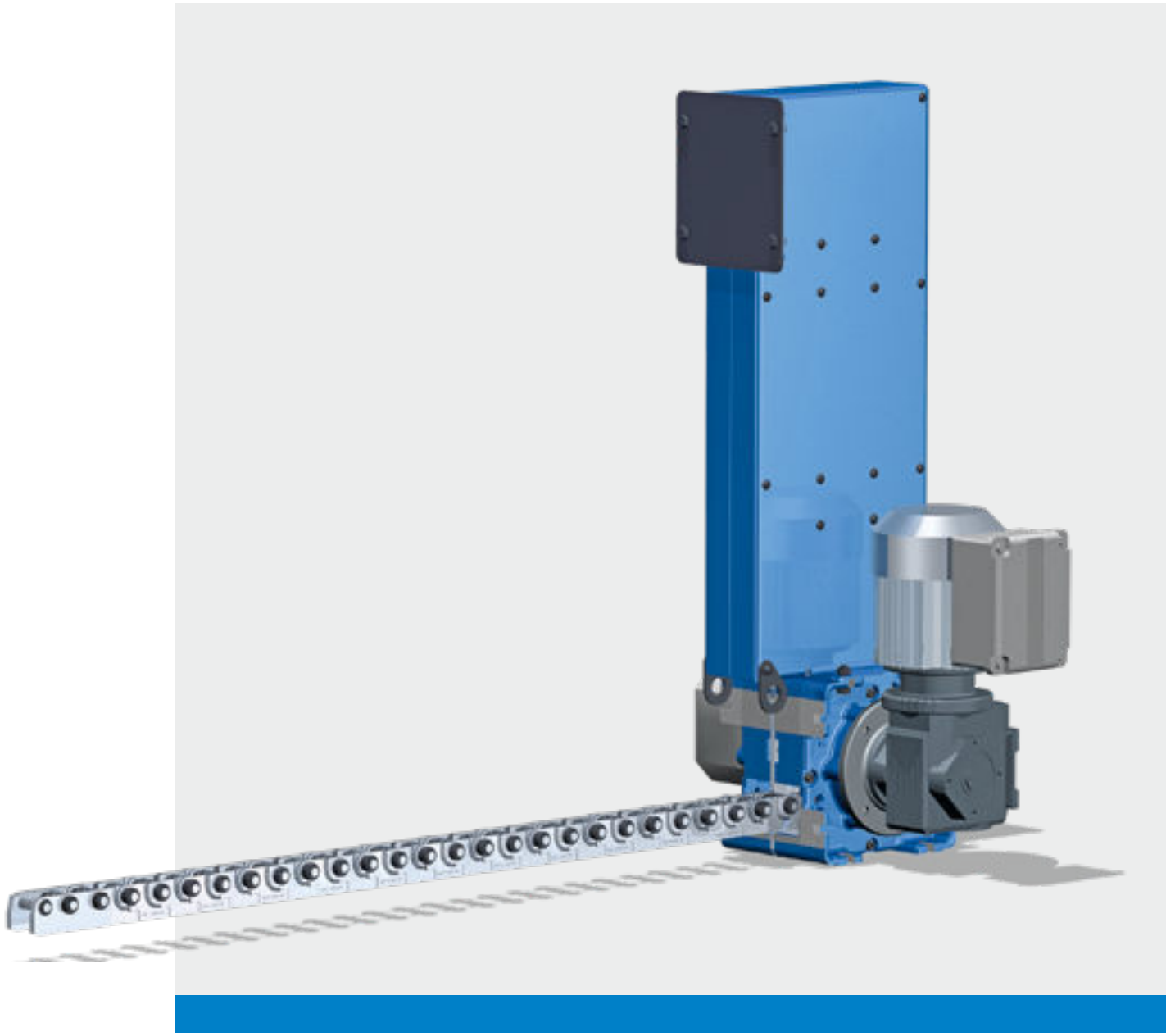
SERAPID
RIGID CHAIN TECHNOLOGY

ROLLBEAM

The telescopic rigid-chain actuator for heavy loads



RollBeam – the telescopic rigid-chain actuator for heavy loads

Our RollBeam series offers a wide range of actuators for the transfer and handling of heavy loads. It is the most versatile of SERAPID's widely used and proven rigid-chain systems.

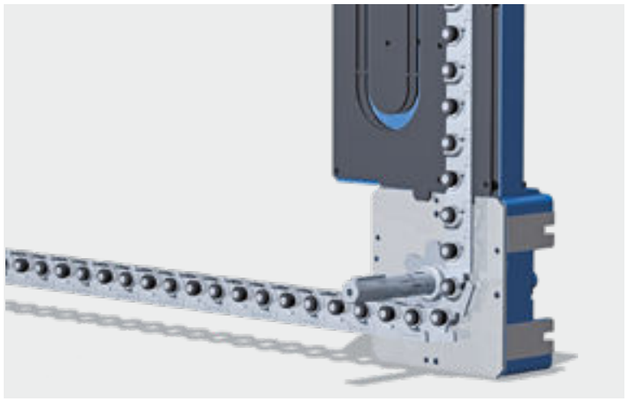
The rigid chain consists of links that interlock with each other under forward thrust and push the load like a solid bar. In the opposite direction, when retracting, the chain rolls up and can be stored out of the way in a compact magazine. The telescopic mode of operation allows the transfer area to remain unobstructed as long as no load is being moved across it. Thus, the RollBeam is not only easy to install even in confined or difficult environments, it also allows very flexible and efficient operation.

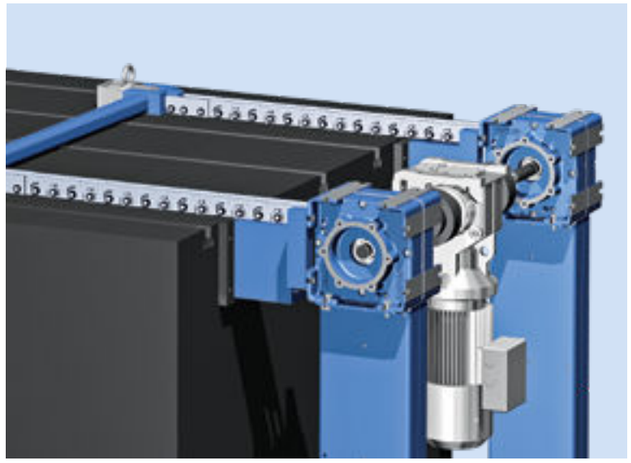
The RollBeam is completely mechanical, with high reliability, a long lifetime and with an energy efficiency of 80 to 90 percent making it a sustainable investment, ecologically as well as economically.

The RollBeam standard model range covers applications up to 50 tonnes at a practically unlimited stroke. Multiple units can be combined to achieve even higher load capacity and/or to optimise system layout. A comprehensive choice of options allows for operation in harsh environments or under heavy-duty, high-cycle conditions.

Features and benefits

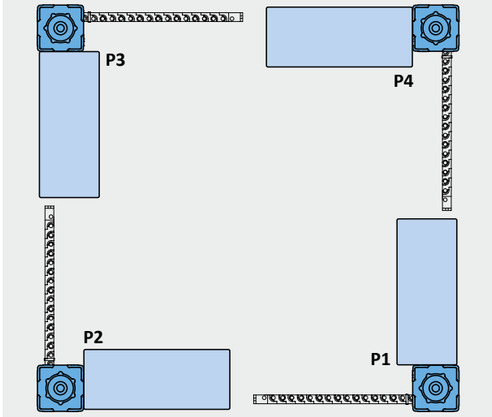
- telescopic actuator with configurable storage magazine
- allows complete withdrawal from transfer path permitting crossing movements
- rigid-chain technology, totally mechanical operation
- high reliability, long lifetime, low maintenance
- flexible, compact and easy to install, even in cramped conditions
- simple and robust construction, suitable for special environments, such as clean rooms, high-temperature manufacturing, or radiation zones
- standard speed up to 300 mm/s, higher speed on demand (up to 1 m/s)
- accurate, repeatable positioning in the millimetre range
- wide range of options and accessories
- powered electrically, hydraulically or pneumatically
- special options: chain made of stainless steel, specific protective coatings, thermal resistance, etc
- associated services: project engineering, layout assistance, design studies, development, installation, etc.





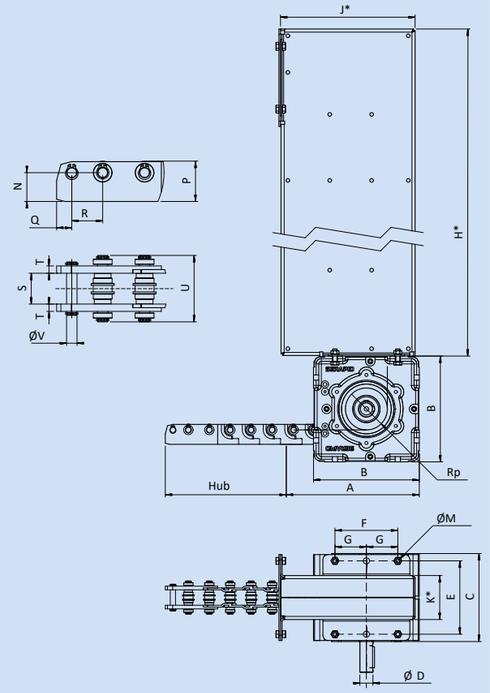
System with dual RollBeam units

Mounting positions



P1: horizontal operation, chain shoulders down, magazine above chain path
P2: vertical operation, bottom up; chain works in self-supported mode. – Please consult our brochure *Linear Telescopic Lifting Columns.*
P3: horizontal operation, chain-shoulders up, magazine below chain path
P4: vertical operation, top down – used to exert downward pressure or to hoist the load; chain works in self-supported mode. This is a special application. Consult SERAPID.

Dimensions



Model	max. kN	Rp	A	B	C	D	E	F	G	M	N	P	Q	R	S**	T**	$U_{max.}$	V
RB 40	**7.5**	40	230	202	168	25	140	120	–	10	27.5	38.5	14.5	29.5	29.4	7	63.4	10
RB S60/PS	**25**	60	330	272	200	45	170	140	–	14	31/39	49/57	22	43	40	9.2	82	15
RB D60	**37**	60	330	272	244.5	60	214.5	140	–	14	31	49	22	43	2x35	9.2	126.4	15
RB J60	**50**	60	330	272	258.5	60	228.5	140	–	14	31	49	22	43	2x39.6	9.2	142	15
RB S90	**80**	90	475	400	268	70	300	300	150	17	52	80	34	66	60	15.5	146.5	25
RB D90	**130**	90	475	400	356	100	388	300	150	17	52	80	34	66	2x62.3	15.5	234	25
RB J90	**160**	90	475	400	375	100	407	300	150	17	52	80	34	66	2x60	15.5	252.8	25
specific	**160+**	on request																

All dimensions in mm.

Note: Dimensions are for information purposes only. For more accurate dimensions please visit our web site or contact SERAPID.

*** Magazines:** The dimensions H, J and K are specified in the table of magazines, see page 7.
**** Reinforced chains (R-versions):**
40PSR: S = 34.8 und T = 10.5
60PSR: S = 45.8 und T = 13.8

Using the chain unguided

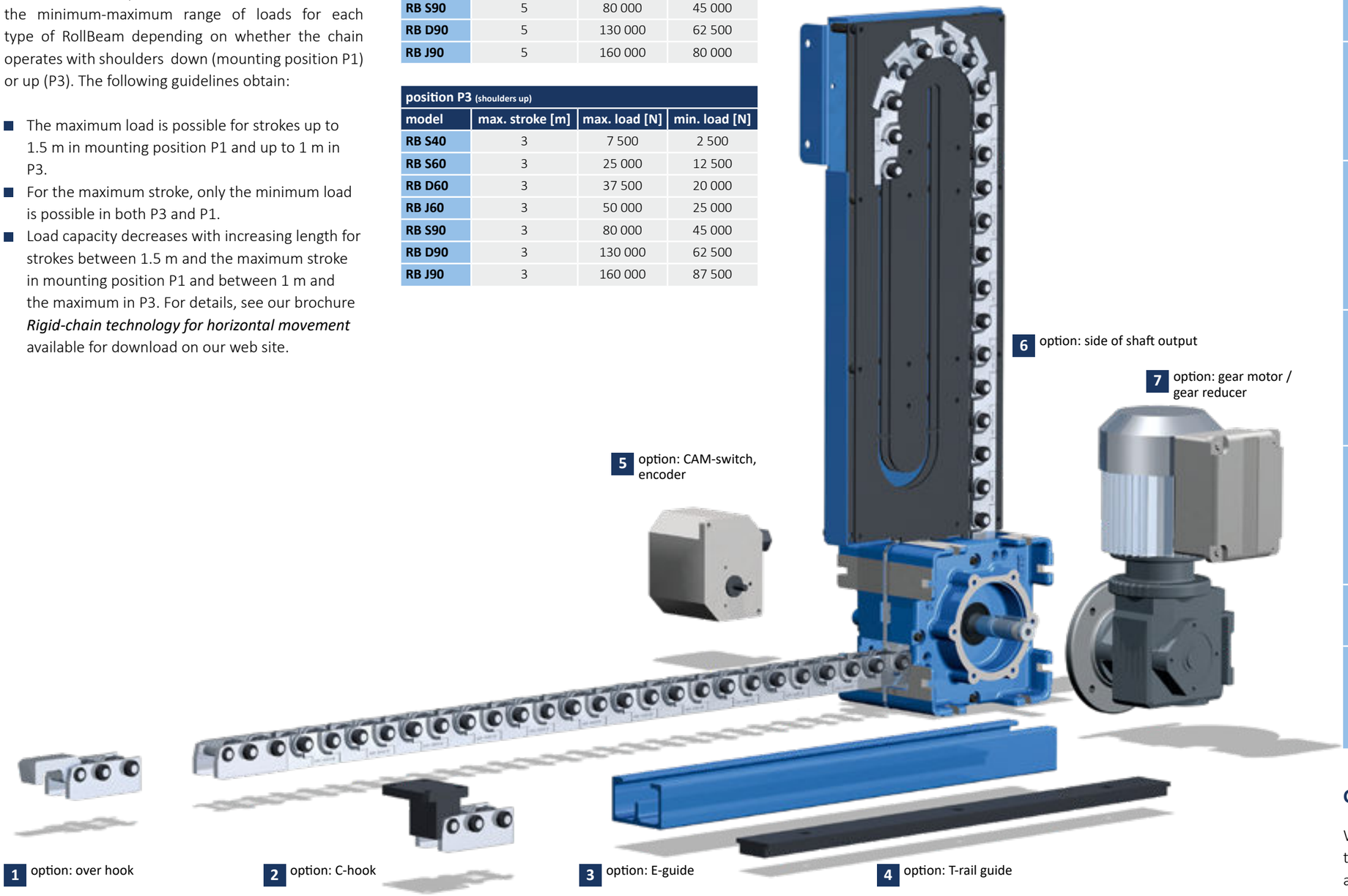
With an unguided chain, the maximum stroke depends on the mode of operation (see *Mounting positions* page 3) and the load. Capacities of unguided chains decrease with increasing stroke.

The table below specifies the maximum strokes and the minimum-maximum range of loads for each type of RollBeam depending on whether the chain operates with shoulders down (mounting position P1) or up (P3). The following guidelines obtain:

- The maximum load is possible for strokes up to 1.5 m in mounting position P1 and up to 1 m in P3.
- For the maximum stroke, only the minimum load is possible in both P3 and P1.
- Load capacity decreases with increasing length for strokes between 1.5 m and the maximum stroke in mounting position P1 and between 1 m and the maximum in P3. For details, see our brochure *Rigid-chain technology for horizontal movement* available for download on our web site.

position P1 (shoulders down)			
model	**max. stroke [m]**	**max. load [N]**	**min. load [N]**
RB S40	3	7 500	5 000
RB S60	5	25 000	7 500
RB D60	5	37 500	22 500
RB J60	5	50 000	30 000
RB S90	5	80 000	45 000
RB D90	5	130 000	62 500
RB J90	5	160 000	80 000

position P3 (shoulders up)			
model	**max. stroke [m]**	**max. load [N]**	**min. load [N]**
RB S40	3	7 500	2 500
RB S60	3	25 000	12 500
RB D60	3	37 500	20 000
RB J60	3	50 000	25 000
RB S90	3	80 000	45 000
RB D90	3	130 000	62 500
RB J90	3	160 000	87 500



Guided chains

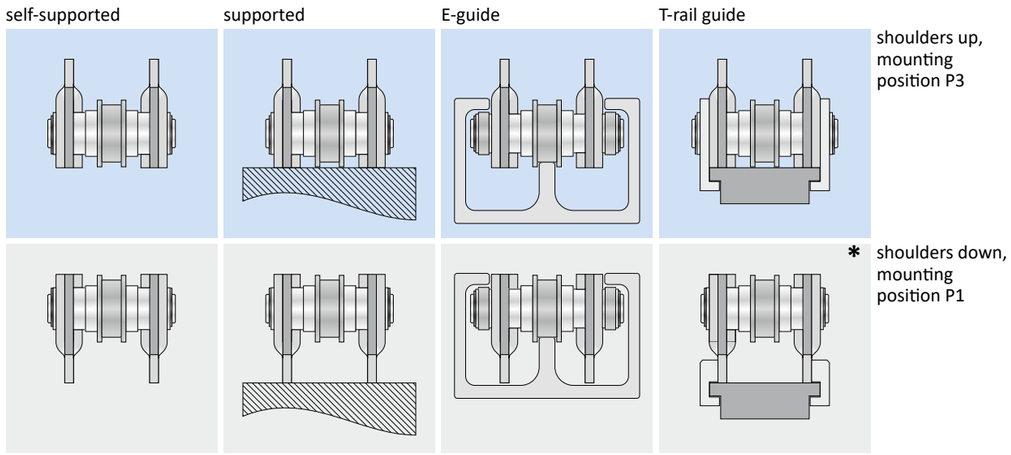
With a guided chain, there is practically no limit to the stroke length, while the load capacity always is at the maximum. Also, it makes no difference whether the chain operates with shoulders up or down.

option	designation	application and function	conditions and possibilities
1	**over hook**	interface for loose connection with load; automatic coupling by gravity, manual uncoupling	The chain may be guided or unguided. The size of the front link varies depending on the type of guiding (option 3 or 4).
2	**C-hook**	load interface used with E-guided chains, providing a mounting plate above the guide rail	allows momentum-free transmission of force
3	**E-guide**	guiding of chain below or beside the load	The guide rail is fixed under or directly beside the load path. To keep the transfer area clear, the guides have to be flush-mounted beneath the surface.
4	**T-rail guide**	guiding of chains with lateral grippers	The guide rail is fixed on the load path. Thanks to its low profile it can be easily recessed into the work top to keep the transfer area clear.
5	**CAM-switch and/or encoder**	position detection and control of acceleration and deceleration	The standard CAM switch has 4 positions; additional switches can be installed on request. The encoder can be absolute or incremental.
6	**side of drive shaft output**	side where motor is mounted	shaft output can be to A (left), B (right) side, or both sides
7	**gear motor or gear reducer**	source of power driving the chain; custom-sized per application	mounted on shaft output; electric, pneumatic or hydraulic; voltage regulation or other utility as required

Guiding the load

With both guided and unguided chains, the load has to be guided, when the transfer system consists of just a single RollBeam unit. When there are multiple synchronised units, the load need not be guided.

Common ways of using the rigid chain



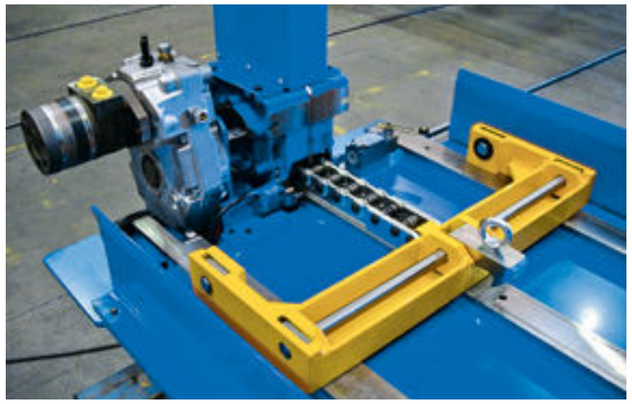
Note: Consult us for all self-supported applications, including vertical use (mounting positions P2 and P4).

* T-rail guiding with shoulders down available for 60 and 90 series only.

A note on system design

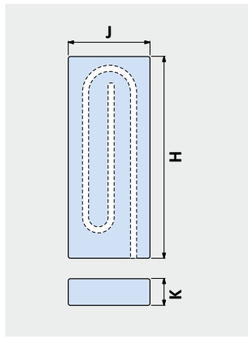
The specifications given in this brochure should be used only as guidelines, for use in intermittent duty applications in a typical industrial environment. Dirty, harsh or unusual environments may require special sizing or adaptations. In such cases, please consult our engineering department.

If your application does not fall within the specifications given here, SERAPID is ready to design and integrate a complete linear-motion system to fit your needs.

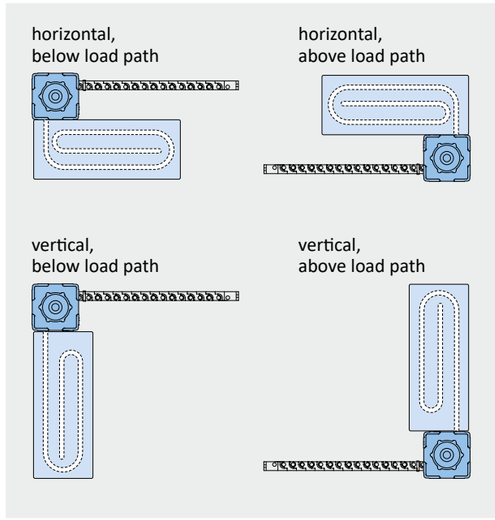


Chain magazines

Our range of standard chain magazines cover RollBeam types RB S40, S60, D60 and J60, up to a stroke of 5 m. For any other RollBeam units, magazines are made to measure.



There are four possible mounting positions for the standard magazines:



Standard magazines for RB S40

	2 tracks		3 tracks		5 tracks		2 / 3 / 5 tracks
stroke	H	J	H	J	H	J	K
500	400	190					85
1000	650	190					85
1500	900	190					85
2000	1150	190	800	260	535	400	85
3000			1135	260	735	400	85
4000			1470	260	935	400	85
5000			1800	260	1135	400	85

Standard magazines for RB S60, D60, J60

	2 tracks		3 tracks		5 tracks		2 / 3 / 5 tracks		
stroke	H	J	H	J	H	J	K		
							S60	D60	J60
1000	690	265					110	145	160
2000	1190	265	840	360			110	145	160
3000	1690	265	1175	360	840	555	110	145	160
4000	2190	265	1505	360	1040	555	110	145	160
5000	2690	265	1840	360	2205	555	110	145	160

All dimensions in mm.

Ordering your specific RollBeam:

To order a RollBeam unit or to obtain advice about selecting a suitable model, have the following information at hand:

	information	remarks	
model	**RB ...**	**load: kg**	**pushing / pulling force: N**
stroke	**m**		
speed (horizontal)	**mm/s**	speeds > 200 mm/s require a frequency converter	
cadence		cycles per day:	days per year:
option 1: over hook	☐ yes		
option 2: C-hook	☐ yes		
option 3: E-guide	☐ yes		
option 4: T-rail guide	☐ yes		
option 5: CAM switch / encoder	☐ A ☐ B	number of positions:	☐ absolute ☐ incremental
option 6: shaft output side	☐ A ☐ B	type of gear motor / reducer:	
option 7*: gear motor / reducer	☐ yes	brand:	

* If the gear motor / reducer is supplied by the user, type and brand should be specified.

Typical applications

- Transfer of radioactive fuel inside containment in new, EPR type reactor
- Repositioning of nuclear material in experimental reactor core
- Loading of deep storage chambers in nuclear waste disposal
- Transfer of small quantities of radioactive material
- Loading trucks or carriages for high-temperature furnaces
- Palletising gas cylinders in automatic filling benches
- Palletising cans of preserves in automatic packaging line
- Handling heavy workpieces in assembly lines

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