



OPTION AND SPECIFICATION MANUAL

SBS16N2(I), SBS20N2(I)
SBS16N2S, SBS20N2S
SBS12N2TF



The order portal is leading and decides whether options can be added to trucks and if combinations of options are possible. This manual is a quick reference and for information purposes only.
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1 Introduction

This Option and Specification Manual is a sales tool, which is primarily intended to help, and partly also inspire, in creating application solution proposals, as well as to offer valid configurations and specifications.

For full details on the usage of individual features and functions, always refer to the corresponding Operation and Maintenance Manual (also known as 'Instruction Handbook'). This handbook is also always available in an English language version under the same heading/folder where this manual is located on your Dealer Support Site (DSS).

NOTE: Considering the extensive scope of information, it is advisable to view this manual in electronic format and use the free text search (CTRL + F) to be able to find all the dependencies (footnotes).

For example, with the keyword 'speed', you can find information in, for example, Technical specifications, Standard configuration, and several of the option chapters.

2 Technical specifications

2.1 SBS16N2(I), SBS20N2(I)

				SBS16N2	SBS20N2	SBS16N2I	SBS20N2I
1	CHARACTERISTICS						
1.1	Manufacturer			Mitsubishi	Mitsubishi	Mitsubishi	Mitsubishi
1.2	Manufacturer's model designation			SBS16N2	SBS20N2	SBS16N2I	SBS20N2I
1.3	Power source (battery, diesel, LP gas, petrol)			Battery	Battery	Battery	Battery
1.4	Operator type			Sit-on	Sit-on	Sit-on	Sit-on
1.5	Load capacity	[kg]	Q	1,600	2,000	1,600	2,000
1.6	Load center distance	[mm]	c	400-600	400-600	600	600
1.8	Load wheel axle to fork face (forks lowered)	[mm]	x	800	800	800	800
1.9	Wheelbase	[mm]	y ¹	1,616 ²	1,665 ²	1,661 ²	1,720 ²
2	WEIGHT						
2.1a	Truck weight with load, with maximum battery weight	[kg]	¹ 3	3,262	4,128	3,422	4,294
2.1b	Truck weight without load, with maximum battery weight	[kg]	¹ 3	1,662	2,128	1,822	2,294
2.2a	Axle loadings with nominal load and max. battery weight, drive/load side, max.	[kg]	¹ 3	1,323 / 1,939	1,690 / 2,438	1,435 / 1,987	1,806 / 2,488
2.2b	Axle load, with max load on initial lift, front / rear, max.	[kg]	¹ 3	-	-	1,475 / 2,347	1,806 / 2,488
2.3	Axle loadings without load, with max. battery weight, drive/load side	[kg]	¹ 3	1,163 / 499	1,490 / 638	1,275 / 547	1,606 / 688
3	WHEELS AND TYRES						
3.1	Tyres: Vul = Vulkollan, Trac = Tractothan, SG = Super Grip			Vul/Vul	Vul/Vul	Vul/Vul	Vul/Vul
3.2	Tyre dimensions, drive side	[mm]		250 x 105	250 x 105	250 x 105	250 x 105
3.3	Tyre dimensions, load side	[mm]		Ø 85 x 70 (Tandem)	Ø 85 x 70 (Tandem)	Ø 85 x 70 (Tandem)	Ø 85 x 70 (Tandem)

¹ Dimensions vary depending on the battery carriage and mast type.

² With Senior chassis (BC775) add 104 mm.

³ Reference value using the standard alternative mast and chassis, highest lift height, and maximum battery weight (465 Ah battery (400 kg) for JN chassis).

				SBS16N2	SBS20N2	SBS16N2I	SBS20N2I
3.4	Castor wheel dimensions (diameter x width)	[mm]		Ø 150 x 55	Ø 150 x 55	Ø150 x 55	Ø 150 x 55
3.5	Number of wheels, load / drive side (x = driven)			4 / 1x + 2 ⁴	4 / 1x + 2 ⁴	4 / 1x + 2 ⁴	4 / 1x + 2 ⁴
3.6	Track width (center of tyres), drive side	[mm]	b10	706 ± 11 ⁵	706 ± 11 ⁵	706 ± 11 ⁵	706 ± 11 ⁵
3.7	Track width (center of tyres), load side	[mm]	b11	402	392	390	375
4 DIMENSIONS							
4.2	Height with mast lowered	[mm]	h1	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5
4.3	Free lift	[mm]	h2	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5
4.4	Lift	[mm]	h3	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5
4.5	Height of mast extended	[mm]	h4	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5
4.6	Initial lift	[mm]	h5	-	-	110	110
4.7	Height to top of overhead guard	[mm]	h6	2,110	2,110	2,110	2,110
4.8	Seat or stand height	[mm]	h7	966	966	966	966
4.10	Height of support legs	[mm]	h8	80	83	87	87
4.15	Fork height, fully lowered	[mm]	h13	89	90	93	93
4.19	Overall length with forks	[mm]	l1	2,189 ⁶	2,238 ⁶	2,233 ⁶	2,293 ⁶
4.20	Length to fork face	[mm]	l2	1,019 ⁶	1,068 ⁶	1,063 ⁶	1,123 ⁶
4.21	Overall width	[mm]	b1	1,010	1,010	1,010	1,010
4.22	Fork dimensions (thickness, width, length)	[mm]	s/e/l	70 / 180 / 1,170	70 / 195 / 1,170	70 / 180 / 1,170	70 / 195 / 1,170
4.25	Outside width over forks (minimum / maximum)	[mm]	b5	570 (550 - 660)	570 (570 - 660)	570	570
4.32	Ground clearance at center of wheelbase (forks lowered)	[mm]	m2	25	23	20	20

⁴ Tandem load wheels and twin assembly castor wheels.

⁵ Drive wheel assembly offset is 11 mm.

⁶ With Senior chassis (BC775) add 104 mm.

				SBS16N2	SBS20N2	SBS16N2I	SBS20N2I
4.34	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise	[mm]	Ast ^{7 8}	2,584	2,632	2,627	2,685
4.35	Turning radius	[mm]	Wa ⁷	1,819	1,866	1,861	1,920
5 PERFORMANCE							
5.1	Travel speed, with / without load	[km/h]		10 / 10	9 / 9	9 / 9	9 / 9
5.1.1	Travel speed, with / without load, forks leading	[km/h]		8 / 8	8 / 8	8 / 8	8 / 8
5.2	Lifting speed, with/without load [Heavy duty option ⁹]	[m/s]	⁷	0.16 / 0.32 [0.23 / 0.53]	0.12 / 0.22 [0.19 / 0.37]	0.16 / 0.32 [0.23 / 0.53]	0.12 / 0.22 [0.19 / 0.37]
5.3	Lowering speed, with/without load [Heavy duty option ⁹]	[m/s]	⁷	0.43 / 0.41 [0.55 / 0.50]	0.33 / 0.31 [0.50 / 0.42]	0.43 / 0.41 [0.55 / 0.50]	0.33 / 0.31 [0.50 / 0.42]
5.8	Maximum gradeability, with/without load	[%]		6.2 / 6.2	5.5 / 5.5	9.2 / 14.6	9.4 / 11.4
5.9	Acceleration time (over 10 m), with/without load	[s]		6.5 / 5.5	6.5 / 5.5	6.5 / 5.5	6.5 / 5.5
5.10	Service brake type (mechanical / hydraulic / electric / pneumatic)			Electric	Electric	Electric	Electric
6 ELECTRIC MOTORS							
6.1	Drive motor, rating S2 = 60 min	[kW]		2.7	2.7	2.7	2.7
6.2	Lift motor rating at S3 15% [Heavy duty option ⁹]	[kW]		4.0 [8.0]	4.0 [8.0]	4.0 [8.0]	4.0 [8.0]
6.3	Battery according to DIN 43531/35/36, A, B, C, no			DIN-cells	DIN-cells	DIN-cells	DIN-cells
6.4	Battery voltage / rated capacity (5h)	[V/Ah]		24 / 375 - 775	24 / 375 - 775	24 / 375 - 775	24 / 375 - 775
6.5	Battery weight (+/-5%)	[kg]		330 - 620	330 - 620	330 - 620	330 - 620
6.6	Energy consumption according to EN 16796-2:2016 ¹⁰ [Heavy duty option ⁹]	[kWh/h]	¹¹	0.85 [0.87]	0.85 [0.87]	0.85 [0.87]	0.85 [0.87]

⁷ Varies depending on battery carriage and mast type.

⁸ Ast dimensions available in Sections O and O.

Ast formulas:

$$Ast = Wa + R + a$$

Ast = full case/definition of min. stacking/working aisle width requirement

Wa = Turning radius

a = Safety clearance = 2 x 100 mm

$$R = \sqrt{((l6-x)^2 + (b12/2)^2)}$$

l6 = load length

b12 = load width

⁹ With the Lift motor 8.0 kW option (LFT/MTR80). The improvement with the Heavy duty option is approx. 30-60 %.

¹⁰ The standard EN 16796 energy consumption test cycle is used to produce a reference value which does typically not reflect any normal operation/application, why a real use case typically gives a lower value, more rarely, but sometimes even a higher value.

¹¹ This is the reference value for SBS16N2I, the actual value varies according to model, configuration and actual usage pattern.

				SBS16N2	SBS20N2	SBS16N2I	SBS20N2I
MISCELLANEOUS							
8.1	Type of drive control			AC	AC	AC	AC
10.7	Noise level at operator's ear	[dB (A)]		< 70	< 70	< 70	< 70

2.1.1 Extra Ast dimensions, VDI2198 ¹² (4.34a) for SBS16N2(I) and SBS20N2(I)

4.34a) Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise

Basic capacity, kg		1600		2000	
Chassis / Battery carriage		Junior / BC 465	Senior / BC 775	Junior / BC 465	Senior / BC 775
Mast type	Initial lift				
Duplex with free lift	No	2,584	2,686	2,632	2,733
Triplex with free lift	No	2,584	2,686	2,632	2,733
Duplex with free lift	Yes	2,627	2,728	2,685	2,787
Triplex with free lift	Yes	2,627	2,728	2,685	2,787

2.1.2 Extra Ast dimensions, Ast3 ¹³ (4.34b) for SBS16N2(I) and SBS20N2(I)

4.34b) Working aisle width (Ast3) with 800 x 1200 mm pallets, load lengthwise

Basic capacity, kg		1600		2000	
Chassis / Battery carriage		Junior / BC 465	Senior / BC 775	Junior / BC 465	Senior / BC 775
Mast type	Initial lift				
Duplex with free lift	No	2,419	2,520	2,466	2,567
Triplex with free lift	No	2,419	2,520	2,466	2,567
Duplex with free lift	Yes	2,461	2,562	2,520	2,621
Triplex with free lift	Yes	2,461	2,562	2,520	2,621

¹² Ast = Wa + R + a. The Ast VDI 2198 standard definition stipulates a full and sharp 90 degree turn/rotation inside the aisle before moving in to the racking/pallet, and with a total play of 200 mm.

¹³ Ast3= Wa+l6-x+a. The Ast3 is a legacy Ast measure based on practical experience, with a simultaneous turn and drive/move during the stacking cycle, and that works well with e.g. Euro pallets.

2.2 SBS16N2S, SBS20N2S, SBS12N2TF

				SBS16N2S	SBS20N2S	SBS12N2TF
1	CHARACTERISTICS					
1.1	Manufacturer			Mitsubishi	Mitsubishi	Mitsubishi
1.2	Manufacturer's model designation			SBS16N2S, wide straddle	SBS20N2S, wide straddle	SBS12N2TF, telescopic forks
1.3	Power source (battery, diesel, LP gas, petrol)			Battery	Battery	Battery
1.4	Operator type			Sit-on	Sit-on	Sit-on
1.5	Load capacity	[kg]	Q	1,600	2,000	1,200
1.6	Load center distance	[mm]	c	400 - 600	400 - 600	400 - 600
1.8	Load wheel axle to fork face (forks lowered)	[mm]	x	600 / 800	600 / 800	714 (314 - 864)
1.9	Wheelbase	[mm]	y ¹⁴	Σ 856+x ¹⁵	Σ 896+x ¹⁵	Σ 946+x ¹⁵
2	WEIGHT					
2.1a	Truck weight with load, with maximum battery weight	[kg]	¹⁴ ¹⁶	3,315	4,077	3,378
2.1b	Truck weight without load, with maximum battery weight	[kg]	¹⁴ ¹⁶	1,715	2,077	2,178
2.2	Axle loadings with nominal load, drive / load side, max.	[kg]	¹⁴	1,361 / 1,955	1,654 / 2,423	1,545 / 1,833
2.3	Axle loadings without load, drive / load side, max.	[kg]	¹⁴	1,201 / 515	1,454 / 623	1,525 / 653
3	WHEELS AND TYRES					
3.1	Tyres, drive / load side (Vul = Vulkollan, Trac = Tractothan, SG = Super Grip)			Vul/Vul	Vul/Vul	Vul/Vul
3.2	Tyre dimensions, drive side	[mm]		Ø 250 x 105	Ø 250 x 105	Ø 250 x 105
3.3	Tyre dimensions, load side	[mm]		Ø 85 x 70 (Tandem) Ø 150 x 55 (Single)	Ø 85 x 70 (Tandem)	Ø 85 x 70 (Tandem) Ø 150 x 55 (Single)
3.4	Castor wheel dimensions (diameter x width)	[mm]		Ø 150 x 55	Ø 150 x 55	Ø 150 x 55
3.5	Number of wheels, load / drive side (x = driven)			4 / 1x + 2 ¹⁷	4 / 1x + 2 ¹⁷	4 / 1x + 2 ¹⁷

¹⁴ Dimensions vary depending on the battery carriage and mast type.

¹⁵ With Senior chassis (BC775) add 104 mm.

¹⁶ Reference value using the standard mast and standard alternative chassis, highest lift height, and maximum battery weight (465 Ah battery (400 kg) for JN chassis).

¹⁷ Tandem load wheels and twin assembly castor wheels.

				SBS16N2S	SBS20N2S	SBS12N2TF
3.6	Track width (center of tyres), drive side	[mm]	b10	706 ± 11	706 ± 11	706 ± 11
3.7	Track width (center of tyres), load side	[mm]	b11	985 / 1,185 (tandem) 955 / 1,155 (single)	985 / 1,185 (tandem)	880 / 1,080 (tandem) 850 / 1,050 (single)
4 DIMENSIONS						
4.2a	Height with mast lowered	[mm]	h1	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5
4.3	Free lift	[mm]	h2	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5
4.4	Lift height	[mm]	h3	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5
4.5	Height with mast extended	[mm]	h4	See mast table in Chapter 5	See mast table in Chapter 5	See mast table in Chapter 5
4.7	Height to top of overhead guard	[mm]	h6	2,110	2,110	2,110
4.8	Seat or stand height	[mm]	h7	966	966	966
4.10	Height of support legs	[mm]	h8	92 (with tandem wheels) (110 with single wheels)	92 (with tandem wheels)	(92 with tandem wheels) 110 with single wheels
4.15	Fork height, fully lowered	[mm]	h13	50	55	65
4.19	Overall length with forks ¹⁸	[mm]	l1 ¹⁹	2,207	2,247	2,347
4.20	Length to fork face	[mm]	l2 ¹⁹	1,057	1,097	1,147
4.21	Overall width	[mm]	b1	1,115 / 1,315 (with tandem wheels) (1,055 / 1,255 with single wheels)	1,115 / 1,315 (with tandem wheels) (single wheels not available)	(1,010 / 1,210 with tandem wheels) 1,010 / 1,150 (with single wheels)
4.22	Fork dimensions, standard (thickness, width, length)	[mm]	s/e/l	40 / 100 / 1,150	40 / 100 / 1,150	57 / 169 / 1,200
4.23	Fork carriage to ISO 2328, class / form A, B			2 / A	2 / A	3 / A
4.25	Outside width over forks (minimum / maximum)	[mm]	b5	316 / 773	316 / 773	578 / 842
4.26	Width between wheel arms	[mm]	b4	855 / 1,055	855 / 1,055	750 / 950
4.28	Reach travel	[mm]	l4	—	—	850 (450 - 1,000)

¹⁸ Fork length = 1150 for wide straddle models, 1200 for telescopic forks.

¹⁹ Dimensions vary depending on the battery carriage and mast type.

				SBS16N2S	SBS20N2S	SBS12N2TF
4.32	Ground clearance at center of wheelbase, (forks lowered)	[mm]	m2	35 (tandem) 40 (single)	35 (tandem)	35 (tandem) 40 (single)
4.33	Working aisle width (Ast) with 1000 x 1200 mm pallets, load crosswise	[mm]	Ast ^{20 21}	2,584 ²²	2,623 ²²	2,726 ²³
4.34	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise	[mm]	Ast ^{20 21}	2,584 ²²	2,623 ²²	2,690 ²³
4.35	Turning radius	[mm]	Wa ²⁰	1,663 ²² 1,857 ²⁴	1,702 ²² 1,896 ²⁴	1,861 ²³ 2,007 ²⁵
4.37	Length of chassis ²⁶	[mm]	l7 ²⁰	—	—	1,971 (tandem) 1,966 (single)
5 PERFORMANCE						
5.1	Travel speed, with / without load	[km/h]	²⁷	8 / 8	8 / 8	8 / 8
5.1.1	Travel speed, with / without load, backwards	[km/h]	²⁷	8 / 8	8 / 8	8 / 8
5.2	Lifting speed, with / without load [Heavy duty option ²⁸]	[m/s]	²⁰	0.15 / 0.30 [0.24 / 0.40]	0.12 / 0.22 [0.19 / 0.37]	0.15 / 0.26 [²⁹]
5.3	Lowering speed, with / without load [Heavy duty option ²⁸]	[m/s]	²⁰	0.35 / 0.27 [0.45 / 0.30]	0.33 / 0.31 [0.50 / 0.42]	0.38 / 0.38 [²⁹]
5.8	Maximum gradeability, with / without load	[%]	²⁰	7.2 / 7.2	7.0 / 7.0	7.2 / 7.2
5.9	Acceleration time (over 10 m), with / without load	[s]	²⁰	7.0 / 6.0	7.5 / 6.5	6.5 / 5.5
5.10	Service brake type (mechanical / hydraulic / electric / pneumatic)			Electric	Electric	Electric

²⁰ Varies depending on the battery carriage and mast type.

²¹ Ast dimensions available in Sections 2.2.1 and 2.2.2.

Ast formulas:

$$\text{Ast} = \text{Wa} + \text{R} + \text{a}$$

Ast = full case/definition of min. stacking/working aisle width requirement

Wa = Turning radius

a = Safety clearance = 2 x 100 mm

$$\text{R} = \sqrt{((l6-x)^2 + (b12/2)^2)}$$

l6 = load length

b12 = load width

²² x=600

²³ x=714, l=1,200

²⁴ x=800

²⁵ x=864, l=1,350

²⁶ $\Sigma l2+x+110 / 105$ (tandem / single wheels), x=straddle length, 714 mm

²⁷ The speed is reduced to 5 km/h when the lift height exceeds:

1,520 mm (SBS16N2S)

1,440 mm (SBS20N2S)

1,180 mm (SBS12N2TF)

²⁸ With the Lift motor 8.0 kW option (LFT/MTR80).

²⁹ Not yet sufficiently tested to be reported specifically, but will expectedly align close to the results of the 2.0-ton wide straddle model (SBS20N2S).

				SBS16N2S	SBS20N2S	SBS12N2TF
6	ELECTRIC MOTORS					
6.1	Drive motor capacity (60 min. short duty)	[kW]		2.7	2.7	2.7
6.2	Lift motor output at 15% duty factor [Heavy duty option ³⁰]	[kW]		4.0 [8.0]	4.0 [8.0]	4.0 [8.0]
6.3	Battery according to DIN 43531/35/36, A, B, C, no			DIN-cells	DIN-cells	DIN-cells
6.4	Battery voltage/capacity at 5-hour discharge	[V/Ah]		24 / 375 - 775	24 / 375 - 775	24 / 375 - 775
6.5	Battery weight	[kg]		330 - 610	330 - 610	330 - 610
6.6a	Energy consumption according to EN16796 [Heavy duty option ³⁰]	[kWh/h]	³¹ ³²	0.85 [0.87]	0.85 [0.87]	0.85 [0.87]
MISCELLANEOUS						
8.1	Type of drive control			AC	AC	AC
10.7	Noise level at operator's ear	[dB (A)]		<70	<70	<70

2.2.1 Extra Ast dimensions, VDI2198 ³³ (4.34a) for SBS16N2S, SBS20N2S and SBS12N2TF

Model and Mast Type	SBS16N2S / 160WTFV				SBS20N2S / 200WDTFV				SBS12N2TF / 120WDTFV-TF			
Chassis / Battery Carriage	JN / BC 465		SN / BC 775		JN / BC 465		SN / BC 775		JN / BC 465		SN / BC 775	
1.8 Load distance, axle centre to fork face (x, mm)	600	800	600	800	600	800	600	800	714	864	714	864
VDI 2198 - Aisle width (Ast, mm)												
4.33a) Ast for pallets 1000x1200 (l6xb12) - crossways	2,584	2,689	2,685	2,790	2,623	2,728	2,724	2,830	2,726	2,822	2,827	2,924
4.34a) Ast for pallets 800x1200 (b12xl6) - lengthways	2,584	2,623	2,685	2,724	2,623	2,662	2,724	2,764	2,690	2,729	2,791	2,831

³⁰ With the Lift motor 8.0 kW option (LFT/MTR80).

³¹ The standard EN 16796 energy consumption test cycle is used to produce a reference value which does typically not reflect any normal operation/application, why a real use case typically gives a lower value, more rarely, but sometimes even a higher value.

³² This is the reference value for SBS16N2I, the actual value varies according to model, configuration and actual usage pattern.

³³ Ast = Wa + R + a. The Ast VDI 2198 standard definition stipulates a full and sharp 90 degree turn/rotation inside the aisle before moving in to the racking/pallet, and with a total play of 200 mm.

2.2.2 Extra Ast dimensions, Ast3³⁴ (4.34b) for SBS16N2S, SBS20N2S and SBS12N2TF

Model and Mast Type	SBS16N2S / 160WTFV				SBS20N2S / 200WDTFV				SBS12N2TF / 120WDTFV-TF			
Chassis / Battery Carriage	JN / BC 465		SN / BC 775		JN / BC 465		SN / BC 775		JN / BC 465		SN / BC 775	
1.8 Load distance, axle centre to fork face (x, mm)	600	800	600	800	600	800	600	800	714	864	714	864
Ast3 - Aisle width (Ast3, mm)												
4.33b) Ast3 for pallets 1000x1200 (l6xb12) - crossways	2,263	2,257	2,364	2,358	2,302	2,296	2,403	2,398	2,347	2,343	2,448	2,445
4.34b) Ast3 for pallets 800x1200 (b12xl6) - lengthways	2,463	2,457	2,564	2,558	2,502	2,496	2,603	2,598	2,547	2,543	2,648	2,645

³⁴ Ast3= Wa+l6-x+a. The Ast3 is a legacy Ast measure based on practical experience, with a simultaneous turn and drive/move during the stacking cycle, and that works well with e.g. Euro pallets.

3 Standard configuration

3.1 SBS16N2(I), SBS20N2(I)

	Notes		SBS16N2, SBS16N2I	SBS20N2, SBS20N2I
Nominal capacity		[kg]	1,600	2,000
Voltage		[V]	24	
Maximum battery capacity		[Ah]	375 - 775	
Chassis (JN = Junior (BC 465), SN = Senior (BC 775))			JN (standard alternative) / SN	JN (standard alternative) / SN
Standard mast (TFV = Duplex with full free lift, DTFV = Triplex with full free lift)			TFV (standard alternative) / DTFV	TFV / DTFV (standard alternative)
Standard lift height		[mm]	TFV 3,600 / DTFV 4,800	TFV 3,600 / DTFV 4,800
Standard fork length (l/x/b5 ³⁵)	³⁶	[mm]	1,170 / 800 / 570	
AST VDI 2198 (Load length 1,200 mm, load lengthwise, x=800)		[mm]	2,584 / 2,686 (JN / SN)	2,632 / 2,733 (JN / SN)
Mast width		[mm]	750	786
Fork carriage width		[mm]	730	780
Drive speed with/without load (forks leading)		[km/h]	8	8
Drive speed with/without load (forks trailing)		[km/h]	10 (with initial lift: 9)	9
Truck length (JN/SN)		[mm]	2,189 / 2,293 (JN / SN)	2,238 / 2,342 (JN / SN)
Weight without battery	³⁷	[kg]	1,200 / 1,260 (TFV / DTFV, JN) 1,230 / 1,290 (TFV / DTFV, SN)	1,390 / 1,500 (TFV / DTFV, JN) 1,420 / 1,530 (TFV / DTFV, SN)
Truck width		[mm]	1,010	
Truck width with optional side stabilizers (retracted)	³⁸	[mm]	1,010 / 1,010 (DTFV, JN / SN)	1,010 / 1,010 (DTFV, JN / SN)
Height of overhead guard		h6 [mm]	2,110	

³⁵ l = Fork length, x = Straddle length (wheel axle to fork face), b5 = Width across forks

³⁶ Other combinations are available as Option or CSM design. See separate information about fork combinations of l/x in Chapter 9.

³⁷ Additional weight for: Stabilizers=80 kg; Initial lift=160 kg.

³⁸ SBS20N2I with DTFV mast: Width with stabilizers retracted 1,030. See Section 10.3.

As a standard, the truck is supplied with:

Standard display incl. hour meter and battery indicator	Drive motor 2.7 kW AC
Key switch entry	Lift motor: 4.0 kW DC lift motor (S3=15%)
Electric power steering	Drive wheel: Vulkollan®
Speed regulated lifting and proportional valve for lowering	Load wheels: tandem Vulkollan
Adjustable right armrest	Junior (BC 465, standard alternative) or Senior (BC 775) chassis
Mini-steering wheel with floating armrest, adjustable height and length	Plastic battery rollers in Junior (BC 465) chassis, steel rollers in Senior (BC 775) chassis
Storage compartment under the armrest, and by the left side and in front of the seat	Chill store design down to -10 °C, with grease nipples in mast and rust protected axles
Fingertip controls for lifting/lowering	Initial lift (SBS16N2I and SBS20N2I)
Hands-free direction control (HFDC), in accelerator foot pedal	Battery connector: REMA 160.
Ergonomic fully adjustable seat	Speed reduction to 5 km/h when H>1,700 mm.
Automatic cornering control for safe handling	Overhead guard

3.2 SBS16N2S, SBS20N2S

	Notes		SBS16N2S	SBS20N2S
Nominal capacity		[kg]	1,600	2,000
Voltage		[V]	24	
Maximum battery capacity		[Ah]	465 - 775	
Chassis (JN = Junior (BC 465), SN = Senior (BC 775))			JN (standard alternative) / SN	JN (standard alternative) / SN
Standard mast (TV = Duplex with clear view mast, TFV = Duplex with full free lift, DTFV = Triplex with full free lift)		[mm]	TFV	DTFV
Standard lift height		[mm]	3,600	4,800
Standard fork length (l/x ³⁹)	⁴⁰	[mm]	1,150 / 800	
Standard width across forks		b5 [mm]	316-773	

³⁹ l = Fork length, x = Straddle length (wheel axle to fork face)

⁴⁰ Other combinations are available as Option or CSM design. See separate information about fork combinations of l/x in Chapter 9.

	Notes		SBS16N2S	SBS20N2S
Standard width between straddles		[mm]	855	
AST VDI 2198 (Load length 1,200 mm, load lengthwise, x=800)		[mm]	2,584 (JN) 2,685 (SN)	2,623 (JN) 2,724 (SN)
Mast width		[mm]	750	786
Fork carriage width		[mm]	840	
Drive speed with/without load (forks leading)		[km/h]	8	
Drive speed with/without load (forks trailing)		[km/h]	8	
Truck length (JN/SN)		l1 [mm]	2,207	2,247
Weight without battery		[kg]	1,715	2,077
Truck width		[mm]	1,115 / 1,315 (with tandem wheels) 1,055 / 1,255 (with single wheels)	1,115 / 1,315 (with tandem wheels)
Height of overhead guard		h6 [mm]	2,110	

As a standard, the truck is supplied with:

Standard display incl. hour meter and battery indicator

Key switch entry

Electric power steering with flexi steering wheel, adjustable in height as well as horizontally according to the operating position

Speed regulated lifting and proportional valve for lowering

Adjustable armrest

Storage compartment under armrest

Fingertip controls for lifting/lowering

Automatic cornering control for safe handling

Chill store design down to -10 °C, with grease nipples in mast and rust protected axles

Wide straddle legs (support legs)

Drive motor 2.7 kW AC

Lift motor: 4.0 kW DC lift motor (S3=15%)

Drive wheel: Vulkollan®

Load wheel: tandem Vulkollan, single available as an alternative for SBS16N2S

Junior (BC 465, standard alternative) or Senior (BC 775) chassis

Plastic battery rollers in Junior (BC 465) chassis, steel rollers in Senior (BC 775) chassis

Battery connector: REMA 160

Speed reduction to 5 km/h when H > 1,520 mm for SBS16N2S, or 1,440 mm for SBS20N2S

Overhead guard

3.3 SBS12N2TF

	Notes		SBS12N2TF
Nominal capacity		[kg]	1,200
Voltage		[V]	24
Maximum battery capacity		[Ah]	465-775
Chassis (JN = Junior (BC 465), SN = Senior (BC 775))			JN (standard alternative) / SN
Standard mast (TV = Duplex with clear view mast, TFV = Duplex with full free lift, DTFV = Triplex with full free lift)		[mm]	DTFV
Standard lift height		[mm]	4800
Standard fork length		[mm]	1,200
Standard straddle length	⁴¹	[mm]	714
Standard width across forks		[mm]	578
Standard width between straddles		[mm]	750 / 950 (standard alternative)
AST VDI 2198 (Load length 1,200 mm, load lengthwise, x=714)		[mm]	2,690 (JN) 2,791 (SN)
Mast width		[mm]	786
Fork carriage width		[mm]	820
Drive speed with/without load (forks leading)		[km/h]	8
Drive speed with/without load (forks trailing)		[km/h]	8
Truck length (JN/SN)		[mm]	2,347
Weight without battery		[kg]	2,178
Truck width		[mm]	1,010 / 1,210 (with tandem wheels) 1,010 / 1,150 (with single wheels)
Height of overhead guard		h6 [mm]	2,110

As a standard, the truck is supplied with:

Standard display incl. hour meter and battery indicator

Speed-regulated telescopic forks (K00I)

Key switch entry

Drive motor 2.7 kW AC

Electric power steering with flexi steering wheel, adjustable in height as well as horizontally according to the operating position

Lift motor: 4.0 kW DC lift motor (S3=15%)

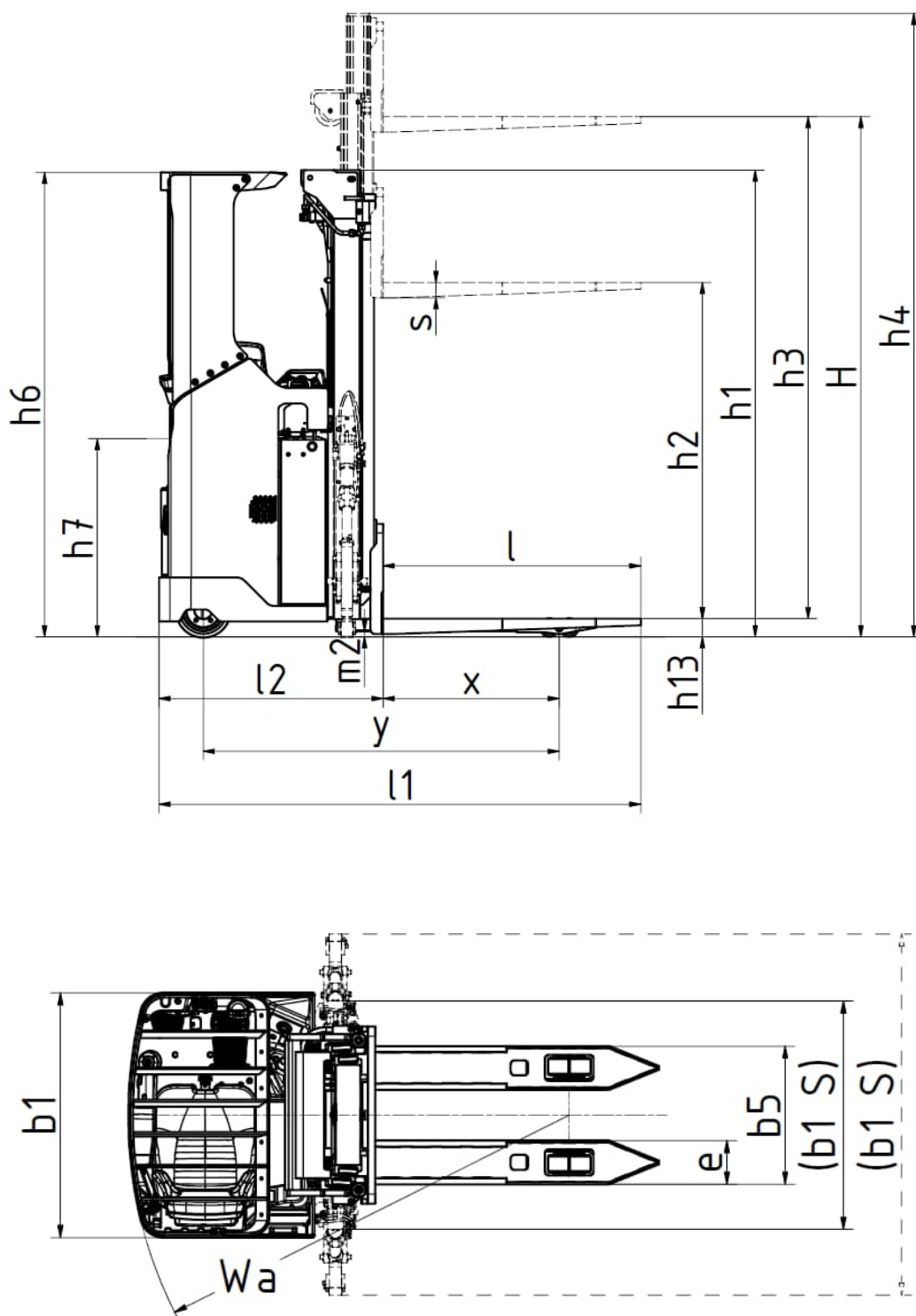
⁴¹ Straddle length (x) = fork length (l) - 486 mm

Speed regulated lifting and proportional valve for lowering	Drive wheel: Vulkollan®
Adjustable armrest	Load wheel: single (standard alternative) or tandem Vulkollan
Storage compartment under armrest	Junior (BC 465, standard alternative) or Senior (BC 775) chassis
Fingertip controls for lifting/lowering	Plastic battery rollers in Junior (BC 465) chassis, steel rollers in Senior (BC 775) chassis
Automatic cornering control for safe handling	Battery connector: REMA 160
Chill store design down to -10 °C, with grease nipples in mast and rust protected axles	Speed reduction to 5 km/h when $H > 1,180$ mm
	Overhead guard

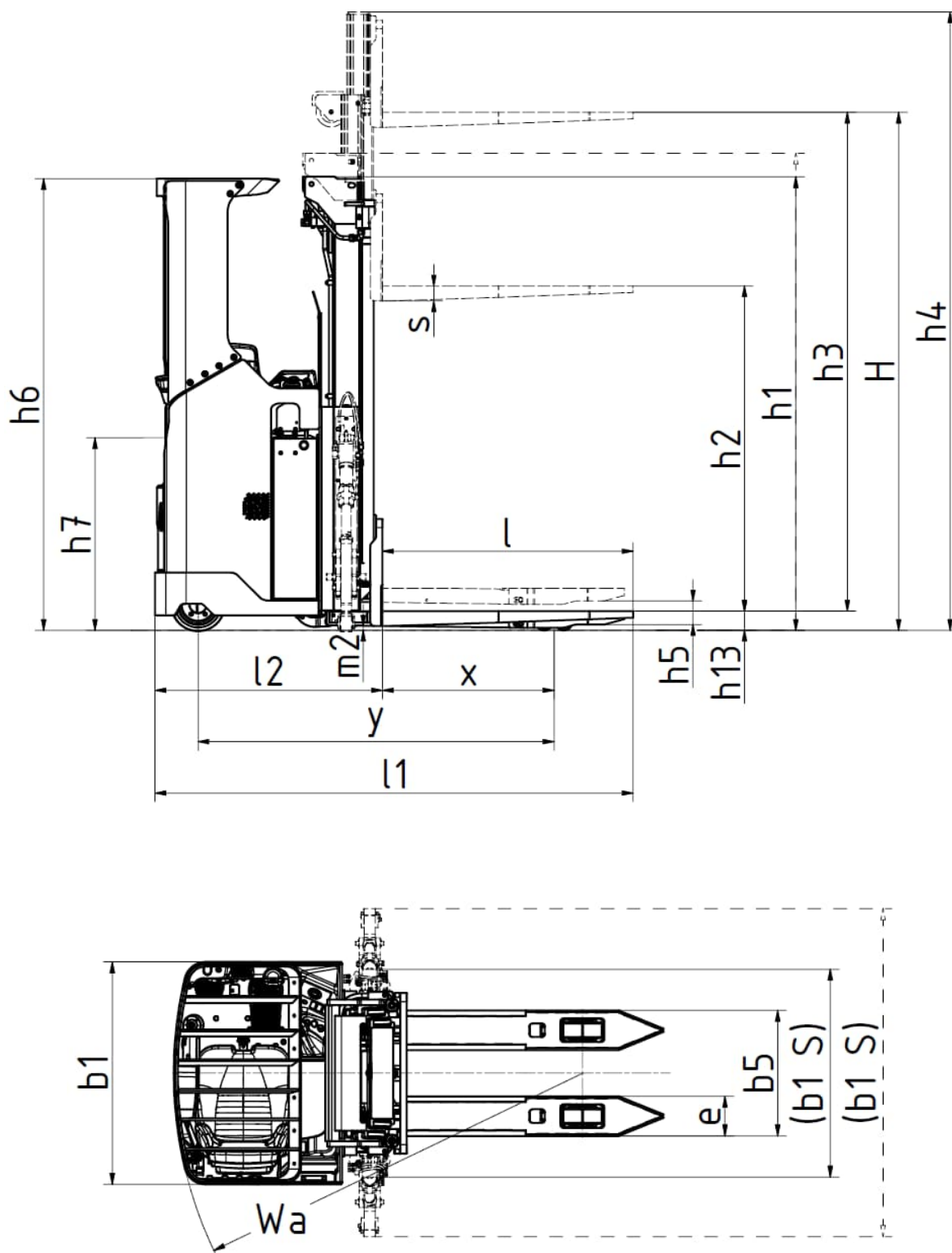
4 Technical drawings

Wa	Turning radius	h1	Height with mast lowered
e	Fork width	h2	Free lift
s	Fork thickness	h3	Lift stroke
l	Fork length	h4	Height of mast extended
x	Load distance, axle to fork face	h5	Initial lift
y	Wheelbase	h6	Height of overhead guard
b1	Overall width	h7	Height of seat
b5	Width across forks	h13	Lowered fork height
l1	Overall length with fork	H	Lift height (h3+h13)
l2	Length to fork face	m2	Ground clearance, centre of wheelbase
b1 S	Width with stabilizers retracted/extracted		

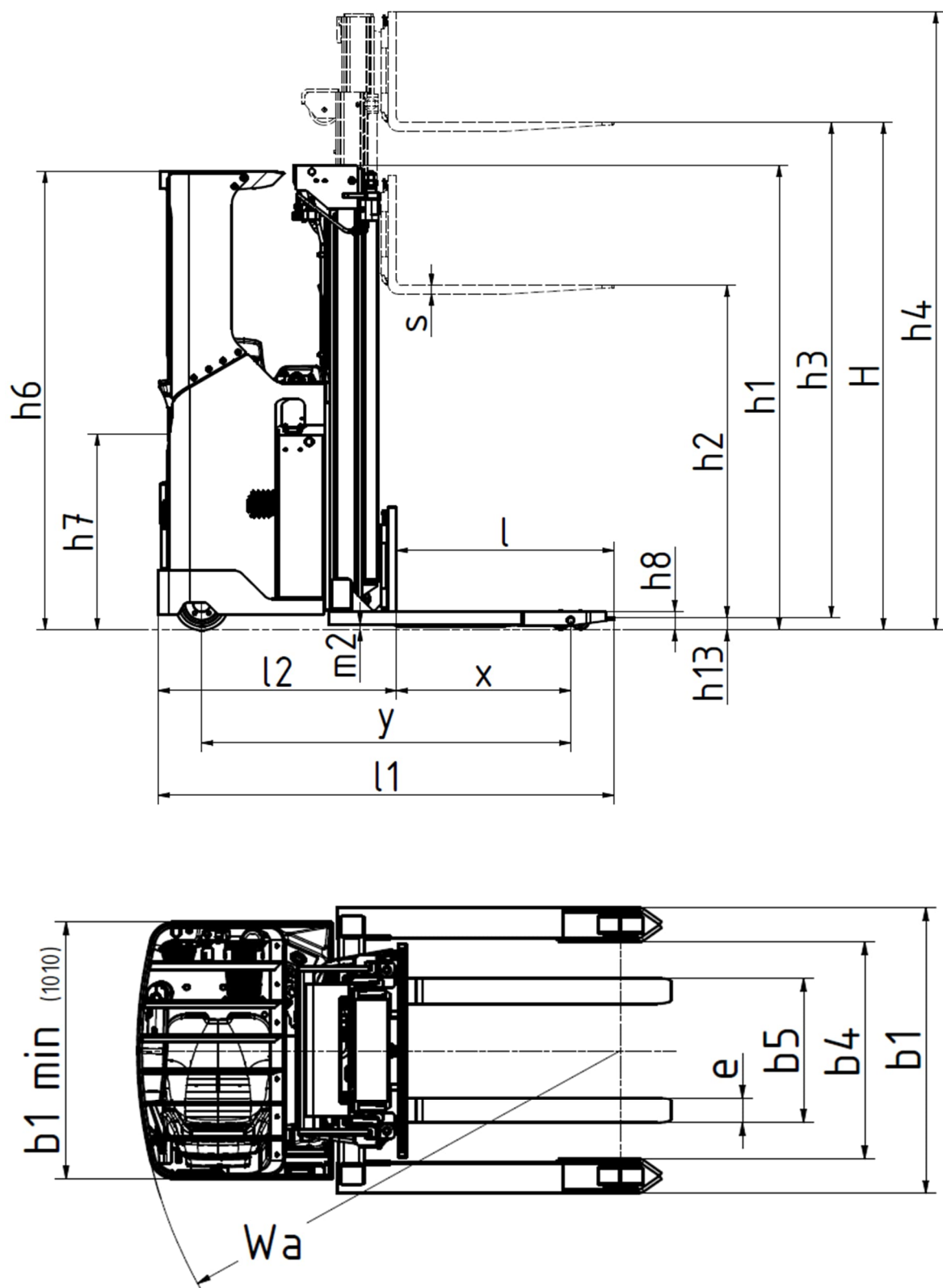
4.1 Technical drawings for SBS16N2 and SBS20N2



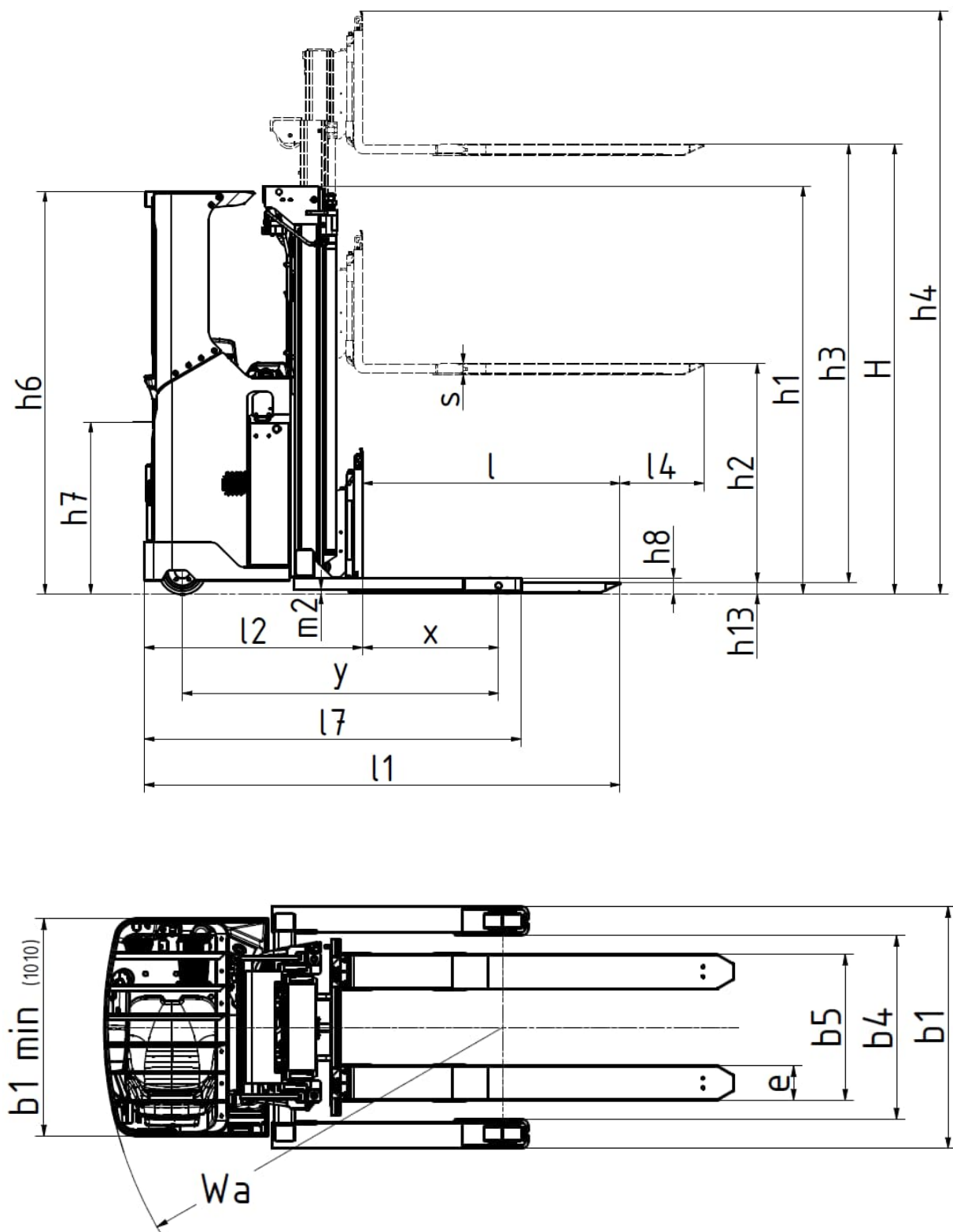
4.2 Technical drawings for SBS16N2I and SBS20N2I



4.3 Technical drawings for SBS16N2S and SBS20N2S



4.4 Technical drawings for SBS12N2TF



5 Mast charts

TFV	Duplex with full free lift (DEV)
DTFV	Triplex with full free lift (TREV)
h3+h13	Lifting height (H) (floor to top of fork)
h1	Lowered mast height (aka closed mast height)
h4	Raised mast height
h2+h13	Full free lift

5.1 SBS16N2 and SBS16N2I

Mast type		h3+h13	h1 ⁴²	h4 ⁴³	h2+h13 ⁴⁴
Narrow	CODE	[mm]	[mm]	[mm]	[mm]
Duplex with full free lift (TFV)	TFV360	3,600	2,350	4,105	1,849
	TFV420	4,200	2,650	4,705	2,149
	TFV450	4,500	2,800	5,005	2,299
	TFVXXX	3,600-4,500	-	-	-
Triplex with full free lift (DTFV)	DTFV480	4,800	2,150	5,332	1,669
	DTFV540	5,400	2,350	5,932	1,869
	DTFV570	5,700	2,450	6,232	1,969
	DTFV630	6,300	2,650	6,832	2,169
	DTFV700	7,000 ⁴⁵	2,883	7,532	2,402
	DTFVXXX	4,800-7,000 ⁴⁵	-	-	-

Other lift heights are CSM (TFVXXX-CSM, DTFVXXX-CSM).

⁴² Add 5 mm for models with initial lift.

⁴³ Add 7 mm for models with initial lift.

⁴⁴ Add 4 mm for models with initial lift.

⁴⁵ Lift height over 6,300 mm requires Senior chassis (BC775) with lead-acid battery, or Junior chassis (BC465) with Li-ion 370 Ah battery (min weight 460 kg).

5.2 SBS20N2 and SBS20N2I

Mast type		h3+h13	h1 ⁴⁶	h4 ⁴⁶	h2+h13 ⁴⁷
Initial lift	CODE	[mm]	[mm]	[mm]	[mm]
Duplex with full free lift (TFV)	TFV360	3,600	2,350	4,108	1,850
	TFV420	4,200	2,650	4,708	2,150
	TFV450	4,500	2,800	5,008	2,300
	TFVXXX	3,600-4,500	-	-	-
Triplex with full free lift (DTFV)	DTFV480	4,800	2,150	5,335	1,670
	DTFV540	5,400	2,350	5,935	1,870
	DTFV570	5,700	2,450	6,235	1,970
	DTFV630	6,300	2,650	6,835	2,170
	DTFV700	7,000 ⁴⁸	2,883	7,535	2,403
	DTFVXXX	4,800-7,000 ⁴⁸	-	-	-

Other lift heights are CSM (TFVXXX-CSM, DTFVXXX-CSM).

5.3 SBS16N2S

Mast type		h3+h13	h1	h4	h2+h13
Wide	CODE	[mm]	[mm]	[mm]	[mm]
Duplex with full free lift (TFV)	TFV360	3,600	2,350	4,110	1,815
	TFV420	4,200	2,650	4,710	2,115
	TFV450	4,500	2,800	5,010	2,265
	TFVXXX	3,600-4,500	—	—	—

Other lift heights are CSM (TFVXXX-CSM).

⁴⁶ Add 5 mm for models with initial lift.

⁴⁷ Add 3 mm for models with initial lift.

⁴⁸ Lift height over 6,300 mm requires Senior chassis (BC775) with lead-acid battery, or Junior chassis (BC465) with Li-ion 370 Ah battery (min weight 460 kg).

5.4 SBS20N2S

Mast type		h3+h13	h1	h4	h2+h13
Wide	CODE	[mm]	[mm]	[mm]	[mm]
Triplex with full free lift (DTFV)	DTFV480	4,800	2,150	5,335	1,635
	DTFV540	5,400	2,350	5,935	1,835
	DTFV570	5,700	2,450	6,235	1,935
	DTFV630	6,300	2,650	6,835	2,135
	DTFV700	7,000 ⁴⁹	2,883	7,535	2,368
	DTFVXXX	4,800-7,000 ⁴⁹	—	—	—

Other lift heights are CSM (DTFVXXX-CSM).

5.5 SBS12N2TF

Mast type		h3+h13	h1	h4	h2+h13
Wide TF	CODE	[mm]	[mm]	[mm]	[mm]
Triplex with full free lift (DTFV) Telescopic forks	DTFV480	4,800	2,150	5,750	1,225
	DTFV540	5,400	2,350	6,350	1,425
	DTFV570	5,700	2,450	6,650	1,525
	DTFV630	6,300	2,650	7,250	1,725
	DTFVXXX	4,800-6,300	—	—	—

Other lift heights are CSM (DTFVXXX-CSM).

⁴⁹ Lift height over 6,300 mm requires Senior chassis (BC775) with lead-acid battery, or Junior chassis (BC465) with Li-ion 370 Ah battery (min weight 460 kg).

6 Load deration

6.1 SBS16N2(I), SBS20N2(I)

Minimum lift height H (h3+h13):

SBS16N2(I) TFV=3,600 mm

SBS20N2(I) DTFV=4,800 mm

Lower lift height is special design.

Calculations for optional lift heights between standard:

Model	Mast type	Mast height (h1) ⁵⁰	Lift height (h3+h13)	Free lift (h2)
SBS16N2(I), SBS20N2(I)	TFV	H/2+550 mm	2 (h1-550) mm	h1-590 mm
	DTFV	H/3+550 mm	3 (h1-550) mm	h1-570 mm

For example, to adapt a mast to get the maximum lift height with a restricted doorway height, you can start from h1 and calculate backwards. However, you must always take into consideration if there are other restrictions in addition. For example, on machines with OHG, the h6 measurement can be critical/decisive. Raised support legs are very important to think about, and even the load may of course stick up higher.

If we need a mast for a truck to pass a 2.0 m high doorway, we can use the formula in the middle of the table. In that case, a truck with fixed support legs should not have an h1 dimension greater than 1,950 mm.

Example with models with no initial lift (H = h3+h13):

TFV: $2 \times (1,950 - 550) = 2,800$, i.e. H=2,800 mm

DTFV: $3 \times (1,950 - 550) = 4,200$, i.e. H=4,200 mm

The mast comes through the door opening, but with an h6 of 2,283 mm, no model variant with OHG may pass.

Example with initial lift models (H = h3+h13):

Initial lift down:

TFV I: $2 \times (1,950 - 5 - 550) = 2,790$, i.e. H=2,790 mm

DTFV I: $3 \times (1,950 - 5 - 550) = 4,185$, i.e. H=4,185 mm

NOTE: Risky and not recommended to rely on the support legs always being down.

Initial lift up:

TFV I: $2 \times (1,950 - 110 - 550) = 2,580$, i.e. H=2,580 mm

DTFV I: $3 \times (1,950 - 110 - 550) = 3,870$, i.e. H=3,870 mm

⁵⁰ h1/H/h4 increases by 110 mm when straddle legs in upper position, and 5 mm in lower position.

6.1.1 Load deration Q (kg), TFV mast

Load deration based on load evenly spread along the forks.

		SBS16N2(I) with TFV mast, LC = 400-600 mm		SBS20N2(I) with TFV mast, LC = 400-600 mm	
		Junior (BC465) with lead-acid battery or 222/296 Ah li-ion battery	Junior (BC465) with 370 Ah li-ion battery ⁵¹ , or Senior (BC 775) with lead-acid battery	Junior (BC465) with lead-acid battery or 222/296 Ah li-ion battery	Junior (BC465) with 370 Ah li-ion battery ⁵¹ , or Senior (BC 775) with lead-acid battery
Lift height H (h3+h13) [mm]	Lowered mast height h1 ⁵² [mm]	Std Capacity [kg]	Std Capacity [kg]	Std Capacity [kg]	Std Capacity [kg]
(2,500)		1,600	1,600	2,000	2,000
(2,800)				1,850	
(2,900)				1,400	1,600
(3,100)		1,400			
(3,200)					
3,600	2,350	1,200	1,350		1,500
4,200	2,650	950	1,150	1,100	1,275
4,500	2,800	850	1,000	1,000	1,175

() = Non-standard mast, only to show capacity.
 LC = Load center

Calculating residual capacities depending on load center, TFV mast

Residual capacities depending on load center, TFV mast			
Load center [mm]	400-600	601-700	701-800
Capacity ratio	100%	85%	75%
Example: SBS20N2 Senior, TFV mast, H=4500 Std	1,175 kg	990 kg ⁵³	880 kg ⁵³

Load deration on request when LC>800 mm.

⁵¹ 370 Ah lithium-ion battery is ballasted to the same min. weight as a Senior BC775 lead-acid battery (460 kg).

⁵² With initial lift, add 5 mm.

⁵³ If applied round-down to the nearest 10 kg.

6.1.2 Load deration Q (kg), DTFV mast

Load deration based on load evenly spread along the forks.

		SBS16N2(I) with DTFV mast, LC = 400-600 mm				SBS20N2(I) with DTFV mast, LC = 400-600 mm			
		Junior (BC465) with lead-acid battery or 222/296 Ah li-ion battery		Junior (BC465) with 370 Ah li-ion battery ⁵⁴ or Senior (BC 775) with lead-acid battery		Junior (BC465) with lead-acid battery or 222/296 Ah li-ion battery		Junior (BC465) with 370 Ah li-ion battery ⁵⁴ or Senior (BC 775) with lead-acid battery	
Lift height H (h3+h13) [mm]	Lowered mast height h1 (mm) ⁵⁵	Std Capacity [kg]	Stabilizers Capacity [kg]	Std Capacity [kg]	Stabilizers Capacity [kg]	Std Capacity [kg]	Stabilizers Capacity [kg]	Std Capacity [kg]	Stabilizers Capacity [kg]
(2,800)		1,600	1,600	1,600	1,600	2,000	2,000	2,000	2,000
(3,200)						1,800			
(3,600)		1,400				1,650		1,800	
(4,350)		1,050		1,200		1,300		1,400	
4,800	2,150	850	1,500	1,050		1,100		1,200	
(5,250)		700	1,300	800	1,400	950	1,850	1,050	
5,400	2,350					900	1,800	1,000	
5,700	2,450	600	1,200	700	1,300	800	1,650	900	1,850
6,300	2,650	450	1,000	550	1,000	600	1,250	700	1,500
7,000	2,883			400	650			450	1,000

() = Non-standard mast, only to show capacity.

LC = Load center.

Stabilizers are optional, available only in combination with DTFV mast.

Calculating residual capacities depending on load center, DTFV mast

Residual capacities depending on load center, DTFV mast			
Load center [mm]	400-600	601-700	701-800
Capacity ratio	100%	85%	75%
Example: SBS16N2 Junior, DTFV mast, H=5400 Std	700 kg	590 kg ⁵⁶	520 kg ⁵⁶

Load deration on request when LC>800 mm.

⁵⁴ 370 Ah lithium-ion battery is ballasted to the same min. weight as a Senior BC775 lead-acid battery (460 kg).

⁵⁵ With initial lift, add 5 mm.

⁵⁶ If applied round-down to the nearest 10 kg.

6.2 SBS16N2S and SBS20N2S

h3+h13 [mm]		SBS16N2S		SBS20N2S	
		JN / BC 465	SN / BC 775	JN / BC 465	SN / BC 775 ⁵⁷
		LC 400-600 mm			
TFV	3,600	1,600	1,600		
	(4,000)	1,600	1,600		
	4,200	1,500	1,550		
	4,500	1,300	1,350		
DTFV	(4,350)			2,000	2,000
	4,800			1,600	1,700
	5,250			1,350	1,450
	5,400			1,250	1,350
	5,700			1,100	1,200
	6,300			800	900
	6,750				700
	7,000				600

() = Non-standard mast, only to show capacity.

LC = Load center

⁵⁷ Load deration valid also for JN chassis with a 370 Ah lithium-ion battery.

6.3 SBS12N2TF

Fork length l, mm Load depth h3+h13 [mm]		SBS12N2TF with JN (BC 465) or SN (BC 775) chassis							
		800		1,000		1,200		1,350	
		Single	Double	Single	Double	Single	Double	Single	Double
		LC 400	LC 400	LC 500	LC 550	LC 600	LC 650	LC 600	LC 750
DTFV	(4,000)	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
	(4,300)	1,000	1,000	1,200	1,200	1,200	1,000	1,200	1,000
	4,800	800	800	1,200	1,000	1,200	900	1,200	800
	5,400	700	700	1,000	800	1,000	700	1,000	700
	5,700	600	600	800	700	800	600	800	600
	6,300	500	500	600	500	600	500	600	500

() = Non-standard mast, only to show capacity.

LC = Load center

6.3.1 Telescopic fork lengths

Fork position	Fully retracted	Extension stroke *	Fully extended
Fork lengths l, mm	800	450	1,250
	1,000	650	1,650
	1,200	850	2,050
	1,350	1,000	2,350

* Telescopic fork overlap is 350 mm

7 Initial lift parameters and double pallet handling (SBS16N2I and SBS20N2I)

Standard specification, initial lift models

NOTE: Not in combination with increased drive speed.

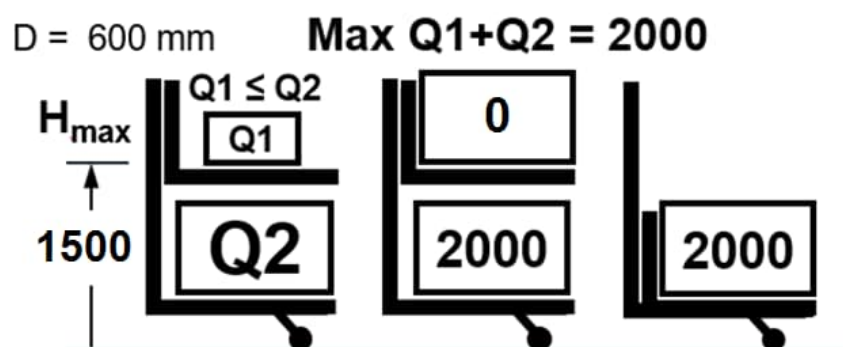
h1/h23(H)/h4 increases by 110 mm when straddle legs in upper position and 5 mm in lower position.

		SBS16N2I				SBS20N2I			
		TFV mast		DTFV mast		TFV mast		DTFV mast	
		Junior (BC 465)	Senior (BC 775)	Junior (BC 465)	Senior (BC 775)	Junior (BC 465)	Senior (BC 775)	Junior (BC 465)	Senior (BC 775)
Ast	[mm]	2,627	2,728	2,627	2,728	2,685	2,787	2,685	2,787
l / x / b5 ⁵⁸	[mm]	1,170 / 800 / 570							
h13	[mm]	93 (90-93)							

Double pallet handling

In addition to the load deration tables above, the specification below applies for double pallet handling with initial lift.

Possible combinations for double pallet handling Q (kg)



D = Load center

⁵⁸ l = Fork length, x = Straddle length (wheel axle to fork face), b5 = Width across forks

8 Batteries

- Standard
- 0 Option
- Not available

8.1 Option availability

Chassis		Battery 24 V type		Battery capacity		Battery compartment			
Junior BC 465	Senior BC 775	Lead-Acid	Li-ION	Container no	[Ah]	Plastic rollers	Steel rollers	Fixed	Cell type
•	—	•	—	180548	375 - 465	•	0	—	DIN
		—	•	—	222 - 370	—	—	•	Prismatic NMC
—	•	•	—	180549	560 - 775	—	•	—	DIN

For large batteries or frequent battery change we recommend steel rollers.
 Height of battery roller bed 145 mm.

8.1.1 Lead-acid batteries

Battery	Capacity [Ah]	Option code	Battery container /drawing	Chassis / Battery carriage	Cell type (BS=British Standard)
Exide Classic 24V	465	BW24D465E	180548	Junior BC465	DIN
	625	BW24D625E	180549	Senior BC775	
	775	BW24D775E			
Midac 24V	465	BW24D465M	180548	Junior BC465	DIN
	620	BW24D620M	180549	Senior BC775	
	775	BW24D775M			
Hawker Perfect 24V	465	BW24D465A	180548	Junior BC465	DIN
	625	BW24D625A	180549	Senior BC775	
	775	BW24D775A			

Battery	Capacity [Ah]	Option code	Battery container /drawing	Chassis / Battery carriage	Cell type (BS=British Standard)
Hawker Waterless 24V	375	BW24W375A	180548	Junior BC465	DIN
	465	BW24W465A			
	575	BW24W575A	180549	Senior BC775	
	625	BW24W625A			
	775	BW24W775A			

8.1.2 Li-ion batteries

Battery	Capacity [Ah]	Option code	Battery container /drawing	Chassis / Battery carriage	Cell type (BS=British Standard)
Li-ion (Li-Pro) ^{59 60}	222	BL24J222T	-	Junior BC465	Prismatic NMC
	296	BL24J296T			
	370	BL24J370T			

8.1.3 Lead-acid chargers

Charger	Option code	
Sharp IUla, High Frequency, Constant Current, 1-phase, 230V	24 V / 45 A ⁶⁰	CHSHF45E
	24 V / 60 A ⁶⁰	CHSHF60E
	24 V / 80 A	CHSHF80E
	24 V / 100 A	CHSHF100E
Sharp IUla, HighFrequency, Constant Current, 3-phase, 400V	24 V / 130 A	CHSHF130E
ACCESS IUla, High Frequency, Constant Current, 1-phase, 230V	24 V / 60 A ⁶⁰	CHAHF60E
	24 V / 80 A	CHAHF80E
	24 V / 100 A	CHAHF100E

⁵⁹ Not in combination with Cold store modification (MODCS).

⁶⁰ Not available for Senior (BC775) chassis.

Charger		Option code
Hawker Life IQ Modular Waterless TC1, 1-phase, 230V	24 V / 30 A ⁶¹	CHWIQ30A
	24 V / 35 A ⁶¹	CHWIQ35A
	24 V / 50 A ⁶¹	CHWIQ50A
	24 V / 70 A	CHWIQ70A
	24 V / 95 A	CHWIQ95A
	24 V / 110 A	CHWIQ110A

8.1.4 Li-ion chargers

Charger		Option code
Li-ion	24 V / 100 A ⁶¹	CH24/100T
	24 V / 200 A ⁶¹	CH24/200T

8.1.5 Battery options

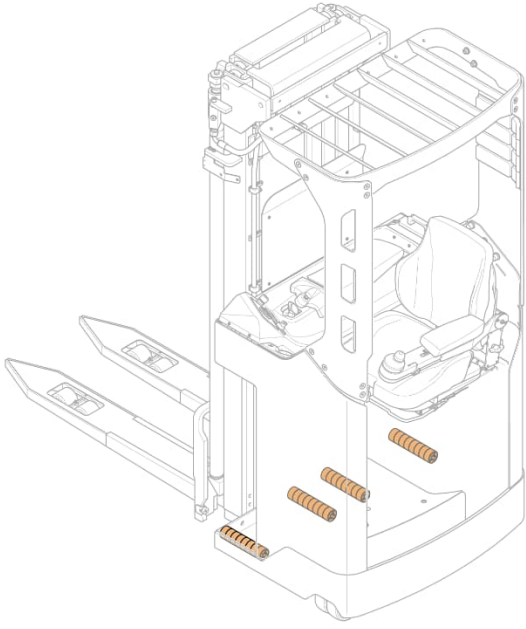
Battery	Battery option	Option code
Exide Classic	Water Fill Plug 24V, Classic	BQFS24E
	Aqua Level	AQLVL
	Battery acid circulation 24V Exide	BACI24E
Midac	Battery Quick Fill System	BQFS24M
	E-lytelevel indicator	ELYLVL
	Battery acid circulation 24V Midac	BACI24M
Hawker Perfect / Hawker Waterless	Battery Quick Fill System	BQFS24A
	Battery acid circulation 24V Hawker	BACI24A

⁶¹ Not available for Senior (BC775) chassis.

8.1.6 Charger equipment

Charger equipment		Option code
Li-Ion charger equipment	Easy access charge arm ⁶²	EASY/ACCES
For Hawker Waterless	Acid Circulation Charger Side ⁶²	CHACI24A

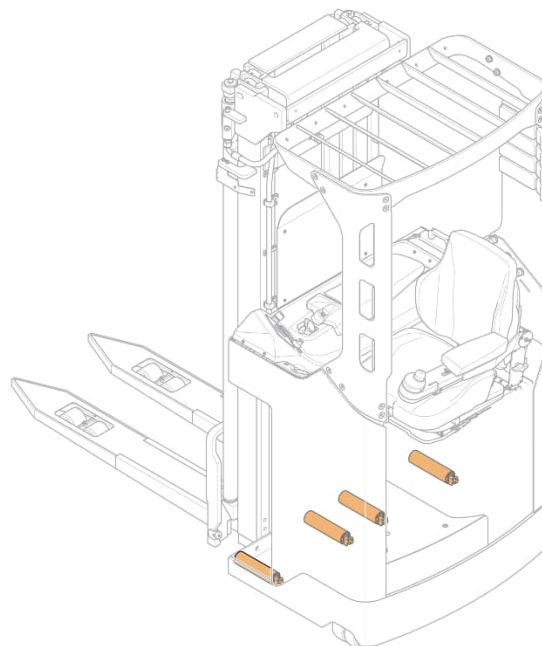
8.2 Option descriptions

PLASTIC BATTERY ROLLERS	PBATT/ROLL
Plastic rollers, standard in the Junior (BC465) model. NOTE: For large batteries or frequent battery change we recommend steel rollers.	

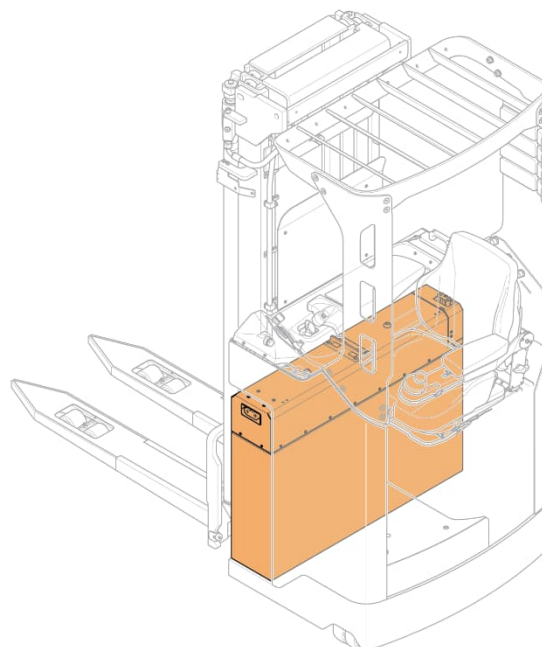
⁶² Not available for Senior (BC775) chassis.

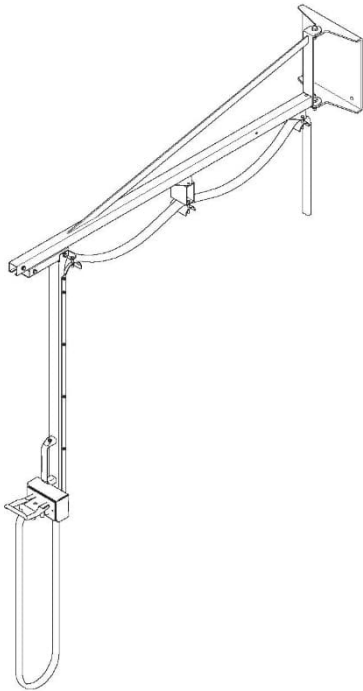
STEEL BATT ROLLERS WITH BEARINGS
SBATT/ROLL

Steel rollers for easy and quick battery change.
 Steel rollers are standard on the Senior (BC775) model and optional on the Junior (BC465) model.


LI-ION BATTERY

NOTE: Only Junior (BC465) size.
 Capacity 222 Ah, 296 Ah and 370 Ah.
 Battery 370 Ah (ballasted to 460 kg) makes it possible to get Senior capacity for Load deration in a Junior-sized truck.
NOTE: Not in combination with Cold store modification (MODCS).



EASY ACCESS CHARGE ARM	EASY/ACCES
Charger equipment for li-ion batteries. The charge arm is attached to the wall. NOTE: Only for li-ion batteries. Not available for Senior (BC775) chassis.	

9 Fork and straddle options

- Standard
- 0 Option
- Not available

9.1 SBS16N2, SBS20N2

OPTION	Notes	CODE	SBS16N2	SBS20N2
Narrow Straddle Model		NARR/STR	•	•
Fork & Straddle Length 1170/800 mm	⁶³	L1170S800	•	•
Fork, Straddle Variable Length	⁶⁴	LXXX/SLXX	0	0
Fork Width 570 mm	⁶³	F/W570	•	•
Variable Fork Width	⁶⁵	F/WXXX	0	0

Other fork lengths than 800–1,600 mm are CSM (LXXX/SLXX-CSM).

Other fork widths than 550–660 mm are CSM (F/WXXX-CSM).

9.1.1 Fork/straddle combinations (SBS16N2 and SBS20N2)

FORK, STRADDLE VARIABLE LENGTH	LXX/SLXX
Combinations of l/x ⁶⁶ with l between 801–1,600 mm are possible as option on SBS16N2 and SBS20N2. $l-x = 370$ mm ($l \geq 900$ mm) $l-x = 300$ mm ($l < 900$ mm) Other combinations of l/x are special design (CSM).	

⁶³ Standard alternative, included if nothing else specified in the order.

⁶⁴ Fork length 800–1,600 mm. State the length in the order. See Section 9.1.1 for available combinations of l/x . Other lengths than 800–1,600 mm, request as CSM only.

⁶⁵ Fork width 550–660 mm. State the width in the order. Other fork width than 550–660 mm, request as CSM only.

⁶⁶ l = Fork length, x = Straddle length (wheel axle to fork face)

9.2 SBS16N2I, SBS20N2I

OPTION	Notes	CODE	SBS16N2I	SBS20N2I
Narrow Straddle Model & Initial Lift		NARR/STR/I	•	•
Fork & Straddle Length 1170/800 mm (fork width 570 mm)	⁶⁷	L1170S800L	•	•

9.3 SBS16N2S, SBS20N2S

OPTION	Notes	CODE	SBS16N2S	SBS20N2S
Wide straddle model			•	•
Fork length 1150 mm	⁶⁸	L1150	•	•
Fork length 1000 mm		L1000	0	0
Fork length 800 mm		L800	0	0
Variable fork length	⁶⁹	LXXX	0	0
Straddle length 800 mm	⁶⁸	SL800	•	•
Straddle length 600 mm		SL600	0	0
Width over forks 316 mm / 468 mm / 621 mm / 773 mm	⁷⁰	F/MW773	•	•
Width between straddles 855 mm (EU standard)	⁶⁸	S/W855	•	•
Width between straddles 1055 mm (UK standard)		S/W1055	0	0

Other fork lengths than 800–1,400 are CSM (LXXX-CSM).

Other straddle lengths than 600 mm or 800 mm are CSM (SLXXX-CSM).

Other width over forks than 316 mm, 468 mm, 621 mm, and 773 mm is CSM (F/WXXX-CSM).

Other width between straddles than 855 mm or 1,055 mm is CSM (S/WXXX-CSM).

⁶⁷ Standard alternative. Other combinations available as CSM only (LXXX/SLFWXX-CSM).

⁶⁸ Standard alternative, included if nothing else specified in the order.

⁶⁹ Fork length 800–1,400 mm. State the length in the order. Other lengths than 800–1,400 mm, request as CSM only.

⁷⁰ Four user-selectable widths: 316 mm (standard alternative), 468 mm, 621 mm, and 773 mm.

9.4 SBS12N2TF

OPTION	Notes	CODE	SBS12N2TF
Telescopic fork model			•
Fork length 800 mm		L800	0
Fork length 1000 mm		L1000	0
Fork length 1200 mm	⁷¹	L1200	•
Fork length 1350 mm		L1350	0
Max fork width 842 mm (user-selectable widths: 578 mm ⁷¹ / 688 mm / 842 mm)		F/MW842	•
Straddle length = fork length - 486 mm	⁷²	SLL1-486	•
Width between straddles 950 mm	⁷¹	S/W950	•
Width between straddles 750 mm	⁷³	S/W750	0

Other fork lengths than 800 mm, 1,000 mm, 1,200 mm, or 1,350 mm are CSM (LXXX-CSM).

Other fork widths than 578 mm, 688 mm, or 842 mm are CSM (F/WXXX-CSM).

Other straddle length than fork length (l) - 486 mm is CSM (SLXXX-CSM).

Other width between straddles than 950 mm or 750 mm is CSM (S/WXXX-CSM).

⁷¹ Standard alternative, included if nothing else specified in the order.

⁷² Straddle length (x) = fork length (l) - 486 mm. For other lengths, request as CSM only.

⁷³ Narrower only to support putting pallets away close enough to the racking pillars, to fit more pallets tighter per each racking beam section (while e.g. EUR pallets will in this case have to be picked up using the telescoping reach in front of the straddles).

10 Carriage options

•	Standard
0	Option
—	Not available
CSM	Available as CSM only

10.1 Option availability

See Option descriptions for details.

OPTION	Notes	CODE	SBS16N2	SBS16N2I	SBS20N2	SBS20N2I	SBS16N2S	SBS20N2S	SBS12N2TF
Hydraulic side stabilizers	⁷⁴ ⁷⁵ ⁷⁶ ⁷⁷	HSS	0	0	0	0	—	—	—
Hydraulic side stabilizers - dual load ratings	⁷⁵ ⁷⁶ ⁷⁷ ⁷⁸	HSS/DL	0	0	0	0	—	—	—
Load backrest		BACKREST	0	0	0	0	0	0	CSM

⁷⁴ See Section 10.3 Side stabilizers (HSS).

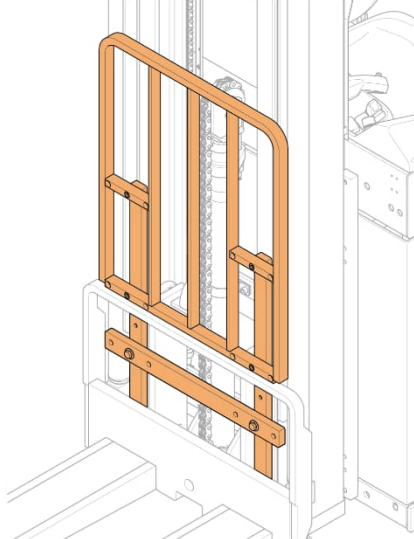
⁷⁵ Only available on DTFV mast.

⁷⁶ Only in combination with Multi function display (MULTI DISPLAY).

⁷⁷ Not in combination with Wide straddle or Telescopic forks models.

⁷⁸ See Section 10.4 Side stabilizers - dual load ratings (HSS/DL).

10.2 Option descriptions

LOAD BACKREST	BACKREST
Load backrest height 1,200 mm from top of fork. NOTE: Available for SBS12N2TF as CSM only.	

10.3 Side stabilizers (HSS)

NOTE: Only available on DTFV mast.

NOTE: Only in combination with Multi function display (MULTI DISPLAY).

NOTE: Stabilizers increase the truck width (Std width = 1,010 mm).

When lifting with the stabilizers not fully extended, the lift stops at the height shown in the table below. A red stabilizer symbol on the display indicates that it is necessary to extend the stabilizers to be able to lift higher.

When the stabilizers are fully extended it is possible to lift to the maximum lift height.

Type	Stabilizer position	Width b1 S [mm]	Fork height for stabilizers to be extended for extra stability and capacity
SBS16N2 DTFV	Retracted	1,010	Junior (BC 465) 3,200 mm
	Extended	1,488	Senior (BC 775) 3,600 mm
SBS16N2I DTFV	Retracted	1,010	Junior (BC 465) 3,200 mm
	Extended	1,504	Senior (BC 775) 3,600 mm
SBS20N2 DTFV	Retracted	1,010	Junior (BC 465) 2,800 mm
	Extended	1,493	Senior (BC 775) 3,200 mm
SBS20N2I DTFV	Retracted	1,030	Junior (BC 465) 2,800 mm
	Extended	1,581	Senior (BC 775) 3,200 mm

To enhance efficient load handling operations, it is possible to simultaneously lift the main lift and extend the stabilizers, and to simultaneously lower the main lift and retract the stabilizers.

When stabilizers are not fully retracted the drive speed is limited to 4 km/h.

10.4 Side stabilizers - dual load ratings (HSS/DL)

The lift height is not limited depending on the status of the stabilizers. Two load deration tables are provided, one is valid when the stabilizers are fully extended and one is valid when they are retracted.

When the lift height reaches a certain height (see the table in Section 10.3) with the stabilizers not fully extended, a red stabilizer symbol on the display indicates that the truck capacity is dependent on the use of the side stabilizers.

NOTE: It is the operator's responsibility to use the stabilizers depending on the weight of the load.

To enhance efficient load handling operations, it is possible to simultaneously lift the main lift and extend the stabilizers, and to simultaneously lower the main lift and retract the stabilizers.

When stabilizers are not fully retracted the drive speed is limited to 4 km/h.

11 Drive and lift control options

- Standard
- 0 Option
- Not available

11.1 Option availability

See Option descriptions for details.

OPTION	Notes	CODE	SBS16N2	SBS16N2I	SBS20N2	SBS20N2I	SBS16N2S	SBS20N2S	SBS12N2TF
Lift Motor 4.0 kW		D/LFT/MTR40	•	•	•	•	•	•	•
Lift Motor 8.0 kW (Heavy duty)		LFT/MTR80	0	0	0	0	0	0	0
Increased drive speed 12 km/h	⁷⁹ ⁸⁰ ⁸¹	SPEED/I	0	—	0	—	—	—	—
Hand operated direction control	⁸²	HODC	0	0	0	0	0	0	0
360 Degree steering	⁸²	ELEC/S360	0	0	0	0	0	0	0
180/360 Degree steering	⁸³	ELEC/S1836	0	0	0	0	0	0	0
Midi steering wheel		MIDI/STEER	0	0	0	0	0	0	0
Mini steering wheel		MINI/STEER	•	•	•	•	•	•	•
Reversed steering		REV/S	0	0	0	0	0	0	0
Key switch entry	⁸⁴	KEY SWITCH	•	•	•	•	•	•	•
Multi function display		MULTI DISPLAY	0	0	0	0	0	0	0

⁷⁹ See Section 11.3 Increased drive speed 12 km/h (SPEED/I).

⁸⁰ Not in combination with initial lift, wide straddle, or telescopic forks.

⁸¹ Requires option Load weight indicator (LWI).

⁸² Only in combination with Multi function display (MULTI DISPLAY).

⁸³ Only in combination with Multi function display (MULTI DISPLAY) and PIN entry.

⁸⁴ Key switch is optional in combination with Multi function display (MULTI DISPLAY).

OPTION	Notes	CODE	SBS16N2	SBS16N2I	SBS20N2	SBS20N2I	SBS16N2S	SBS20N2S	SBS12N2TF
Lift height indicator	⁸⁵	LHI	0	0	0	0	—	0	0
Load weight indicator	⁸⁶ ⁸⁷	LWI	0	0	0	0	0	0	0
Lift stop without restart (Duplex mast)	⁸⁸	LIFT/STOP	0	0	0	0	0	—	—
Lift stop with restart (Duplex mast)	⁸⁷ ⁸⁸	LIFT/STOPR	0	0	0	0	0	—	—
Default lift stop without restart (Triplex mast)	⁸⁸ ⁸⁹	S/LIFT/STOP	0	0	0	0	—	0	0
Default lift stop with restart (Triplex mast)	⁸⁸ ⁹⁰	S/LIFT/STOP/R	0	0	0	0	—	0	0
Level assistance system	⁹⁰	LAS	0	0	0	0	—	0	0
Battery creep speed (limp home, safety function)		BATT/CREEP	0	0	0	0	0	0	0

11.2 Option descriptions

LIFT MOTOR 8.0 KW	LFT/MTR80
High performance 8.0 kW AC (heavy duty) lift motor (S3=15%), replaces the standard 4.0 kW DC motor.	

⁸⁵ Only in combination with DTFV mast and Multi function display (MULTI DISPLAY).

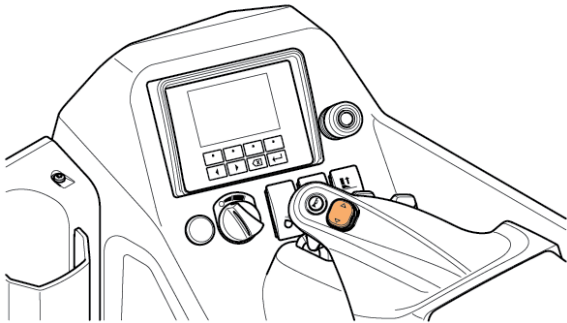
⁸⁶ Not in combination with Cold store modification (MODCS).

⁸⁷ Only in combination with Multi function display (MULTI DISPLAY).

⁸⁸ The truck can be equipped with either the 'with restart' option or the 'without restart' option, not both.

⁸⁹ Lift height indicator (LHI) required. Multi function display (MULTI DISPLAY) is not necessary for this option but it is needed if a read-out of the height is required.

⁹⁰ Only in combination with DTFV mast, Multi function display (MULTI DISPLAY) and Lift height indicator (LHI).

HAND OPERATED DIRECTION CONTROL	HODC
Hand-operated 180° steering direction control. Replaces the standard hands-free direction control in the accelerator pedal. NOTE: Only in combination with option Multi function display (MULTI DISPLAY).	
360 DEGREE STEERING	ELEC/S360
Replaces 180° steering. Includes Hand operated direction control (HODC). NOTE: Only in combination with option Multi function display (MULTI DISPLAY).	180° steering:  360° steering: 

180/360 DEGREE STEERING
ELEC/S1836

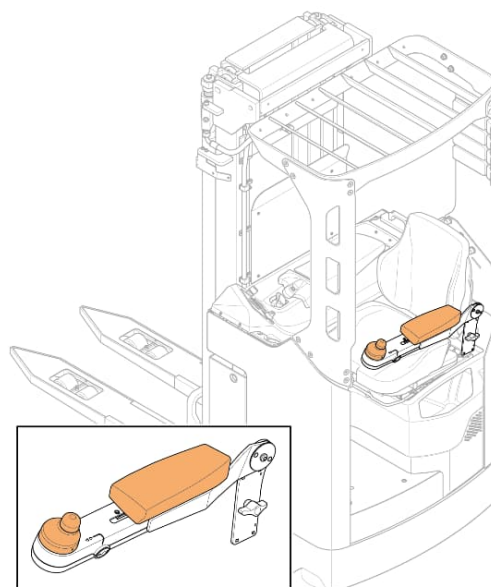
180/360° steering selectable via the Multi function display.

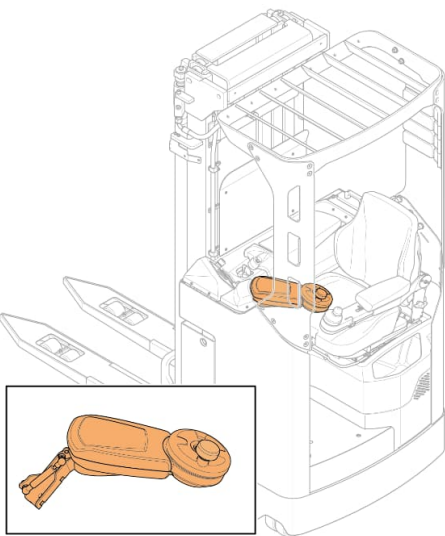
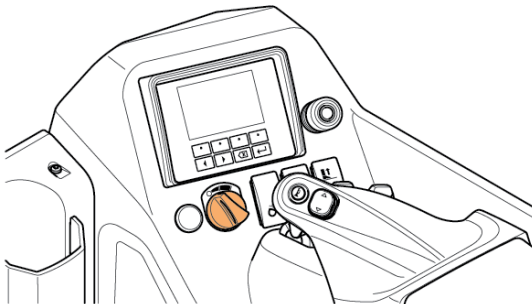
Includes Hand operated direction control (HODC).

NOTE: Only in combination with option Multi function display (MULTI DISPLAY) and PIN entry.


MINI STEERING WHEEL
MINI/STEER

Standard steering wheel with floating armrest, adjustable height and length.



MIDI STEERING WHEEL	MIDI/STEER
Replaces the standard mini steering wheel.	
REVERSED STEERING	REV/S
IMPORTANT: This is only recommended for customers who already have trucks with reversed steering in operation in the existing fleet.	
KEY SWITCH ENTRY	KEY SWITCH
Included in the Standard display. When Multi function display (MULTI DISPLAY) is chosen, Key switch is not included but can be added as an option.	

MULTI FUNCTION DISPLAY

Advanced graphical display with a keypad. Enables operator interaction with the display.

Allows PIN code login (replaces Key switch). At delivery, 99 default PIN codes are installed. They can all be changed via TruckTool. A list of the default codes will be available on After Market Portal.

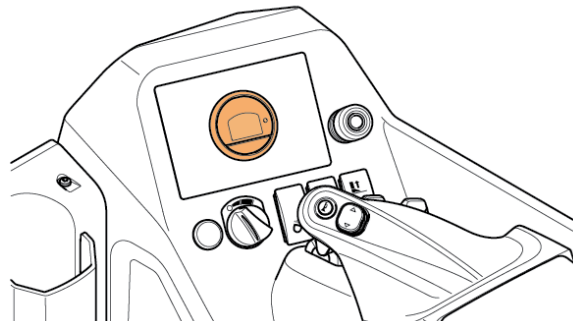
Shows Battery Discharge Indicator (BDI) and allows selection of Performance category (Power, Eco, Easy).

Operator instructions shown as icons and graphics.

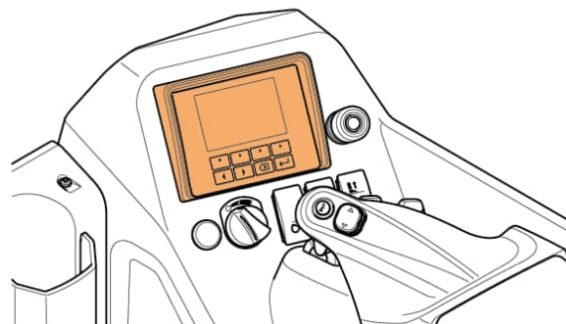
NOTE: Option Key switch entry (KEY SWITCH) is not included but can be added as an option. Replaces the PIN code login.

MULTI DISPLAY

Standard display:



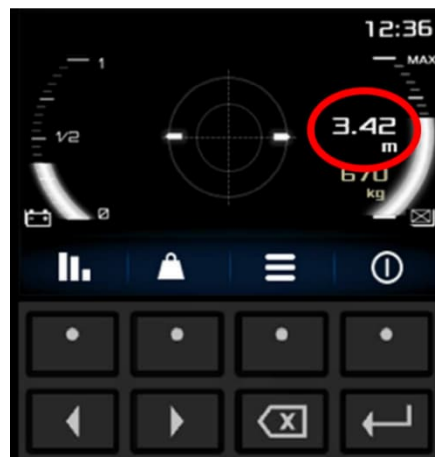
Multi function display:


LIFT HEIGHT INDICATOR

Height indication on the display, indicated in meters and centimeters.

NOTE: Not included in free lift stroke.

NOTE: Only in combination with DTFV mast and Multi function display (MULTI DISPLAY).

LHI


LOAD WEIGHT INDICATOR
LWI

Weight indication on the display, indicated in kg.

On the main screen, the weight shows the total (nominal) load weight, accuracy +/- 50 kg.

On the scale screen:

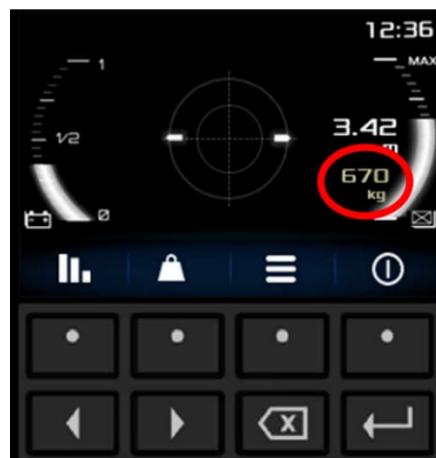
- The first value indicates the net weight for the goods when tared, accuracy +/- 50 kg.
- The second value shows the accumulated net weight since the last reset.

Not active above 1.7 m lift height (H), or when driving, lifting or lowering.

NOTE: Not in combination with Cold store modification (MODCS).

NOTE: Option Multi function display (MULTI DISPLAY) required, not included.

Main screen:



Scale screen:



LIFT STOP WITHOUT RESTART (DUPLEX MAST)
LIFT/STOP
LIFT STOP WITH RESTART (DUPLEX MAST)
LIFT/STOPR
DEFAULT LIFT STOP WITHOUT RESTART (TRIPLEX MAST)
S/LIFT/STOP
DEFAULT LIFT STOP WITH RESTART (TRIPLEX MAST)
S/LIFT/STOP/R

One pre-defined lift stop included in all options. Note the lift height ($H=h_3+h_{13}$) in the order. The levels can be selected in 100 mm intervals. If needed, the lift stop height for DTFV mast can be changed via TruckTool.

NOTE: When selecting the lift stop height, be aware that the selected lift stop height is the lift height $H = VDI h_3+h_{13}$, while the highest point of the machine when in operation can be either the mast top (h_4), the top of an additional load backrest, or the customer's pallet load height.

In combination with DTFV mast, with Multi function display (MULTI DISPLAY) and Default lift stop with restart, up to 10 different lift-stop heights can be programmed before use in the truck computer via TruckTool.

In combination with TFV mast, only 1 lift stop is possible.

The lowest possible level for lift stop:

- SBS16N2 with DTFV-mast $H/3+310$ mm
- SBS16N2I with DTFV-mast $H/3+420$ mm
- SBS20N2 with DTFV-mast $H/3+360$ mm
- SBS20N2I with DTFV-mast $H/3+470$ mm
- SBS16N2(I) with TFV-mast $H/2+350$ mm

NOTE: The actual lift stop height (H) is reduced by approx. 110 mm for the TFV mast models, as well as for the initial lift models. The lift stop function of the TFV mast is created with a single/fixed sensor, hence being prone to larger variations in its stop height tolerance.

NOTE: Lift stop options with restart only in combination with Multi function display (MULTI DISPLAY).

NOTE: Not included in free lift stroke.

NOTE: The truck can be equipped with either the 'with restart' option or the 'without restart' option, not both.

NOTE: S/LIFT/STOP requires Lift height indicator (LHI). Multi function display (MULTI DISPLAY) is not necessary for this option but it is needed if a read-out of the height is required.

LEVEL ASSISTANCE SYSTEM
LAS

The truck driver can initiate the lifting stop procedure by reducing the lift speed to less than 80 % of the max lift speed 150 mm before the programmed beam level, at the latest. A display indication will notify the driver that the automated lifting stop process started. A "double beep" indicates that the lift has stopped at the selected lift stop height.

The driver will need to keep the lift lever in position 1 $\leq$ 80 % lift speed. The lift function then gradually slows down the lift speed and stops the forks at the programmed height.

Bypass of programmed level(s) is done when the lift speed is $>$ 80 % of the max lift speed.

NOTE: No levels can be programmed in free lift stroke.

The lowest possible level for lift stop:

- SBS16N2 with DTFV-mast H/3+310 mm
- SBS16N2I with DTFV-mast H/3+420 mm
- SBS20N2 with DTFV-mast H/3+360 mm
- SBS20N2I with DTFV-mast H/3+470 mm

NOTE: Only in combination with DTFV mast, Multi function display (MULTI DISPLAY) and Lift height indicator (LHI).

The minimum distance between levels is 150 mm (recommended distance $>$ 1000 mm between levels).

Levels must be programmed in the truck computer before use. Up to 10 levels in each of four different environments (user-definable zones A, B, C and D) can be programmed.

The target level can be selected separately with the function keys every time a raise command is given.

Example:

Target level B7 selected.

Green background indicates that the target level is reached.


BATTERY CREEP SPEED (LIMP HOME, SAFETY FUNCTION)
BATT/CREEP

When the battery is at low state of charge the travel speed is limited to default 3 km/h.

DoD (depth of discharge):

- Lead-acid 15 %
- Li-ion 7 %

11.3 Increased drive speed 12 km/h (SPEED/I)

NOTE: Not in combination with initial lift, wide straddle, and telescopic forks.

NOTE: Requires option Load weight indicator (LWI).

		SBS16N2				SBS20N2			
Chassis		Junior (BC 465)		Senior (BC 775)		Junior (BC 465)		Senior (BC 775)	
Mast type		TFV	DTFV	TFV	DTFV	TFV	DTFV	TFV	DTFV
Load weight	[kg]	0 - 700	0 - 400	0 - 700	0 - 400	0 - 400	0 - 400	0 - 400	0 - 100
Speed (load trailing)	[km/h]	12	12	12	12	12	12	12	12
Speed (load leading)	[km/h]	10	10	10	10	10	10	10	10

With loads over the load weight given in the table, the top speed is automatically reduced to standard speed to secure the braking performance and maintain safety.

12 Electrical options

•	Standard
0	Option
—	Not available

12.1 Option availability

See Option descriptions for details.

OPTION	Notes	CODE	SBS16N2	SBS16N2I	SBS20N2	SBS20N2I	SBS16N2S	SBS20N2S	SBS12N2TF
Floor spot red on headguard	⁹¹ ⁹²	FLR/SRED/O	0	0	0	0	0	0	0
Floor spot blue on headguard	⁹¹ ⁹²	FLR/SPOT/O	0	0	0	0	0	0	0
Warning light	⁹¹	WARN/LIGHT	0	0	0	0	0	0	0
Light in cabin (interior light)	⁹¹	INT/LIGHT	0	0	0	0	0	0	0
Working lights OHG	⁹¹	WORK/L/O	0	0	0	0	0	0	0
Radio with USB socket	⁹¹ ⁹³	RADIO/USB	0	0	0	0	0	0	0
Mast mounted camera RLED	⁹¹ ⁹⁴ ⁹⁵	M/CAM/RLED	0	0	0	0	—	0	—
Laser positioning guide	⁹³ ⁹⁶	LASER/POS	0	0	0	0	—	—	—
Converter 24 - 12 V		DC24/12	0	0	0	0	0	0	0

⁹¹ Only in combination with Overhead guard prepared for options (OHG/PREP), Mesh metal on overhead guard (MESH/METAL), or Panoramic Provision roof (PAN/ROOF).

⁹² Either FLR/SRED/O or FLR/SPOT/O can be selected, not both.

⁹³ Not in combination with Cold store modification (MODCS).

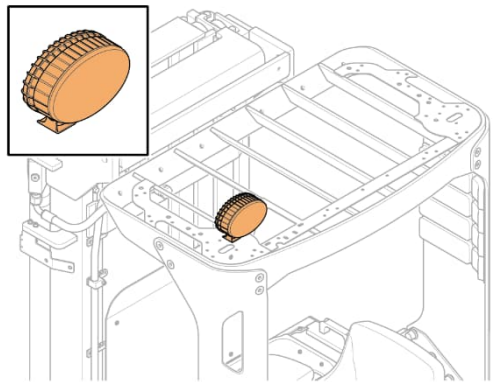
⁹⁴ DTFV mast only. Not in combination with telescopic forks.

⁹⁵ Not in combination with Laser positioning guide (LASER/POS).

⁹⁶ Not in combination with Mast mounted camera RLED (M/CAM/RLED).

OPTION	Notes	CODE	SBS16N2	SBS16N2I	SBS20N2	SBS20N2I	SBS16N2S	SBS20N2S	SBS12N2TF
12V DC Power socket		12V CONN	0	0	0	0	0	0	0
5V USB socket		USB	0	0	0	0	0	0	0
Prepared for opportunity charging	⁹⁷	OPP/CHARGE	0	0	0	0	0	0	0
Antistatic chain		AS/CHAIN	0	0	0	0	0	0	0
Drive alarm		D/ALARM	0	0	0	0	0	0	0
Automatic logoff	⁹⁸ ⁹⁹	AUTOLOGOFF	0	0	0	0	0	0	0
Service alarm		SERV/ALARM	0	0	0	0	0	0	0

12.2 Option descriptions

FLOOR SPOT RED	FLR/SRED/O
Activated by software in forward direction (forks trailing). The lamp is located on the overhead guard and provides a sharp red dot on the floor, approx. 4-6 m in front of the truck to warn other truck drivers and pedestrians. The floor spot cannot be switched off. Increases the overhead guard height by +135 mm. NOTE: Only in combination with Overhead guard prepared for options (OHG/PREP), Mesh metal on overhead guard (MESH/METAL), or Panoramic Provision roof (PAN/ROOF). NOTE: Either FLR/SRED/O or FLR/SPOT/O can be selected, not both.	

⁹⁷ Not in combination with Li-ion battery.

⁹⁸ Not in combination with Key switch entry (KEY SWITCH).

⁹⁹ Only in combination with Multi function display (MULTI DISPLAY).

FLOOR SPOT BLUE
FLR/SPOT/O

The same technical information as for Floor spot red (FLR/SRED/O).

The Floor spot blue is now, with regards to photobiological safety, classified in the risk group 2 as per DIN EN 62471 due to the concentrated blue light emittance. A warning label must be permanently attached clearly visible and legible during normal operation, maintenance and service works.

In case the customer has no request of a specific colour, we recommend Floor spot red (FLR/SRED/O) due to safety reasons.

NOTE: Only in combination with Overhead guard prepared for options (OHG/PREP), Mesh metal on overhead guard (MESH/METAL), or Panoramic Provision roof (PAN/ROOF).

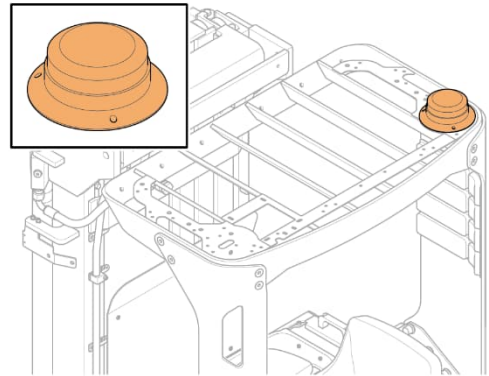
NOTE: Either FLR/SRED/O or FLR/SPOT/O can be selected, not both.


WARNING LIGHT
WARN/LIGHT

Flashes when the operator is present and operates the truck.

Increases the overhead guard height (lamp +60 mm).

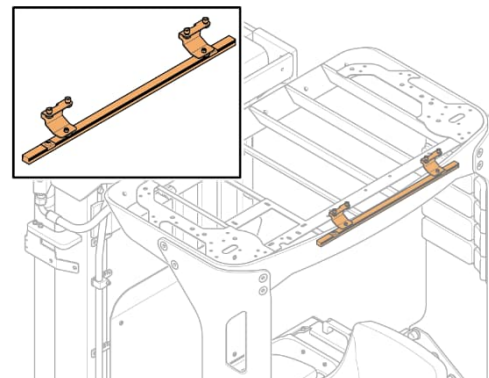
NOTE: Only in combination with Overhead guard prepared for options (OHG/PREP), Mesh metal on overhead guard (MESH/METAL), or Panoramic Provision roof (PAN/ROOF).

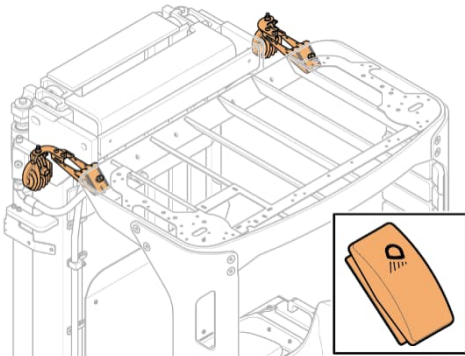
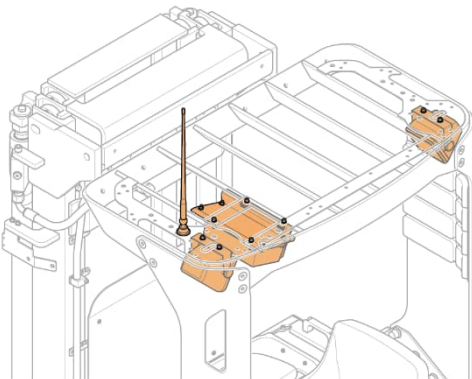
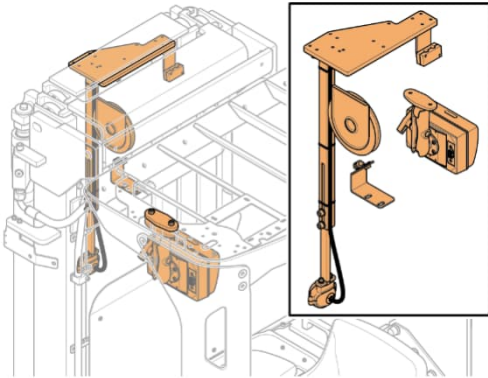

LIGHT IN CABIN (INTERIOR LIGHT)
INT/LIGHT

Light in the driver compartment.

Increases the overhead guard height (cables +25 mm).

NOTE: Only in combination with Overhead guard prepared for options (OHG/PREP), Mesh metal on overhead guard (MESH/METAL), or Panoramic Provision roof (PAN/ROOF).



WORKING LIGHTS	WORK/L/O
2 lights 4xLEDs each mounted in the overhead guard in fork direction. Light intensity 1,100 Lumen per lamp. IP 69 rated. Switched on/off by a button on the dashboard. Increases the overhead guard height (cables +25 mm). NOTE: Only in combination with Overhead guard prepared for options (OHG/PREP), Mesh metal on overhead guard (MESH/METAL), or Panoramic Provision roof (PAN/ROOF).	
RADIO WITH USB PORT	RADIO/USB
Car stereo with: • RDS tuner • Bluetooth • USB and Aux-in • Two loudspeakers Supports: • MIXTRAX EZ • iPod/iPhone Direct Control • Android Increases the overhead guard height (foldable antenna +50 to 395 mm). NOTE: Not in combination with Cold store modification (MODCS). NOTE: Only in combination with Overhead guard prepared for options (OHG/PREP), Mesh metal on overhead guard (MESH/METAL), or Panoramic Provision roof (PAN/ROOF).	
MAST MOUNTED CAMERA RLED	M/CAM/RLED
Ball camera in inner mast (only DTFV) and monitor in the overhead guard. The monitor increases the overhead guard height (fasteners +30 mm). NOTE: Only in combination with Overhead guard prepared for options (OHG/PREP), Mesh metal on overhead guard (MESH/METAL), or Panoramic Provision roof (PAN/ROOF). NOTE: Not in combination with Laser positioning guide (LASER/POS). NOTE: In combination with DTFV mast only. Not in combination with telescopic forks.	

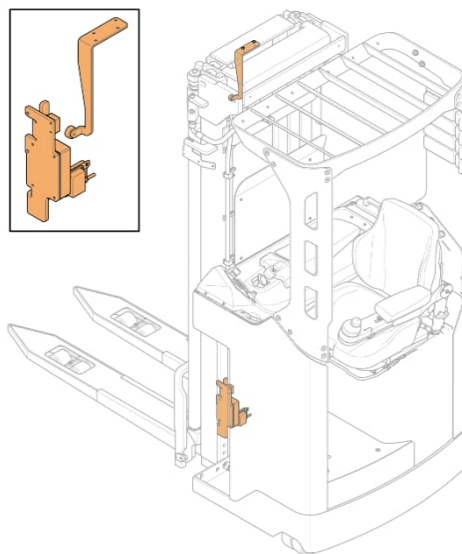
LASER POSITIONING GUIDE

Horizontal laser beam indication of the forks level along pallet racking storage beams.

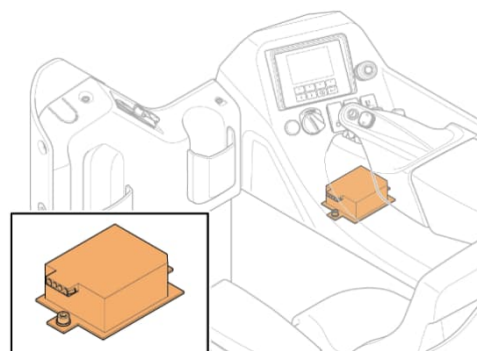
Technical specifications	
Wavelength	635-640nm
Output power	6mW
Optics	90°-line optics
Laser Class	2M
Battery pack	5V 10A
Encapsulation	IP66 (dust tight and waterproof)
Operating temperature	-10°C to +40°C
Storage temperature	-10°C to +50°C
Dimensions laser unit	56 x 56mm
Dimensions battery pack	124 x 82 x 40mm (incl. bracket)
IEC 60825-1:2014	Laser Standard
IEC 50081-2 EMC	Generic Emission Standard
IEC 61000-6-2 EMC	Compatibility Standard for Industrial Environments
IEC 61000-4-4 EMC	Electrical Fast Transient/Burst Immunity Test
IEC 61000-4-2 ESD	Electrostatic Discharge Immunity Test

NOTE: Not in combination with Mast mounted camera RLED (M/CAM/RLED) and Cold store modification (MODCS).

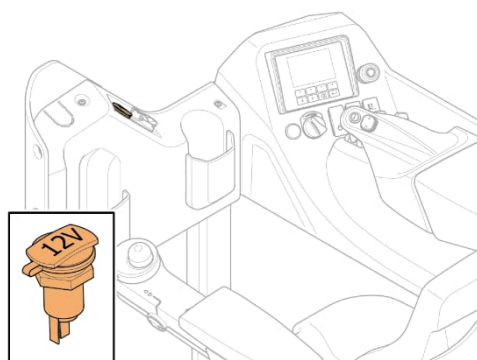
NOTE: Not in combination with wide straddle or telescopic forks.

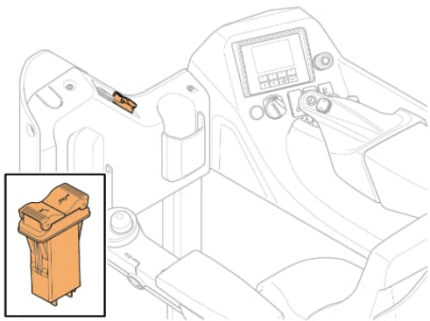
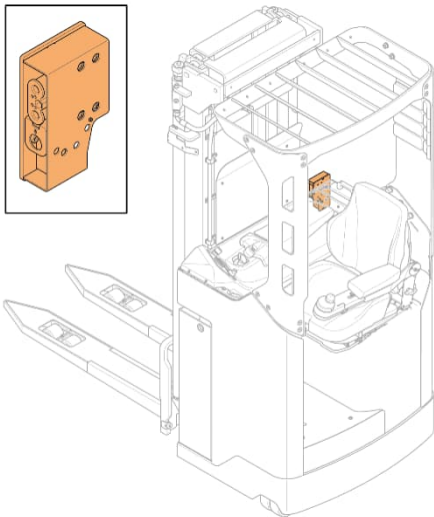
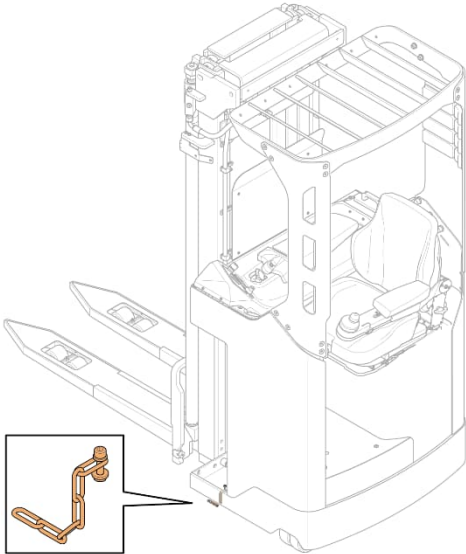
LASER/POS

DC24/12 CONVERTER 24 - 12 V

Converts 24V to 12V. Power connection to terminal on Converter.

DC24/12

12V DC POWER SOCKET

12 V/8 A power outlet on the panel in front of the driver, over the knees. Converter 24V – 12V is included.

12V CONN


5V USB SOCKET	USB
5 V/3 A power outlet on the panel in front of the driver, over the knees.	
PREPARED FOR OPPORTUNITY CHARGING	OPP/CHARGE
An extra battery plug for easy access. The battery can be charged with the standard plug still connected. NOTE: For lead-acid batteries only. Not available for li-ion batteries.	
ANTISTATIC CHAIN	AS/CHAIN
Chain connected to the chassis hanging down and touching the floor to avoid static electricity.	

DRIVE ALARM	D/ALARM
An audible warning (beep sound), upon delivery activated to warn others when the truck is travelling in the load leading (LL) direction only. Re-configurable by software (TruckTool) to warn when travelling in the load leading (LL) direction, or in the load trailing direction (LT), or both.	
AUTOMATIC LOG OFF	AUTOLOGOFF
The truck automatically logs off when the operator has been absent for 5 minutes. Adjustable between 1-255 minutes. NOTE: Not in combination with Key switch entry (KEY SWITCH). NOTE: Option Multi function display (MULTI DISPLAY) required, not included.	
SERVICE ALARM	SERV/ALARM
A wrench symbol is shown for 30 s after log-in on the display when service is due. Adjustable service interval in active hours or number of calendar months.	

13 OHG and cabin options

•	Standard
0	Option
—	Not available

13.1 Option availability

See Option descriptions for details.

OPTION	Notes	CODE	SBS16N2	SBS16N2I	SBS20N2	SBS20N2I	SBS16N2S	SBS20N2S	SBS12N2TF
Overhead guard		OHG	•	•	•	•	•	•	•
Overhead guard prepared for options		OHG/PREP	0	0	0	0	0	0	0
Mesh metal on overhead guard		MESH/METAL	0	0	0	0	0	0	0
Panoramic Provision roof	¹⁰⁰	PAN/ROOF	0	0	0	0	0	0	0
PVC cover on OHG bars	¹⁰¹	PVC/COV	0	0	0	0	0	0	0
Accessory rack		BAR	0	0	0	0	0	0	0
Writing desk	¹⁰²	DESK	0	0	0	0	0	0	0
Equipment holder RAM system size type C	¹⁰²	RAM/C	0	0	0	0	0	0	0
Equipment holder RAM system size type C 2X	¹⁰²	RAM/C/2X	0	0	0	0	0	0	0
Equipment holder RAM system size type D	¹⁰²	RAM/D	0	0	0	0	0	0	0
Rear view mirror	¹⁰²	RVM	0	0	0	0	0	0	0
Dashboard protection and mini accessory rack		D/BOARD/PROT	0	0	0	0	0	0	0

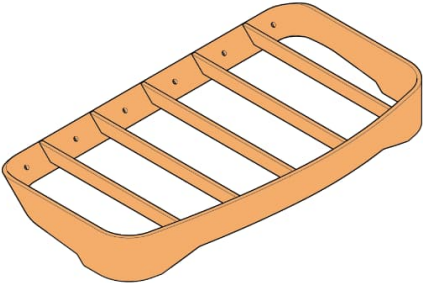
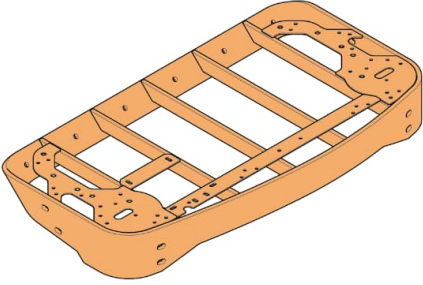
¹⁰⁰ Not in combination with Cold store modification (MODCS).

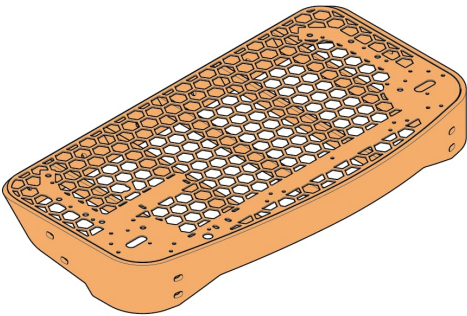
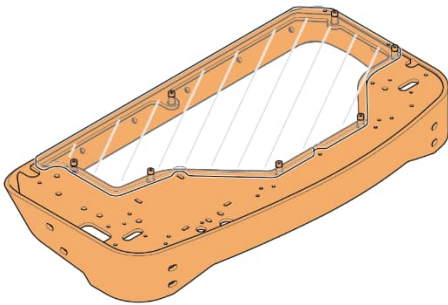
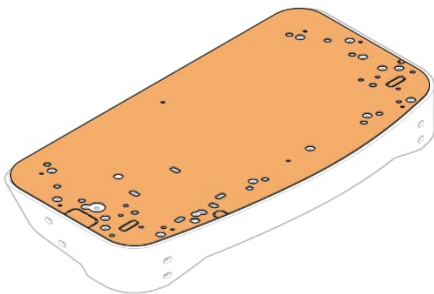
¹⁰¹ Requires Overhead guard prepared for options (OHG/PREP). Not in combination with standard, mesh, or Panoramic ProVision roof.

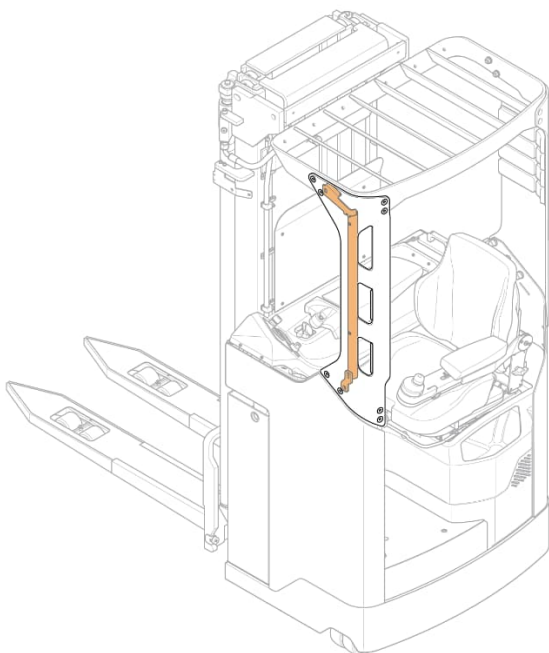
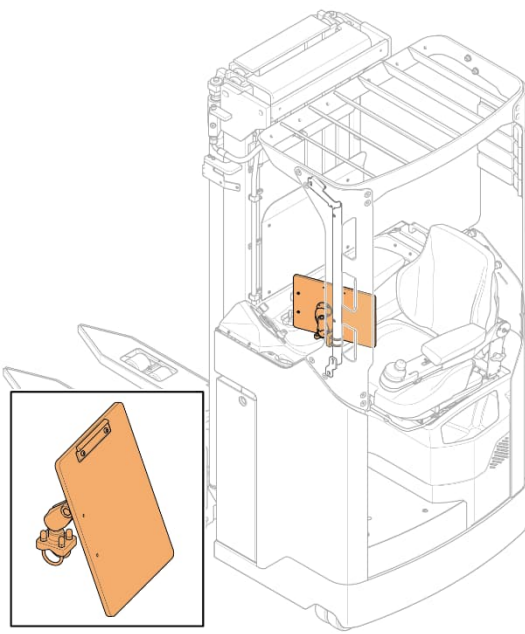
¹⁰² Requires accessory rack, not included in the standard OHG.

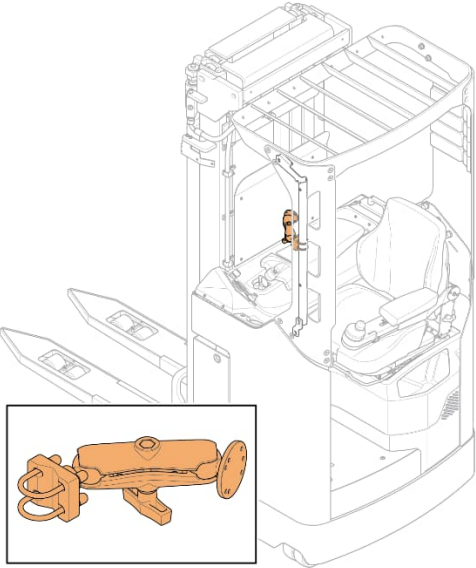
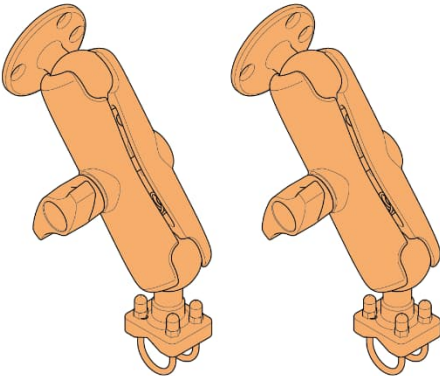
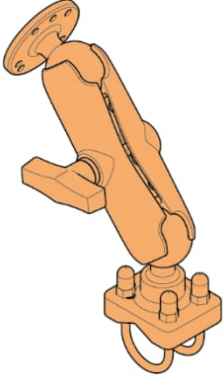
OPTION	Notes	CODE	SBS16N2	SBS16N2I	SBS20N2	SBS20N2I	SBS16N2S	SBS20N2S	SBS12N2TF
Seat PVC (suspension seat in PVC)		SEAT/P	0	0	0	0	0	0	0
Seat suspension cloth		SEAT/C	●	●	●	●	●	●	●
Seat PVC with heater		S/HEAT/P	0	0	0	0	0	0	0
Seat cloth with heater		S/HEAT/C	0	0	0	0	0	0	0
Adjustable floor height		ADJ/FLR/HT	0	0	0	0	0	0	0
Special color for product		SP/COLOR	0	0	0	0	0	0	0

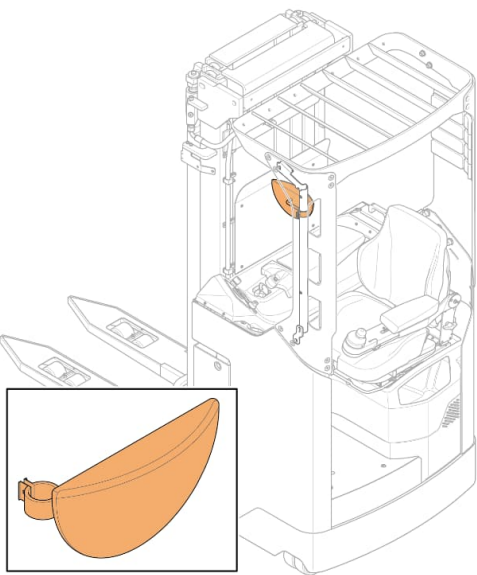
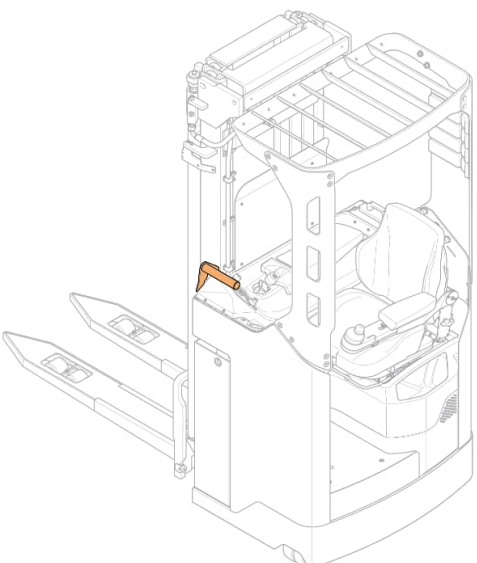
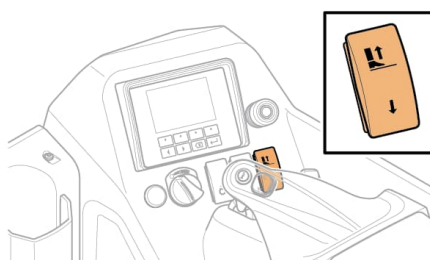
13.2 Option descriptions

OVERHEAD GUARD	OHG
Standard roof (not in combination with options on overhead guard). Standard OHG height h6=2,110 mm. The OHG includes a head cushion.	
OVERHEAD GUARD PREPPED FOR OPTIONS	OHG/PREP
Option roof. Prepared for options (plastic cover and lamps etc). Accessory rack included. The OHG includes a head cushion.	

MESH METAL ON OVERHEAD GUARD	MESH/METAL
Mesh roof. Prepared for options (lamps etc). Accessory rack included. The OHG includes a head cushion.	
PANORAMIC PROVISION ROOF	PAN/ROOF
Recommended safety option. Superior protection against dust and falling objects without loss of vision. Panoramic ProVision roof. Prepared for options (lamps etc). Accessory rack included. Increases the overhead guard height (plastic +10, fasteners +20 mm). The OHG includes a head cushion. NOTE: Not in combination with Cold store modification (MODCS) due to fogging.	
PVC COVER ON OVERHEAD GUARD BARS	OHG/PVC
Protects the driver from small falling objects. Increases the overhead guard height (plastic +3, fasteners +15 mm). NOTE: Requires Overhead guard prepared for options (OHG/PREP). Not in combination with standard OHG, Mesh metal on overhead guard, or Panoramic ProVision roof.	

ACCESSORY RACK	BAR
Vertical accessory rack $\varnothing$ 35mm. The optional accessory rack can be chosen in combination with the standard OHG (it is included with overhead guards prepared for options). NOTE: RAM holders are not included.	
WRITING DESK (INCLUDING RAM C HOLDER)	DESK
NOTE: Accessory rack is not included. NOTE: If standard OHG is chosen, requires Accessory rack.	

EQUIPMENT HOLDER, RAM SYSTEM SIZE C	RAM/C
Short holder, length 120 mm for extra equipment, load capacity 1.8 kg. AMPS hole pattern, measuring 30*38 mm. NOTE: If standard OHG is chosen, requires Accessory rack.	
EQUIPMENT HOLDER, RAM SYSTEM SIZE C, 2 PCS	RAM/C/2X
Package of 2 pcs short holder, length 120 mm for extra equipment. AMPS hole pattern, measuring 30*38 mm. NOTE: If standard OHG is chosen, requires Accessory rack.	
EQUIPMENT HOLDER, RAM SYSTEM SIZE D	RAM/D
Long holder, length 220 mm for extra equipment, load capacity 4.5 kg. AMPS hole pattern, measuring 30*38 mm. NOTE: If standard OHG is chosen, requires Accessory rack.	

REAR VIEW MIRROR	RVM
Wide angle mirror mounted on accessory rack (not included). NOTE: If standard OHG is chosen, requires option Accessory rack (BAR).	
DASHBOARD PROTECTION	D/BOARD/PROT
A protective bar on the fork side of the chassis. The bar functions as a mini accessory rack. PVC curtain protection towards mast side.	
ADJUSTABLE FLOOR HEIGHT	ADJ/FLR/HT
Electrically adjustable floor height, adjustment range 70 mm. Allows the operator to adjust the height of the floor according to individual preferences.	

14 Environment

COLD STORE MODIFICATION (-30°C)	MODCS
Cold store hydraulic oil. Cold store gearbox oil. Plastic finger protection replaced by steel mesh. Comfort floor mat. NOTE: Not in combination with Li-ion battery, Load weight indicator (LWI), Radio with USB socket (RADIO/USB), Laser positioning guide (LASER/POS), and Panoramic Provision roof (PAN/ROOF).	
Drive wheel	Tractothan® 93° shore is recommended for cold store environment.
Rust protection (Tectyl)	On the following surfaces: unpainted surfaces and black screws, load wheel and drive wheel hubs, bolts securing mast and chassis. Chain bolts.
NOTE: Avoid small batteries in Cold store applications due to low operating time. Always use the largest battery capacity possible in Cold store. For lead/acid batteries, the available battery capacity is reduced by approximately 1% per degree °C below average electrolyte temperature of 30 °C. NOTE: Not in combination with Li-ion battery.	

15 Wheels

- Standard
- 0 Option
- Not available

15.1 Option availability

OPTION	Notes	CODE	SBS16N2	SBS16N2I	SBS20N2	SBS20N2I	SBS16N2S	SBS20N2S	SBS12N2TF
Vulkollan drive wheel		VUL/DW	•	•	•	•	•	•	•
Tractothan drive wheel		TRAC/DW	0	0	0	0	0	0	0
Super grip drive wheel		SGRIP/DW	0	0	0	0	0	0	0
Std bogie (tandem) loadwheels, Vulkollan		BOG/LWS BOG/LWS/L ¹⁰³ BOG/LW/W ¹⁰⁴ STR/LOW ¹⁰⁵	•	•	•	•	•	•	0
Std bogie (tandem) loadwheels lift		SINGP/LW STR/HIGH ¹⁰⁵	—	—	—	—	0	—	•

15.2 Option descriptions

OPTION	DESCRIPTION
Vulkollan® 93° shore	For drive and load wheels in all applications up to 16 km/h. The best choice for 90 % of all applications. It is especially recommended for high requirements regarding load capacity, rebound resilience, speed and durability. Therefore Vulkollan® is preferred for drive and load wheels for industrial trucks.

¹⁰³ Code for initial lift models.

¹⁰⁴ Code for wide straddle models.

¹⁰⁵ Code for the telescopic forks model.

OPTION	DESCRIPTION
Tractothan® 93° shore	For improved traction of load and drive wheels for all applications. For vehicles for in-plant transportation on wet and soiled floors. In mixed operations (i.e. for trucks that travel from deep-freeze area to the loading zone or onto the ramp) there can be problems caused by humidity due to condensation. We recommend using Tractothan® to improve traction on these surfaces. Also to be used on smooth, highly sealed wet, dirty or partly oil-soiled surfaces. Advantages Advantages of Vulkollan® plus improved traction of approx. 15 %. Disadvantages Less resistant to wear compared to Vulkollan® 93° shore.
Super grip 93° shore	For load and drive wheels used on extremely humid, slippery and greasy floors and where there is a danger of icing. For extreme applications like the fish, meat and dairy industry. Advantages Significantly better traction. Disadvantages Abrasive effect may damage sensitive floors! Less resistant to wear compared to Vulkollan® 93° shore.

15.3 Maximum wheel pressures

		SBS16N2 DTFV 6300 Battery 465 Ah	SBS16N2 DTFV 7000 Battery 775 Ah
Maximum wheel pressure with load	[Mpa]	6.2	6.3
Maximum wheel pressure without load	[Mpa]	4.2	4.5
Maximum wheel pressure with load	[kg/cm ²]	62	63
Maximum wheel pressure without load	[kg/cm ²]	42	45



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