



LiftRunner Technical Data

Tugger Train Trailers and Trolleys

B-Frame

C-Frame

E-Frame

Trolleys



LiftRunner

Efficient production supply with tugger trains

Maximum delivery frequency for in-house goods and materials transportation and an essential component of Lean Production

Maximum flexibility through different frames and trolley combinations within one LiftRunner tugger train system

Excellent driveability and directional stability guarantees a high level of safety

Raised trolleys for minimum driving noise and low wear-and-tear

Greater operating comfort through different variants of LiftRunner frames and trolleys for a wide range of applications, as well as ease of handling heavy loads due to low rolling resistance and a specially developed trolley removal system



Extensive Equipment

Power

- Efficient material flow: High frequency small batch supply and disposal in different load carriers at different designation points
- High load capacity: Pulling up to six B- or E-Frames with a towing capacity of 4000 kg
- Efficient transportation of goods: High handling capacity using bundled transport

Precision

- Capital expenditure: Fewer staging areas and a reduction in stock levels
- Always on track: LiftRunner has excellent directional stability, even at higher speeds and when breaking and cornering
- Maximum flexibility: Depending on the LiftRunner frame type, they can be loaded from the left or from the right or even from both sides

Ergonomics

- User-friendly: Trolleys can easily be coupled or uncoupled from the frames at ground level
- Easy handling: The uncoupling mechanism enables trolleys to be detached with the minimum of effort without strain on the back
- Easy adjustment options: The alignment of LiftRunner frames in trains can be adjusted quickly to changing conditions and processes through the flexible coupling/tiller system, and due to its low deadweight

Compactness

- Reduction in stock levels and production logistics space: High delivery frequency in synchronised production and logistics processes
- Maximum flexibility: A combination of different frame types within one train for the demand-orientated provision of small batches
- Space-saving: A very tight turning circle enables it to be used in confined areas

Safety

- Reduced accident risk: Increased safety through bundling shipments and reducing truck traffic
- Minimised risk of damage: Automatic safety mechanism when sliding trolleys in
- Safe ramp travel: a combination of rigid and flexible links minimises pitching during acceleration and braking

Environmental Responsibility

- Energy saving: Traffic reduction by bundling together shipments of the same volume therefore avoiding empty journeys
- High process transparency: Supplying and disposing of materials at the same time increases the efficiency of tugger train usage
- Noise and wear and tear: Trolleys are raised up during the journey, so there is no ground contact

LiftRunner

Efficient production supply with tugger trains

In cutting-edge and Lean Production logistics, tugger trains are indispensable for efficient material flow. They supply the locations where they are needed, e.g. assembly points, with the right materials in different load carriers and in small batches. The operator thereby reduces not only costly production logistics areas, but is able to reduce stock levels and energy consumption as well as reduce the risk of accidents through fewer traffic volumes. With its LiftRunner tugger train, STILL offers a complete tugger train system that is highly adaptable to individual operational requirements. The STILL LiftRunner tugger train system consists of a train truck (e.g. tow tractor from product lines CX-T, LTX or R 07) and a flexible combination of different tugger train elements, like LiftRunner B-, C- and E-Frames (trailers) and trolleys (rollable load carriers). With the broad range of frames and trolleys, tugger trains can be assembled according to need, so that the various types of goods arrive in small batches quickly and efficiently at their particular deployment area. LiftRunner frames are therefore designed to transport trolleys of different types and dimensions, and are developed and constructed individually in accordance with customer

requirements. Before the tugger train sets off, the trolleys are slotted into or out of the LiftRunner frames and are secured automatically. They can be loaded from the left or from the right (C- and E-Frames) or from both sides, depending on the direction of the coupling, so that no re-coupling of the frames is necessary (B-Frames). The trolleys are raised up automatically when the driver enters the towing truck (standing truck) or activates a switch (seated truck). The lifting energy required for this is provided by pneumatics, hydraulics or electricity via the towing truck or autonomously via the frame. The frame lowers automatically when the driver leaves the towing truck or deactivates the appropriate switch and the trolleys can then be removed. A foot pedal activates a mechanism that eases the trolley in the direction of the operator. This initial thrust enables the trolley to be removed in an effortless manner that places no strain on the back. By lifting the trolleys up during the journey, harder polyamide rollers can be used. This minimises rolling resistance, enabling higher loads to be moved more easily. Moreover, it not only minimises running noise, but also wear-and-tear to the rollers.

LiftRunner System Variants

Hydraulic

In a hydraulic lifting system, the power needed for lifting is provided by a hydraulic unit on the towing truck. The hydraulic line transmits it to the individual LiftRunners. Lifting the LiftRunners up occurs behind the towing truck, before the tugger train starts to move off.

Advantages

- Good energy efficiency
- Smooth lifting and lowering
- Quiet operation

Pneumatic

In a pneumatic lifting system, the power needed for lifting is produced via a compressor on the towing truck. Power to the LiftRunner is transmitted via a pneumatic line, enabling it to be raised up before the start of the journey.

Advantages

- Oil-free, suitable for the food and pharmaceutical industries due to its extremely clean operation
- Perfect damping
- Smooth lifting and lowering

Electrical

In an electrical lifting system, the power needed for lifting is generated via an electrical connection to the towing truck. Individual LiftRunners are connected to one another via an electrical cable. Here again, the LiftRunners are lifted up before the journey begins.

Advantages

- Quiet operation
- Oil-free, suitable for the food and pharmaceutical industries due to its extremely clean operation
- Good energy efficiency
- Smooth synchronised lifting and lowering

Autonomous

In an autonomous lifting system, it is the driving movement that generates the power needed to lift up the LiftRunners. When the trolleys are slotted in, hydraulics lift up the individual LiftRunners.

Advantages

- Very flexible when changing towing trucks, as no hydraulic unit is needed
- Quick coupling and uncoupling of individual LiftRunners
- Quiet operation

LiftRunner B-Frame

Efficient production supply with tugger trains

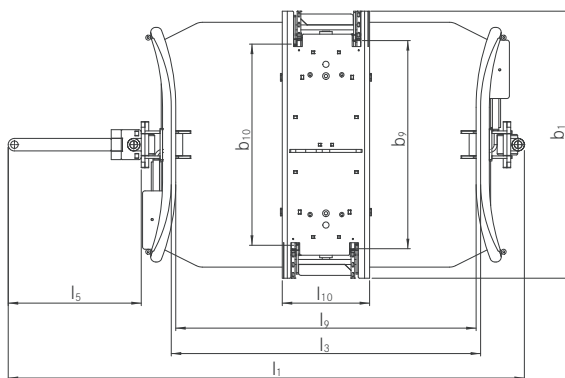
This specification sheet based on VDI standard 2198, only provides the technical values of the standard equipment. Different tyres, other lifting gear, additional equipment etc. may produce different figures.

Features	1.1	Manufacturer			STILL	STILL	STILL	STILL
	1.2	Manufacturer's type designation			LiftRunner B-Frame 1200 x 800 mm	LiftRunner B-Frame 1200 x 1000 mm	LiftRunner B-Frame three-sided loading 800 x 600 mm	LiftRunner B-Frame three-sided loading 1000 x 600 mm
	1.2.1	Load dimensions (length x width)		mm	1210 x 810	1210 x 1010	1210 x 810 / 820 x 630	1210 x 1010 / 1010 x 630
	1.5	Load capacity ¹	Q	kg	1000	1000	1 trolley: 1000 2 trolleys: 2 x 500 3 trolleys: 3 x 300	1 trolley: 1000 2 trolleys: 2 x 500 3 trolleys: 3 x 300
Weight	2.1	Service weight		kg	204	237	408	490
	3.1	Tyres			Polyurethane	Polyurethane	Polyurethane	Polyurethane
Wheels/chassis	3.2	Tyre size		mm	∅ 200	∅ 200	∅ 200	∅ 200
	3.5	Number of wheels			2 (mid axle)	2 (mid axle)	2 (mid axle)	2 (mid axle)
Basic dimensions	3.6	Track width	b ₁₀	mm	810	1010	810	1010
	4.2.1	Total height	lowered/raised	h ₁	mm	313/353	313/353	313/353
	4.4	Lift		h ₃	mm	40	40	40
	4.12	Clutch height	lowered/raised	h ₁₀	mm	185/225	185/225	185/225
	4.16	Loading surface length/max. Trolley length ²		l ₃	mm	1240	1240	2030
	4.17	Tiller length		l ₅	mm	533	683	533
	4.18	Loading platform width		b ₉	mm	834	1034	834
	4.19	Total length		l ₁	mm	2069	2219	2859
	4.21	Total width		b ₁	mm	1070	1270	1070
	4.32	Ground clearance Centre of wheel base	lowered/raised	m ₂	mm	0/40	0/40	0/40
	4.35	Turning radius	CX-T/LTX 70	W _a	mm	1950/2100	2100/2250	3350/3450
	4.39	Frame opening length (inner frame dimension)		l ₉	mm	1204	1204	1994
	4.40	Centre plate length		l ₁₀	mm	350	350	350
	4.41	Tiller height	lowered/raised	h ₁₁	mm	170/210	170/210	170/210
Performance data	5.1	Max. speed ³		km/h	15	15	15	15
Misc.	8.5	Coupling			Combination of rigid and flexible links		Combination of rigid and flexible links	

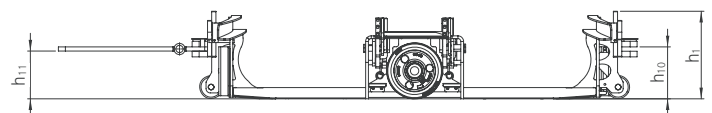
¹ With several trailers, the maximum towing capacity exceeds the entire tow 4 t (depending on the max. towing capacity of the towing truck)

² Applies only when using STILL LiftRunner trolleys

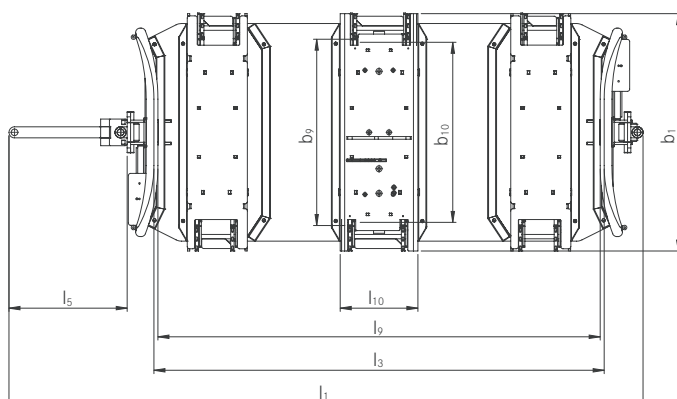
³ Depending on the towing truck



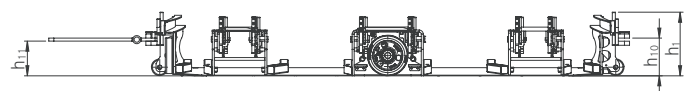
Top view B-Frame



Side view B-Frame



Top view B-Frame loadable from three directions



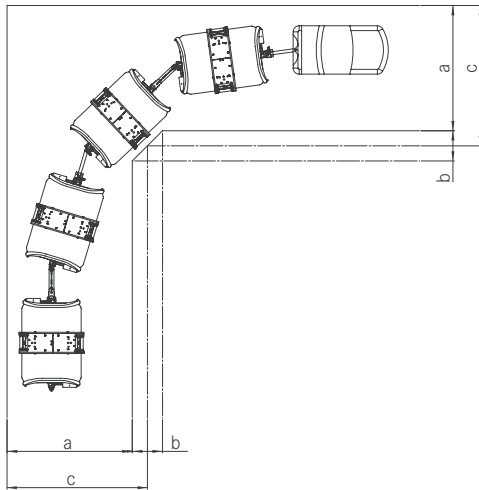
Side view B-Frame loadable from three directions

LiftRunner B-Frame Working Aisle Widths

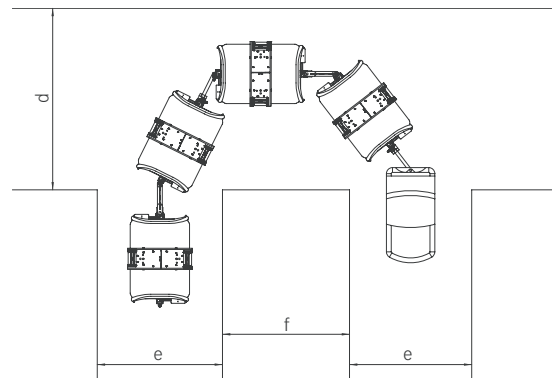


B-Frame 90° curve minimum aisle width	Number of B-Frames	Tow length in mm without towing truck	Aisle width with a chamfered edge in mm (without on-coming traffic) with LTX 50 / LTX 70	Chamfered edge b in mm (without on-coming traffic) with LTX 50 / LTX 70	Aisle width c without chamfered edge in mm (without on-coming traffic) with LTX 50 / LTX 70
LiftRunner B-Frame 1200 x 800 mm	2	4089	2070/2070	0/0	2070/2070
	4	8128	2070/2070	500/500	2320/2320
LiftRunner B-Frame 1200 x 1000 mm	2	4389	2270/2270	0/0	2270/2270
	4	8728	2270/2270	500/500	2520/2770
LiftRunner B-Frame three-sided loading 800 x 600 mm	2	5669	2070/2070	1000/1000	2570/2570
	4	11288	2070/2070	2000/2000	3070/3070
LiftRunner B-Frame three-sided loading 1000 x 600 mm	2	5969	2270/2270	1000/1000	2770/2770
	4	11888	2270/2270	2000/2000	3270/3270

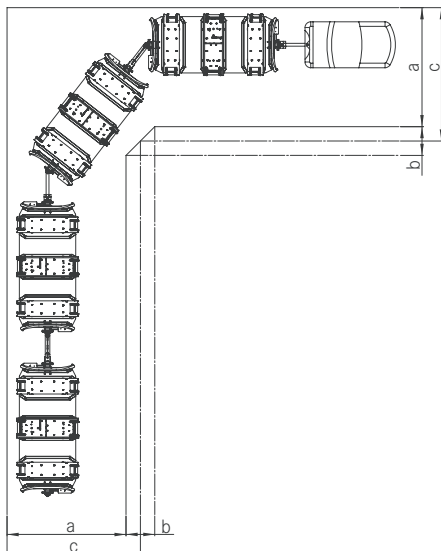
B-Frame 180° curve minimum aisle width	Number of B-Frames	Tow length in mm without towing truck	Aisle width d in mm (without on-coming traffic) with LTX 50 / LTX 70	Aisle width e in mm (without on-coming traffic) with LTX 50 / LTX 70	Distance between the aisles f in mm (without on-coming traffic) with LTX 50 / LTX 70	Aisle width in mm in loading and unloading zones with LTX 50 / LTX 70
LiftRunner B-Frame 1200 x 800 mm	2	4089	2200/2400	2000/2000	2000/2000	2900/2900
	4	8128	3000/3200	2000/2000	2000/2000	2900/2900
LiftRunner B-Frame 1200 x 1000 mm	2	4389	2500/2700	2000/2000	2000/2000	3300/3300
	4	8728	3300/3500	2000/2000	2000/2000	3300/3300
LiftRunner B-Frame three-sided loading 800 x 600 mm	2	5669	2700/2800	2700/2700	2000/2000	2900/2900
	4	11288	3700/3800	2700/2700	2000/2000	2900/2900
LiftRunner B-Frame three-sided loading 1000 x 600 mm	2	5969	2700/2800	3200/3200	2000/2000	3300/3300
	4	11888	3700/3800	3200/3200	2000/2000	3300/3300



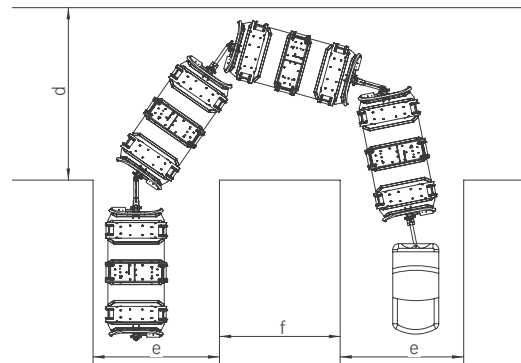
B-Frame 90° track curve



B-Frame 180° track curve



B-Frame 90° track curve loadable from three sides



B-Frame 180° track curve loadable from three sides

LiftRunner B-Frame

Efficient production supply with tugger trains

Loading and unloading from both sides for maximum flexibility

Quiet operation and low wear-and-tear, as trolleys are raised up during the journey

Excellent driveability and directional stability guarantees a high level of safety

A straightforward easy-to-use trolley de-coupling system

Safe handling with an automatic safety back-up when pushing trolleys



LiftRunner B-Frames are designed for different types and dimensions of trolleys up to a load capacity of 1000 kg. It offers maximum flexibility by means of the possibility of loading and unloading from both sides without de-coupling the frames. The LiftRunner tugger train system can therefore be used on alternative routes with little effort, or can deliver two different kinds of production line within one journey. The manoeuvrable two-wheeled frames are steered through a mid axle. This ensures excellent directional stability, even at high speeds and in braking manoeuvres. The combination of rigid and flexible links minimises jolting movements when starting off or braking and ensures a safe passage on ramps.

Trolleys slotted into the B-Frames are automatically secured by a mechanism and are lifted up when the driver enters the towing truck (standing truck) or activates a switch (seated truck). The lifting energy is provided by either pneumatics, hydraulics or electricity above the towing truck or autonomously above the frame. When the driver leaves the towing truck, the frames are lowered automatically and the trolleys can be removed. The trolley becomes disengaged via the foot pedal and can be removed effortlessly in a way that presents no strain to the back. B-Frames can be combined with C- or E-Frames within one train.

Extensive Equipment

Power

- High load capacity and low deadweight: The load capacity of B-Frame is up to 1000 kg
- Efficient material transport: High handling capacity using bundled transports
- Individual deployment: With B-Frames transporting load carriers of varying types and dimensions is possible. Also, accommodating up to three trolleys at the same time is feasible

Precision

- Maximum flexibility: Double-sided loading and unloading without de-coupling, enabling the delivery of two different types of production lines within one journey
- Always on track: LiftRunner with B-Frames has excellent directional stability, even at high speed, and in breaking and cornering manoeuvres

Ergonomics

- User-friendly: trolleys can slide easily into the frames
- Easy handling: Thanks to the specially developed uncoupling system and with very little rolling resistance, trolleys can be detached with minimum effort and without back strain
- Optimal load handling: A flexible combination - depending on requirements - of B-, C- or E-Frames and various types of trolleys

Compactness

- Reduction in stock levels and production logistics space: High delivery frequency in synchronised production and logistics processes
- Maximum flexibility: A combination of different frame types within one train for the demand-orientated provision of small batches
- Space-saving: A very tight turning circle enables it to be used in confined areas

Safety

- Reduced accident risk: Increased safety through bundling shipments and reducing truck traffic
- Minimised risk of damage: Automatic safety mechanism when sliding trolleys in
- Safe ramp travel: A combination of rigid and flexible links minimises pitching during acceleration and braking

Environmental Responsibility

- Energy saving: Traffic reduction by bundling together shipments of the same volume therefore avoiding empty journeys
- High process transparency: Supplying and disposing of materials at the same time increases the efficiency of tugger train usage
- Noise and wear and tear: Trolleys are raised up during the journey, so there is no ground contact

LiftRunner B-Frame
Efficient production supply with tugger trains



Maximum flexibility with B-Frames in confined working areas due to two-way loading and unloading options



B-Frames can be loaded from either two or three sides

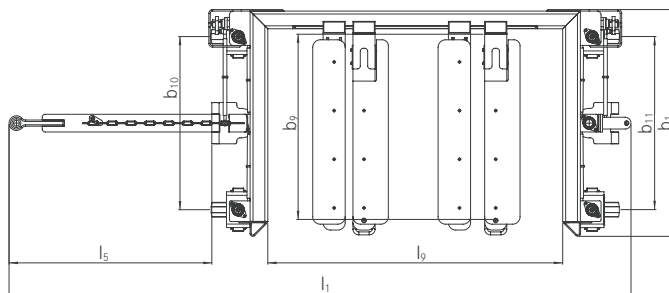
LiftRunner C-Frame

Efficient production supply with tugger trains

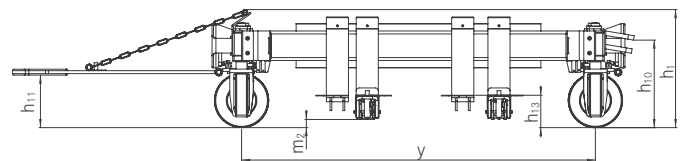
This specification sheet based on VDI standard 2198, only provides the technical values of the standard equipment. Different tyres, other lifting gear, additional equipment etc. may produce different figures.

Features	1.1	Manufacturer				STILL
	1.2	Manufacturer's type designation				LiftRunner C-Frame 2000 x 1200 mm
	1.2.1	Load dimensions (length x width)			mm	1210 x 810
	1.5	Load capacity			kg	2 trolleys: 2 x 800
	1.9	Wheel base		y	mm	2400
Weight	2.1	Service weight			kg	960
Wheels/chassis	3.1	Tyres				Superelastic
	3.2	Tyre size		front/rear	mm	∅ 374/374
	3.5	Number of wheels				2/2
Basic dimensions	3.6	Track width		front/rear	b ₁₀ /b ₁₁	mm 1174/1174
	4.2.1	Total height		lowered/raised	h ₁	mm 800/830
	4.4	Lift			h ₃	mm 80
	4.12	Clutch height		lowered/raised	h ₁₀	mm 593/673
	4.15	Height lowered (underclearance)			h ₁₃	mm 220
	4.16	Loading platform length/max. trolley length			l ₃	mm 2000
	4.17	Tiller length			l ₅	mm 1375
	4.18	Loading platform width			b ₉	mm 1255
	4.19	Total length			l ₁	mm 4218
	4.21	Total width			b ₁	mm 1540
	4.32	Ground clearance, centre of wheel base		lowered/raised	m ₂	mm 55/135
	4.35	Turning radius		LTX 70/R 07	W _a	mm 3100/3750
4.39	Frame opening length (inner frame dimension)			l ₉	mm 2000	
4.41	Tiller height		lowered/raised	h ₁₁	mm 356/436	
Performance data	5.1	Max. speed ¹			km/h	15
Misc.	8.5	Coupling				C-Frame tiller

¹ Depending on the towing truck



Top view C-Frame



Side view C-Frame



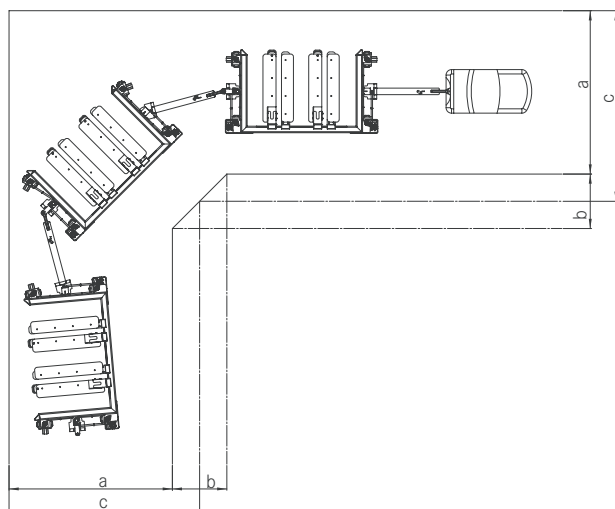
Multiple uses of C-Frames in indoor and outdoor areas

LiftRunner C-Frame Working Aisle Widths

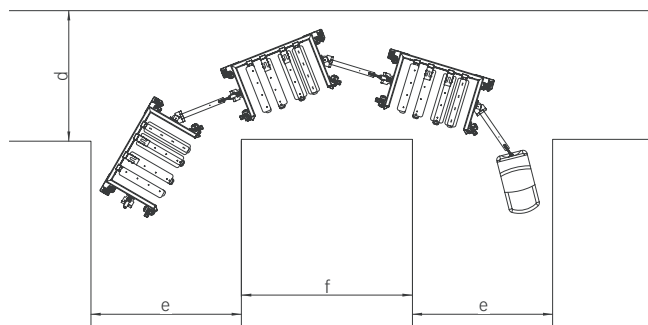


C-Frame 90° curve minimum aisle widths	Number of C-Frames	Tow length in mm without towing truck	Aisle width a with chamfered edge in mm (without on-coming traffic) with LTX 70/R 07	Chamfered edge b in mm (without on-coming traffic) with LTX 70/R 07	Aisle width c without chamfered edge in mm (without on-coming traffic) with LTX 70/R 07
LiftRunner C-Frame 2000 x 1200 mm	1	4140	2540	0/1000	2540/3040
	2	8280	2540	500/1500	2790/3290
	3	12420	2540	1000/1500	3040/3290
	4	16560	2540	1500/2000	3290/3540

C-Frame 180° curve minimum aisle widths	Number of C-Frames	Tow length in mm (without towing truck)	Aisle width d in mm (without on-coming traffic) with LTX 70/R 07	Aisle width e in mm (without on-coming traffic) with LTX 70/R 07	Distance between the aisles f in mm (without on-coming traffic) with LTX 70/R 07	Aisle width in mm in loading and unloading zones with LTX 70/R 07
LiftRunner C-Frame 2000 x 1200 mm	1	4140	2550/3100	2550/3100	800	3900
	2	8280	2800/3200	2800/3200	800	3900
	3	12420	3050/3400	3050/3400	800	3900
	4	16560	3300/3600	3300/3600	800	3900



C-Frame 90° track curve



C-Frame 180° track curve



Outdoor use with C-Frame and weather protection

LiftRunner C-Frame

Efficient production supply with tugger trains

Flexible indoor and outdoor use

Excellent driveability and directional stability guarantees a high level of safety

Quiet operation and low wear-and-tear, as trolleys are raised up during the journey

Ideal for heavy loads and large containers due to high load capacity

Safe handling with an automatic safety back-up when sliding trolleys in



LiftRunner C-Frames are designed for different types and dimensions of trolleys up to a load capacity of 1600 kg. C-Frames are ideally suited for outdoor use due to their superelastic tyres that compensate for uneven ground surfaces. The frames can also be galvanised or fitted with a canopy. Steering is transmitted from the tiller to all the wheels, ensuring not only that directional stability at high speed, braking and cornering manoeuvres are all assured, but that the frames remain stable even at sharp steering angles. Equipped with flexible prongs, C-Frames can easily be adjusted to any trolley size. The trolleys are slid into the C-Frame and are secured by an automatic mechanism.

They can be loaded from the left or right, depending on the course of the docking direction. The frames automatically rise up hydraulically when the towing truck (standing truck) is entered or when a switch is operated in the seated truck. On exiting both trucks, the frames lower again automatically. A foot pedal activates a mechanism that eases the trolley in the direction of the operator. This initial thrust enables the trolley to be removed in an effortless manner that places no strain on the back. C-Frames can even be designed and constructed in any size and load capacity required by the customer.

Extensive Equipment

Power

- High load capacity: The C-Frame load capacity is up to 1600 kg
- Efficient transportation of goods: Maximum handling capacity using bundled transports and clearly defined transport routes
- Individual deployment: C-Frames are equipped with flexible fork prongs, enabling them to be put in position where required and to be adjusted to any size of trolley

Precision

- Always on track: In the LiftRunner C-Frames, tiller steering is transmitted mechanically to all four wheels. This guarantees a high degree of directional stability
- Maximum flexibility: The loading direction can be quickly changed via the tiller system, according to requirements
- Ideal for outside use: Superelastic tyres compensate for uneven ground

Ergonomics

- User-friendly: Trolleys can be inserted or fitted into the frames easily at ground level. Using a forklift is not required for this purpose
- Easy handling: Using the uncoupling mechanism, trolleys can be detached with the minimum of effort that is also gentle on the back
- Optimal load handling: Flexible combinations of different trolleys, depending on requirements

Compactness

- Reduction in stock levels and production logistics space: High delivery frequency in synchronised production and logistics processes
- Maximum flexibility: A combination of different frame types within one train for the demand-orientated provision of small batches
- Space-saving: A very tight turning circle enables it to be used in confined areas

Safety

- Minimised risk of damage: Automatic safety mechanism when sliding trolleys in
- Maximum stability: Trailers remain stable even at sharp steering angles

Environmental Responsibility

- Energy saving: Traffic reduction by bundling together shipments of the same volume therefore avoiding empty journeys
- High process transparency: Supplying and disposing of materials at the same time increases the efficiency of tugger train usage
- Noise and wear and tear: Trolleys are raised up during the journey, so there is no ground contact

LiftRunner E-Frame

Efficient production supply with tugger trains

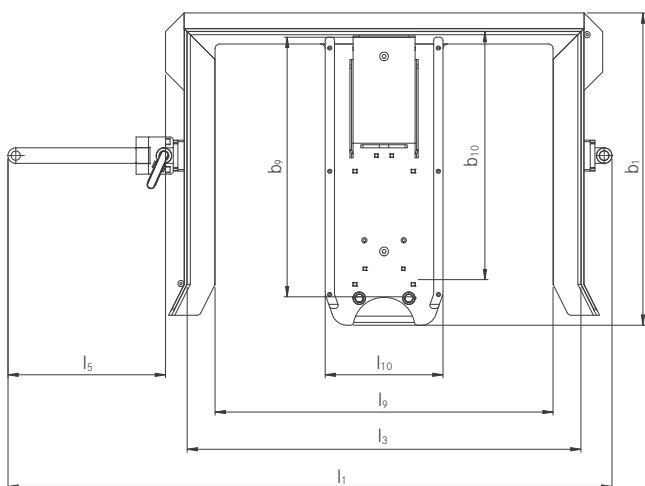
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Features	1.1		Manufacturer		STILL		STILL		STILL		STILL	
	1.2		Manufacturer's type designation		LiftRunner E-Frame 1200 x 800 mm		LiftRunner E-Frame 1200 x 1000 mm		LiftRunner E-Frame two-sided loading 800 x 600 mm		LiftRunner E-Frame two-sided loading 1000 x 600 mm	
	1.2.1	Load dimensions (length x width)		mm	1210 x 810		1210 x 1010		1210 x 810 / 820 x 630		1210 x 1010 / 1010 x 630	
	1.5	Load capacity ¹		Q kg	600	1000	600	1000	1 trolley: 1000 2 trolleys: 2 x 500		1 trolley: 1000 2 trolleys: 2 x 500	
Weight	2.1	Service weight		kg	158	170	188	200	254		285	
Wheels / chassis	3.1	Tyres			Polyurethane		Polyurethane		Polyurethane		Polyurethane	
	3.2	Tyre size		mm	Ø 200		Ø 200		Ø 200		Ø 200	
	3.5	Number of wheels			2 (mid axle)		2 (mid axle)		2 (mid axle)		2 (mid axle)	
	3.6	Track width		b ₁₀ mm	800		1000		845		1045	
Basic dimensions	4.2.1	Total height lowered/raised		h ₁ mm	310/350		310/350		310/350		310/350	
	4.4	Lift		h ₃ mm	40		40		40		40	
	4.12	Clutch height lowered/raised		h ₁₀ mm	185/225		185/225		185/225		185/225	
	4.15	Height lowered (underclearance)		h ₁₃ mm	228		228		228		228	
	4.16	Loading surface length/max. trolley length ²		l ₃ mm	1270		1270		1786		1786	
	4.17	Tiller length		l ₅ mm	533		683		683		833	
	4.18	Loading platform width		b ₉ mm	837		1037		834		1034	
	4.19	Total length		l ₁ mm	1953		2095		2568		2718	
	4.21	Total width		b ₁ mm	1007		1207		1062		1262	
	4.32	Ground clearance, centre of wheel base lowered/raised		m ₂ mm	25/65		25/65		40/80		40/80	
	4.35	Turning radius CX-T/LTX 70		W ₈ mm	1950/2100		2100/2250		3100/3200		3250/3350	
4.39	Frame opening length (inner frame dimension)		l ₉ mm	1090		1090		1610		1610		
4.40	Centre plate length		l ₁₀ mm	380		380		536		536		
4.41	Tiller height lowered/raised		h ₁₁ mm	170/210		170/210		170/210		170/210		
Performance data	5.1	Max. speed ³		km/h	15		15		15		15	
Misc.	8.5	Coupling			Basic tiller/combination of rigid and flexible links				Combination of rigid and flexible links			

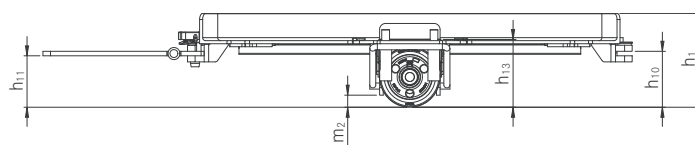
¹ With several trailers, the maximum towing capacity exceeds the entire tow 4 t (depending on the max. towing capacity of the towing truck)

² Applies only when using STILL LiftRunner trolleys

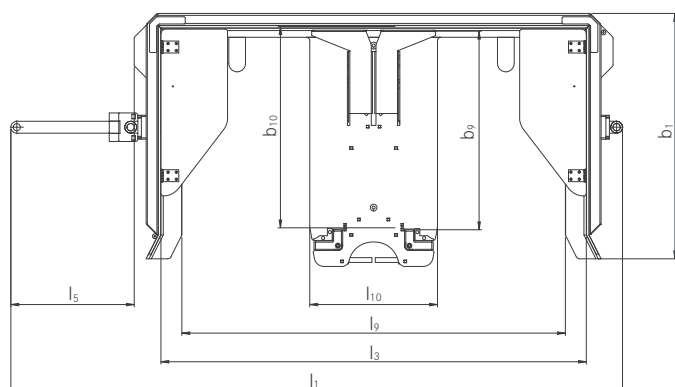
³ Depending on the towing truck



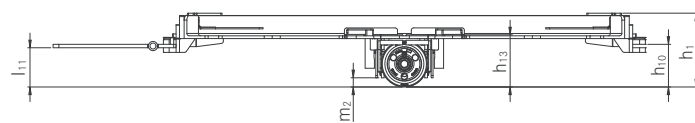
Top view E-Frame



Side view E-Frame



Top view E-Frame two-sided loading



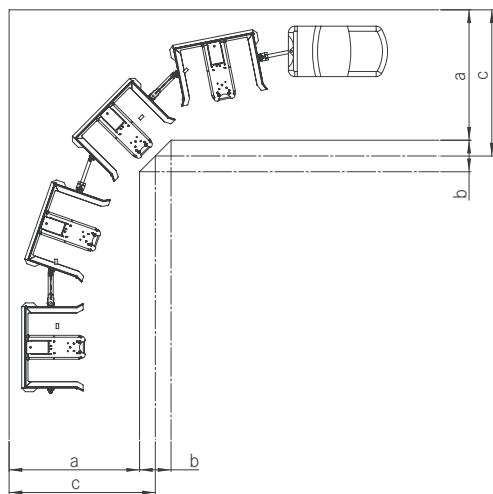
Side view E-Frame with two-sided loading

LiftRunner E-Frame Working Aisle Widths

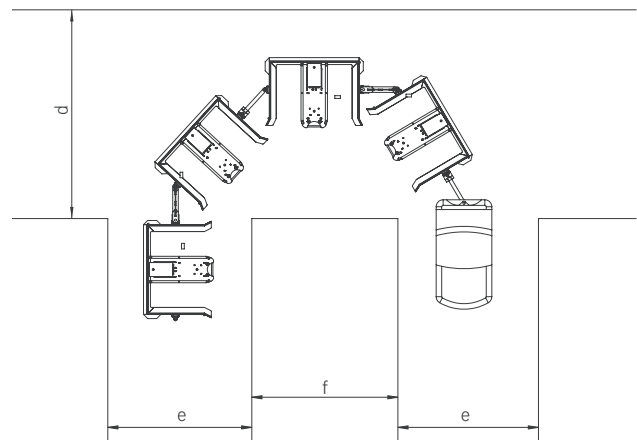


E-Frame 90° curve minimal aisle widths	Number of E-Frames	Train length in mm without towing truck	Aisle width a with chamfered edge in mm (without on-coming traffic) with LTX 50 / LTX 70	Chamfered edge b in mm (without on-coming traffic) with LTX 50 / LTX 70	Aisle width c without chamfered edge in mm (without on-coming traffic) with LTX 50 / LTX 70
LiftRunner E-Frame 1200 x 800 mm	2	3846	2010/2010	0/0	2010/2010
	4	7642	2010/2010	500/500	2260/2260
LiftRunner E-Frame 1200 x 1000 mm	2	4146	2210/2210	0/0	2210/2210
	4	8242	2210/2210	500/1000	2460/2710
LiftRunner E-Frame two-sided loading 800 x 600 mm	2	5388	2070/2070	500/500	2320/2320
	4	10726	2070/2070	1500/1500	2820/2820
LiftRunner E-Frame two-sided loading 1000 x 600 mm	2	5688	2260/2260	500/500	2510/2510
	4	11326	2260/2260	1500/1500	3010/3010

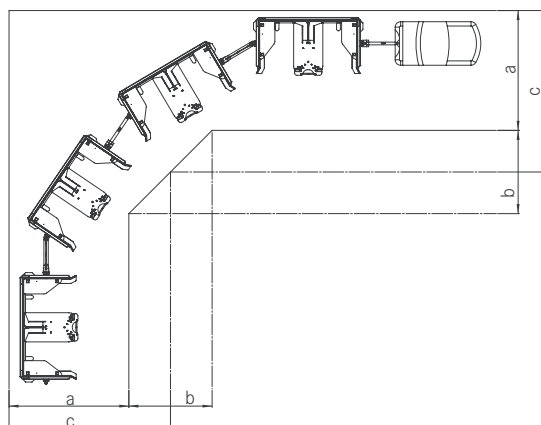
E-Frame 180° curve minimal aisle widths	Number of E-Frames	Train length in mm without towing truck	Aisle width d in mm (without on-coming traffic) with LTX 50 / LTX 70	Aisle width e in mm (without on-coming traffic) with LTX 50 / LTX 70	Distance between the aisles f in mm (without on-coming traffic) with LTX 50 / LTX 70	Aisle width in mm in loading and unloading zones with LTX 50 / LTX 70
LiftRunner E-Frame 1200 x 800 mm	2	3846	2200/2400	2000/2000	2000/2000	2900/2900
	4	7642	3000/3200	2000/2000	2000/2000	2900/2900
LiftRunner E-Frame 1200 x 1000 mm	2	4146	2500/2700	2300/2300	2000/2000	3300/3300
	4	8242	3300/3500	2300/2300	2000/2000	3300/3300
LiftRunner E-Frame two-sided loading 800 x 600 mm	2	5388	2500/2600	2500/2500	2000/2000	2955/2955
	4	10726	3500/3600	2500/2500	2000/2000	2955/2955
LiftRunner E-Frame two-sided loading 1000 x 600 mm	2	5688	2500/2600	3000/3000	2000/2000	3355/3355
	4	11326	3500/3600	3000/3000	2000/2000	3355/3355



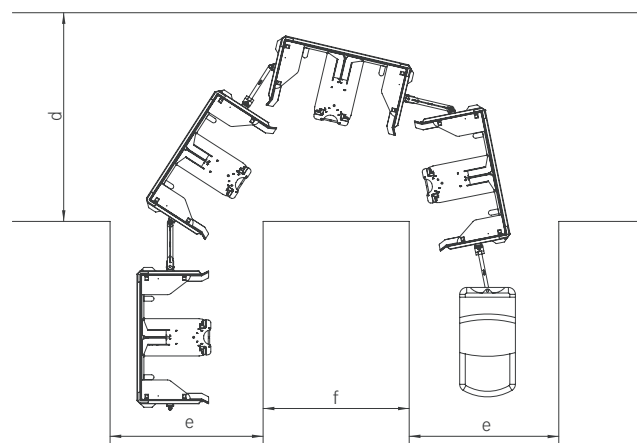
E-Frame 90° track curve



E-Frame 180° track curve



E-Frame 90° track curve with two-sided loading



E-Frame 180° track curve with two-sided loading

LiftRunner E-Frame

Efficient production supply with tugger trains

Depending on the orientation, trolleys can be loaded from the right or the left

Excellent driveability and directional stability guarantees a high level of safety

Quiet operation and low wear-and-tear, as trolleys are raised up during the journey

A straightforward easy-to-use trolley de-coupling system

Safe handling with an automatic safety back-up when sliding trolleys in



LiftRunner E-Frames are designed for different types and dimensions of trolleys up to 1000 kg. The manoeuvrable two-wheeled frames are steered through a mid axle. This ensures excellent directional stability, even at high speeds and in braking manoeuvres. The combination of rigid and flexible links minimises jolting movements when starting off or braking and ensures a safe passage on ramps. The loaded trolleys are slid into the lowered E-Frames and are secured by an automatic mechanism. They can be loaded from the left or right, depending on the course of the docking direction.

The trolleys are raised up automatically when the driver enters the towing truck (standing truck) or activates a switch (seated truck). The lifting energy required for this is provided by pneumatics, hydraulics or electricity via the towing truck or autonomously via the frame. When the driver leaves the towing truck, the frames are lowered automatically and the trolleys can be removed. A foot pedal activates a mechanism that eases the trolley in the direction of the operator. This initial thrust enables the trolley to be removed in an effortless manner that places no strain on the back. E-Frames can be combined with B- or C-Frames within one train.

Extensive Equipment

Power

- High load capacity and low deadweight: E-Frame load capacity is up to 1000 kg
- Efficient material transport: High handling capacity using bundled transports
- Individual deployment: E-Frames can transport load carriers of varying types and dimensions. Also, it can accommodate two trolleys at the same time

Precision

- Maximum flexibility: loading direction can be quickly changed according to application with a plug-in coupling
- Always on track: LiftRunner with E-Frames has excellent directional stability, even at higher speeds and when braking and cornering
- Adaptation to outdoor use: E-Frames are available galvanised and with a roof

Ergonomics

- User-friendly: Trolleys can easily be coupled or uncoupled from the frames at ground level
- Easy handling: Thanks to the specially developed uncoupling system and with very little rolling, trolleys can be detached with minimum effort and without back strain
- Optimal load handling: A flexible combination - depending on requirements - of B-, C- or E-Frames and various types of trolleys

Compactness

- Reduction in stock levels and production logistics space: High delivery frequency in synchronised production and logistics processes
- Maximum flexibility: A combination of different frame types within one train for the demand-orientated provision of small batches
- Space-saving: A very tight turning circle enables it to be used in confined areas

Safety

- Minimised risk of damage: Automatic safety mechanism when sliding trolleys in
- Safe ramp travel: A combination of rigid and flexible links minimises pitching during acceleration and braking
- Reduced accident risk: Increased safety through bundling shipments and reducing truck traffic

Environmental Responsibility

- Energy saving: Traffic reduction by bundling together shipments of the same volume therefore avoiding empty journeys
- High process transparency: Supplying and disposing of materials at the same time increases the efficiency of tugger train usage
- Noise and wear and tear: Trolleys are raised up during the journey, so there is no ground contact

LiftRunner B- and E-Frames
Efficient production supply with tugger trains



Different kinds of load carriers can be transported by the B-Frame



E-Frame loadable from two sides

LiftRunner B-, C- and E-Frames Equipment Variants

	LiftRunner B-Frame	LiftRunner B-Frame three-sided loading	LiftRunner C-Frame	LiftRunner E-Frame	LiftRunner E-Frame two-sided loading
Tarpaulin roof with roller shutter	○	○	○	○	○
Preparation for re-fitting a tarpaulin roof	○	○	○	○	○
System configuration hydraulic	●	●	●	●	●
System configuration pneumatic	○	○	—	○	—
System configuration electrical	○	○	—	○	○
System configuration autonomous	—	—	—	○	—
Cable installation under the tiller	●	●	—	●	●
Cable installation above the tiller	○	○	●	○	○
E-Frame basic tiller for ground-level use	—	—	—	●	—
Combination of rigid and flexible links suitable for ramp travel	●	●	—	○	●
C-Frame basic tiller	—	—	●	—	—
Foot guards on wheels	—	—	—	○	○
Position flags for better sensory perception	○	○	—	○	○
Minor prong adjustment	—	—	○	—	—
Electrogalvanising	○	○	○	○	○

● Standard ○ Option — Not available



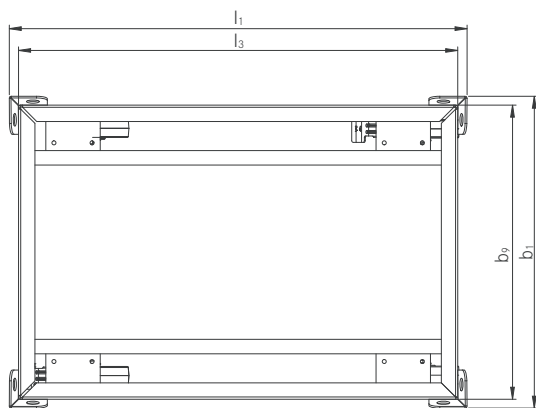
E-Frame loadable from two sides with different trolley sizes

Trolleys

Efficient production supply with tugger trains

This specification sheet based on VDI standard 2198, only provides the technical values of the standard equipment. Different tyres, other lifting gear, additional equipment etc. may produce different figures.

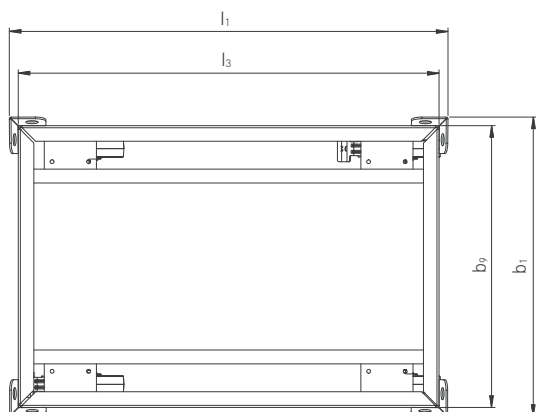
Features	1.1	Manufacturer			STILL	STILL	STILL	STILL	STILL	STILL	STILL	STILL
	1.2	Manufacturer's type designation			Trolley 1200 x 800 x 280 mm	Trolley 1200 x 800 x 450 mm	Trolley 800 x 600 x 280 mm	Trolley 800 x 600 x 450 mm	Trolley 1200 x 1000 x 280 mm	Trolley 1200 x 1000 x 450 mm	Trolley 1000 x 600 x 280 mm	Trolley 1000 x 600 x 450 mm
	1.2.1	Load dimensions (length x width)		mm	1200 x 800	1200 x 800	800 x 600	800 x 600	1200 x 1000	1200 x 1000	1000 x 600	1000 x 600
	1.5	Capacity/load	Q	kg	1000	1000	1000	1000	1000	1000	1000	1000
Weight	2.1	Service weight		kg	36	53	29	47	38	62	31	51
Wheels	3.1	Tyres			Polyamide	Polyamide	Polyamide	Polyamide	Polyamide	Polyamide	Polyamide	Polyamide
	3.2	Tyre size front/rear		mm	∅ 200/200	∅ 200/200	∅ 150/150	∅ 150/150	∅ 200/200	∅ 200/200	∅ 150/150	∅ 150/150
	3.5	Number of wheels front/rear			2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Basic dimensions	4.2.1	Total height	h_1	mm	350	520	350	520	350	520	350	520
	4.13	Loading height	h_{11}	mm	280	450	280	450	280	450	280	450
	4.16	Loading surface length	l_3	mm	1210	1210	820	820	1210	1210	1010	1010
	4.18	Loading surface width	b_9	mm	810	810	630	630	1010	1010	630	630
	4.19	Total length	l_1	mm	1260	1260	870	870	1260	1260	1060	1060
	4.21	Total width	b_1	mm	860	860	680	680	1060	1060	680	680
4.32	Ground clearance, centre of wheel base	m_2	mm	235	235	235	235	235	235	235	235	



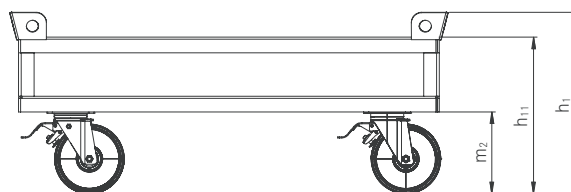
Top view trolley 1200 x 800 x 280 mm



Side view trolley 1200 x 800 x 280 mm



Top view trolley 1200 x 800 x 450 mm

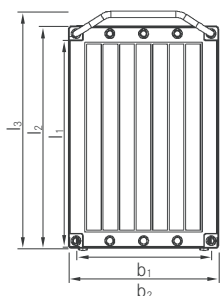


Side view trolley 1200 x 800 x 450 mm

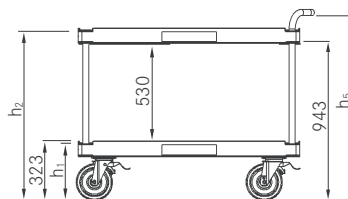
Plastic trolleys

Efficient production supply with tugger trains

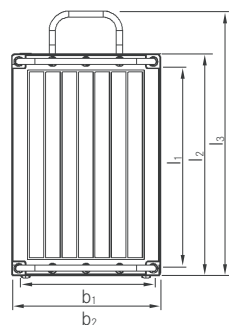
		1.1	Manufacturer			STILL	STILL	STILL	STILL	
Features	1.2	Manufacturer's type designation				Plastic pallet trolley 1200 x 800 mm	Plastic table truck trolley 2 tiers	Plastic shelf-truck trolley 3 tiers	Plastic shelf-truck trolley 4 tiers	
	1.2.1	Load dimensions (length x width)			mm	1200 x 800	above: 1151 x 520 below: 1102 x 520	above: 1151 x 820 below: 1102 x 820	above: 1151 x 820 below: 1102 x 820	
	1.5	Capacity/load	Q	kg	1000	1000	1000	1000	1000	
	1.5.1	Capacity tier 1/2/3/4				1000/-/-/-	1000/500/-/-	1000/500/200/-	1000/500/200/200	
	2.1	Service weight			kg	30	43	53	65	
Wheels	3.1	Tyres				Polyamide	Polyamide	Polyamide	Polyamide	
	3.2	Tyre size front/rear			mm	∅ 200/200	∅ 200/200	∅ 200/200	∅ 200/200	
	3.5	Number of wheels front/rear				2/2	2/2	2/2	2/2	
Basic dimensions	4.2.1	Total height			h_1	mm	362	1011	1403	1814
	4.13	Loading height			h_{11}	mm	313	313	313	313
	4.13.1	Loading height 2 nd tier			h_{12}	mm	-	933	763	763
	4.13.2	Loading height 3 rd tier			h_{13}	mm	-	-	1213	1213
	4.13.3	Loading height 4 th tier			h_{14}	mm	-	-	-	1663
	4.16	Loading surface length			l_3	mm	1200	1145	1090	1090
	4.18	Loading surface width			b_9	mm	800	500	800	800
	4.19	Total length			l_1	mm	1220	1300	1455	1455
4.21	Total width			b_1	mm	820	520	820	820	



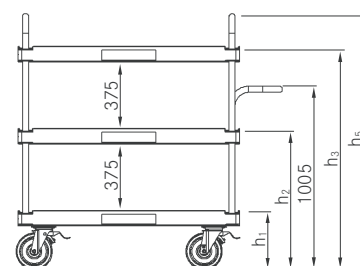
Top view table truck trolley



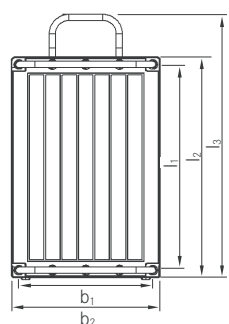
Side view table truck trolley



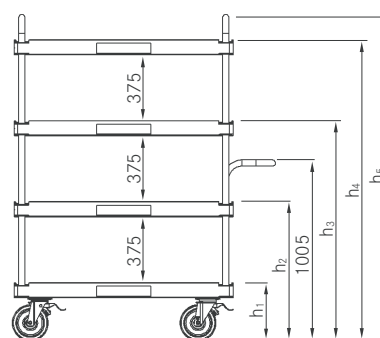
Top view shelf-truck trolley, 3 tiers



Side view shelf-truck trolley, 3 tiers



Top view shelf-truck trolley, 4 tiers



Side view shelf-truck trolley, 4 tiers

Trolleys

Efficient production supply with tugger trains

Ease of operation, even with high loads, thanks to lower rolling resistance

The wide range of trolley types for different load-carrying transportation makes it suitable for various applications

Trolleys are fitted with two brakes as standard for safe operation

Plastic table trucks with a low deadweight for easier handling come in a variety of different models



Steel trolleys

STILL steel trolleys are compatible with B-, C- and E-Frames and are available in different sizes depending on requirements. The standard height for pallet entry is 280 mm. A 450 mm height is also available, when an ergonomic working height is required for picking orders from the trolley. For precise positioning of the load carrier, trolleys can be fitted with removable pull handles and a braking system. For transportation in the LiftRunner tugger train system, trolleys are slid into the frames, automatically secured and raised up. This not only reduces running noise, but also roller wear-and-tear. By lifting the trolleys up during the journey, harder polyamide rollers can be used. This minimises rolling resistance, enabling higher loads to be moved more easily. Trolleys for carrying predominantly pallets or grid boxes are available in a variety of sizes and designs and can be tailor-made to requirements.

Plastic trolleys

Due to their low deadweight and smooth-running polyamide wheels, STILL plastic trolleys are suitable for work areas where employees have to push and pull heavy loads. They can be fitted with a push bar and specially smooth ball bearing rollers that support ergonomic posture when pushing or pulling. A sophisticated modular system - consisting of pallets and table or shelf-truck trolleys in different specifications - covers a variety of uses and applications. For transportation in the LiftRunner tugger train system, trolleys are slid into the frames at ground level, automatically secured and then lifted up either by hydraulics, pneumatics, electricity or autonomously, so that the tugger train has no contact with the ground during the journey. This not only reduces running noise, but also roller wear-and-tear.



Steel trolley 450 mm height



Table truck trolley

Trolleys Equipment Variants

	Steel trolley 1200 x 800 mm	Steel trolley 1200 x 1000 mm	Steel trolley 800 x 600 mm	Steel trolley 1000 x 600 mm	Plastic pallet trolley 1200 x 800 mm	Plastic table truck trolley 2 tiers	Plastic shelf-truck trolley 3 tiers	Plastic shelf-truck trolley 4 tiers
Rollers with plain bearings	●	●	—	●	●	●	●	●
Rollers with ball bearings	○	○	●	○	○	○	○	○
4 polyamide wheels, one of which is electrically conductive	●	●	●	●	○	○	○	○
3 polyurethane wheels and an electrically conductive polyamide wheel	○	○	○	○	—	—	—	—
Rotating brake pedal mounted on 2 wheels	●	●	—	●	—	—	—	—
Fixed brake pedal mounted on 2 wheels	○	○	●	○	—	—	—	—
Pull handles	○	○	○	○	○	○	○	○
Roller lock at every 90° position	○	○	○	○	○	○	○	○
Two roller locks at every 90° position	○	○	○	○	—	—	—	—

● Standard ○ Option — Not available



Steel trolley 1200 x 800 mm with extension for bigger pallets



Steel trolley 1200 x 800 mm with pull handle



Plastic trolleys in different sizes

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www.still.co.uk

STILL is certified in the following areas: Quality management, occupational safety, environmental protection and energy management.



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