures the hardened raceways undergo a tempering process, reducing the surface hardness of the elements). For NTVZ-H and NTUZ-H the temperature is constrained by the rubber stopper at 110°C .

SPEED

The recommended maximum speed is 0,5 m/s in order to have a correct running behaviour (for NTS-H, NTVZ-H and NTUZ-H rails the maximum speed is 0,3 m/s). These products are suggested for applications with small inversion frequencies and accelerations (please, consult the following «Suggestions for a correct mounting» paragraph).

LOAD CAPACITIES

Guide rails with ball cages have preferential load capacities with a side-mounting layout (major axis). The correct mounting assembly is obtained when the guides are placed in parallel with each other, having a uniform distribution of the load. The mounting frame and the drawer must be robust enough to support the load without deformations. When fastening the rails to the support structure, it is always recommended placing class 10.9 screws in all the available holes.



Ideal mounting configuration with two parallel guides, load in preferential direction applied in the middle of the sliders.

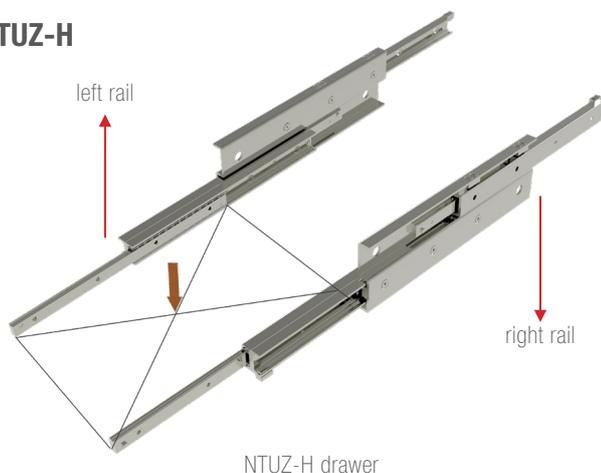
TECHNICAL SPECIFICATIONS

NTA-H, NTS-H, NTSF-H, NTVZ-H, NTUZ-H

4.1

For NTVZ-H and NTUZ-H load must be applied in vertical direction as indicated in the picture, and the loaded drawer has to be connected to the bottom slider.

NTUZ-H



NTVZ-H



Load capacities are expressed in N (Newton), torque load capacities are expressed in Nm, referred to the Cartesian axes with origin in the centre of the slider.

The load capacities values shown in the tables refer to the pair of rails and are to be intended as maximum static admissible loads for a smooth operation. In order to choose the correct guide rail we suggest to use the product with the appropriate load capacity by calculating the safety factor S_F .

With more loads and torques acting simultaneously in different directions, the check should be done considering the contemporary action of all the components (P_{eq}).

In order to perform static and lifetime checks, consider all the loads acting on a single slider.

OPERATING CONDITIONS	f_s
For high stiffness, low dynamics, low contaminations	1.5
Normal conditions	1.5 - 2
For low stiffness, heavy duty cycle	2 - 3

$$S_F = \left(\frac{C_y'}{P_{eq}} \right) > f_s$$

$$P_{eq} = P_1' + \left(\frac{P_2'}{C_z'} + \frac{M_1'}{M_x} + \frac{M_2'}{M_y'} + \frac{M_3'}{M_z'} \right) \times C_y'$$

C_y' , C_z' , M_y' , M_z' are the load capacity for a single rail and they are equal to the values in the previous tables divided by 2. For M_x use directly the value written in the previous tables.

LIFETIME

The lifetime of the guide rail is the maximum carried distance (in km for rails NTSF-H) or maximum number of cycles (for rails NTA-H, NTS-H, NTVZ-H, NTUZ-H), that the guide rail will be able to reach before the plastic deformation on the raceways occurs.

For rails NTSF-H:

$$L_{km} = 100 \times \left(\frac{C_{100}'}{P_{eq}} \times \frac{1}{f_d} \right)^3$$

C_{100}' , C_{dyn}' are the load capacity for a single rail and they are equal to the values in the previous tables divided by 2.

OPERATING CONDITIONS	f_d
Smooth operation at low speed at constant load without shocks	1 - 1.2
Smooth operation with load variation	1.2 - 1.5
Operation with small shocks and vibrations	1.5 - 2
High accelerations, shocks and vibrations	2 - 4

with:

- P_{eq} equivalent load in Y direction resulting from the combination of all the loads and torques acting contemporary on the slider
- P_1' load applied in the middle of the slider in Y direction
- P_2' load applied in the middle of the slider in Z direction
- M_1' torque applied in the middle of the slider around X axis
- M_2' torque applied in the middle of the slider around Y axis
- M_3' torque applied in the middle of the slider around Z axis
- C_y' maximum admissible static load capacity in Y direction
- C_z' maximum admissible static load capacity in Z direction
- M_x maximum admissible static torque load capacity around X axis
- M_y' maximum admissible static torque load capacity around Y axis
- M_z maximum admissible static torque load capacity around Z axis
- f_s static factor

For rails NTA-H, NTS-H, NTVZ-H and NTUZ-H:

$$L_{cycles} = 100000 \times \left(\frac{C_{dyn}'}{P_{eq}} \times \frac{1}{f_d} \right)^3$$

with:

- C_{100}' dynamic load in Y direction [N], for the calculation of the lifetime in km (rails NTSF-H)
- C_{dyn}' dynamic load in Y direction [N], for calculation of the lifetime in cycles (rails NTA-H, NTS-H, NTVZ-H, NTUZ-H)
- P_{eq} equivalent load in Y direction resulting from the combination of all the loads and torques acting contemporary on the slider (see formula above)
- f_d dynamic factor

TECHNICAL SPECIFICATIONS

NTA-H, NTS-H, NTSF-H, NTVZ-H, NTUZ-H

DEFLECTION

The deflection is the elastic deformation you can experience at the edge of the opened rail when a load is applied.



With semi-telescopic rails NTA-H, that can partially exit from the rail, the deflection will depend almost exclusively on the rigidity of the structures connected to the guide elements.

FRICITION COEFFICIENT

The friction coefficient in normal conditions is equal to 0,01. When the movement of the slider is controlled by a drive system, we recommend providing a peak motor torque 10 times higher than the standard required due to the process of displacement (see the “Suggestion for a correct mounting” paragraph). For telescopic rails NTSF-H, NTUZ-H, NTVZ-H the required closing force for letting the slider return to the central position is increased by the deflection due to the extraction of the moving elements.

SUGGESTIONS FOR A CORRECT MOUNTING

In ball-cages guide systems, the sliding occurs thanks to the simultaneous movement of the slider and the ball-cage: the slider, moved manually or by a drive system, sets in motion the ball-cage, which will cover half of the stroke done by the slider, until reaching the end-stop. During the running operation, with the succession of working cycles and consequent motion reversals, imperceptible displacements of the ball-cage can occur.

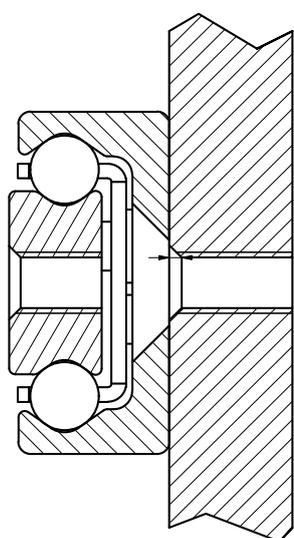
This process, that is defined displacement and leads to a gradual reduction of the stroke and consequent dragging of the ball-cage on the raceways, can be slowed down by limiting speed and acceleration.

The restoration of the proper functioning must be done by setting a forced cycle up to the end stop: when the movement of the slider is commanded by a drive system, we recommend providing a peak motor torque 10 times higher (friction coefficient in normal condition is 0,01).

Guide systems based on ball-cages are mostly recommended for horizontal movements. Vertical installation is not recommended because the ball-cage tends to fall by gravity, emphasizing the process of displacement.

We recommend providing an external end stop in order not to only discharge the arrest of the machine on the stopping screw. The internal end stop are designed to synchronize the cage and inner elements only.

Rails mounted in parallel require good alignment between the 2 sides to avoid internal overload and difficulty in the movement.



Chamfer in the hole:
of the support

Size	Chamfer (mm)
NTA28, NTSF28, NTVZ84-17H, NTUZ84-30H	1x45°
NTA43, NTSF43, NTVZ120-28H, NTUZ120-50H	1,5x45°
NTA63, NTSF63, NTVZ208-40H, NTUZ208-69H	1x45°

The support on which the guide is mounted needs to have holes with chamfer in order to allow a correct tightening of the countersunk screws. For each type of telescopic rail, the minimum chamfer is shown in the table above (telescopic rails not present in table do not require chamfer).

TECHNICAL SPECIFICATIONS

NTA-H, NTS-H, NTSF-H, NTVZ-H, NTUZ-H

4.1

Available hole configurations

NTA rails allows to have a complete access to all the fixing holes by removing the screw at the end of the guide profile. Once the telescopic rail is fixed on the support, the screw must be fasten again.

In order to properly mount NTVZ-H and NTUZ-H it is recommended to use all accessible holes without removing any guide component. As indicated in figure below, the orange circles indicate the accessible holes that can be used to fix the guide when completely extended; the red circles highlight the holes that become accessible, once the guide is closed, by using the holes with the orange arrows.

These steps must be performed both on the wall and on the drawer side.



NTVZ-S and NTUZ accessible holes

OPTIONS

Double stroke (VR, VRM)

Nadella telescopic rails NTA-H and NTS-H can be delivered with forward and backward extension (or with Double Stroke).

For NTA-H and NTS-H the double stroke functioning can be opted by the customer simply removing the end screw at the edge of the rail or ordering the guide directly with -VR suffix.



Remove the screw at the edge of the rail for double stroke.



Remove the screw at the edge of the rail for double stroke.

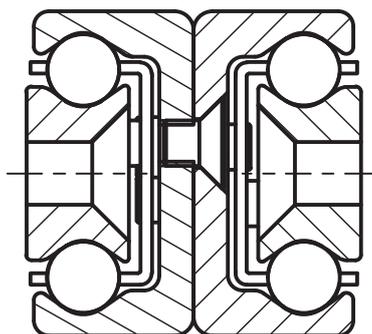


VRM option

For Full-Extension NTS-H, removing the end stop screws may cause the unintentional shifting of the middle beam while moving from backward to forward direction. To prevent this and ensure a synchronized movement of the three elements for double-stroke extensions, please add the -VRM suffix in the ordering code.

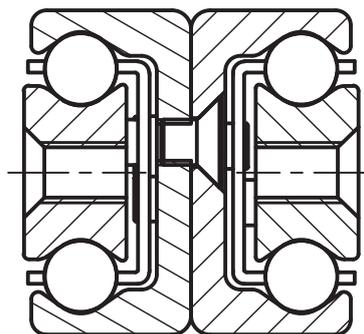
Note that VRM option, due to shortened cage, will have slightly lowered stroke and load capacity compared to the standard NTS.

NTS-H full extensions size 28 and 43 are available with countersunk holes (suffix SS) and threaded holes, or in the mixed version (suffix GS), with one slider with countersunk holes and one slider with threaded holes.



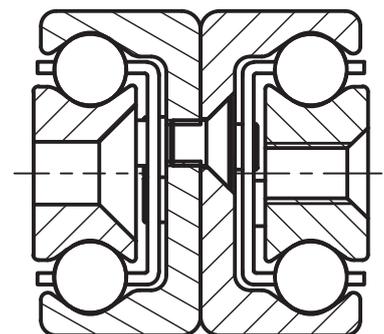
NTS28-26H-...SS
NTS43-44H-...SS

Code example:
NTS28-26H-450 SS, full extension
NTS-H size 28, closed length 450 mm,
countersunk holes in both sliders.



NTS28-26H-...
NTS43-44H-...

Code example:
NTS43-44H-770, full extension
NTS-H size 43, closed length 770 mm,
threaded holes in both sliders.



NTS28-26H-...GS
NTS43-44H-...GS

Code example:
NTS43-44H-1170 GS, full extension
NTS-H size 43, closed length 1170 mm,
threaded holes on one slider and countersunk
holes in the opposite one.

TECHNICAL SPECIFICATIONS

NTA-H, NTS-H, NTSF-H, NTVZ-H, NTUZ-H

All the countersunk holes are accessible with no need to open the guide in the double extension.

As indicated in figure below, the orange circles indicate the accessible holes that can be used to fix the guide when completely extended; the red circles highlight the holes that become accessible, once the guide is closed, by using the holes with the orange arrows.

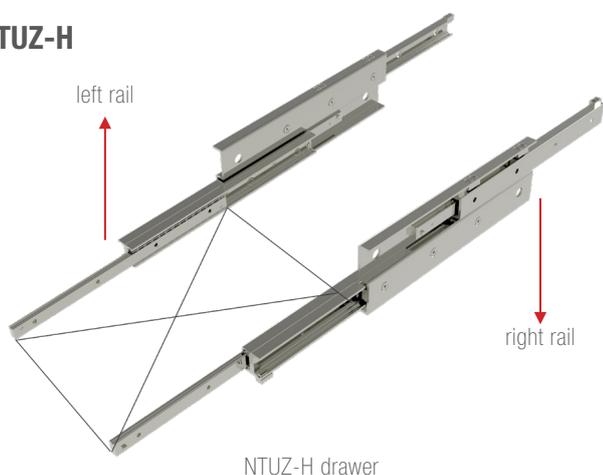


NTS accessible holes

Both single and double stroke version of NTVZ-H can be used indifferently on right or left side of the drawer so it is no needed to specify the mounting side during the product order.

The NTUZ-H type is not symmetrical and, as shown in the figure, there is the guide for the right side and the guide for the left one. During the product order it is important to select the right code present in this catalogue (example: NTUZ84-30H-770-R for right, NTUZ84-30H-770-L for left). NTVZ-H and NTUZ-H guides must always have the slider where the load is applied on the bottom side.

NTUZ-H



NTVZ-H

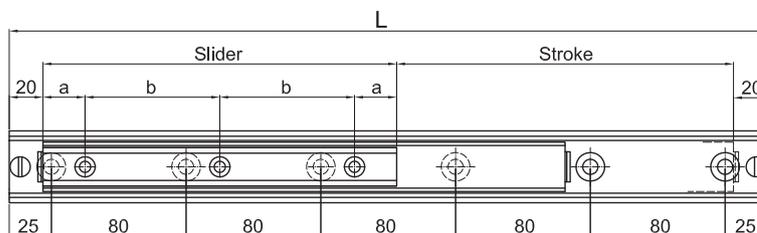


NTSF-H

With NTSF-H linear guides the movement is achieved through one or more sliders which run inside the guide rail. Several different combinations are possible and the final product can be configured out according to the application requests.

NTSF-H with single slider

In the standard configuration the final product is composed by the guide rail inside which run a single ball-cage and a single slider.



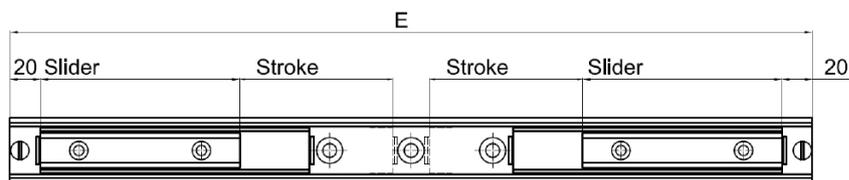
TECHNICAL SPECIFICATIONS

NTA-H, NTS-H, NTSF-H, NTVZ-H, NTUZ-H

4.1

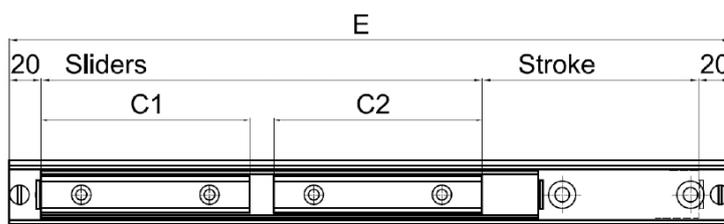
NTSF with two independent sliders

This configuration allows the movement, inside the guide rail, of two ball-cages, inside each ball-cage one or more sliders. The two ball-cages can run in opposing directions.



NTSF with two synchronized sliders

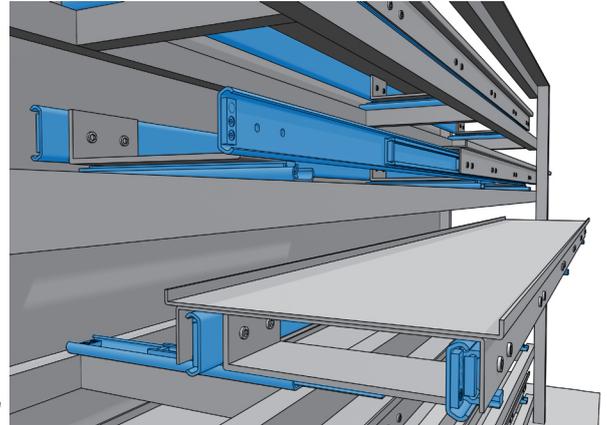
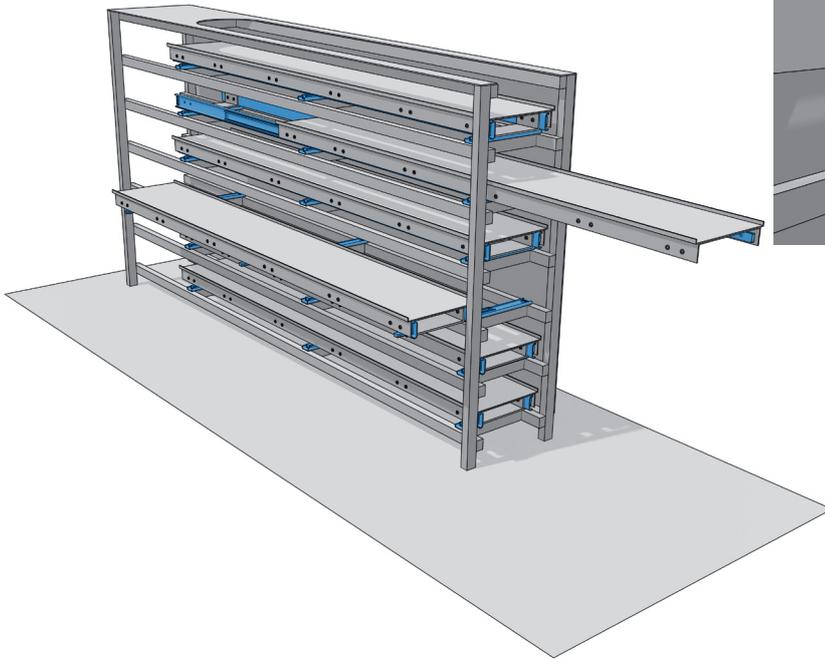
This configuration allows two synchronized sliders to move inside the ball-cage.



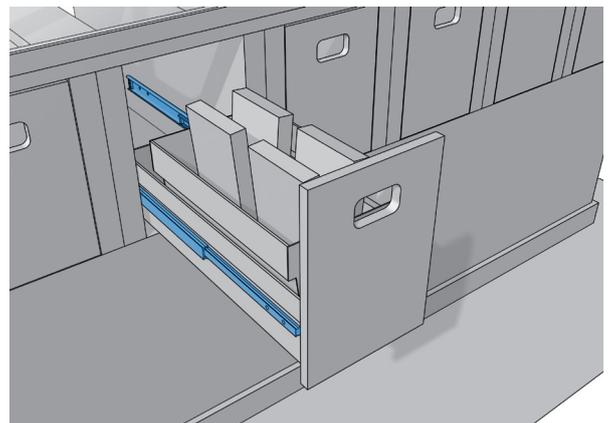
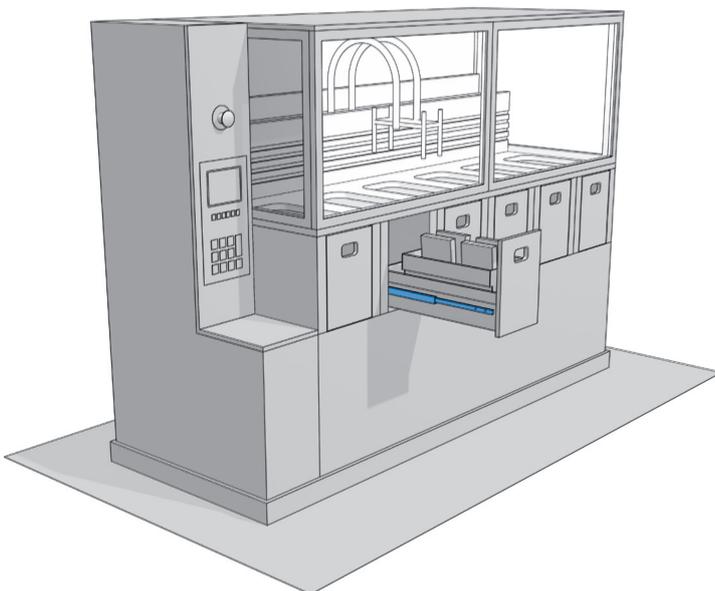
TECHNICAL SPECIFICATIONS

APPLICATION CASES

Application	Component warehouse
Industry	Warehouse and logistics
Products	Part-extension (NTA)

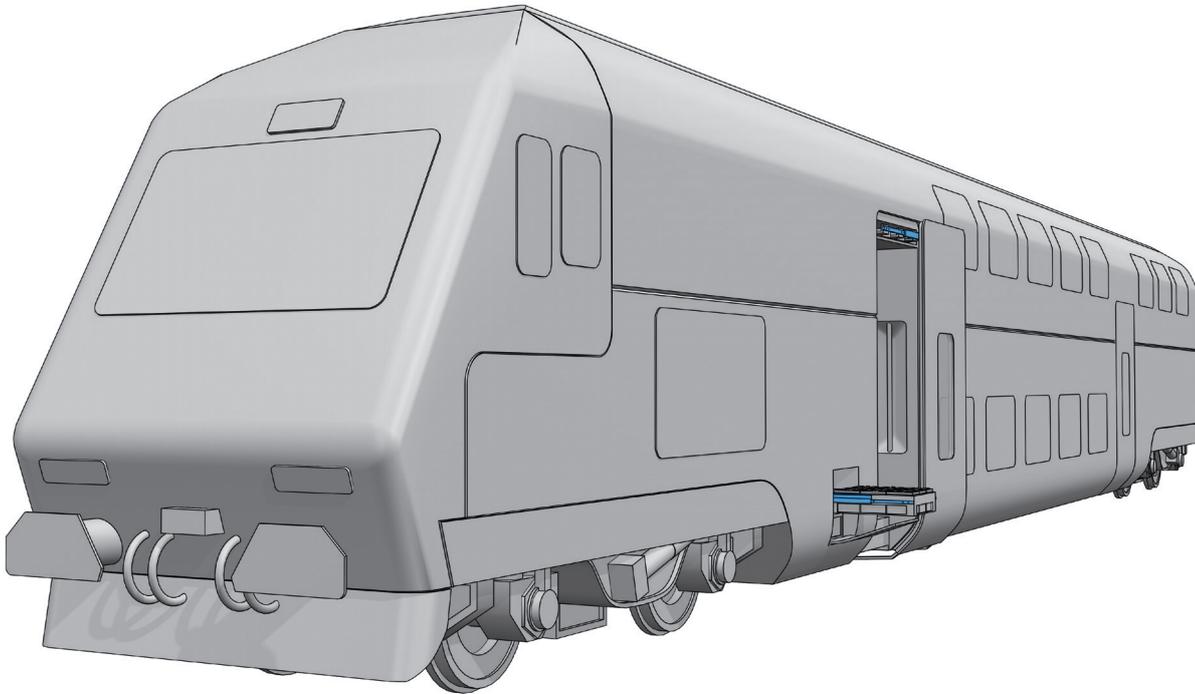


Application	Product supply
Industry	Medical technology
Products	Part-extension (NTA)

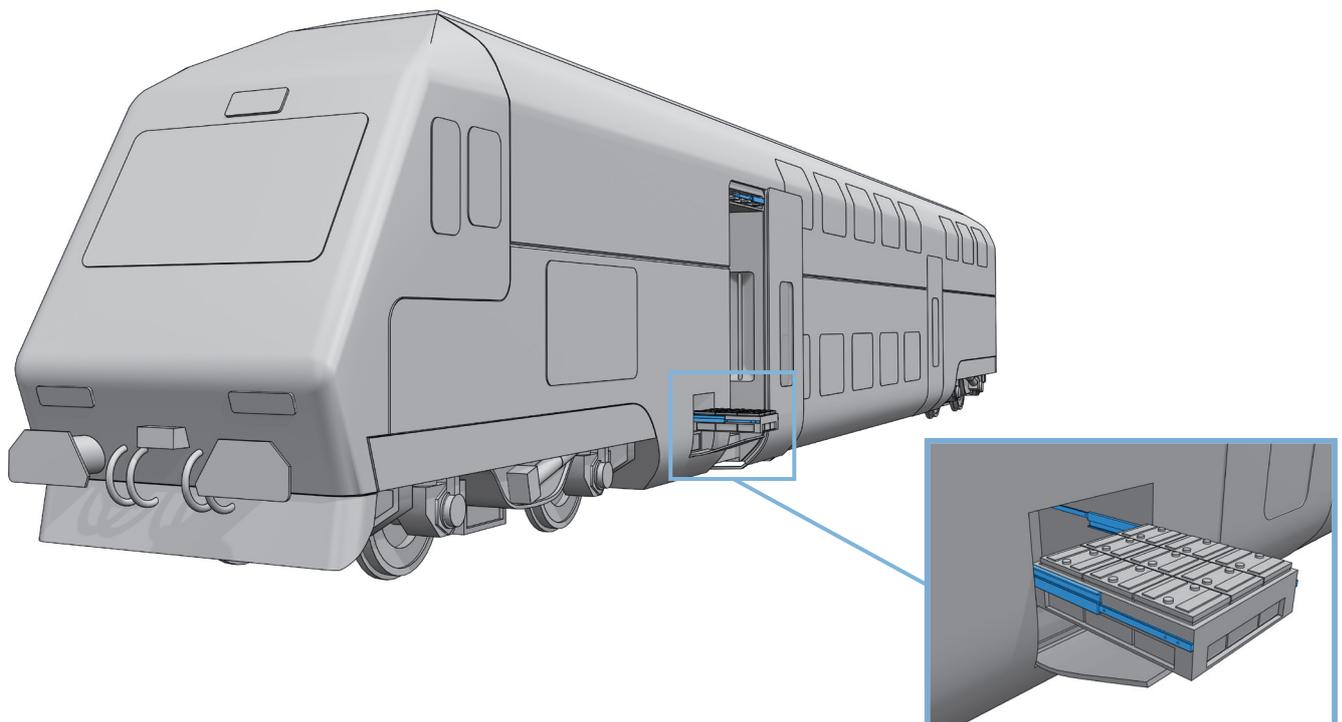


4.2

Application	Door rail guide
Industry	Railway technology
Products	Full Extension (NTVZ)



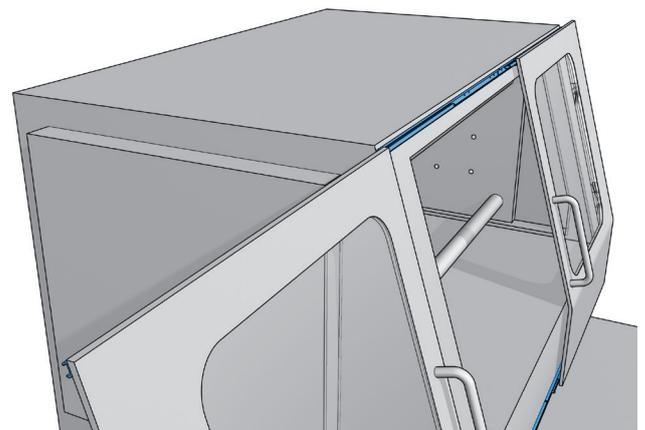
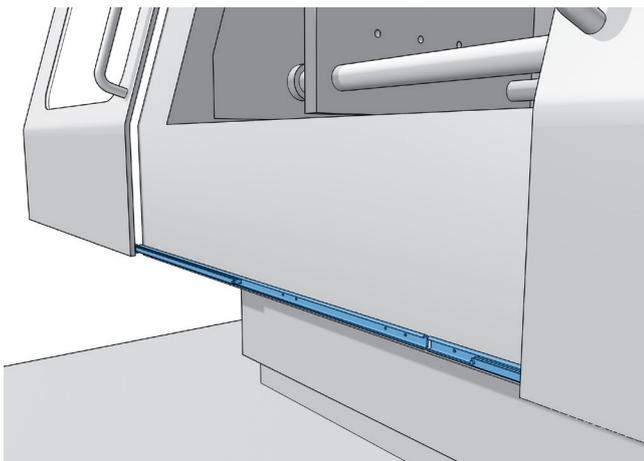
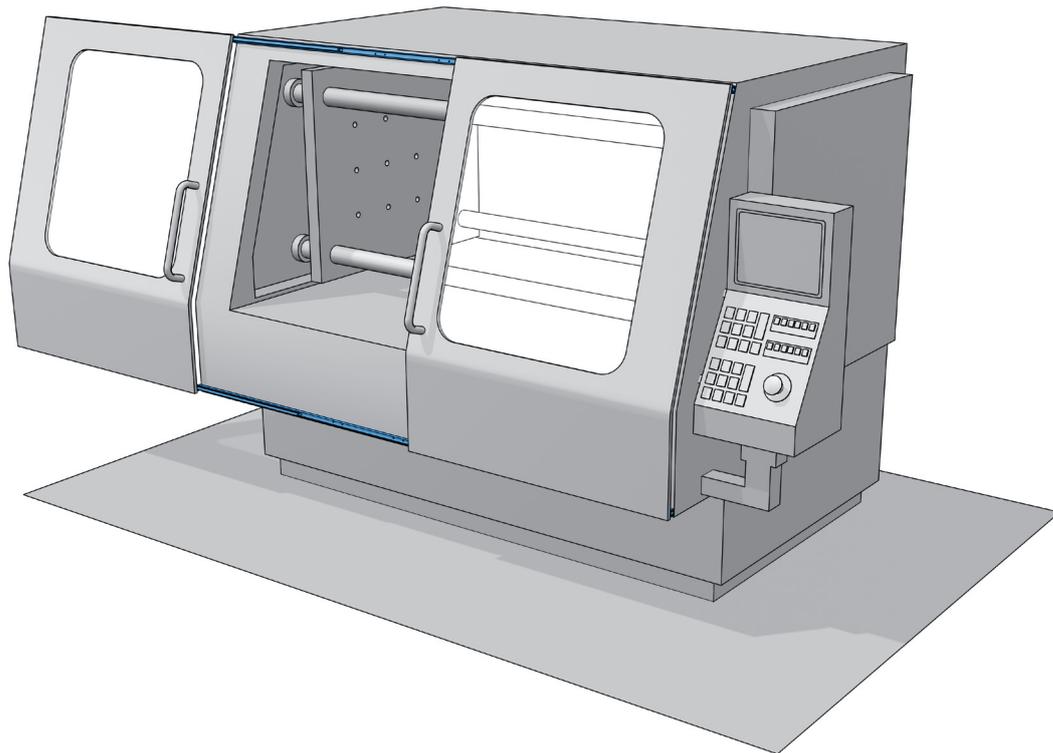
Application	Battery pack drawer
Industry	Railway technology
Products	Full Extension (NTVZ)



TECHNICAL SPECIFICATIONS

APPLICATION CASES

Application	Protective equipment
Industry	Rubber and plastics machines Machine tools
Products	Part-extension (NTA)



TECHNICAL SPECIFICATIONS

PRODUCT MATRIX

4.3

Product group	Designation	Technical Manual			Material					
		L from	L to	Extension length	ST	NC4	VR	VRM	GS	SS
Part Extension	NTA28-13H	130	1170	~ 60%	x	x	x		x	x
	NTA43-22H	210	1970	~ 60%	x	x	x		x	x
	NTA63-29H	610	1970	~ 60%	x	x	x		x	x
Full Extension	NTS28-26H	130	1170	~ 100%	x	x	x	x	x	x
	NTS43-44H	210	1970	~ 100%	x	x	x	x	x	x
	NTS63-58H	610	1970	~ 100%	x	x	x	x	x	x
	NTVZ84-17H	290	1490	~ 100%	x	x				
	NTVZ120-28H	530	1970	~ 100%	x	x				
	NTVZ208-40H	610	1970	~ 100%	x	x				
Over Extension	NTUZ84-30H	290	1170	~ 150%	x	x				
	NTUZ120-50H	530	1970	~ 150%	x	x				
	NTUZ208-69H	610	1970	~ 150%	x	x				
Linear Guides	NTSF28H	130	1650	x	x	x			x	x
	NTSF43H	290	1970	x	x	x			x	x
	NTSF63H	610	1970	x	x	x			x	x

Legend

L	Installation length
ST	Standard steel with Zinc-Plating
NC4	Zinc-Nickel Plated guide, cursor and cage; stainless steel balls
VR	Double stroke extension
VRM	Double stroke extension with synchronization of inner rails
LL	Smooth-running, for temperature up to 200°C or vertical installation
LS	Increasing clearance, for temperature > 200°C
GS	Counterbores instead of threaded holes on one side
SS	Counterbores instead of threaded holes on both sides
NZ	Special according to drawing
AZ	"Special extension length (not necessary for standard version) i.e. NTS43-44H-1010-AZ1100 = Extension Length 1100 mm"

TECHNICAL SPECIFICATIONS

ORDER CODE

4.4

NTA 28 - 13H - 1000 - XX

RAIL TYPE

NTA
NTS
NTVZ
NTUZ

INSTALLATION SIZE

H = HARDENED

INSTALLATION LENGTH

OPTIONS

- NZ = Design according to drawing (e.g: customised hole pattern)
- NC4 = Zinc-Nickel Plated profiles and stainless steel balls
- NC5 = Standard Steel without Coating
- VR = Forward and backward extension
- VRM = Forward and backward extension including carrier for inner rail
- AZ = Special extension length (not necessary for standard version)
i.e.: NTA28-13H-1010-AZ600 = Extension Length 600mm
- LL = Smooth-running, for temperature up to 200°C or vertical installation
- LS = Increasing clearance, for temperature > 200°C
- GS = Threaded/Countersunk holes
- SS = Countersunk holes on both sides
- S = Single direction stroke
- D = Double direction stroke
- R = Right side mounting
- L = Left side mounting

ORDER CODE LINEAR GUIDE SYSTEM

NTSF 28H - 210 - 930

RAIL TYPE

INSTALLATION SIZE

RAIL LENGTH

CARRIAGE LENGTH



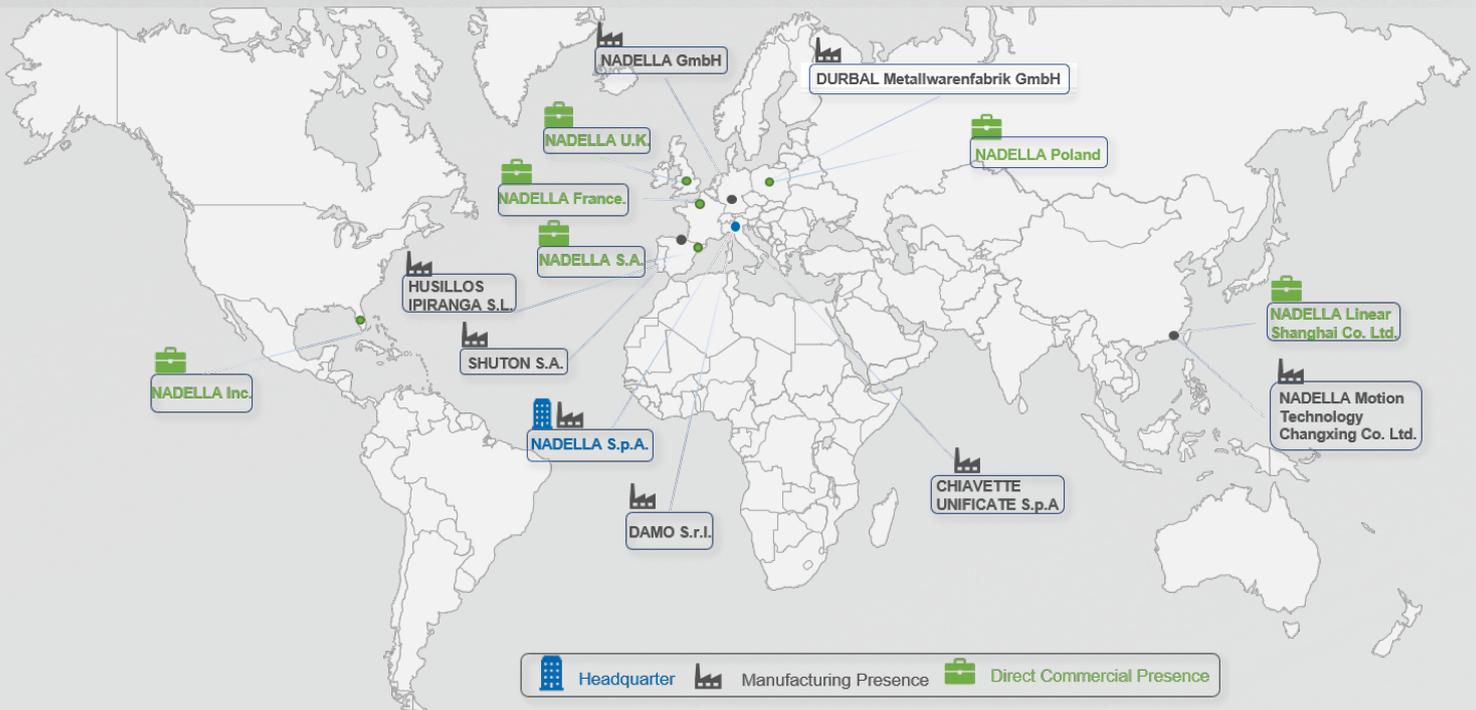
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 IPIRANGA / ipirangahusillos.com
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