



# COST-SAVING CAPABILITIES

## SPECIFICATIONS

**STAND-IN STACKERS** 24V, 1.2 - 2.0 TONNES

**NSR12N2  
NSR16N2  
NSR20N2**

**NSR12N2I  
NSR16N2I  
NSR20N2I**

**NSR16N2S  
NSR20N2S**





# STEP IN AND SAVE

THE SMARTER CHOICE. THESE WORLD-LEADING STAND-IN STACKERS WILL REDUCE YOUR TOTAL COST OF OPERATION (TCO). HOW? BY BOOSTING PRODUCTIVITY, LOWERING FLEET AND LABOUR COSTS, AND INCREASING STORAGE DENSITY. IDEAL FOR LONG AND SHORT INTERNAL TRANSPORT, ORDER PICKING AND STACKING UP TO 7 METRES.



More compact and rapidly manoeuvrable than a platform stacker, their advanced drive, lifting, lowering, steering and stability systems make every operation faster and smoother. In narrow aisles, especially, you will get the job done in less time, with fewer trucks and operators.



Stand-in stackers enable you to use your valuable warehouse space more fully by making aisles narrower and racking higher. Fulfilling multiple roles, including order picking, they offer similar lifting capabilities to many reach trucks but at lower prices and in tighter spaces.



Contained and protected within the truck's robust structure, operators work quickly and confidently – with lower accident and damage risk – thanks to automated speed and stability aids. The operator compartment is vibration-free, comfortable, quiet and very easy to enter and exit.



Ergonomic controls give further comfort, job satisfaction and productivity – and avoid stress, strain and fatigue. They include a fully adjustable (up/down, forward/back) steering console, allowing the perfect driver position, and armrest-mounted features for simultaneous control of drive and hydraulic functions.

## LOWER COST OF OPERATION

- Robust construction and component sealing minimises damage and wear, even in demanding multi-shift operations.
- Multifunctional display option with onboard diagnostics encourages correct use of truck and speeds up maintenance.
- PIN code identification prevents unauthorised use, while choice of PRO, ECO and EASY modes matches truck performance to operator experience and application. (Only with multifunctional display option.)
- Easy, fail-safe battery lock avoids delays and accidents at exchanges.
- Fast maintenance access combines with low servicing requirements and long service intervals to reduce downtime.
- Availability of fully integrated Li-ion battery increases battery efficiency, runtime and lifespan, while minimising maintenance needs, for even lower total cost of operation (TCO).
- Advanced motors, regenerative braking and efficient mast designs save on energy and hydraulic oil consumption.
- High levels of component sharing maximise parts availability – and reduce downtime, stock and carbon costs – across the Cat stacker and power pallet ranges.

## UNMATCHED PRODUCTIVITY

- Broad range of models, variants and specialised options gives class-leading adaptability to different applications, for optimum productivity, ergonomics and safety.
- Advanced AC motor and control technology enables fast, smooth and precise driving, lifting and lowering.
- Integrated functionality saves time by allowing simultaneous control of drive speed, mast/fork movements and side stabiliser deployment.
- Side stabilisers (optional) increase residual capacity for high lifting.
- Progressive electric power steering automatically adjusts sensitivity according to speed, for high precision in tight manoeuvres and high stability when travelling fast and straight.
- Automatic cornering control reduces maximum travel speed according to steering angle, to ensure quick but safe, stable and confident turns.
- Creep speed feature increases load capacity for lifts above 1.7 m by automatically limiting travel to 5 km/h when forks reach that height. (Speed-cut height varies in wide straddle models.)
- With Li-ion battery, performance is enhanced and fast opportunity charging is possible, via easily accessible connector, for continuous operation without battery changes.
- High ground clearance avoids sticking on ramps and uneven floors.
- Initial lift (I) models give additional ground clearance and may be used for double pallet handling – with one load on the support legs and one on the forks.

- Wide straddle (S) models allow lowering of forks to the floor, between widely spaced support legs, for handling of closed-base pallets and other carriers without open fork spaces or pockets.
- Wide straddle structure simplifies fitting and use of specialised attachments such as roll clamps, spikes and rotators, giving even greater application flexibility.
- Wide straddle variant specifications include choice of standard (855 or 1055 mm) or customised straddle widths, and smaller or larger chassis/capacity, for optimum matching with applications.
- Wide straddle legs have tandem wheels and a low-profile design, slightly angled downward toward their end point, for improved drive-in and ground clearance and better performance on gradients.
- Fork shape is tapered on the underside as well as pointed at the tip, to avoid sticking, for easier and faster pallet entry and exit even while turning at the same time. (On wide straddle models, fork tips are slightly pointed and tapered.)
- Extensive mast choice includes duplex and triplex versions with a range of standard and custom lift heights, to match applications perfectly.
- Powerful and quiet hydraulic motor is smoothly governed by stepless, speed-regulated lifting and lowering control, for quick but safe and accurate fork positioning and movement.
- Level assistance system option provides a quick and simple way for operators to choose between stopping at each pre-set height or bypassing it. (Not on 1.6 tonne wide straddle model.)
- Laser fork height indicator option aids accuracy in placing forks at correct level. (Not on wide straddle models.)
- Ergo forks trailing control option allows speed adjustment from a more convenient position - as well as clearer vision - for operators standing in the direction of travel with forks trailing.
- 360-degree steering option allows truck to turn and move in opposite direction, without stopping, in one smooth manoeuvre – for substantial time gains, especially in complex layouts and highly repetitive handling cycles.

## SAFETY AND ERGONOMICS

- Enclosed operator position ensures all-round protection by heavy-duty chassis, integrated bumper, overhead guard pillars and roof.
- Comfortable operator compartment minimises strain and tiredness with low step-in height, fully floating floor, outstanding levels of vibration damping, cushioned backrest, and plenty of space.
- Optical presence sensor reduces stress and fatigue by allowing operator to make small foot movements without accidentally activating automatic braking.
- Fully adjustable steering wheel allows different driving positions depending on travel direction.
- Adjustable armrest comfortably supports wrist while positioning hand ideally to operate the thumbwheel throttle, fingertip hydraulic levers and other controls simultaneously.

- Clear all-round, forward and fork-tip view is achieved through careful design of mast, fork carriage, overhead guard, pillars and chassis, and by low-reflection surfaces.
- Effective mast and fork carriage damping ensures soft landings, smooth stage transitions and rattle-free travel – allowing comfortable load handling and driving with maximum performance throughout long shifts.
- Low-noise specification includes quiet, temperature-controlled fans and speed-regulated lift pump motors, for a pleasant operator environment.
- Working aids include large tool storage compartment – under armrest and accessible from outside truck – plus holders for smaller equipment, phone and drinks, and a writing desk with paper clamp.
- Intuitive multifunctional display option keeps drivers fully informed and is optimally positioned and angled for clear viewing.



### STACKER WITH TELESCOPIC FORKS

We also have a telescopic fork (TF) model. This is specialised for double-deep racking systems but also has many other uses. Like handling long loads or reaching across lorry cargo areas. It can act as a reach truck, a four-point straddle stacker, a pallet truck and an order picker. See our separate NSR12N2TF spec sheet for further information.

### EVERYONE'S A WINNER

Unprecedented levels of component sharing within the Cat® stacker and power pallet portfolio bring additional gains. Fixes are faster, with minimal downtime. Less stock investment is needed. And fewer service van and parts delivery journeys mean a smaller carbon footprint. Everyone wins!

# STANDARD EQUIPMENT AND OPTIONS

	NSR12N2	NSR12N2I	NSR16N2	NSR16N2I	NSR20N2	NSR20N2I	NSR16N2S	NSR20N2S
<b>GENERAL</b>								
Regular narrow straddle legs for handling of open load carriers	●	●	●	●	●	●	—	—
Initial lift for double load handling	—	●	—	●	—	●	—	—
Wide straddle legs for handling of both open and closed load carriers	—	—	—	—	—	—	●	●
Telescopic forks for extended reach in handling of e.g. double-deep stacking and closed load carriers	—	—	—	—	—	—	—	—
Standard display incl. hour meter and battery discharge indicator (BDI)	●	●	●	●	●	●	●	●
Key switch entry	●	●	●	●	●	●	●	●
Electric power steering, with Flexi steering wheel	●	●	●	●	●	●	●	●
Automatic straight steering at start-up	●	●	●	●	●	●	●	●
Adaptive cornering control	●	●	●	●	●	●	●	●
Speed-regulated lift motor and proportional valve for lowering	●	●	●	●	●	●	●	●
Tandem load wheels Vulkollan	●	●	●	●	●	●	●	●
Overhead guard (OHG)	●	●	●	●	●	●	●	●
Adjustable armrest	●	●	●	●	●	●	●	●
Adjustable steering wheel	●	●	●	●	●	●	●	●
Storage compartment under armrest	●	●	●	●	●	●	●	●
Writing desk with paper clip	●	●	●	●	●	●	●	●
Battery on rollers	●	●	●	●	●	●	●	●
<b>POWER SOURCE</b>								
Li-ion batteries *	○	○	○	○	○	○	○	○
Lead acid batteries	○	○	○	○	○	○	○	○
<b>ENVIRONMENT</b>								
Chill store design, down to -10°C	●	●	●	●	●	●	●	●
Cold store design, 0°C to -30°C	○	○	○	○	○	○	○	○
<b>DRIVE AND LIFT CONTROLS</b>								
Height and sideways adjustable Flexi steering wheel	●	●	●	●	●	●	●	●
Fingertip controls for lifting/lowering	●	●	●	●	●	●	●	●
360-degree steering	○	○	○	○	○	○	○	○
Reversed steering	○	○	○	○	○	○	○	○
<b>WHEEL OPTIONS</b>								
Vulkollan	●	●	●	●	●	●	●	●
Tractothan	○	○	○	○	○	○	○	○
Super Grip	○	○	○	○	○	○	○	○
<b>OTHER OPTIONS</b>								
Side stabilisers	—	—	○	○	○	○	—	—
High-performance lift motor system 8.0 kW AC	—	—	○	○	○	○	○	○
Ergo forks trailing speed control (EFTC)	○	○	○	○	○	○	○	○
Foot protection light barrier in driver compartment	○	○	○	○	○	○	○	○
Floor spot warning red or blue	○	○	○	○	○	○	○	○
Comfort and anti-slip floor mat in driver compartment (recommended)	○	○	○	○	○	○	○	○
Interactive multifunctional display incl. BDI & hour meter, PIN code login (100 codes) and graphic icons	○	○	○	○	○	○	○	○
Foldable seat	○	○	○	○	○	○	○	○
Load backrest 1200 mm	○	○	○	○	○	○	○	—
Key switch entry (in combination with multifunctional display)	○	○	○	○	○	○	○	○
Laser positioning guide	—	—	○	○	○	○	—	—
Load weight indicator	○	○	○	○	○	○	○	○
Lift height indicator	—	—	○	○	○	○	—	○
Level Assistance System (LAS)	—	—	○	○	○	○	—	○
Video camera and monitor	—	—	○	○	○	○	—	○
Panoramic ProVision OHG roof	○	○	○	○	○	○	○	○
12V DC power socket	○	○	○	○	○	○	○	○
5 V USB socket	○	○	○	○	○	○	○	○
Accessory rack	○	○	○	○	○	○	○	○
Writing desk incl. RAM C holder	○	○	○	○	○	○	○	○
Accessory rack holder RAM system size C	○	○	○	○	○	○	○	○
Accessory rack holder RAM system size C, 2 pcs	○	○	○	○	○	○	○	○
Accessory rack holder RAM size D	○	○	○	○	○	○	○	○
Working lights LED	○	○	○	○	○	○	○	○
Increased drive speed 12 km/h	○	—	○	—	○	—	—	—
Special RAL colour	○	○	○	○	○	○	○	○



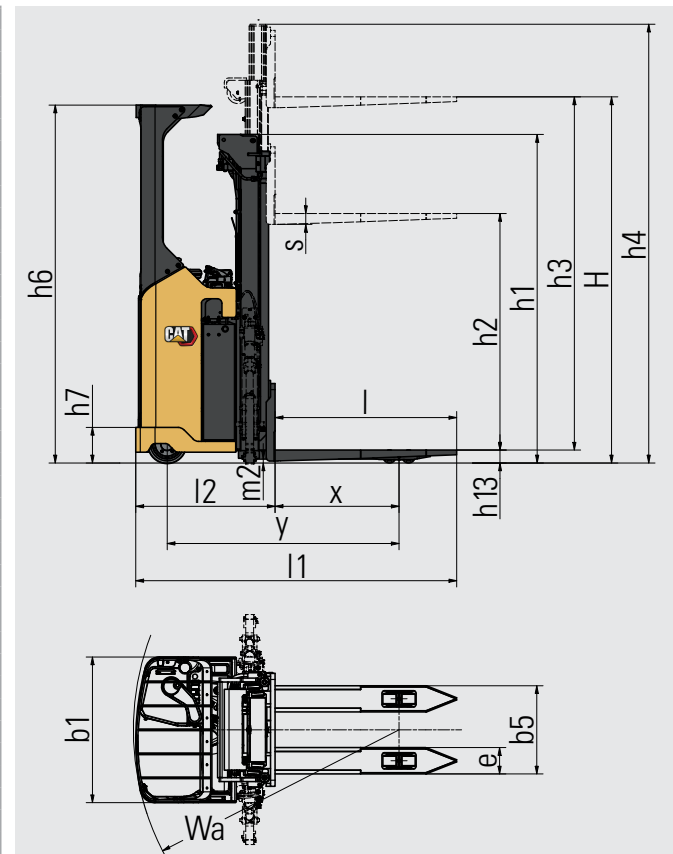
Standard



Option

\* Li-ion battery option is available in selected regions

Characteristics					
1.1	Manufacturer		Cat Lift Trucks	Cat Lift Trucks	Cat Lift Trucks
1.2	Manufacturer's model designation		<b>NSR12N2</b>	<b>NSR16N2</b>	<b>NSR20N2</b>
1.3	Power source		Battery	Battery	Battery
1.4	Operator type		Stand-in	Stand-in	Stand-in
1.5	Load capacity	Q (kg)	1250	1600	2000
1.6	Load centre distance	c (mm)	600	600	600
1.8	Load wheel axle to fork face (forks lowered)	x (mm)	800	800	800
1.9	Wheelbase	y (mm)	1422 <sup>1)</sup>	1496 <sup>1)</sup>	1545 <sup>1)</sup>
Weight					
2.1a	Truck weight with load, with maximum battery weight	kg	2682	3356	4018
2.1b	Truck weight without load, with maximum battery weight	kg	1432	1756	2018
2.2	Axle loadings with nominal load & maximum battery weight, drive / load side	kg	1127/1555	1389/1967	1613/2405
2.3	Axle loadings without load & with maximum battery weight, drive / load side	kg	1002/430	1229/527	1413/605
Wheels, drive train					
3.1	Tyres: PT = Power Thane, Vul = Vulkollan, P = Polyurethane, N = Nylon, R = Rubber drive / load side		Vul / Vul	Vul / Vul	Vul / Vul
3.2	Tyre dimensions, drive side	(mm)	250 x 105	250 x 105	250 x 105
3.3	Tyre dimensions, load side	ø (mm)	85 x 70	85 x 70	85 x 70
3.4	Castor wheel dimensions (diameter x width)	(mm)	150 x 55	150 x 55	150 x 55
3.5	Number of wheels, load / drive side (x = driven)		4 / 1x + 2	4 / 1x + 2	4 / 1x + 2
3.6	Track width (centre of tyres), drive side	b10 (mm)	662	662	662
3.7	Track width (centre of tyres), load side	b11 (mm)	402	402	392
Dimensions					
4.2a	Height with mast lowered	h1 (mm)	see tables	see tables	see tables
4.2b	Height	h1 (mm)	see tables	see tables	see tables
4.3	Free lift	h2 (mm)	see tables	see tables	see tables
4.4	Lift height	h3 (mm)	see tables	see tables	see tables
4.5	Height with mast extended	h4 (mm)	see tables	see tables	see tables
4.6	Initial lift	h5 (mm)	-	-	-
4.7	Height to top of overhead guard	h6 (mm)	2310	2310	2310
4.8	Seat or stand height	h7 (mm)	230	230	230
4.10	Height of support legs	h8 (mm)	82	80	83
4.15	Fork height, fully lowered	h13 (mm)	89	89	90
4.19	Overall length	l1 (mm)	1995 <sup>1)</sup>	2069 <sup>1)</sup>	2118 <sup>1)</sup>
4.20	Length to fork face	l2 (mm)	825 <sup>1)</sup>	899 <sup>1)</sup>	948 <sup>1)</sup>
4.21	Overall width	b1 (mm)	940	940	940
4.22	Fork dimensions (thickness, width, length)	s / e / l (mm)	70 / 180 / 1170	70 / 180 / 1170	70 / 195 / 1170
4.25	Outside width over forks (minimum / maximum)	b5 (mm)	570	570	570
4.32	Ground clearance at centre of wheelbase, (forks lowered)	m2 (mm)	32	25	23
4.33a	Working aisle width (Ast) with 1000 x 1200 mm pallets, load crosswise	Ast (mm)	2475 <sup>2)</sup>	2548 <sup>2)</sup>	2593 <sup>2)</sup>
4.33b	Working aisle width (Ast3) with 1000 x 1200 mm pallets, load crosswise	Ast3 (mm)	2043 <sup>2)</sup>	2116 <sup>2)</sup>	2161 <sup>2)</sup>
4.34a	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise	Ast (mm)	2409 <sup>2)</sup>	2481 <sup>2)</sup>	2527 <sup>2)</sup>
4.34b	Working aisle width (Ast3) with 800 x 1200 mm pallets, load lengthwise	Ast3 (mm)	2243 <sup>2)</sup>	2316 <sup>2)</sup>	2361 <sup>2)</sup>
4.35	Turning radius	Wa (mm)	1643 <sup>2)</sup>	1716 <sup>2)</sup>	1761 <sup>2)</sup>
Performance					
5.1	Travel speed, with / without load	km / h	10.0/10.0	10.0/10.0	9.0/9.0
5.2	Lifting speed, with / without load	m / s	0.21/0.37	0.15/0.32	0.12/0.22
5.3	Lowering speed, with / without load	m / s	0.55/0.41	0.45/0.42	0.33 / 0.30
5.8	Maximum gradeability with / without load	%	9.0/9.0	6.7/6.7	5.9/5.9
5.10	Service brakes (mechanical / hydraulic / electric / pneumatic)		Electric	Electric	Electric
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	kW	4.0	4.0	4.0
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	kWh / h	0.87 <sup>3)</sup>	0.87 <sup>3)</sup>	0.87 <sup>3)</sup>
Miscellaneous					
8.1	Type of drive control		AC	AC	AC
10.7	Level of noise at the ear level of the driver according to EN 12 053:2001 and EN ISO 4871 in work LpAZ	dB (A)	<70 dB(A)	<70 dB(A)	<70 dB(A)
10.7.1	Level of noise at the ear level of the driver according to EN 12 053:2001 and EN ISO 4871, drive/lift/idle LpAZ	dB (A)			



$$Ast = Wa + R + a$$

$$Ast3 = Wa + l6 - x + a$$

Ast = Working aisle width

Wa = Turning radius

a = Safety clearance = 2 x 100 mm

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

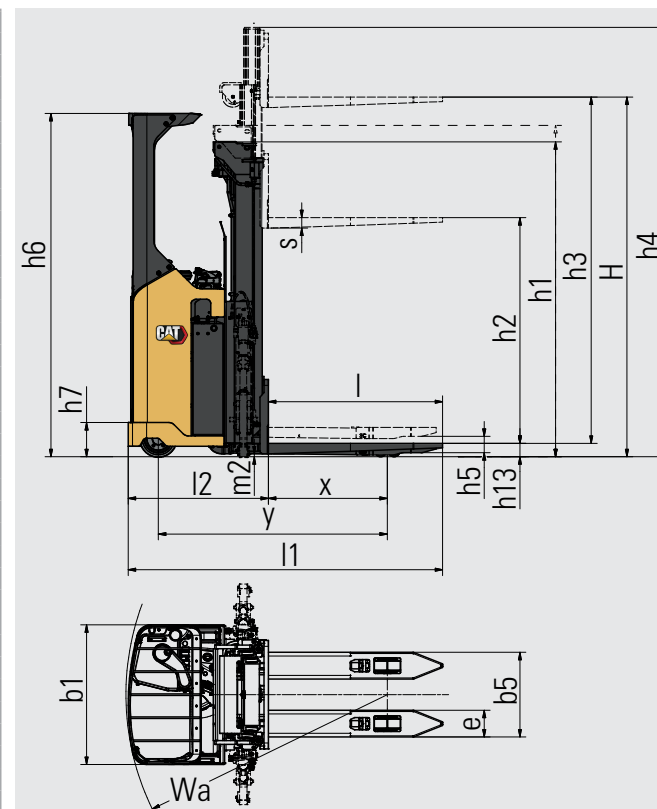
1) When SN/BC775 then add 104 mm

2) Dimensions vary depending on battery carriage and mast type

3) Varies according to configuration and actual usage pattern

Characteristics		
1.1	Manufacturer	
1.2	Manufacturer's model designation	
1.3	Power source	
1.4	Operator type	
1.5	Load capacity	Q (kg)
1.6	Load centre distance	c (mm)
1.8	Load wheel axle to fork face (forks lowered)	x (mm)
1.9	Wheelbase	y (mm)
Weight		
2.1a	Truck weight with load, with maximum battery weight	kg
2.1b	Truck weight without load, with maximum battery weight	kg
2.2	Axle loadings with nominal load & maximum battery weight, drive / load side	kg
2.3	Axle loadings without load & with maximum battery weight, drive / load side	kg
Wheels, drive train		
3.1	Tyres: PT = Power Thane, Vul = Vulkollan, P = Polyurethane, N = Nylon, R = Rubber drive / load side	
3.2	Tyre dimensions, drive side	(mm)
3.3	Tyre dimensions, load side	ø (mm)
3.4	Castor wheel dimensions (diameter x width)	(mm)
3.5	Number of wheels, load / drive side (x = driven)	
3.6	Track width (centre of tyres), drive side	b10 (mm)
3.7	Track width (centre of tyres), load side	b11 (mm)
Dimensions		
4.2a	Height with mast lowered	h1 (mm)
4.2b	Height	h1 (mm)
4.3	Free lift	h2 (mm)
4.4	Lift height	h3 (mm)
4.5	Height with mast extended	h4 (mm)
4.6	Initial lift	h5 (mm)
4.7	Height to top of overhead guard	h6 (mm)
4.8	Seat or stand height	h7 (mm)
4.10	Height of support legs	h8 (mm)
4.15	Fork height, fully lowered	h13 (mm)
4.19	Overall length	l1 (mm)
4.20	Length to fork face	l2 (mm)
4.21	Overall width	b1 (mm)
4.22	Fork dimensions (thickness, width, length)	s / e / l (mm)
4.25	Outside width over forks (minimum / maximum)	b5 (mm)
4.32	Ground clearance at centre of wheelbase, (forks lowered)	m2 (mm)
4.33a	Working aisle width (Ast) with 1000 x 1200 mm pallets, load crosswise	Ast (mm)
4.33b	Working aisle width (Ast3) with 1000 x 1200 mm pallets, load crosswise	Ast3 (mm)
4.34a	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise	Ast (mm)
4.34b	Working aisle width (Ast3) with 800 x 1200 mm pallets, load lengthwise	Ast3 (mm)
4.35	Turning radius	Wa (mm)
Performance		
5.1	Travel speed, with / without load	km / h
5.2	Lifting speed, with / without load	m / s
5.3	Lowering speed, with / without load	m / s
5.8	Maximum gradeability with / without load	%
5.9	Acceleration time (10 metres) with / without load	s
5.10	Service brakes (mechanical / hydraulic / electric / pneumatic)	
Electric motors		
6.1	Drive motor capacity (60 min. short duty)	kW
6.2	Lift motor output at 15% duty factor	kW
6.4	Battery voltage/capacity at 5-hour discharge	V / Ah
6.5	Battery weight	kg
6.6a	Energy consumption according to EN16796	kWh / h
Miscellaneous		
8.1	Type of drive control	
10.7	Level of noise at the ear level of the driver according to EN 12 053:2001 and EN ISO 4871 in work LpAZ	dB (A)
10.7.1	Level of noise at the ear level of the driver according to EN 12 053:2001 and EN ISO 4871, drive/lift/idle LpAZ	dB (A)

Cat Lift Trucks	Cat Lift Trucks	Cat Lift Trucks
NSR12N2I	NSR16N2I	NSR20N2I
Battery	Battery	Battery
Stand-in	Stand-in	Stand-in
1250	1600	2000
600	600	600
800	800	800
1501 <sup>1)</sup>	1541 <sup>1)</sup>	1600 <sup>1)</sup>
2876	3506	4184
1626	1906	2184
1263/1613	1494/2012	1729/2455
1138/488	1334/572	1529/655
Vul / Vul	Vul / Vul	Vul / Vul
250 x 105	250 x 105	250 x 105
85 x 70	85 x 70	85 x 70
150 x 55	150 x 55	150 x 55
4 / 1x + 2	4 / 1x + 2	4 / 1x + 2
662	662	662
390	390	375
see tables	see tables	see tables
see tables	see tables	see tables
see tables	see tables	see tables
see tables	see tables	see tables
see tables	see tables	see tables
110	110	110
2310	2310	2310
230	230	230
87	87	87
93	93	93
2073 <sup>1)</sup>	2113 <sup>1)</sup>	2173 <sup>1)</sup>
903 <sup>1)</sup>	943 <sup>1)</sup>	1003 <sup>1)</sup>
940	940	940
70 / 180 / 1170	70 / 180 / 1170	70 / 195 / 1170
570	570	570
20	20	20
2552 <sup>2)</sup>	2591 <sup>2)</sup>	2622 <sup>2)</sup>
2120 <sup>2)</sup>	2159 <sup>2)</sup>	2190 <sup>2)</sup>
2486 <sup>2)</sup>	2525 <sup>2)</sup>	2556 <sup>2)</sup>
2320 <sup>2)</sup>	2359 <sup>2)</sup>	2390 <sup>2)</sup>
1720 <sup>2)</sup>	1759 <sup>2)</sup>	1790 <sup>2)</sup>
9.0/9.0	9.0/9.0	9.0/9.0
0.21/0.37	0.15/0.32	0.12/0.22
0.55/0.41	0.45/0.42	0.33/0.30
10.0/16.0	10.0/16.0	10.0/16.0
		7.0/6.0
Electric	Electric	Electric
2.7	2.7	2.7
4.0	4	4
24 / 375-775	24 / 375-775	24 / 375-775
330-610	330-610	330-610
0.87 <sup>3)</sup>	0.87 <sup>3)</sup>	0.87 <sup>3)</sup>
AC	AC	AC
<70 dB(A)	<70 dB(A)	<70 dB(A)



$$Ast = Wa + R + a$$

$$Ast3 = Wa + l6 - x + a$$

Ast = Working aisle width

Wa = Turning radius

a = Safety clearance = 2 x 100 mm

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

1) When SN/BC775 then add 104 mm

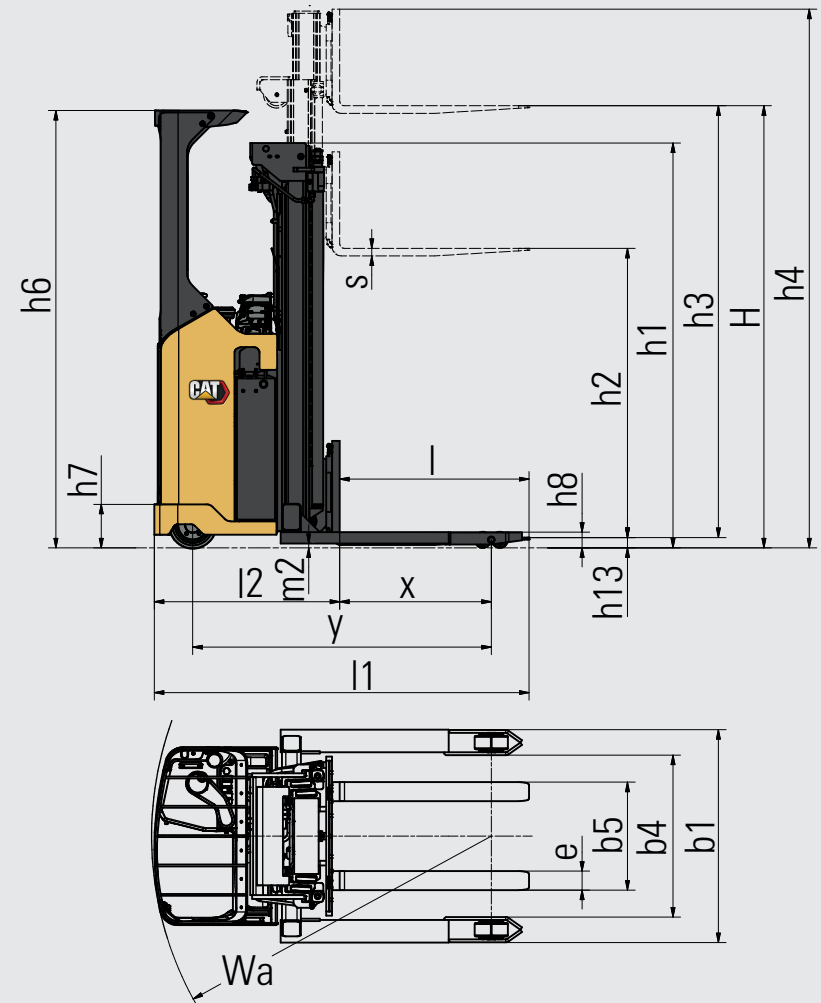
2) Dimensions vary depending on battery carriage and mast type

3) Varies according to configuration and actual usage pattern



Characteristics		
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1.2	Manufacturer's model designation	
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1.4	Operator type	
1.5	Load capacity	Q (kg)
1.6	Load center distance	c (mm)
1.8	Load wheel axle to fork face (forks lowered)	x (mm)
1.9	Wheelbase	y (mm)
Weight		
2.1b	Truck weight without load, with maximum battery weight	kg
2.2	Axle loadings with nominal load & maximum battery weight, drive / load side	kg
2.3	Axle loadings without load & with maximum battery weight, drive / load side	kg
Wheels, Drive Train		
3.1	Tyres: PT = Power Thane, Vul = Vulkollan, P = Polyurethane, N = Nylon, R = Rubber drive / load side	
3.2	Tyre dimensions, drive side	(mm)
3.3	Tyre dimensions, load side	ø (mm)
3.4	Castor wheel dimensions (diameter x width)	(mm)
3.5	Number of wheels, load / drive side (x = driven)	
3.6	Track width (center of tyres), drive side	b10 (mm)
3.7	Track width (center of tyres), load side	b11 (mm)
Dimensions		
4.2a	Height with mast lowered	h1 (mm)
4.2b	Height	h1 (mm)
4.3	Free lift	h2 (mm)
4.4	Lift height (stroke)	h3 (mm)
4.5	Height with mast extended	h4 (mm)
4.7	Height to top of overhead guard	h6 (mm)
4.8	Seat- or stand height	h7 (mm)
4.10	Height of support legs	h8 (mm)
4.15	Fork height, fully lowered	h13 (mm)
4.19	Overall length	l1 (mm)
4.20	Length to fork face	l2 (mm)
4.21	Overall width	b1 (mm)
4.22	Fork dimensions (thickness, width, length)	s / e / l (mm)
4.23	Fork carriage to DIN	
4.24	Fork carriage width	b3 (mm)
4.25	Outside width over forks (minimum / maximum)	b5 (mm)
4.26	Inner width of support legs	b4 (mm)
4.32	Ground clearance at center of wheelbase, (forks lowered)	m2 (mm)
4.33a	Working aisle width (Ast) with 1000 x 1200 mm pallets, load crosswise	Ast (mm)
4.34a	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise	Ast (mm)
4.35	Turning radius	Wa (mm)
Performance		
5.1	Travel speed, with / without load	km / h
5.2	Lifting speed, with / without load	m / s
5.3	Lowering speed, with / without load	m / s
5.8	Maximum gradeability with / without load	%
5.9	Acceleration time (10 metres) with / without load	s
5.10	Service brakes (mechanical / hydraulic / electric / pneumatic)	
Electric motors		
6.1	Drive motor capacity (60 min. short duty)	kW
6.2	Lift motor output at 15% duty factor	kW
6.3	Battery to DIN	
6.4	Battery voltage/capacity at 5-hour discharge	V / Ah
6.5	Battery weight	kg
6.6a	Energy consumption according to EN 16796 cycle	kWh / h
Miscellaneous		
8.1	Type of drive control	
10.7	Level of noise at the ear level of the driver according to EN 12 053:2001 and EN ISO 4871 in work LpA2	dB (A)
10.7.2	Whole-body vibration (EN 13 059:2002)	
10.7.3	Hand-arm vibration (EN 13 059:2002)	

Cat Lift Trucks	Cat Lift Trucks
NSR16N2S	NSR20N2S
Battery	Battery
Stand-in	Stand-in
1600	2000
600	600
800	800
1536 <sup>2)</sup>	1576 <sup>2)</sup>
1605	1967
1284 / 1922	1577 / 2390
1124 / 482	1377 / 590
Vul / Vul	Vul / Vul
250 x 105	250 x 105
85 x 70	85 x 70
150 x 55	150 x 55
4 / 1x + 2 <sup>1)</sup>	4 / 1x + 2 <sup>1)</sup>
651	651
985 / 1185	985 / 1185
see tables	see tables
see tables	see tables
see tables	see tables
see tables	see tables
see tables	see tables
2310	2310
230	230
92	92
55	55
2089 <sup>2)</sup>	2129 <sup>2)</sup>
939 <sup>2)</sup>	979 <sup>2)</sup>
1115 / 1315 <sup>8)</sup>	1115 / 1315 <sup>8)</sup>
40 / 100 / 1150	40 / 100 / 1150
FEM 2/A	FEM 2/A
840	840
316 / 773	316 / 773
855 / 1055 <sup>8)</sup>	855 / 1055 <sup>8)</sup>
35	35
2481	2520
2481	2520
1560	1599
8.0 / 8.0	8.0 / 8.0
0.24 / 0.40	0.19 / 0.37
0.45 / 0.30	0.50 / 0.42
7.8 / 7.8	7.6 / 7.6
7.0 / 6.0	7.5 / 6.5
Electric	Electric
2.7	2.7
8.0 <sup>5)</sup>	8.0 <sup>5)</sup>
DIN-cells	DIN-cells
24 / 465 <sup>6)</sup>	24 / 465 <sup>6)</sup>
330-400 <sup>6)</sup>	330-400 <sup>6)</sup>
0.87 <sup>7)</sup>	0.87 <sup>7)</sup>
AC	AC
<70	<70
See instruction handbook	See instruction handbook
See instruction handbook	See instruction handbook



Ast = Wa + R + a

Ast3 = Wa + l6 - x + a

Ast = Working aisle width

Wa = Turning radius

a = Safety clearance = 2 x 100 mm

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

\*1) All dimensional values, weights and measures, varies according to configuration

1) 4-point design with twin assembly drive side castor wheels

2) When Senior (BC775) chassis add +104

3) Telescopic forks reach travel, optional reach 450-1000

4) Standard motor, not sufficiently tested with the 8.0 kW heavy-duty option yet

5) With heavy-duty lift motor, standard is 4.0

6) With Senior chassis, 24V / 560-775Ah and 460-610 kg

7) Ref. test value with 8.0 kW lift motor, varies according to model, config and usage pattern

8) There are two standard straddle/support legs widths available to choose from (ref. b1/b4)

NSR12N2				
Mast Type Narrow	h3+h13 mm	h1 mm	h4 mm	h2+h13 mm
TV / DS	3290	2157	3720	159 (h2=70)
	3590	2307	4020	159 (h2=70)
	4190	2607	4620	159 (h2=70)
TFV / DEV	3290	2157	3720	1726
	3590	2307	4020	1876
	4190	2607	4620	2176

NSR12N2I				
Mast Type Initial lift	h3+h13 mm	h1 mm	h4 mm	h2+h13 mm
TV / DS	3290	2162	3725	163 (h2=70)
	3590	2312	4025	163 (h2=70)
	4190	2612	4625	163 (h2=70)
TFV / DEV	3290	2162	3725	1730
	3590	2312	4025	1880
	4190	2612	4625	2180

NSR16N2				
Mast Type Narrow	h3+h13 mm	h1 mm	h4 mm	h2+h13 mm
TFV / DEV	3600	2350	4105	1849
	4200	2650	4705	2149
	4500	2800	5005	2299
DTFV / TREV	4800	2150	5332	1669
	5400	2350	5932	1869
	5700	2450	6232	1969
	6300	2650	6832	2169
	7000	2883	7532	2402

NSR16N2I				
Mast Type Initial lift	h3+h13 mm	h1 mm	h4 mm	h2+h13 mm
TFV / DEV	3600	2355	4112	1853
	4200	2655	4712	2153
	4500	2805	5012	2303
DTFV / TREV	4800	2155	5339	1673
	5400	2355	5939	1873
	5700	2455	6239	1973
	6300	2655	6839	2173
	7000	2888	7539	2406

NSR20N2				
Mast Type Narrow	h3+h13 mm	h1 mm	h4 mm	h2+h13 mm
TFV / DEV	3600	2350	4108	1850
	4200	2650	4708	2150
	4500	2800	5008	2300
DTFV / TREV	4800	2150	5335	1670
	5400	2350	5935	1870
	5700	2450	6235	1970
	6300	2650	6835	2170
	7000	2883	7535	2403

NSR20N2I				
Mast Type Initial lift	h3+h13 mm	h1 mm	h4 mm	h2+h13 mm
TFV / DEV	3600	2355	4113	1853
	4200	2655	4713	2153
	4500	2805	5013	2303
DTFV / TREV	4800	2155	5339	1673
	5400	2355	5939	1873
	5700	2455	6239	1973
	6300	2655	6839	2173
	7000	2888	7539	2406

NSR16N2S - NSR20N2S				
Mast Type Wide Straddle	h3+h13 mm	h1 mm	h4 mm	h2+h13 mm
TFV / DEV	3600	2350	4110	1815
	4200	2650	4710	2115
	4500	2800	5010	2265
DTFV / TREV	4800	2150	5335	1635
	5400	2350	5935	1835
	5700	2450	6235	1935
	6300	2650	6835	2135
	7000	2883	7535	2368

## Mast Performance and Capacity

TV / DS	Duplex with clear-view mast
TFV / DEV	Duplex with full free lift
DTFV / TREV	Triplex with full free lift
h3+h13	Lifting height
h1	Lowered mast height
h4	Raised mast height
h2+h13	Free lift





# LI-ION BATTERIES

## TIME TO SWITCH?



Lithium-ion (Li-ion) battery technology is available in the Cat® electric counterbalance and warehouse truck ranges. While lead-acid batteries remain a popular choice for our customers, and still have much to offer, they present various challenges which Li-ion can overcome.

Perhaps the most noticeable change when switching to Li-ion is the use of opportunity charging. Instead of exchanging batteries between shifts, you can simply plug into a fast charger during short breaks and keep the same battery going 24/7. This, together with other efficiency, environmental and safety benefits, makes Li-ion a very appealing alternative.



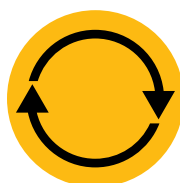
**LONGER  
LIFE**



**HIGHER  
EFFICIENCY**



**LONGER  
RUNTIME**



**CONSISTENT  
PERFORMANCE**



**FASTER  
CHARGING**



**NO BATTERY  
CHANGING**



**NO DAILY  
MAINTENANCE**



**INBUILT  
PROTECTION**

### Cat Li-ion advantages over lead-acid

Li-ion is an investment which should be viewed against ongoing savings on energy, equipment, labour and downtime.

- **Longer life** – 3 to 4 times lead-acid lifespan – reduces overall battery investment
- **Higher efficiency** – energy losses during charging and discharging are up to 30% lower, so electricity consumption is reduced
- **Longer runtime** – thanks to more efficient battery performance and use of opportunity charges, which can be given at any time without damaging the battery or shortening its lifespan
- **Consistently high performance** – with a more constant voltage curve – maintains greater truck productivity, even toward the end of a shift
- **Faster charging** – enables full charge in as little as 1 hour with the fastest chargers
- **No battery changing** – fast opportunity charges – 15 minutes for several hours of extra runtime – enable continuous operation with just one battery and minimise the need to buy, store and maintain spares
- **No daily maintenance** – the battery stays on board the truck for charging and there is no need for water top-ups or electrolyte checks
- **No gas** – or acid spills – avoids the space, equipment and running costs of a battery room and ventilation system
- **Inbuilt protection** – intelligent battery management system (BMS) automatically prevents excessive discharge, charge, voltage and temperature, as well as virtually eliminating misuse

Batteries and chargers with different capacities are available. Your dealer will identify the best combination for your needs. You should also ask your dealer about optional 5-year warranties, subject to annual check-ups, which give extra peace of mind.

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NOTE: Performance specifications may vary depending on standard manufacturing tolerances, vehicle condition, types of tyres, floor or surface conditions, applications, or operating environment. Trucks may be shown with non-standard options. Specific performance requirements and locally available configurations should be discussed with your Cat lift trucks Dealer. Cat Lift Trucks follows a policy of continual product improvement. For this reason, some materials, options and specifications could change without notice.



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