



**NSV12N3  
NSV12N3I**

**NSF12N3R  
NSF12N3S  
NSF12N3IR  
NSF12N3IS**

**NSV16N3  
NSV16N3I  
NSV16N3S**

**NSF16N3R  
NSF16N3S  
NSF16N3IR  
NSF16N3IS  
NSF16N3SR  
NSF16N3SS**

# ASSURED PERFORMANCE

**SPECIFICATIONS**

**PLATFORM STACKERS 24V, 1.25 - 1.6 TONNES**

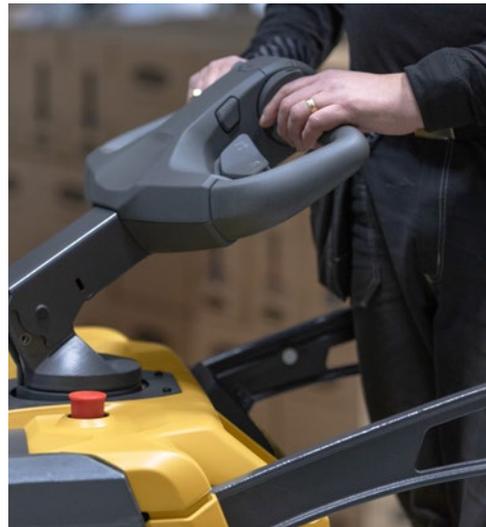


# BOOST OPERATOR CONFIDENCE – INCREASE OUTPUT

CAT® PLATFORM STACKERS ARE IDEAL FOR HIGH-INTENSITY APPLICATIONS REQUIRING TRUCKS WITH MULTI-ROLE VERSATILITY. THEIR USES INCLUDE HIGH-LEVEL STACKING (UP TO 5.4 METRES), ORDER PICKING AND TRANSPORT IN FACTORIES AND WAREHOUSES. REMARKABLY COMPACT, BUT WITH HEAVY-DUTY QUALITIES AND CAPABILITIES, THEIR FAST, REFINED AND SAFETY-ASSURED PERFORMANCE INSPIRES CONFIDENT AND HIGHLY PRODUCTIVE OPERATION.



From the moment an operator sets off on one of these trucks for the first time, it feels just right. That sense of balance, control and power carries on consistently through every shift.



The operator connects to a compact, stable chassis via the class-leading, ergonomic, *emPower* tiller head. Effective platform and mast damping further enhance the smooth, comfortable user experience. Fatigue and strain are minimised, along with the related need for sick leave.



Powerful motors with advanced control technology enable fast but safe, precise and confident travel and load handling. These factors, as well as easy manoeuvrability, increase productivity while reducing the risk of accidents and associated costs.



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!

## LOWER COST OF OPERATION

- Fully weather-protected and impact-resistant tiller head is sealed to IP65 standard and reinforced for high durability.
- Sealing of connectors, sensors and other key components combines with robust construction, shock and accident resilience, long service intervals and fast access features – including removable motor cover – to reduce maintenance needs and improve uptime.
- Durable design features include heavy-duty chassis, large-diameter drive wheel, protected display location, inductive operator presence sensors, and more, for long life with minimal servicing.
- Li-ion battery (if chosen) gives maximum lifespan, efficiency and runtime. (Both Li-ion and lead-acid versions are available.)
- Advanced motors, regenerative braking and efficient mast designs save on energy and hydraulic oil consumption.
- Standard display includes BDI (battery discharge indicator) to help prevent damaging deep discharge and support optimal timing of battery changes.
- Multifunctional display option offers clear information on truck and battery condition, faults and actions, and enables setting of operator IDs and PIN code access to avoid unauthorised truck use.
- 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

- Initial lift (I) models allow clearance under load (197 mm from floor to top of load legs; 200 mm to top of forks) for easier working on steep ramps and loading docks.
- Double pallet handling capability halves the number of transport movements required. (Initial lift models.)
- Pallet-stopping heel on load legs helps align loads for much easier, faster and safer double handling. (Initial lift models.)
- 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, 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. (Triplex not available on wide straddle models.)

- 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.
- 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.)
- Compact and lightweight chassis works with easy, accurate steering to allow rapid manoeuvring and tight turns in narrow aisles.
- Fully integrated Li-ion technology makes continuous operation possible, without battery changes, using fast opportunity charging during short breaks. (Both Li-ion and lead-acid versions are available.)
- Quick battery lock together with bearing-mounted steel roller option speeds up changes. (For lead-acid batteries.)
- Exceptional levels of comfort, control, traction and stability keep operators alert, motivated and productive, however intense their workload.
- Three performance modes are selectable to suit individual users and applications: Power for advanced operators and intensive operations; Eco to blend low energy consumption with high productivity; Easy for learners and for handling sensitive goods. (Available only with multifunctional display option.)
- Latest AC drive motor technology combines high power with advanced electronic control, a large-diameter drive wheel and strong regenerative braking for a confident, fast, smooth and precisely controlled ride.

## SAFETY AND ERGONOMICS

- Operator-centric chassis design optimises traction according to load weight and maintains safe stability, while providing excellent manoeuvrability, for instant user confidence and continuous top-class performance in fast-paced, high-level stacking operations.
- Active Spin Reduction (ASR) option aids traction on slippery surfaces.
- Best-in-class *emPower* ergonomic tiller head gives easier access to controls with a unique patented design that achieves the optimum distance between hand and lift/lower buttons.
- Ergonomically designed tiller head operating features include optimised handle shape and cross-section, large hand space, and enlarged horn and lift/lower buttons, as well as user-friendly speed and brake controls.
- Butterfly-type, dual-direction speed and brake control design provides seven convenient finger positions for comfortable, low-effort, precise operation.
- Dual controls allow easy reach with either hand and can be used accurately even when wearing gloves.
- Tiller-type power steering via a short tiller arm features a hydraulic damper and works without physical connection to the drive wheel – avoiding transmission of bumps, twists and turns, while enabling comfortable, controlled, precise manoeuvring. (Available on folding platform and rear-entry fixed platform models.)
- Comfort Steering via a tiller head without an arm – as on an electric scooter – maximises power-steered control and precision, with the aid of a damper, while avoiding shock, vibration, strain and fatigue in the operator's hands, wrists and arms. (Available on fixed platform models.)
- Mechanical (non-powered) steering option uses a compact tiller arm to provide a simple, economical, durable, low-effort manoeuvring solution for less intense work environments. (Only available on folding platform models.)

- Tiller up drive option allows manoeuvring with tiller arm vertical, to move through the tightest spaces. (Available on folding platform models with mechanical or power steering.)
- Electronic steering technology automatically adjusts sensitivity according to steered angle and truck speed, and gives resistance and feedback, for controlled travel and full confidence. (On all power-steered trucks.)
- Cornering control constantly monitors steering angle, travel rate and quickness of tiller head movement – automatically adjusting the turning speed to maintain safe motion. (On all power-steered trucks.)
- Mast and fork carriage design and engineering advances improve forward and fork-tip views, while enhancing the user experience with smoother, quieter lifting and lowering.
- 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.
- High-comfort damping on both folding and fixed platforms minimises impacts on the knees, especially, and acts progressively with increasing operator weight, while ergonomic controls and steering further reduce effort and fatigue.
- Unique electrically adjustable damping option on fixed platform models is optimised for each operator's weight and preference at the touch of a button, providing a cost-effective increase in comfort.
- Overhead guard protects operator from falling goods. (Standard on fixed platform models. Optional on folding platform models, but only with power steering.)
- Optional protective side bars on folding platform models are deployed quickly and simply – with one hand – to help avoid falls and defend against impacts. (Top speed is increased when side bars are used.)
- Fixed platform models give extra protection and comfort, with low step height – for easy entry/exit – and a choice of rear (R) and side entry (S) barrier designs.
- Optional foot protection system automatically slows/stops the truck if foot is outside platform. (Rear entry fixed platform models.)
- Rugged build includes compact but heavy-duty chassis, cast-iron platform and integrated low-profile bumper to resist deformation, protect the operator and reduce foot-trapping risk.

## 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

	NSV12-16N3	NSV12-16N3I	NSF12-16N3R	NSF12-16N3IR	NSF12-16N3S	NSF12-16N3IS	NSV16N3S	NSF16N3SR	NSF16N3SS	
<b>GENERAL</b>										
Drive motor 2.4 kW AC	●	●	●	●	●	●	●	●	●	
Lift motor 3.0 kW DC (S3=12%)	●	●	●	●	●	●	●	●	●	
Micro-computer with standard display (HMI-10), incl. hour meter and BDI	●	●	●	●	●	●	●	●	●	
Initial straddle lift (for double pallet handling and cross-docking)	-	●	-	●	-	●	-	-	-	
Wide straddle legs for handling of also closed load carriers (std width 855 or 1055 mm)	-	-	-	-	-	-	●	●	●	
Foldable platform, without side protection bars (6.0 km/h)	●	-	-	-	-	-	●	-	-	
Fixed operator protected platform, rear entry (8.5 km/h)	-	-	●	●	-	-	-	●	-	
Fixed operator protected platform, side entry (8.5 km/h)	-	-	-	-	●	●	-	-	-	
Mechanical steering tiller arm (fixed length 450 mm)	●	●	-	-	-	-	●	-	-	
Power steering tiller arm	○	○	●	●	-	-	○	●	-	
Comfort Steering tiller arm	-	-	○	○	●	●	-	○	●	
Vulkollan® drive wheel	●	●	○	○	●	●	●	○	●	
Tandem load wheels diam 85 mm, Vulkollan®	●	●	●	●	●	●	●	●	●	
Single load wheels dia 150 mm, Vulkollan®	-	-	-	-	-	-	○	○	○	
<b>BATTERY AND CHARGER</b>										
Battery connector: Rema 160	●	●	●	●	●	●	●	●	●	
Battery compartment without rollers	○	○	○	○	○	○	○	○	○	
Battery on steel rollers **	○	○	○	○	○	○	○	○	○	
Quick release of battery lock (only in combination with steel rollers)	○	○	○	○	○	○	○	○	○	
Li-ion batteries and chargers*	○	○	○	○	○	○	○	○	○	
Lead-acid batteries and chargers	○	○	○	○	○	○	○	○	○	
<b>ENVIRONMENT</b>										
Grease nipples in lifting profiles and rust-protected axles	●	●	●	●	●	●	●	●	●	
Chill store design, down to -10°C	●	●	●	●	●	●	●	●	●	
Cold store design, down to -30°C **	○	○	○	○	○	○	○	○	○	
<b>DRIVE AND LIFT CONTROLS</b>										
Speed-regulated lift motor and proportional valve for lowering, controlled by large rocker switch on tiller head	●	●	●	●	●	●	●	●	●	
Tiller up drive	○	○	-	-	-	-	○	-	-	
<b>DRIVE WHEEL OPTIONS</b>										
Vulkollan 93®	●	●	●	●	●	●	●	●	●	
Tractothan 93	○	○	○	○	○	○	○	○	○	
Super Grip 93	○	○	○	○	○	○	○	○	○	
PEVODYN-Soft 78	○	○	○	○	○	○	○	○	○	
Vulkollan 95 ELF®	○	○	○	○	○	○	○	○	○	
<b>OTHER FEATURES AND OPTIONS</b>										
Overhead guard (not in combination with mech. steering)	○	○	●	●	●	●	○	●	●	
Foldable side protection bars, incl. increased drive 8.5 km/h (only with foldable platform)	○	○	-	-	-	-	○	-	-	
Fixed platform electrically adjustable damped floor with toggle switch for individual settings/preferences	-	-	-	-	○	○	-	-	-	
Foot protection, by safety light curtain in platform opening (rear entry platform versions only)	-	-	○	○	-	-	-	○	-	
Power steering	○	○	●	●	●	●	○	●	●	
Active Spin Reduction - ASR	○	○	○	○	○	○	○	○	○	
Multifunctional display incl. hour meter and BDI (HMI-20), <99 individual login PIN codes, and graphic icons	○	○	○	○	○	○	○	○	○	
Load backrest 1200	○	○	○	○	○	○	○	○	○	
Key switch entry	○	○	○	○	○	○	○	○	○	
12V DC power socket (not in combination with 5V USB)	○	○	○	○	○	○	○	○	○	
5V USB socket (not in combination with 12V)	○	○	○	○	○	○	○	○	○	
Accessory rack (not in combination with OHG; already included in OHG)	○	○	○	○	○	○	○	○	○	
Writing desk incl. RAM C holder (accessory rack or OHG required)	○	○	○	○	○	○	○	○	○	
Equipment holder, RAM system size C (accessory rack or OHG required)	○	○	○	○	○	○	○	○	○	
Equipment holder, RAM system size C, 2 pcs (accessory rack or OHG required)	○	○	○	○	○	○	○	○	○	
Equipment holder, RAM size D (accessory rack or OHG required)	○	○	○	○	○	○	○	○	○	
Special RAL colour	○	○	○	○	○	○	○	○	○	
Battery creep (limp home) safety feature, lead-acid (DoD 15%) / Li-ion (DoD 7%)	●	●	●	●	●	●	●	●	●	
Battery level audible warning, lead-acid (DoD 20%) / Li-ion (DoD 10%)	○	○	○	○	○	○	○	○	○	
Service interval alarm	○	○	○	○	○	○	○	○	○	
Automatic log-off (HMI-20 required, not in combination with key switch entry)	○	○	○	○	○	○	○	○	○	
Revert to low speed at log-off (not in combination with 'at operator absent')	○	○	○	○	○	○	○	○	○	
Revert to low speed at operator absent (not in combination with 'at log-off')	○	○	○	○	○	○	○	○	○	
Floor spot red or blue (not combined; OHG required or CSM)	○	○	○	○	○	○	○	○	○	

## FULL LI-ION\* BATTERY INTEGRATION

Full integration of Li-ion battery communication on Cat platform stackers enables all battery-related information to be presented clearly via the truck's inbuilt full-colour display.

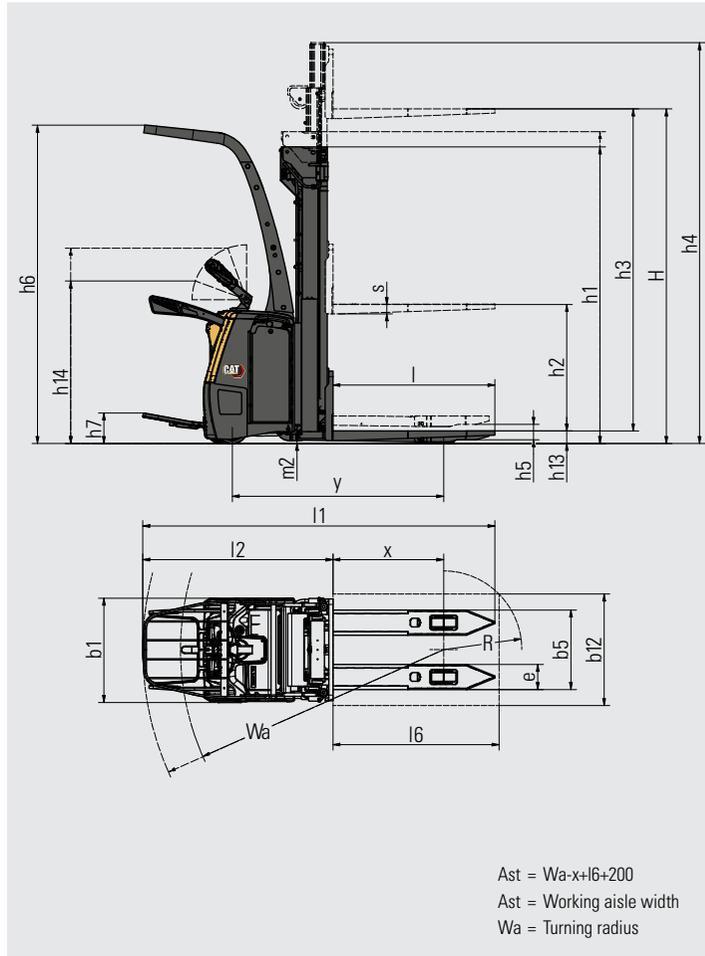


The class-leading, user-friendly *emPower* tiller head gives easy access to controls and enables rapid, precise operation.

\*Li-ion battery option is available in selected regions.  
\*\* Not in combination with Li-ion battery

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		
2.1b	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 (stroke)	h3 (mm)
4.5	Height with mast extended	h4 (mm)
4.6	Initial lift (stroke)	h5 (mm)
4.7	Height to top of overhead guard	h6 (mm)
4.8	Seat or stand height	h7 (mm)
4.9	Height of tiller arm / steering console (min/max)	h14 (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/b2 (mm)
4.22	Fork dimensions (thickness, width, length)	s / e / l (mm)
4.24	Fork carriage width	b3 (mm)
4.25	Outside width over forks (min/max)	b5 (mm)
4.26	Inner width of support legs	b4 (mm)
4.32	Ground clearance at centre of wheelbase, (forks lowered)	m2 (mm)
4.34a	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise	Ast (mm)
4.34c	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise, platform up/down	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
5.7	Gradeability, with/without load	%
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)
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	Cat Lift Trucks	Cat Lift Trucks
NSV12N3	NSV12N3i	NSV16N3	NSV16N3i
Battery	Battery	Battery	Battery
Pedestrian/stand-on	Pedestrian/stand-on	Pedestrian/stand-on	Pedestrian/stand-on
1250	1250	1600	1600
600	600	600	600
800	800	800 <sup>1)</sup>	800
1429	1503	1503 <sup>2)</sup>	1533
1350	1450	1560	1660
1005 / 1410 <sup>13)</sup>	1020 / 1495 <sup>13)</sup>		1235 / 1975 <sup>13)</sup>
825 / 310 <sup>13)</sup>	855 / 375 <sup>13)</sup>		1095 / 485 <sup>13)</sup>
Vul / Vul	Vul / Vul	Vul / Vul	Vul / Vul
235 x 75	235 x 75	235 x 75	235 x 75
85 x 76 <sup>3)</sup>			
150 x 55	150 x 55	150 x 55	150 x 55
4 <sup>3)</sup> / 1x + 1			
497	497	497	497
402	390	402	390
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	See tables
See tables	See tables	See tables	See tables
110	110	110	110
2283	2283	2283	2283
171	171	171	171
1099 / 1512	1099 / 1512	1099 / 1512	1099 / 1512
82	87	80	87
89	93	89	93
2090 / 2450 <sup>4) 14)</sup>	2163 / 2523 <sup>4) 14)</sup>	2164 / 2525 <sup>4) 14)</sup>	2193 / 2554 <sup>4) 14)</sup>
920 / 1280 <sup>4) 14)</sup>	993 / 1353 <sup>4) 14)</sup>	994 / 1355 <sup>4) 14)</sup>	1023 / 1384 <sup>4) 14)</sup>
748	748	748	748
70 / 180 / 1170	70 / 180 / 1170	70 / 180 / 1170 <sup>5)</sup>	70 / 180 / 1170
670	670	730	730
570	570	570 <sup>6)</sup>	570
N/A <sup>7)</sup>	N/A <sup>7)</sup>	N/A <sup>7)</sup>	N/A <sup>7)</sup>
32	20-130	25	20-130
2509 / 2846 <sup>9)</sup> [2841 <sup>9)</sup>	2581 / 2919 <sup>9)</sup> [2914 <sup>9)</sup>	2582 / 2921 <sup>9)</sup> [2915 <sup>9)</sup>	2611 / 2950 <sup>9)</sup> [2944 <sup>9)</sup>
1743 / 2080 <sup>4)</sup> [2075 <sup>4)</sup>	1815 / 2153 <sup>4)</sup> [2148 <sup>4)</sup>	1816 / 2155 <sup>4)</sup> [2149 <sup>4)</sup>	1845 / 2184 <sup>4)</sup> [2178 <sup>4)</sup>
6.0 / 6.0 <sup>10)</sup> 8.5 / 8.5 <sup>11)</sup>	6.0 / 6.0 <sup>10)</sup> 8.5 / 8.5 <sup>11)</sup>	6.0 / 6.0 <sup>10)</sup> 8.5 / 8.5 <sup>11)</sup>	6.0 / 6.0 <sup>10)</sup> 8.5 / 8.5 <sup>11)</sup>
0.20 / 0.34	0.20 / 0.34	0.16 / 0.28	0.16 / 0.28
0.47 / 0.40	0.47 / 0.33	0.42 / 0.41	0.42 / 0.36
8.7 / 8.7	11.9 / 17.2	6.1 / 6.1	11.3 / 17.2
5.7 / 5.3 <sup>13)</sup>	5.7 / 5.3 <sup>13)</sup>	6.3 / 5.3 <sup>13)</sup>	6.3 / 5.3 <sup>13)</sup>
Electric <sup>12)</sup>	Electric <sup>12)</sup>	Electric <sup>12)</sup>	Electric <sup>12)</sup>
2.4	2.4	2.4	2.4
3.0 <sup>15)</sup>	3.0 <sup>15)</sup>	3.0 <sup>15)</sup>	3.0 <sup>15)</sup>
24 / 270-400	24 / 270-400	24 / 270-400	24 / 270-400
285-350	285-350	285-350	285-350
0.68 <sup>16)</sup>	0.68 <sup>16)</sup>	0.72 <sup>16)</sup>	0.72 <sup>16)</sup>
AC	AC	AC	AC
<70 dB(A)	<70 dB(A)	<70 dB(A)	<70 dB(A)
TBD	TBD	TBD	TBD
See instruction handbook	See instruction handbook	See instruction handbook	See instruction handbook
See instruction handbook	See instruction handbook	See instruction handbook	See instruction handbook

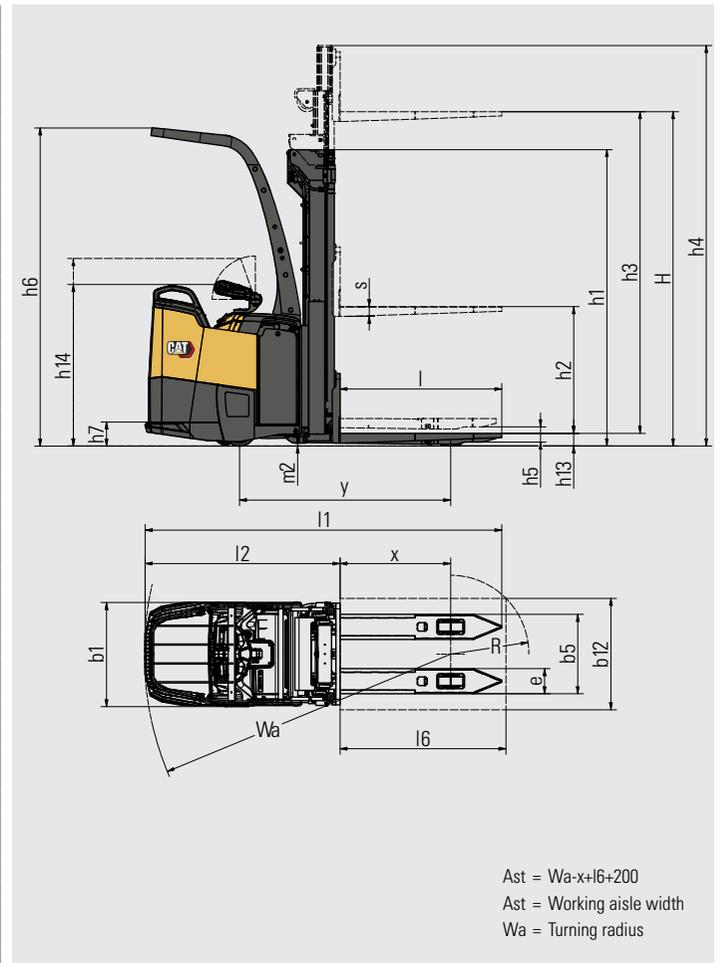


Ast = Wa-x+l6+200  
Ast = Working aisle width  
Wa = Turning radius

- 1) 500-1230 mm or alt. 600 mm for straddle models
- 2) at x=800 mm
- 3) bogie (tandem)
- 4) platform up / down
- 5) variable length 800-1600, for straddle models 800-1400
- 6) variable fork width 550-660
- 7) derive from b5 and e
- 8) with pivot power steering
- 9) with overhead guard
- 10) without side protection bars
- 11) with side protection bars
- 12) incl. also parking brake
- 13) Varies acc. to configuration
- 14) For l1 / l2 with OHG add +350 mm to platform up
- 15) 12% duty factor
- 16) Varies acc. to config. and actual usage pattern
- 17) There are two standard straddle/support legs widths available to choose from (ref. b1/b4)

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		
2.1b	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 (stroke)	h3 (mm)
4.5	Height with mast extended	h4 (mm)
4.6	Initial lift (stroke)	h5 (mm)
4.7	Height to top of overhead guard	h6 (mm)
4.8	Seat or stand height	h7 (mm)
4.9	Height of tiller arm / steering console (min/max)	h14 (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/b2 (mm)
4.22	Fork dimensions (thickness, width, length)	s / e / l (mm)
4.24	Fork carriage width	b3 (mm)
4.25	Outside width over forks (min/max)	b5 (mm)
4.26	Inner width of support legs	b4 (mm)
4.32	Ground clearance at centre of wheelbase, (forks lowered)	m2 (mm)
4.34a	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise	Ast (mm)
4.34c	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise, platform up/down	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
5.7	Gradeability, with/without load	%
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/ride LpAZ	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	Cat Lift Trucks	Cat Lift Trucks
NSF12N3R	NSF12N3IR	NSF16N3R	NSF16N3IR
Battery	Battery	Battery	Battery
Stand-on	Stand-on	Stand-on	Stand-on
1250	1250	1600	1600
600	600	600	600
800	800	800 1)	800
1429	1503	1503 2)	1533
1420	1520	1600	1730
		1320 / 1835 <sup>13)</sup>	1355 / 1895 <sup>13)</sup>
		1130 / 390 <sup>13)</sup>	1175 / 445 <sup>13)</sup>
Vul / Vul	Vul / Vul	Vul / Vul	Vul / Vul
235 x 75	235 x 75	235 x 75	235 x 75
85 x 76 <sup>3)</sup>	85 x 76 <sup>3)</sup>	85 x 76 <sup>3)</sup>	85 x 76 <sup>3)</sup>
150 x 55	150 x 55	150 x 55	150 x 55
4 <sup>3)</sup> / 1x + 1	4 <sup>3)</sup> / 1x + 1	4 <sup>3)</sup> / 1x + 1	4 <sup>3)</sup> / 1x + 1
497	497	497	497
402	390	402	390
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	See tables
See tables	See tables	See tables	See tables
110	110	110	110
2283	2283	2283	2283
170	170	170	170
1119 / 1428	1119 / 1428	1119 / 1428	1119 / 1428
82	87	80	87
89	93	89	93
2482	2556	2556	2585
1312	1386	1386	1415
748	748	748	748
70 / 180 / 1170	70 / 180 / 1170	70 / 180 / 1170 <sup>9)</sup>	70 / 180 / 1170
670	670	730	730
570	570	570 <sup>6)</sup>	570
N/A <sup>7)</sup>	N/A <sup>7)</sup>	N/A <sup>7)</sup>	N/A <sup>7)</sup>
32	20-130	25	20-130
2878	2956	2957	2986
2112	2190	2191	2220
8.5 / 8.5	8.5 / 8.5	8.5 / 8.5	8.5 / 8.5
0.20 / 0.34	0.20 / 0.34	0.16 / 0.28	0.16 / 0.28
0.47 / 0.40	0.47 / 0.33	0.42 / 0.41	0.42 / 0.36
8.7 / 8.7	11.4 / 15.0	6.1 / 6.1	10.9 / 15.0
5.7 / 5.3 <sup>15)</sup>	5.7 / 5.3 <sup>15)</sup>	6.3 / 5.3 <sup>15)</sup>	6.3 / 5.3 <sup>15)</sup>
Electric <sup>12)</sup>	Electric <sup>12)</sup>	Electric <sup>12)</sup>	Electric <sup>12)</sup>
2.4	2.4	2.4	2.4
3.0 <sup>15)</sup>	3.0 <sup>15)</sup>	3.0 <sup>15)</sup>	3.0 <sup>15)</sup>
24 / 270-400	24 / 270-400	24 / 270-400	24 / 270-400
285-350	285-350	285-350	285-350
0.68 <sup>16)</sup>	0.68 <sup>16)</sup>	0.72 <sup>16)</sup>	0.72 <sup>16)</sup>
AC	AC	AC	AC
<70 dB(A)	<70 dB(A)	<70 dB(A)	<70 dB(A)
TBD	TBD	TBD	TBD
See instruction handbook	See instruction handbook	See instruction handbook	See instruction handbook
See instruction handbook	See instruction handbook	See instruction handbook	See instruction handbook

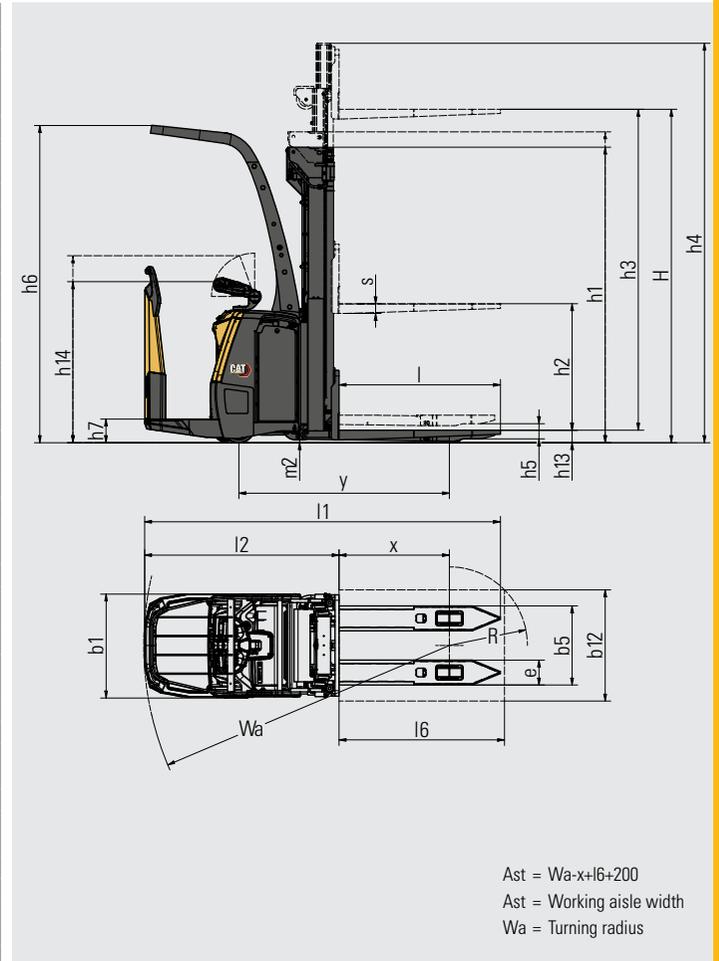


Ast = Wa-x+16+200  
Ast = Working aisle width  
Wa = Turning radius

- 1) 500-1230 mm or alt. 600 mm for straddle models
- 2) at x=800 mm
- 3) bogie (tandem)
- 4) platform up / down
- 5) variable length 800-1600, for straddle models 800-1400
- 6) variable fork width 550-660
- 7) derive from b5 and e
- 8) with pivot power steering
- 9) with overhead guard
- 10) without side protection bars
- 11) with side protection bars
- 12) incl. also parking brake
- 13) Varies acc. to configuration
- 14) For l1 / l2 with OHG add +350 mm to platform up
- 15) 12% duty factor
- 16) Varies acc. to config. and actual usage pattern
- 17) There are two standard straddle/support legs widths available to choose from (ref. b1/b4)

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		
2.1b	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 (stroke)	h3 (mm)
4.5	Height with mast extended	h4 (mm)
4.6	Initial lift (stroke)	h5 (mm)
4.7	Height to top of overhead guard	h6 (mm)
4.8	Seat or stand height	h7 (mm)
4.9	Height of tiller arm / steering console (min/max)	h14 (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/b2 (mm)
4.22	Fork dimensions (thickness, width, length)	s / e / l (mm)
4.24	Fork carriage width	b3 (mm)
4.25	Outside width over forks (min/max)	b5 (mm)
4.26	Inner width of support legs	b4 (mm)
4.32	Ground clearance at centre of wheelbase, (forks lowered)	m2 (mm)
4.34a	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise	Ast (mm)
4.34c	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise, platform up/down	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
5.7	Gradeability, with/without load	%
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)
10.7.2	Whole-body vibration (EN 13 059:2002)	
10.7.3	Hand-arm vibration (EN 13 059:2002)	

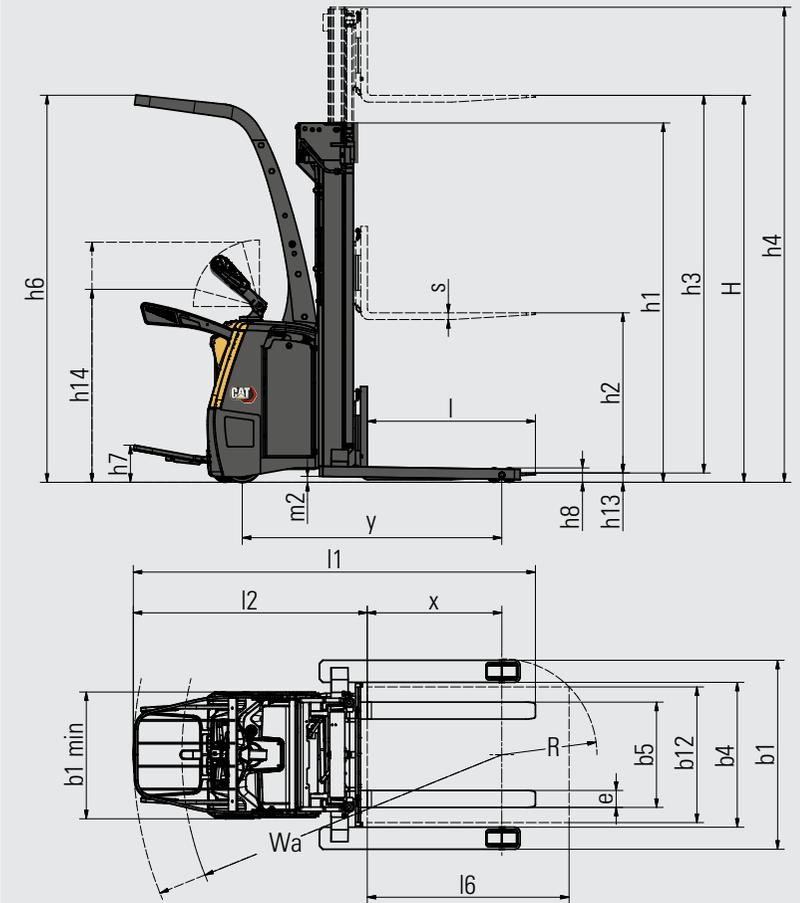
Cat Lift Trucks	Cat Lift Trucks	Cat Lift Trucks	Cat Lift Trucks
NSF12N3S	NSF12N3IS	NSF16N3S	NSF16N3IS
Battery	Battery	Battery	Battery
Stand-on	Stand-on	Stand-on	Stand-on
1250	1250	1600	1600
600	600	600	600
800	800	800 <sup>1)</sup>	800
1429	1503	1503 <sup>2)</sup>	1533
1420	1520	1600	1730
		1320 / 1835 <sup>13)</sup>	1355 / 1895 <sup>13)</sup>
		1130 / 390 <sup>13)</sup>	1175 / 445 <sup>13)</sup>
Vul / Vul	Vul / Vul	Vul / Vul	Vul / Vul
235 x 75	235 x 75	235 x 75	235 x 75
85 x 76 <sup>3)</sup>	85 x 76 <sup>3)</sup>	85 x 76 <sup>3)</sup>	85 x 76 <sup>3)</sup>
150 x 55	150 x 55	150 x 55	150 x 55
4 <sup>3)</sup> / 1x + 1	4 <sup>3)</sup> / 1x + 1	4 <sup>3)</sup> / 1x + 1	4 <sup>3)</sup> / 1x + 1
497	497	497	497
402	390	402	390
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	See tables
See tables	See tables	See tables	See tables
110	110	110	110
2283	2283	2283	2283
170	170	170	170
1130 / 1297 <sup>8)</sup>	1130 / 1297 <sup>8)</sup>	1130 / 1297 <sup>8)</sup>	1130 / 1297 <sup>8)</sup>
82	87	80	87
89	93	89	93
2482	2556	2556	2585
1312	1386	1386	1415
748	748	748	748
70 / 180 / 1170	70 / 180 / 1170	70 / 180 / 1170 <sup>5)</sup>	70 / 180 / 1170
670	670	730	730
570	570	570 6)	570
N/A <sup>7)</sup>	N/A <sup>7)</sup>	N/A <sup>7)</sup>	N/A <sup>7)</sup>
32	20-130	25	20-130
2878	2956	2957	2986
2112	2190	2191	2220
8.5 / 8.5	8.5 / 8.5	8.5 / 8.5	8.5 / 8.5
0.20 / 0.34	0.20 / 0.34	0.16 / 0.28	0.16 / 0.28
0.47 / 0.40	0.47 / 0.33	0.42 / 0.41	0.42 / 0.36
8.7 / 8.7	11.4 / 15.0	6.1 / 6.1	10.9 / 15.0
5.7 / 5.3 <sup>13)</sup>	5.7 / 5.3 <sup>13)</sup>	6.3 / 5.3 <sup>13)</sup>	6.3 / 5.3 <sup>13)</sup>
Electric <sup>12)</sup>	Electric <sup>12)</sup>	Electric <sup>12)</sup>	Electric <sup>12)</sup>
2.4	2.4	2.4	2.4
3.0 <sup>15)</sup>	3.0 <sup>15)</sup>	3.0 <sup>15)</sup>	3.0 <sup>15)</sup>
24 / 270-400	24 / 270-400	24 / 270-400	24 / 270-400
285-350	285-350	285-350	285-350
0.68 <sup>16)</sup>	0.68 <sup>16)</sup>	0.72 <sup>16)</sup>	0.72 <sup>16)</sup>
AC	AC	AC	AC
<70 dB(A)	<70 dB(A)	<70 dB(A)	<70 dB(A)
TBD	TBD	TBD	TBD
See instruction handbook	See instruction handbook	See instruction handbook	See instruction handbook
See instruction handbook	See instruction handbook	See instruction handbook	See instruction handbook



Ast = Wa-x+l6+200  
Ast = Working aisle width  
Wa = Turning radius

- 1) 500-1230 mm or alt. 600 mm for straddle models
- 2) at x=800 mm
- 3) bogie (tandem)
- 4) platform up / down
- 5) variable length 800-1600, for straddle models 800-1400
- 6) variable fork width 550-660
- 7) derive from b5 and e
- 8) with pivot power steering
- 9) with overhead guard
- 10) without side protection bars
- 11) with side protection bars
- 12) incl. also parking brake
- 13) Varies acc. to configuration
- 14) For l1 / l2 with OHG add +350 mm to platform up
- 15) 12% duty factor
- 16) Varies acc. to config. and actual usage pattern
- 17) There are two standard straddle/support legs widths available to choose from (ref. b1/b4)

Characteristics			Cat Lift Trucks	Cat Lift Trucks	Cat Lift Trucks
Weight			NSV16N3S	NSF16N3SR	NSF16N3SS
1.1	Manufacturer		Battery	Battery	Battery
1.2	Manufacturer's model designation		Stand-on	Stand-on	Stand-on
1.3	Power source		1600	1600	1600
1.4	Operator type		600	600	600
1.5	Load capacity	Q (kg)	800 <sup>1)</sup>	800 <sup>1)</sup>	800 <sup>1)</sup>
1.6	Load centre distance	c (mm)	1543 <sup>2)</sup>	1543 <sup>2)</sup>	1543 <sup>2)</sup>
1.7	Load wheel axle to fork face (forks lowered)	x (mm)			
1.8	Wheelbase	y (mm)			
1.9					
Wheels, Drive Train					
2.1b	Truck weight without load, with maximum battery weight	kg	Vul / Vul	Vul / Vul	Vul / Vul
2.2	Axle loadings with nominal load & maximum battery weight, drive / load side	kg	235 x 75	235 x 75	235 x 75
2.3	Axle loadings without load & with maximum battery weight, drive / load side	kg	85 x 76 <sup>3)</sup>	85 x 76 <sup>3)</sup>	85 x 76 <sup>3)</sup>
			150 x 55	150 x 55	150 x 55
			4 <sup>3)</sup> / 1x + 1	4 <sup>3)</sup> / 1x + 1	4 <sup>3)</sup> / 1x + 1
			497	497	497
			985 / 1185 <sup>3)</sup>	985 / 1185 <sup>3)</sup>	985 / 1185 <sup>3)</sup>
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 (stroke)	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 (stroke)	h5 (mm)			
4.7	Height to top of overhead guard	h6 (mm)	2283	2283	2283
4.8	Seat or stand height	h7 (mm)	171	170	170
4.9	Height of tiller arm / steering console (min/max)	h14 (mm)	1099 / 1512	1119 / 1428	1130 / 1297 <sup>9)</sup>
4.10	Height of support legs	h8 (mm)	92 <sup>3)</sup>	92 <sup>3)</sup>	92 <sup>3)</sup>
4.15	Fork height, fully lowered	h13 (mm)	55	55	55
4.19	Overall length	l1 (mm)	2184 / 2545 <sup>4) 14)</sup>	2576	2576
4.20	Length to fork face	l2 (mm)	1034 / 1395 <sup>4) 14)</sup>	1426	1426
4.21	Overall width	b1/b2 (mm)	1115 / 1315 <sup>3) 17)</sup>	1115 / 1315 <sup>3) 17)</sup>	1115 / 1315 <sup>3) 17)</sup>
4.22	Fork dimensions (thickness, width, length)	s / e / l (mm)	40 / 100 / 1150 <sup>5)</sup>	40 / 100 / 1150 <sup>5)</sup>	40 / 100 / 1150 <sup>5)</sup>
4.23	Fork carriage to DIN		FEM 2/A	FEM 2/A	FEM 2/A
4.24	Fork carriage width	b3 (mm)	840	840	840
4.25	Outside width over forks (min/max)	b5 (mm)	316 / 773	316 / 773	316 / 773
4.26	Inner width of support legs	b4 (mm)	855 / 1055 <sup>17)</sup>	855 / 1055 <sup>17)</sup>	855 / 1055 <sup>17)</sup>
4.32	Ground clearance at centre of wheelbase, (forks lowered)	m2 (mm)	30 <sup>3)</sup>	30 <sup>3)</sup>	30 <sup>3)</sup>
4.33a	Working aisle width (Ast) with 1000 x 1200 mm pallets, load crosswise	Ast (mm)		3063 <sup>2)</sup>	3063 <sup>2)</sup>
4.33c	Working aisle width (Ast) with 1000 x 1200 mm pallets, load crosswise, platform up/down	Ast (mm)	2688 / 3027 <sup>4)</sup>		
4.34a	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise	Ast (mm)		2997 <sup>2)</sup>	2997 <sup>2)</sup>
4.34c	Working aisle width (Ast) with 800 x 1200 mm pallets, load lengthwise, platform up/down	Ast (mm)	2622 / 2961 <sup>2) 4)</sup> [2955 <sup>9)</sup>		
4.35	Turning radius	Wa (mm)	1856 / 2195 <sup>2) 4)</sup> [2189 <sup>9)</sup>	2231 <sup>2)</sup>	2231 <sup>2)</sup>
Performance					
5.1	Travel speed, with/without load	km / h	6.0 / 6.0 <sup>10)</sup> 8.5 / 8.5 <sup>11)</sup>	8.5 / 8.5	8.5 / 8.5
5.2	Lifting speed, with/without load	m / s	0.15 / 0.24	0.15 / 0.24	0.15 / 0.24
5.3	Lowering speed, with/without load	m / s	0.33 / 0.30	0.33 / 0.30	0.33 / 0.30
5.7	Gradeability, with/without load	%	6.1 / 6.1	6.1 / 6.1	6.1 / 6.1
5.8	Maximum gradeability with/without load	%			
5.9	Acceleration time (10 metres) with/without load	s	6.3 / 5.3 <sup>13)</sup>	6.3 / 5.3 <sup>13)</sup>	6.3 / 5.3 <sup>13)</sup>
5.10	Service brakes (mechanical/hydraulic/electric/pneumatic)		Electric <sup>12)</sup>	Electric <sup>12)</sup>	Electric <sup>12)</sup>
Electric motors					
6.1	Drive motor capacity (60 min. short duty)	kW	2.4	2.4	2.4
6.2	Lift motor output at 15% duty factor	kW	3.0 <sup>15)</sup>	3.0 <sup>15)</sup>	3.0 <sup>15)</sup>
6.4	Battery voltage/capacity at 5-hour discharge	V / Ah	24 / 270-400	24 / 270-400	24 / 270-400
6.5	Battery weight	kg	285-350	285-350	285-350
6.6a	Energy consumption according to EN16796	kWh / h	0.72 <sup>16)</sup>	0.72 <sup>16)</sup>	0.72 <sup>16)</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	<70	<70
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)			
10.7.2	Whole-body vibration (EN 13 059:2002)				
10.7.3	Hand-arm vibration (EN 13 059:2002)				
			See instruction handbook	See instruction handbook	See instruction handbook
			See instruction handbook	See instruction handbook	See instruction handbook



Ast = Wa-x+l6+200  
 Ast = Working aisle width  
 Wa = Turning radius

- 1) 500-1230 mm or alt. 600 mm for straddle models
- 2) at x=800 mm
- 3) bogie (tandem)
- 4) platform up / down
- 5) variable length 800-1600, for straddle models 800-1400
- 6) variable fork width 550-660
- 7) derive from b5 and e
- 8) with pivot power steering
- 9) with overhead guard
- 10) without side protection bars
- 11) with side protection bars
- 12) incl. also parking brake
- 13) Varies acc. to configuration
- 14) For l1 / l2 with OHG add +350 mm to platform up
- 15) 12% duty factor
- 16) Varies acc. to config. and actual usage pattern
- 17) There are two standard straddle/support legs widths available to choose from (ref. b1/b4)

NSV/NSF12N3(R)(S)				
Mast Type	h3 + h13	h1	h4	h2+h13
Narrow	mm	mm	mm	mm
Duplex with clear view mast (TV)	2690	1857	3120	159
	2990	2007	3420	159
	3290	2157	3720	159
	3590	2307	4020	159
	4190	2607	4620	159
Duplex with clear view and full free lift (TFV)	2690	1857	3120	1389
	2990	2007	3420	1539
	3290	2157	3720	1689
	3590	2307	4020	1839
	4190	2607	4620	2139

NSV/NSF12N3I(R)(S)				
Mast Type	h3 + h13	h1	h4	h2+h13
Initial lift	mm	mm	mm	mm
Duplex with clear view mast (TV)	2690	1862	3125	163
	2990	2012	3425	163
	3290	2162	3725	163
	3590	2312	4025	163
	4190	2612	4625	163
Duplex with clear view and full free lift (TFV)	2690	1862	3125	1393
	2990	2012	3425	1543
	3290	2162	3725	1693
	3590	2312	4025	1843
	4190	2612	4625	2143

## Mast Performance and Capacity

TV / DS	Duplex with clear view mast
TFV / DEV	Duplex with clear view and full free lift
DTFV / TREV	Triplex with clear view and full free lift
WTFV / WTREV	Wide straddle Triplex with clear view and full free lift
h3+h13	Lifting height (fork)
h1	Lowered mast height
h4	Raised mast height
h2+h13	Full free lift

NSV/NSF16N3(R)(S)				
Mast Type	h3 + h13	h1	h4	h2+h13
Narrow	mm	mm	mm	mm
Duplex with clear view and full free lift (TFV)	2900	2000	3405	1499
	3200	2150	3705	1649
	3600	2350	4105	1849
	3800	2450	4305	1949
	4200	2650	4705	2149
Triplex with clear view and full free lift (DTFV)	4350	2000	4882	1519
	4800	2150	5332	1669
	5400	2350	5932	1869

NSV/NSF16N3I(R)(S)				
Mast Type	h3 + h13	h1	h4	h2+h13
Initial lift	mm	mm	mm	mm
Duplex with clear view and full free lift (TFV)	2900	2005	3412	1503
	3200	2155	3712	1653
	3600	2355	4112	1853
	3800	2455	4312	1953
	4200	2655	4712	2153
Triplex with clear view and full free lift (DTFV)	4350	2005	4889	1523
	4800	2155	5339	1673
	5400	2355	5939	1873



NSV/NSF16N3S(R)(S)				
Mast Type	h3 + h13	h1	h4	h2+h13
Wide Straddle	mm	mm	mm	mm
Duplex with clear view and full free lift (WTFV)	2900	2000	3410	1465
	3200	2150	3710	1615
	3600	2350	4110	1815
	3800	2450	4310	1915
	4200	2650	4710	2115



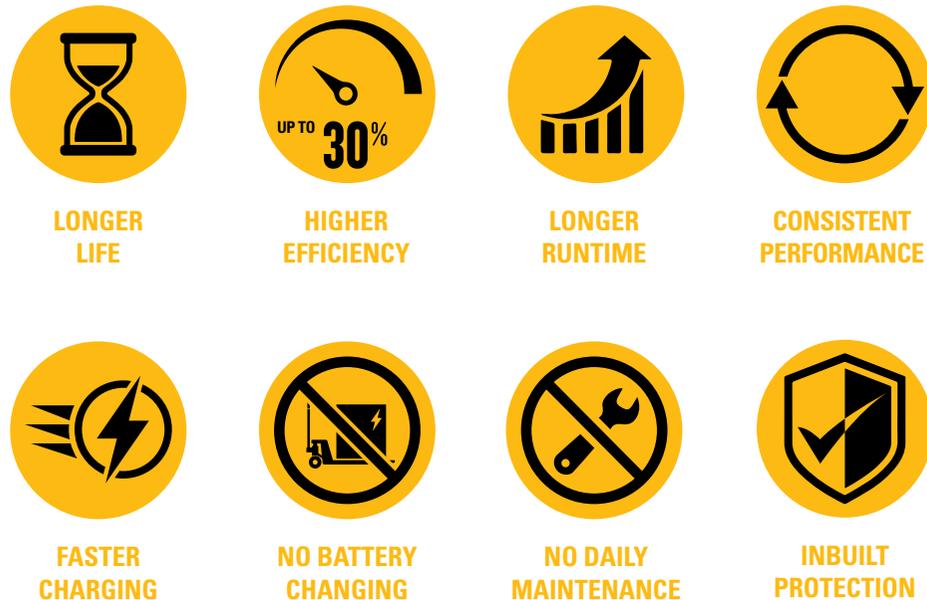
# LI-ION BATTERIES

## 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.



### 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** – 2 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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