

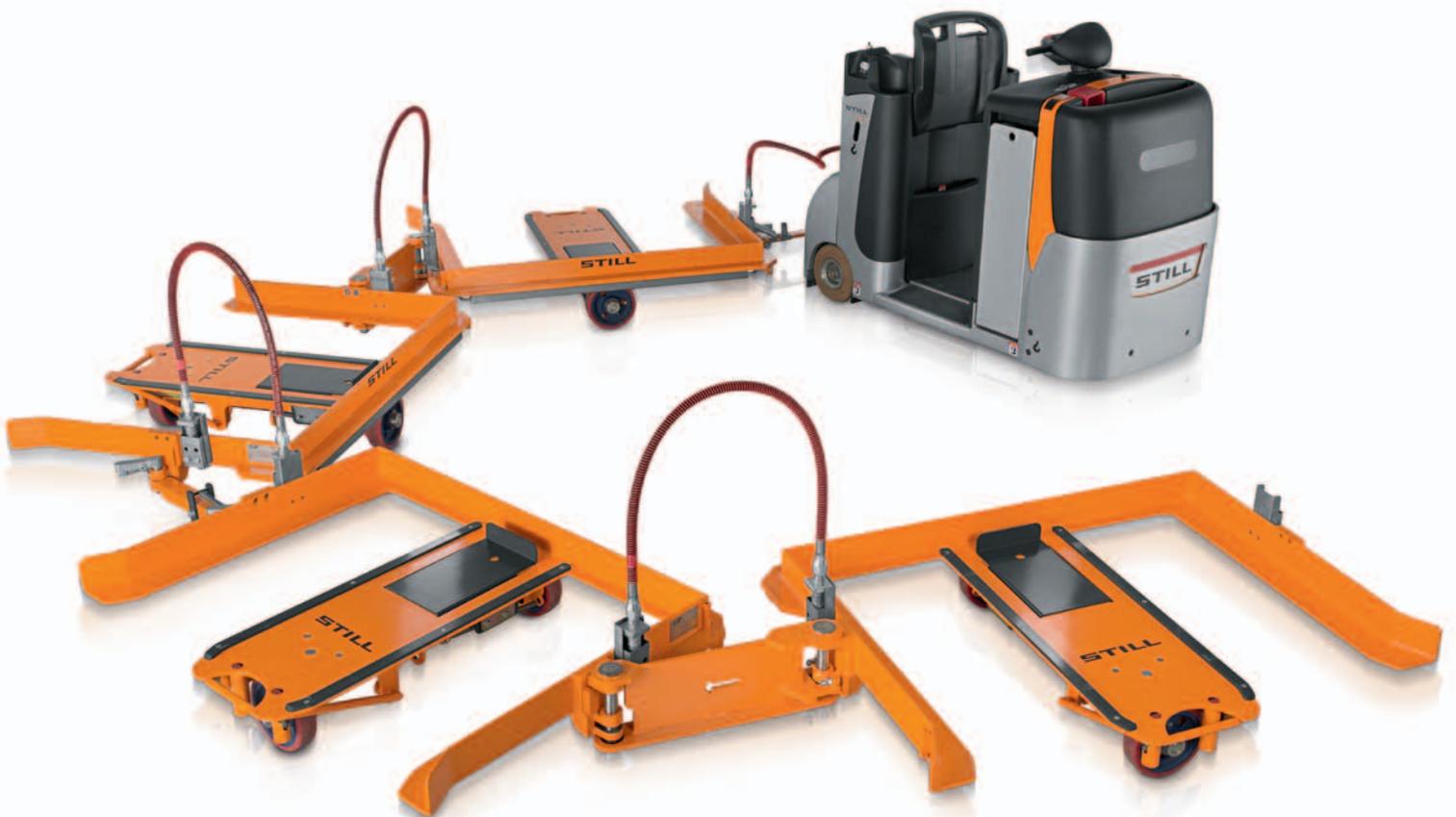


Technical specifications liftrunner® Tugger train trailer/trolley

E-type frame

C-type frame

Trolleys

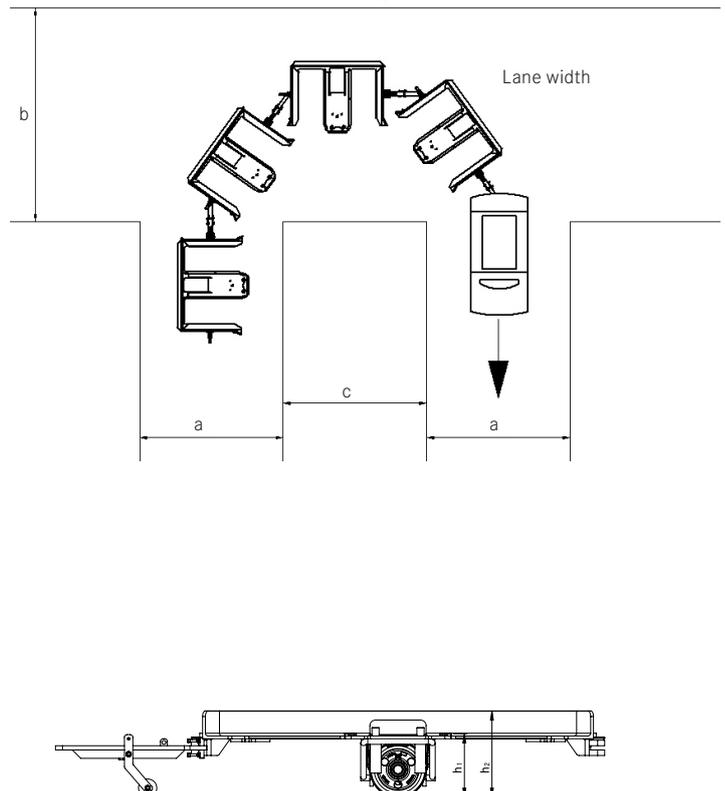
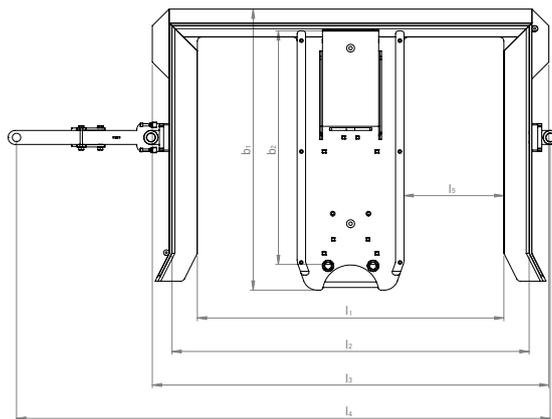


This specification sheet only gives the technical figures for the standard trailer.
 Different dimensions, additional equipment etc. (if listed in the offer) could give different figures.

Technical specification and features E-type frame				600 kg (1210/810) 1000 kg (1210/810)	600 kg (1210/1010) 1000 kg (1210/1010)	1000 kg (1610/1210)
Capacity		Q	kg	600/1000	600/1000	1000
Weight			kg	158/170	188/200	274
Dimensions	Length	l ₁	mm	1090	1090	1490
	Length	l ₂	mm	1270	1270	1666
	Length	l ₃	mm	1390	1390	1790
	Length	l ₄	mm	1900	2040	2650
	Length	l ₅	mm	355	355	555
	Width	b ₁	mm	1007	1207	1417
	Width	b ₂	mm	837*	1037**	1240***
	Height	h ₁	mm	228	228	228
Height	h ₂	mm	310	310	310	
Max. speed (depending on towing truck)			km/h	15	15	15
Turning circle (towing truck CX-T/R 06)		2 x W _a	mm	3900/4200	4200/4500	5500/5800
Turning radius (towing truck CX-T/R 06)		W _a	mm	1950/2100	2100/2250	2750/2900
Recommended trailer number			quantity	4	4	4
Dimensions load carrier			mm	1200/800	1200/1000	1600/1200
*For load carriers of max. 810 mm width.						
** For load carriers of max 1010 mm width.						
*** For load carriers of max 1210 mm width.						

E-type frame	No. of E-type frame	Length without towing tractor (cm)	a (cm) (without two-way traffic) with CX-T or R 06	b (cm) (without two-way traffic) with CX-T/R 06	c (cm) with CX-T or R 06	In loading and unloading areas a (cm) with CX-T or R 06
1210 x 810	2	374	200	220/240	200	290
	3	561	200	260/280	200	290
	4	748	200	300/320	200	290
	5	935	200	340/360	200	290
1210 x 1010	2	402	230	250/270	200	330
	3	603	230	290/310	200	330
	4	804	230	330/350	200	330
	5	1005	230	370/390	200	330
1610 x 1210	2	502	250	280/300	200	370
	3	753	250	340/360	200	370
	4	1004	250	400/420	200	370
	5	1255	250	460/480	200	370

E-type frame standard version



E-type frame.

The tugger train can be operated with 2 to 5 E-type frames (max. loading capacity of the complete train 4 t). Depending on the connected direction, the trailers can be loaded from the left or from the right side.

Wheels.

- 200 mm wheel on steel rim.
- Low-noise, enduring polyurethane faces.
- Equipped with stainless steel axles.

Frame.

- High directional stability, also at high speeds and when braking.
- Pick-up of trolleys with different sizes and of different types.
- User-friendly unloading with little force by depressing a foot lever operating an ejecting mechanism to compensate initial inertia.
- Automatic locking of the load with two stainless steel locking bolts.
- The E-type frames are lifted pneumatically or hydraulically by 40 mm for travelling.

Connectors.

- The standard version features plug-in couplings to allow easy change of the travel direction of the frame.
- Pneumatic or hydraulic connectors with low-drip quick release couplings.
- Standard tiller, adaptable for every STILL tractor.
- Tiller compatible with Rockinger or pin coupling.

Optional articulated tiller:

- Rigid tiller to connect 2 E-type frames allowing only horizontal movements of the frames.
Benefit: Train of 2 E-type frames without pitch motions can pass over ramps.
- Minimises shaking of the transported goods when accelerating or braking.
- The articulated tillers can be retro-fitted.
- Use only with an even number of frames.

Independent E-type frame.

The independent E-type frame generates the energy needed for the lift movement when travelling autonomously.

To generate the necessary pressure, a toothed wheel pump generates pressure in an on-board vessel.

The frame is automatically lifted when a trolley is loaded. The frame is lowered when the foot pedal to release the trolley is depressed.

The independent system does not require any pipe connections between the frames.

Independent E-type frames are always fitted with an articulated tiller and can be operated with 2 or 4 E-type frames (max. load of the complete train 4 t).

The pressure needed to lift the trolley is generated over a travel distance of under 20 m, depending on the condition of the floor.

Options for all E-type frames.

- Galvanised version for outdoor operation.
- Closed version (canvas roof with roller door).
- Foot guard for additional safety for the operator.
- Position flags.
- Special option for customer-specific dimension, capacities and trolleys pockets.



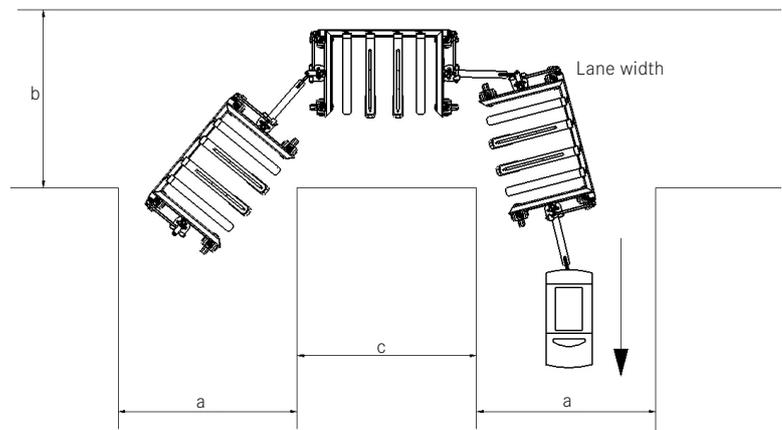
E frame with hydraulic system and articulated tiller.

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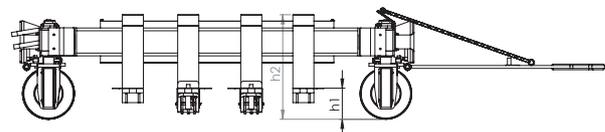
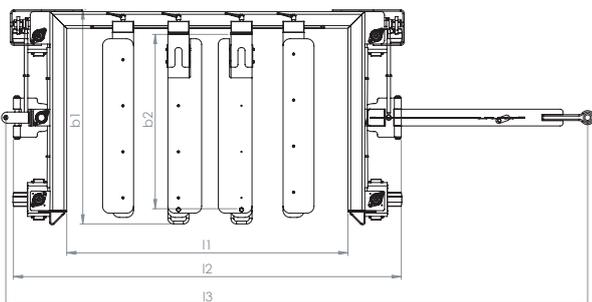
Specifications and equipment C-type frame				
Capacity		Q	kg	1600
Weight			kg	960
Dimensions	Length	l_1	mm	2000
	Length	l_2	mm	2760
	Length	l_3	mm	3840
	Width	b_1	mm	1540
	Width	b_2	mm	1250*
	Height	h_1	mm	228
	Height	h_2	mm	755
Max. speed (depending on towing truck)			km/h	15
Turning circle (towing truck CX-T/R 06)		$2 \times W_a$	mm	6200
Turning radius (towing truck CX-T/R 06)		W_a	mm	3100
Dimensions load carrier			mm	1900 x 1200
* For load carriers of max. 1210 mm width				

Minimum width of working aisle depending on the length of the train

C-type frame	No. of trailers	Length without towing truck (cm)	a (cm) (without two-way traffic) with CX-T or R 06	b (cm) (without two-way traffic) with CX-T or R 06	c (cm) with CX-T or R 06	In loading and unloading areas (cm) with CX-T or R 06
2000 x 1200	1	384	275	275	80	390
	2	768	300	300	80	390
	3	1152	325	325	80	390
	4	1536	350	350	80	390



C-type frame standard version



C-type frame.

The tigger trains can be operated with up to 4 C-type frames. The four-wheel concept with four steered wheels allows passing over ramps with high directional stability. Depending on the connected direction, the trailers can be loaded from the left or from the right side.

Wheels.

- 365 mm wheel diameter.
- Low-noise SE-tyres fitted as standard.
- Fitted with stainless steel axles.

Frame.

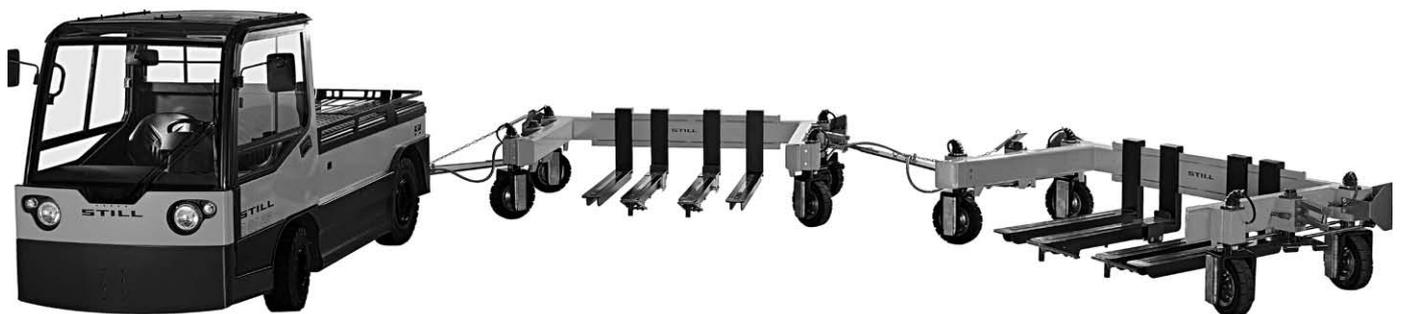
- High directional stability, also at high speeds and when braking.
- Pick-up of different trolley sizes and load carriers.
- Flexible positioning of the frame arms allows adaptation to different trolleys.
- User-friendly and ergonomic unloading with little force by depressing a foot lever operating an ejecting mechanism to compensate initial inertia.
- Automatic locking of the load with stainless steel locking bolts.
- For transport the C-type frame is hydraulically lifted by 80 mm.
- Angled frame ends on both sides for user-friendly insertion of trolleys.

Connectors.

- Hydraulic connector pipes with low-drip quick release couplings.
- Tiller adaptable to every STILL tractor.
- Tiller compatible with Rockinger or pin coupling.
- Tiller support holds the tiller up when detaching.
- Compartment to hold and protect hydraulic coupling when not in use.

Options.

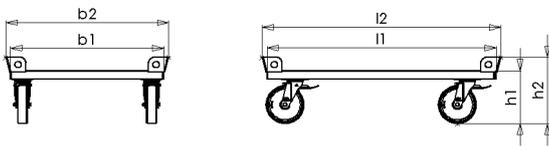
- Galvanised version for outdoor operation.
- Closed version (canvas roof with roller door).
- Various dimensions.
- Special frame arms for customer-specific requirements (e.g. rated capacity, dimensions or tyres).



R 07 with two standard C frames.

Specifications and equipment			Euro 1/1	Euro 1/1 h	Euro 1/2	Euro 1/2 h	Industrial	Industrial h
Capacity	Q	kg	1000	1000	1000	1000	1000	1000
Weight		kg	36	53	29	47	38	62
l_1/l_2		mm	1210/1260	1210/1260	820/870	820/870	1210/1260	1210/1260
b_1/b_2		mm	810/860	810/860	630/680	630/680	1010/1060	1010/1060
h_1/h_2		mm	280/360	450/530	280/360	450/530	280/360	450/530
Floor clearance		mm	235	235	235	235	235	235
Dimension load carrier		mm	1200 x 800	1200 x 800	800 x 600	800 x 600	1200 x 1000	1200 x 1000
E-type frame 1210 x 810			+(1)	+(1)	+(1)	+(1)	-	-
E-type frame 1210 x 1010			+(1)*	+(1)*	+(1)*	+(1)*	+(1)	+(1)
E-type frame 1610 x 1210			+(1)*	+(1)*	+(1)*	+(1)*	-	-
C-type frame 1800 x 1210			+(2)**	+(2)**	+(2)*	+(2)*	+(1)	+(1)
+ = possible			- = not possible			() = max. number of trolleys per frame		
* Position stopper available at extra costs. Stop by slip-guard or leashes.								
** Trolley equipped with 2 fixed or 2 swivel rollers with direction lock recommended.								
All dimensions with tyres (ball bearing standard).								

Euro trolley 1/1 standard version



Euro trolley 1/1 high



Trolleys.

Standard trolleys are compatible with E- and C-type frames, available in various dimensions according to the requirements of the transported material.

Rollers.

- 4 x swivel rollers, 2 of which with brakes, diagonally positioned.
- 3 Polyamide rollers for low rolling resistance.
- 1 ESD roller (anti-static).
- 200 mm diameter.
- Load capacity per roller: 350 kg.

Options.

- Higher load capacities.
- Plug-on push bars.
- 4 x 90 ° swivel wheel lock for easy positioning of the trolley with heavy loads.
- Ball bearings for permanently low friction.
- Foot brake with fixed brake pedal.
- Tires with polyurethane running surface.



STILL liftrunner® concept.

- Trolleys are pushed into the trailer on floor level (no lift device required).
- For travelling the trolleys are hydraulically or pneumatically lifted so that the trolley wheels are not in contact with the floor.
- The towing tractor (CX-T, R06 or R07) is fitted with an integrated hydraulic system or an air compressor to lift the E- or C-type frames (not for independent E-type frames).

Efficiency.

- Easy operation of the tugger train with only one person resulting in high specific transport capacity of the operator.
- Low tare weight of the E-type frames.
- Benefit by lifted trolley wheels when travelling:
- No damage or wear of the trolley wheels.
- Silent operation.
- Optimum directional stability due to high wheel pressure of the central axle of the E-type frame.
- Little space requirements due to narrow turning radius (less than 4 m with the standard E-type frame 1210 x 810 mm).

Safety.

- High directional safety also at high speeds and when braking.
- Automatic securing of the load by locking pin.
- Operation of different types of trolleys with different dimensions (e.g. cage trolleys, rack trolleys etc.).
- Optional position flags to mark the position of the train (E-type frame).
- Optional foot guard (E-type frame 1210 x 810 mm).

Lift system.

- Central control of the lift/lowering function of the whole train (not for independent E-type frame):
- CX-T: control of the lift/lowering function in the standard version by pressing a button in the Cockpit manually or automatic function via the foot switch.
- R06/R07: control of the lift/lowering function via the parking brake and switch:
- Lift of the frames via the seat contact switch and release of the parking brake.
- Lowering of the frames by setting the parking brake and pressing the lowering button.

User-friendliness.

- Easy, floor-level loading of the trolleys onto the trailers requiring minimum force.
- Easy removal of the trolleys by depressing the ejecting mechanism.
- Easy coupling and uncoupling with quick coupling system.
- Loading from left and right (depending on the direction of the trailer in the train).



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