Linde Material Handling

Logistic Train Solutions

LT06 – LT10 M | LT10 W

Capacity 0.6 t – 1.0 t | Series 8971

Flexible Indoor Train

→ Compact logistic train for transporting goods indoors
→ Available as W-frames with sloped platform for two-sided loading and unloading or M-frames for ground-level loading and unloading
→ The narrow design and manoeuvrable single-axle construction allow for versatile use, even in confined spaces
→ The tow tractor can reach high speeds thanks to the low service weight of the attachments
→ Frames available with Linde trolleys or adaptable to customer-supplied load carriers

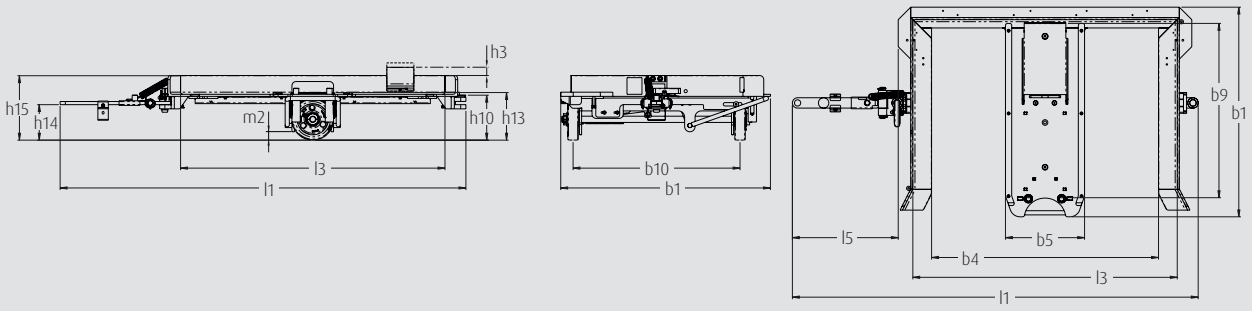
TECHNICAL DATA (according to VDI 2198)

For simplicity, representative models shown. Ask your local contact person for the final data, which may vary depending on the customer-specific scope and configuration.

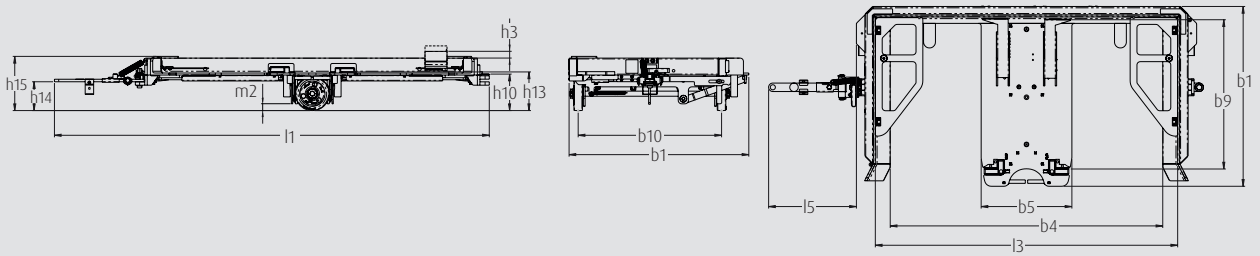
Characteristics	1.1	Manufacturer		Linde MH	Linde MH	Linde MH	Linde MH	Linde MH	Linde MH	Linde MH
	1.2	**Manufacturer's type designation**		**LT06 M 1x TR1200 × 800**	**LT10 M 1x TR1200 × 800**	**LT10 M 1x TR1200 × 1000**	**LT10 M 2x TR800 × 600**	**LT10 W 1x TR1200 × 800**	**LT10 W 1x TR1200 × 1000**	**LT10 W 3x TR800 × 600**
	1.2a	Series		8971[1)]	8971[1)]	8971[10)]	8971[12)]	8971[1)]	8971[10)]	8971[14)]
	1.5	Rated capacity/rated load	Q (t)	0.6	1.0	1.0	1.0[13)]	1.0	1.0	1.0[15)]
Weight	2.1	Service weight	kg	158	170	200	254	204	237	408
Tyres/chassis	3.1	Tyres: solid rubber, superelastic, pneumatic, polyurethane		Polyurethane	Polyurethane	Polyurethane	Polyurethane	Polyurethane	Polyurethane	Polyurethane
	3.2	Tyre size, front		Ø 200 × 50	Ø 200 × 50	Ø 200 × 50	Ø 200 × 50	Ø 200 × 50	Ø 200 × 50	Ø 200 × 50
	3.3	Tyre size, rear		Ø 200 × 50	Ø 200 × 50	Ø 200 × 50	Ø 200 × 50	Ø 200 × 50	Ø 200 × 50	Ø 200 × 50
	3.5	Wheels, number front/rear (x = driven wheels)		2	2	2	2	2	2	2
	3.6	Tread, front	b10 (mm)	800	800	1000	845	810	1010	810
	3.7	Tread, rear	b11 (mm)	-	-	-	-	-	-	-
Dimensions	4.2.1	Overall height	h15 (mm)	310/350[2)]	310/350[2)]	310/350[2)]	310/350[2)]	313/353[2)]	313/353[2)]	313/353[2)]
	4.4	Lift	h3 (mm)	40[3)]	40[3)]	40[3)]	40[3)]	40[3)]	40[3)]	40[3)]
	4.4a	Lift function		Hydraulic/electric[3)]	Hydraulic/electric[3)]	Hydraulic/electric[3)]	Hydraulic/electric[3)]	Hydraulic/electric[3)]	Hydraulic/electric[3)]	Hydraulic/electric[3)]
	4.9	Height drawbar in driving position min./max.	h14 (mm)	170/210[2)]	170/210[2)]	170/210[2)]	170/210[2)]	170/210[2)]	170/210[2)]	170/210[2)]
	4.12	Coupling height	h10 (mm)	185/225[2)]	185/225[2)]	185/225[2)]	185/225[2)]	185/225[2)]	185/225[2)]	185/225[2)]
	4.13	Loading height, unladen	h11 (mm)	-	-	-	-	-	-	-
	4.15	Height, lowered	h13 (mm)	228	228	228	228	228	228	228
	4.16	Length of loading surface	l3 (mm)	1270	1270	1270	1786	1240	1240	2030
	4.17	Overhang	l5 (mm)	533	533	683	683	533	683	533
	4.18	Width of loading surface	b9 (mm)	837	837	1037	834	834	1034	834
	4.19	Overall length	l1 (mm)	1953	1953	2095	2568	2069	2219	2859
	4.21	Overall width	b1/b2 (mm)	1007	1007	1207	1062	1070	1270	1070
	4.25	Fork spread	b5 (mm)	380[4)]	380[4)]	380[4)]	536[4)]	350[4)]	350[4)]	350[4)]
	4.26	Distance between wheel arms/ loading surfaces	b4 (mm)	1090	1090	1090	1610	1204	1204	1994
	4.32	Ground clearance, centre of wheelbase	m2 (mm)	25/65[2)]	25/65[2)]	25/65[2)]	25/65[2)]	0/40[2)]	0/40[2)]	0/40[2)]
	4.33	Load dimension b12 × l6	b12 × l6 (mm)	1x 810 × 1210/ 1x 630 × 820[5)]	1x 810 × 1210/ 1x 630 × 820[5)]	1x 1010 × 1210/ 1x 630 × 1020[11)]	2x 630 × 820/ 1x 810 × 1210[5)]	1x 810 × 1210/ 1x 630 × 820[5)]	1x 1010 × 1210/ 1x 630 × 1020[11)]	3x 630 × 820/ 1x 810 × 1210[5)]
	4.34	Aisle width predetermined load dimensions	Ast (mm)	4900[6)]	4900[6)]	5200[6)]	7200[6)]	4900[6)]	5200[6)]	7700[6)]
	4.34b	Aisle width, 90° curve	Ast1 (mm)	3260[6)]	3260[6)]	3460[6)]	3820[6)]	3320[6)]	3520[6)]	4070[6)]
	4.35	Turning radius	Wa (mm)	1950[6)]	1950[6)]	2100[6)]	3100[6)]	1950[6)]	2100[6)]	3350[6)]
Performance data	5.1	Travel speed, laden/unladen	km/h	15[7)]	15[7)]	15[7)]	15[7)]	15[7)]	15[7)]	15[7)]
	5.2	Lifting speed, laden/unladen	m/s	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	5.7	Gradeability, laden/unladen	%	7.0[8)]	7.0[8)]	7.0[8)]	7.0[8)]	7.0[8)]	7.0[8)]	7.0[8)]
	5.10	Service brake		without	without	without	without	without	without	without
Electric-engine	6.2	Lift motor rating at S3 15%	kW	0.4[3)]	0.4[3)]	0.4[3)]	0.4[3)]	0.4[3)]	0.4[3)]	0.4[3)]
Additional data	10.8	Towing coupling, design/ type, DIN		Ø 25/Ø 30[9)]	Ø 25/Ø 30[9)]	Ø 25/Ø 30[9)]	Ø 25/Ø 30[9)]	Ø 25/Ø 30[9)]	Ø 25/Ø 30[9)]	Ø 25/Ø 30[9)]

1) Frame design for transport of either one Linde trolley TR1200 × 800 or one Linde trolley TR800 × 600 with one frame
2) In lowered/raised position
3) After lift initiation, the complete frame including load pick-up device is lifted hydraulically by 40 mm. An electric lifting function is available as an option (1x lifting motor). Free stroke for LT M = 7 mm, for LT W = 0 mm
4) LT M: Centered load handling device; LT W: Middle block
5) Loading surface dimensions b9 × l3 of Linde trolley TR1200 × 800 = 810 × 1210 mm (outer dimensions b1 × l1 incl. fang corners = 860 × 1260 mm). /Loading surface dimensions b9 × l3 of Linde trolley TR800 × 600 = 630 × 820 mm (outer dimensions b1 × l1 incl. fang corners = 680 × 870 mm)
6) For 4 frames in combination with tow tractor P60 C of series 4595. AST values = incl. safety space of 1000 mm (a/2 = 500 mm on each side)
7) Depending on the used tow tractor
8) In case of gradients the max. allowed speed is 6 km/h. Up to 7% ramp possibility to operate the frames without driving a radius. Ramps beyond this value needs to be reviewed in detail
9) Logistic train drawbar system for LT M and LT W. Frames are connected to the tow tractor (2-level-coupling) with a Ø 25 mm bolt and to each other with a Ø 30 mm bolt
10) Frame design for transport of either one Linde trolley TR1200 × 1000 or one Linde trolley TR1000 × 600 with one frame
11) Loading surface dimensions b9 × l3 of Linde trolley TR1200 × 1000 = 1010 × 1210 mm (outer dimensions b1 × l1 incl. fang corners = 1060 × 1260 mm)./Loading surface dimensions b9 × l3 of Linde trolley TR1000 × 600 = 630 × 1020 mm (outer dimensions b1 × l1 incl. fang corners = 680 × 1070 mm)
12) Frame design for transport of either two Linde trolleys TR800 × 600 or one Linde trolley TR1200 × 800 with one frame
13) 2 slots. Max. load capacity of the left/ right slot = 300 kg each. Max. load capacity of the combined slot = 1000 kg. In case of double loading, max. weight per trolley = 300 kg
14) Frame design for transport of either three Linde trolleys TR800 × 600 or one Linde trolley TR1200 × 800 with one frame
15) 3 slots. Max. load capacity of the left or right slot = 300 kg each. Max. load capacity of the middle slot = 1000 kg. In case of triple loading, max. weight per trolley = 300 kg

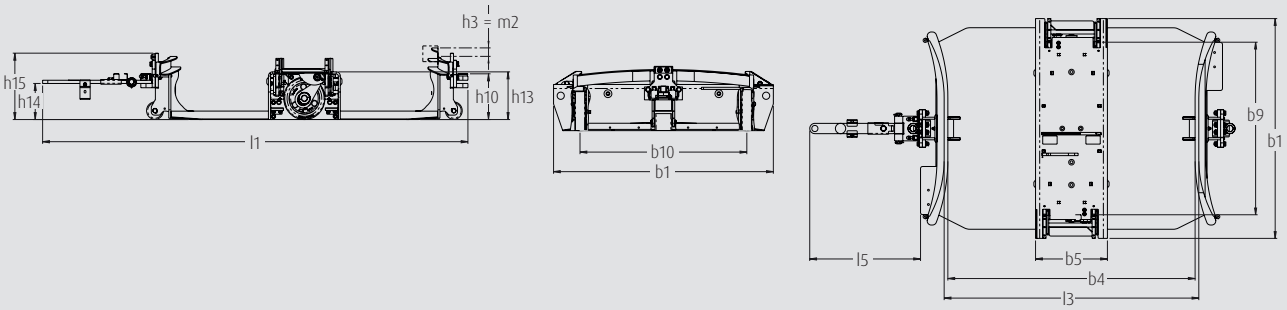
LT06 M/LT10 M (1x TR1200 × 800/1x TR1200 × 1000)



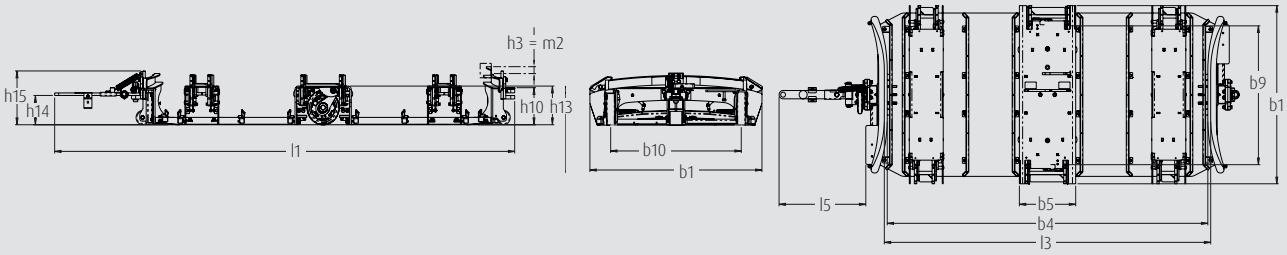
LT10 M (2x TR800 × 600)



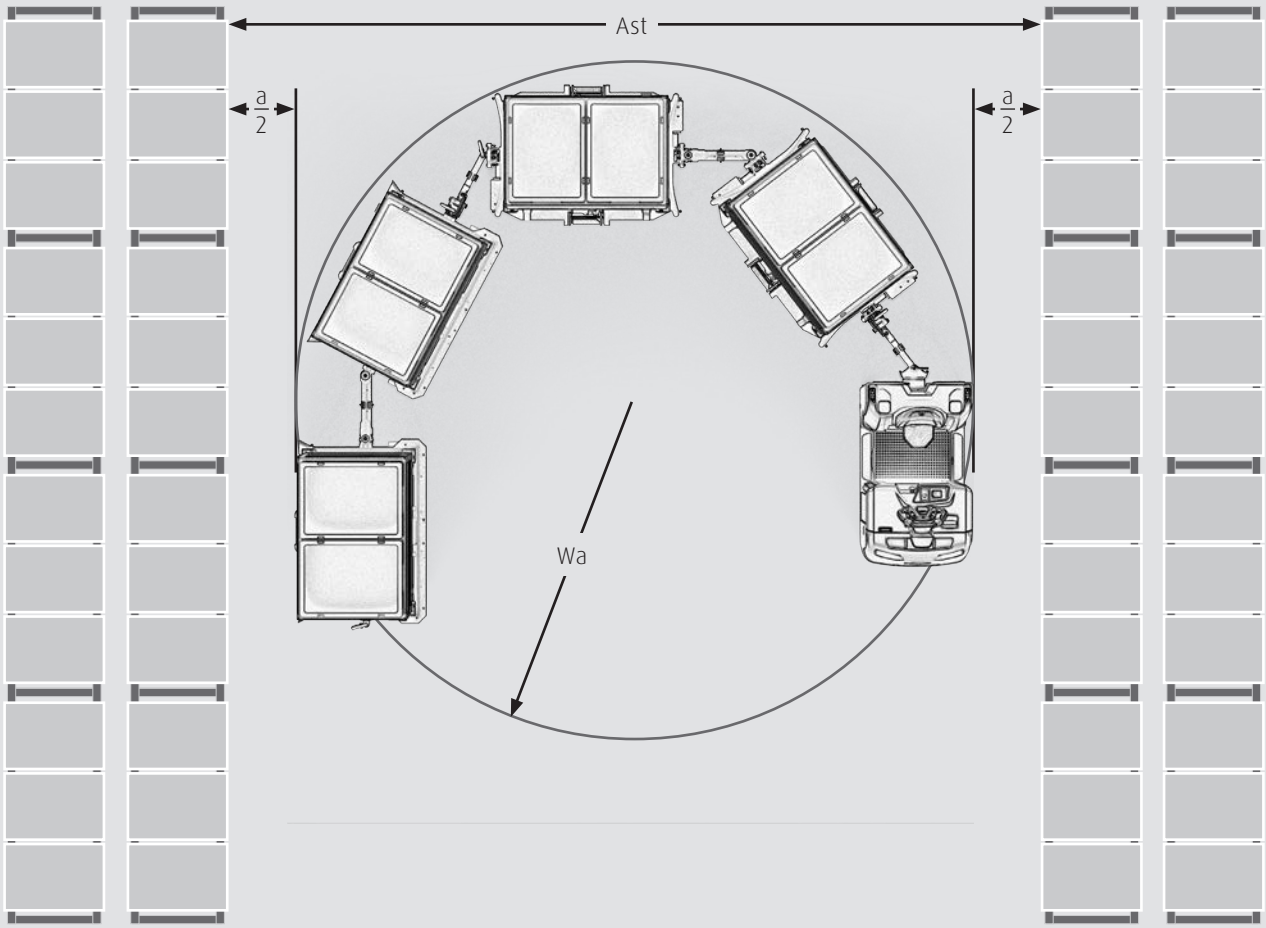
LT10 W (1x TR1200 × 800/1x TR1200 × 1000)



LT10 W (3x TR800 × 600)



AST

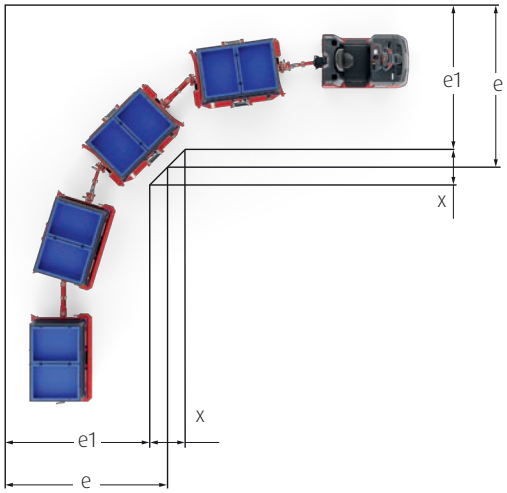


EXAMPLES OF AISLE WIDTHS

Frame type	Frame size	Frames per train	Loads per train	Train length (mm)	e (mm)[1]	e1 (mm)[1]	x (mm)	e2 (mm)[1]	e3 (mm)[1]	d (mm)	e4 (mm)[2][3][4]
LT06 M	1x TR1200×800	2	2	5322[2]/5676[3]	2010	2010	0	2200[2]/2400[3]	2000	2000	2900
		4	4	9118[2]/9472[3]	2260	2010	500	3000[2]/3200[3]	2000	2000	2900
LT10 M	1x TR1200×800	2	2	5322[2]/5676[3]	2010	2010	0	2200[2]/2400[3]	2000	2000	2900
		4	4	9118[2]/9472[3]	2260	2010	500	3000[2]/3200[3]	2000	2000	2900
	1x TR1200×1000	2	2	5622[2]/5976[3]	2210	2210	0	2500[2]/2700[3]	2300	2000	3300
		4	4	9718[2]/10072[3]	2460[2]/2710[3]	2210	500[2]/1000[3]	3300[2]/3500[3]	2300	2000	3300
	2x TR800×600	2	4/2[5]	6864[2]/7218[3]	2320	2070	500	2500[2]/2600[3]	2500	2000	2950
		4	8/4[5]	12202[2]/12556[3]	2820	2070	1500	3500[2]/3600[3]	2500	2000	2950
LT10 W	1x TR1200×800	2	2	5565[2]/5919[3]	2070	2070	0	2200[2]/2400[3]	2000	2000	2950
		4	4	9604[2]/9958[3]	2320	2070	500	3000[2]/3200[3]	2000	2000	2950
	1x TR1200×1000	2	2	5865[2]/6219[3]	2270	2270	0	2500[2]/2700[3]	2000	2000	3350
		4	4	10204[2]/10558[3]	2520[2]/2770[3]	2270	500	3300[2]/3500[3]	2000	2000	3350
	3x TR800×600	2	6/2[6]	7145[2]/7499[3]	2570	2070	1000	2700[2]/2800[3]	2700	2000	2950
		4	12/4[6]	12764[2]/13118[3]	3070	2070	2000	3700[2]/3800[3]	2700	2000	2950

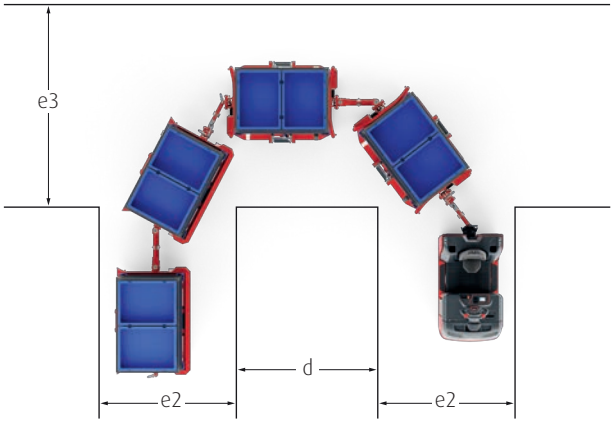
1) Without oncoming traffic and without safety distance. We suggest maintaining a safety distance of 1000 mm (a/2 = 500 mm on each side). Recommendation: The longer the train, the larger the safety distance required to mitigate any potential uncertainty resulting from driver operation
2) In combination with P40–P60 C and P40 C B of series 4595. Note: Values are calculated; final values may vary slightly
3) In combination with P60–P80 of series 1191. Note: Values are calculated; final values may vary slightly
4) Recommendation: e4 = a + b + c. With no oncoming traffic and no overtaking
5) Frame design for transport of either two Linde trolleys TR800 × 600 or one Linde trolley TR1200 × 800 with one frame
6) Frame design for transport of either three Linde trolleys TR800 × 600 or one Linde trolley TR1200 × 800 with one frame

90° CURVES



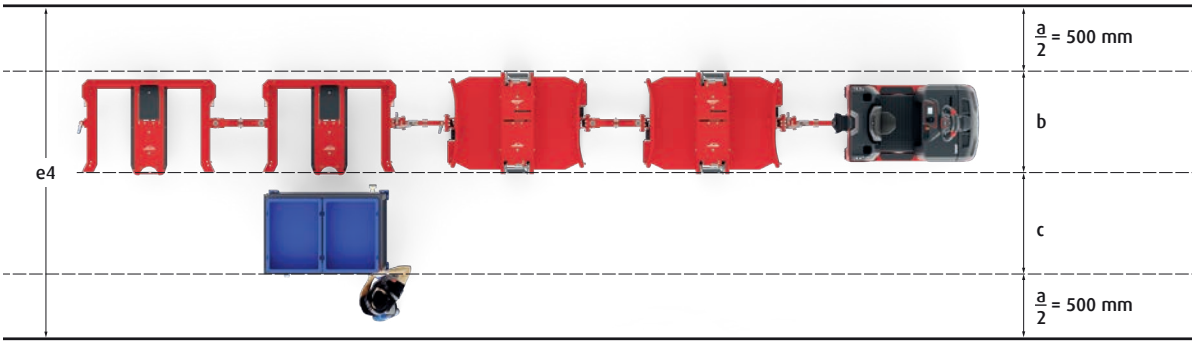
e = Aisle width without corner modification
e1 = Aisle width with corner modification
x = Inward modification of corners

180° CURVES
(SAMPLE AISLE CHANGE)



e2 = Aisle width before/after a 180° curve
e3 = Aisle width when negotiating a 180° curve
d = Distance between aisles

LOADING & UNLOADING ZONES



e4 = Required aisle width for loading and unloading process
a = Added margin + added for handling
b = Width of logistic train incl. play
c = Trolley dimensions incl. play

LOGISTIC TRAIN SYSTEM OVERVIEW

TOW TRACTORS

P20

P40 – P60 C | P40 C B

P60 – P80

P120 – P350

FRAMES

M-Frames

LT06 M LT10 M

LT10 M for 2xTR

W-Frames

LT10 W

LT10 W for 3xTR

WX-Frames

LT10 WX

Ch-Frames

LT16 Ch

BMh-Frames

LT16 BMh

C-Frames

LT10 C LT20 C

B-Frames

LT10 B

BM-Frames

LT10 BM LT16 BM

TROLLEYS

TR-Trolleys
with modular racking structures

BR-Trolleys
with modular racking structures

TR800 × 600 TR1200 × 800 TR1200 × 1000 TR1600 × 1200 BR1200 × 800 BR1200 × 1000

LT = Logistic Train **M** = M-type frame **W** = W-type frame **WX** = W-type frame with scissor tow bar system
Ch = C-type frame, hydraulic version **BMh** = Bridge-type frame with middle support, hydraulic version **C** = C-type frame
B = Bridge-type frame **BM** = Bridge-type frame with middle support **TR** = Trolley **BR** = BaseRunner Trolley

STANDARD AND OPTIONAL EQUIPMENT

	Manufacturer's type designation/equipment	LT06 M	LT10 M	LT10 W
Safety	Mechanical load securing with automatic interlock after insertion	●	●	●
	Redundant load securing: An additional lock is activated during lift	–	–	●
	Traction interlocked when trolley lift in lowered position. Lifting and lowering function deactivated when train is in motion	●	●	●
	Single-axle system with two wheels for compact design and improved trailing action	●	●	●
	Weather protection with one or two opening(s) to secure the load during outdoor use (RAL 7021)	○	○	○
	Weather protection labelling (safety features or customer logo)	○	○	○
	Anti-slip mats on load-bearing surfaces	○	○	○
	Foot guards on right and left	○	○	●
	Safety flags (2x) for visibility and to help with orientation during the loading process	○	○	○
	Fall protection (2x) between the frames	○	○	○
Service	Low-maintenance tiller and coupling system	●	●	●
	Maintenance-free hydraulic lifting system with synchronised lifting via both wheels[1]	●	●	●
	Maintenance-free electric lifting system (patented) with synchronised lifting via both wheels[1]	–	○	○
	Frame-specific spare parts list accessible by scanning the QR code on the identification plate	●	●	●
Operation/load handling	Tiller system for even number of frames in one train (2/4 frames)[2]	●	●	●
	Tiller system for odd number of frames in one train (e.g. 3 frames)[3]	○	○	○
	Ground-level loading and unloading	●	●	–
	Trolleys loaded from one side	●	●	●
	Trolleys can be loaded from either side	–	–	●
	Unloading of trolleys in the direction of the operator	●	●	●
	Integrated ejection mechanism to provide ergonomic support during the unloading process	●	●	–
	Ergonomic support during the loading and unloading process thanks to sloped platform	–	–	●
	Opening side on the left in the drive direction[4]	●	●	●
	Opening side on the right in the drive direction[4]	○	○	●
	Linde trolleys in various designs for use with logistic train frames	○	○	○
	Frame size for 1x Linde trolley TR1200 × 800/1x Linde trolley TR800×600[5]	●	●	●
	Frame size for 1x Linde trolley TR1200×1000/1x Linde trolley TR1000×600[5]	○	○	○
	Frame size for 2x Linde trolleys TR800×600/1x Linde trolley TR1200×800[6]	○	○	–
	Frame size for 2x Linde trolleys TR1000×600/1x Linde trolley TR1200×1000[6]	○	○	–
	Frame size for 3x Linde trolleys TR800×600/1x Linde trolley TR1200×800[7]	–	–	○
	Frame size for 3x Linde trolleys TR1000×600/1x Linde trolley TR1200×1000[7]	–	–	○
	Non-standard frame sizes for customer-specific trolleys upon request	○	○	○
	Lift height of 40 mm: Lifting of load by 33 mm in addition to free lift	●	●	–
	Lift height of 40 mm: Lifting of platform, including load by 40 mm	–	–	●
	Lift height of 60 mm: Lifting of load by 53 mm in addition to free lift	○	○	–
	Lift height of 60 mm: Lifting of platform, including load by 60 mm	–	–	○
	Automatic mode: Lifting/lowering of all frames as soon as operator enters/exits the tow tractor	●	●	●
	Connection hose with shut-off cock for decoupling and coupling of frames when lifted	○	○	○
	Logistic Train Controller (Software) with step-by-step support for dynamic routing processes[8]	○	○	○
Electronics	Low-noise and low-maintenance lift motor (1x) for electric lifting function	○	○	○
	Modular plug-and-play connection for electric lift (protection type IP54)	○	○	○
Attach-ments	Central load handling equipment with side insertion profiles: Locking and lifting the trolley	●	●	–
	Sloped platform with side insertion profiles: Lifting the platform, including the trolley	–	–	●
Tyres	Polyurethane tyres (PU; Shore hardness of 75) Ø 200×50, non-marking (colour: red)	●	●	●
	Polyurethane tyres (PU; Shore hardness of 92) Ø 200 × 60, for increased load capacity	○	○	○
	Optional electrostatic discharge tyres (ESD)	○	○	–
Drive System	Frame compatibility: Use of LT M and LT W in one train	●	●	●
	Compatibility with Linde tow tractors P40–P60 C, P40 C B and P60–P80 with appropriate preparation	○	○	○
Lighting	Tail lights (2x) – turn indicator, reverse, brake and number plate light (ISO 1724)	○	○	○

● Standard equipment ○ Optional equipment – Not available

1) After lifting has been initiated, the complete frame together with load handling equipment is raised
2) The standard tiller system is comprised of one articulated tiller and one fixed tiller per pair and requires an even number of frames (two or four frames). Driving on ramps is possible with this combination
3) For an odd number of frames, there is an optional tiller system comprising an initial articulated tiller and fixed tillers between the frames. Important: Driving on ramps is not possible with this combination
4) For LT M: Retrospective modification by service technicians is possible
5) Flexibility: Handling of either one large trolley or one small trolley with one frame
6) Flexibility: Handling of either one large or two small trolleys (two storage locations) with one frame. Max. load capacity of the left/right storage location is 300 kg each. Max. load capacity of the central storage location is 1000 kg. With double loading, trolleys must not weigh more than 300 kg
7) Flexibility: Handling of either one large or three small trolleys (three storage locations) with one frame. Max. load capacity of the left/right storage location is 300 kg each. Max. load capacity of the central storage location is 1000 kg. In the case of triple loading, trolleys must not weigh more than 300 kg
8) Consulting, designing solutions and implementation as part of a separate project

CHARACTERISTICS

Optional safety flags and fall protection for increased safety

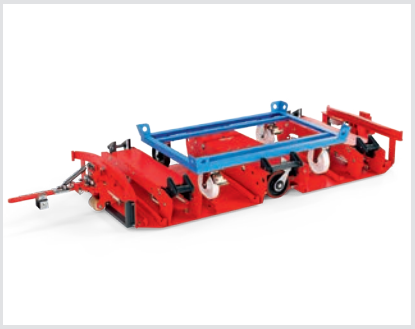
Safety

→ Lowering interlocked during travel and traction interlocked when frames are lowered for safe handling
→ Loading frame with patented fastener for reliable securing of the load
→ Redundant load securing of the W-frame for double the safety while transporting goods
→ Optional electric lift for increased safety and quieter operation
→ Accessories such as safety flags and weather protection for optimum protection of the load

Unlocking with ergonomic ejection mechanism for LT M

Ergonomics

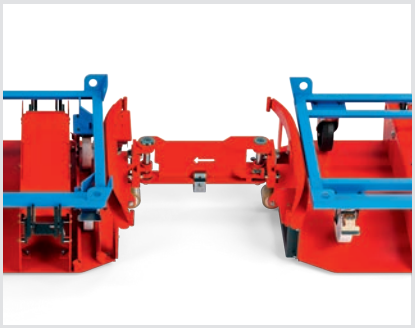
→ Ground-level loading and unloading with the M-frame and sloped platform of the W-frame takes pressure off the operator
→ Automatic interlock of the loading frame reduces time and effort
→ Unlocking device at an ergonomic height for convenient foot operation
→ Ergonomic ejection mechanism on the M-frame for fast and effortless handling



Loading and unloading on both sides with LT W

Handling

→ M-frame for lighter loads and W-frame with loading and unloading on both sides for versatility
→ Compact single-axle design for high flexibility and dynamic driving performance in tight indoor spaces
→ Low-weight load frame allows the tow tractor to reach higher speeds
→ Automatic lifting and lowering of the load frame ensures fast load handling
→ Responsive positioning guides for fast and easy handling of trolleys



Low-maintenance tiller system

Service

→ Simple frame design with few components minimises servicing time and effort, reducing maintenance costs
→ Maintenance-free tiller system for minimal service requirement and seamless functioning
→ Service-friendly locking device for quick maintenance
→ Optional electric lift with just one lift motor per frame for low maintenance costs

Presented by:

Subject to modification in the interest of progress. Illustrations and technical specifications could include options and are not binding for actual constructions. All dimensions subject to usual tolerances.

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