



NSS16N2  
NSS16N2I  
NSS20N2  
NSS20N2I

# COST-EFFECTIVE FLEXIBILITY

## SPECIFICATIONS

**SIT-ON STACKERS** 24V, 1.6 - 2.0 TONNES



# DRIVE UP YOUR PRODUCTIVITY – DRIVE DOWN THE COST

PUT YOUR OPERATOR IN THE DRIVING SEAT OF A CAT® SIT-ON STACKER AND BOOST YOUR THROUGHPUT. ITS ERGONOMIC DESIGN IS GREAT FOR INTENSIVE STACKING AND INTERNAL TRANSPORT – HOWEVER LONG THE DISTANCES OR SHIFTS. COMPACT AND MANOEUVRABLE, WITH LIFTS UP TO 7 METRES, THIS FLEXIBLE AND ECONOMICAL SOLUTION ALSO INCREASES STORAGE DENSITY.



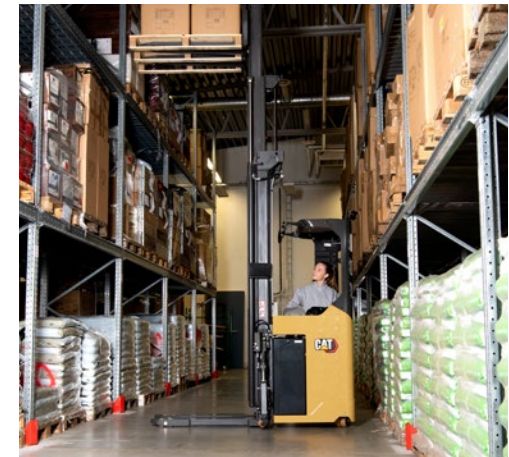
Sit-on stackers are faster and more compact than platform trucks – with no stops to fold or unfold platforms and sidebars. They rival many reach trucks for lifting – at a lower price and in tighter spaces. So why not narrow your aisles, raise your racking and use your warehouse more fully?



The driver is comfortably seated in a quiet, low-vibration, ergonomically equipped compartment. Fully contained and protected within the truck's robust structure, he or she can work quickly and confidently, hour after hour. Stress, strain and fatigue are minimised. Extra comforts include the option of electrically adjustable floor height.



User-friendly controls include fingertip hydraulic levers, with an adjustable armrest, and a positionally adjustable mini steering wheel. The truck's easy and precise manoeuvring and load handling are ideal for a variety of applications and tasks. They include general warehouse work, as well as material flow in factories.



Advanced drive, lifting, lowering and steering systems make every action fast and smooth. Automated stability aids optimise speeds to match activities, ensuring safe but quick operation. For non-stop productivity and the highest levels of efficiency, you can choose Li-ion battery power.

## 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 features, including a swing-out seat, combine 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).

## UNMATCHED PRODUCTIVITY

- 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 maintains high load capacity for lifts above 1.7 m by automatically limiting travel to 5 km/h when forks reach that height.
- Tapered forks and angled fork tips permit faster pallet entry with less risk of damage.
- With Li-ion battery, performance is enhanced and fast opportunity charging is possible, via easily accessible connector, for continuous operation without battery changes.
- With lead-acid battery, an optional plug on the machine housing allows quick and easy charging without disconnecting the battery.
- 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. (Models NSS16N2I and NSS20N2I.)

- Level Assistance System (LAS) option allows choice of pre-set heights.
- Laser fork positioning guide option aids accuracy in placing forks at correct level.
- Weight and height indicators can be optionally included in the display.
- 360-degree steering option enables fluid turning without stopping to change direction.
- Dampened mast-stage transitions and soft landing reduce noise and vibrations, allowing comfortable load handling with maximum performance.

## 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, unobstructed floor, comfortable, adjustable suspension seat, minimal vibration and plenty of space for drivers of all sizes.
- Electrically adjustable floor height option combines with adjustment of armrests and seat to give the perfect fit for each driver.
- Adjustable mini steering wheel on floating armrest allows a relaxed operator posture, proven to reduce neck/back strain and risk of RSI, and quickly folds up for easy entry/exit.
- Midi steering wheel option offers adjustable column length and angle, and folds up for easy entry/exit.
- Height-adjustable armrest comfortably supports wrist while positioning hand ideally to operate fingertip hydraulic levers and other controls simultaneously.
- Hand-operated direction switch option offers alternative to switching via pedal.
- Clear all-round and fork-tip view is achieved through careful design of mast, fork carriage, overhead guard, pillars and chassis, and by low-reflection surfaces.
- Extra overhead guard options include panoramic, transparent, polycarbonate roof for high upward visibility and additional protection from falling objects.
- 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 on engine panel and accessible from outside truck – plus holders for smaller equipment, phone and drinks.
- Intuitive multifunctional display option keeps drivers fully informed and is optimally positioned and angled for clear viewing.



# STANDARD EQUIPMENT AND OPTIONS

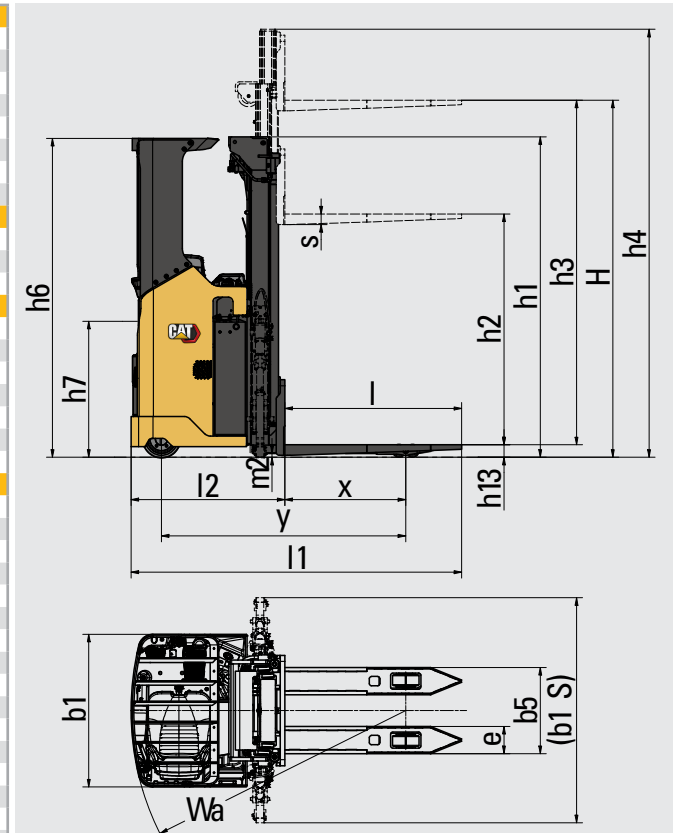
	NSS16N2	NSS16N2I	NSS20N2	NSS20N2I
<b>GENERAL</b>				
Standard display incl. hour meter and battery indicator	●	●	●	●
Key switch entry	●	●	●	●
Electric power steering	●	●	●	●
Speed-regulated lift motor and proportional valve for lowering	●	●	●	●
Tandem load wheels Vulkollan	●	●	●	●
Overhead guard	●	●	●	●
Adjustable armrest, right side	●	●	●	●
Adjustable steering wheel, all directions	●	●	●	●
Storage compartment under armrest and by left side of seat	●	●	●	●
Ergonomic fully adjustable seat	●	●	●	●
Battery rollers, plastic (steel rollers with bearings in Senior models)	●	●	●	●
Initial lift	—	●	—	●
Chill store design, down to -10°C	●	●	●	●
<b>POWER SOURCE</b>				
Li-ion batteries*	○	○	○	○
Lead-acid batteries	○	○	○	○
<b>ENVIRONMENT</b>				
Cold store design, 0°C to -30°C	○	○	○	○
<b>DRIVE AND LIFT CONTROLS</b>				
Mini steering wheel with floating armrest	●	●	●	●
Midi steering wheel	○	○	○	○
Fingertip controls for lifting/lowering	●	●	●	●
Hands-free direction control (HFDC)	●	●	●	●
Hand-operated direction control (HODC)	○	○	○	○
<b>WHEEL OPTIONS</b>				
Vulkollan	●	●	●	●
Tractothan	○	○	○	○
Super Grip	○	○	○	○
<b>OTHER OPTIONS</b>				
Side stabilisers	○	○	○	○
Electrically adjustable floor height, 70 mm	○	○	○	○
360 degree steering	○	○	○	○
Multifunctional display incl. BDI and hour meter, PIN code login (100 codes) and graphic icons	○	○	○	○
High-performance 8.0 kW AC hydraulic pump system	○	○	○	○
Load backrest	○	○	○	○
Key switch entry (in combination with multifunctional display)	○	○	○	○
Laser positioning guide	○	○	○	○
Load weight indicator	○	○	○	○
Lift height indicator	○	○	○	○
Level Assistance System (LAS)	○	○	○	○
Panoramic high-visibility polycarbonate roof	○	○	○	○
12V DC power socket	○	○	○	○
5V USB socket	○	○	○	○
Accessory rack	○	○	○	○
Writing desk incl. RAM C holder	○	○	○	○
Equipment holder RAM system size C	○	○	○	○
Equipment holder RAM system size C, 2 pcs	○	○	○	○
Equipment holder RAM size D	○	○	○	○
Working lights LED	○	○	○	○
Floor spot, red or blue	○	○	○	○
Increased drive speed, 12 km/h in driver compartment direction	○	—	○	—
Special RAL colour	○	○	○	○

● Standard ○ Option

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

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 and maximum battery weight, drive / load side	kg
2.3	Axle loadings without load and 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/b2 (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)
4.34a	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	%
5.10	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
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
NSS16N2	NSS20N2
Battery	Battery
Sit-on	Sit-on
1600	2000
600	600
800	800
1616 <sup>1)</sup>	1665 <sup>1)</sup>
1866	2127
1466 / 2000	1690 / 2438
1306 / 560	1490 / 638
Vul / Vul	Vul / Vul
250 x 105	250 x 105
85 x 70	85 x 70
150 x 55	150 x 55
1 x 2 / 4	1 x 2 / 4
706	706
402	392
see tables	see tables
see tables	see tables
see tables	see tables
see tables	see tables
see tables	see tables
-	-
2110	2110
966	966
80	83
87	90
2189 <sup>1)</sup>	2238 <sup>1)</sup>
1019 <sup>1)</sup>	1068 <sup>1)</sup>
1010	1010
70 / 180 / 1170	70 / 195 / 1170
570	570
25	23
2584 <sup>2)</sup>	2632 <sup>2)</sup>
2419	2466
1819 <sup>2)</sup>	1866 <sup>2)</sup>
10/10	9/9
0.16 / 0.32	0.12 / 0.22
0.44 / 0.41	0.33 / 0.30
6.7 / 6.7	5.9 / 5.9
Electric	Electric
2.7	2.7
4.0	4.0
24 / 375 - 775	24 / 375 - 775
305 - 620	305 - 620
AC	AC



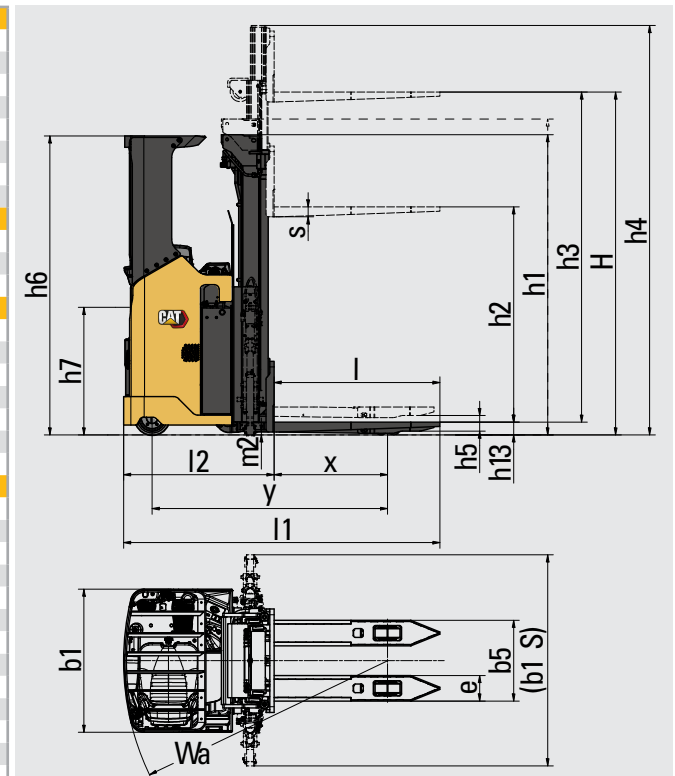
$Ast = Wa + R + a$   
 $Ast3 = Wa + l6 - x + a$   
 $Ast = \text{Working aisle width}$   
 $Wa = \text{Turning radius}$   
 $a = \text{Safety clearance} = 2 \times 100 \text{ mm}$   
 $R = \sqrt{(l6 - x)^2 + (b12 / 2)^2}$

1) When SN/BC775 then add 104 mm.

2) Dimensions vary depending on battery carriage and mast type. Ast dimensions available in table on page 7.

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 and maximum battery weight, drive / load side	kg
2.3	Axle loadings without load and 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		
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4.2b	Height	h1 (mm)
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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/b2 (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)
4.34a	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	%
5.10	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
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
NSS16N2I	NSS20N2I
Battery	Battery
Sit-on	Sit-on
1600	2000
600	600
800	800
1661 <sup>1)</sup>	1720 <sup>1)</sup>
2015	2294
1571 / 2045	1806 / 2488
1411 / 605	1606 / 688
Vul / Vul	Vul / Vul
250 x 105	250 x 105
85 x 70	85 x 70
150 x 55	150 x 55
1 x 2 / 4	1 x 2 / 4
706	706
390	375
see tables	see tables
see tables	see tables
see tables	see tables
see tables	see tables
see tables	see tables
110	110
2110	2110
966	966
87	87
93	93
2233 <sup>1)</sup>	2293 <sup>1)</sup>
1063 <sup>1)</sup>	1123 <sup>1)</sup>
1010	1010
70 / 180 / 1170	70 / 195 / 1170
570	570
20	20
2627 <sup>2)</sup>	2685 <sup>2)</sup>
2461	2520
1861 <sup>2)</sup>	1920 <sup>2)</sup>
9/9	9/9
0.16 / 0.32	0.12 / 0.22
0.44 / 0.41	0.33 / 0.30
26.6 / 26.6	25.6 / 25.6
Electric	Electric
2.7	2.7
4.0	4.0
24 / 375 - 775	24 / 375 - 775
305 - 620	305 - 620
AC	AC



$$\begin{aligned} \text{Ast} &= \text{Wa} + \text{R} + \text{a} \\ \text{Ast3} &= \text{Wa} + \text{l6} - \text{x} + \text{a} \\ \text{Ast} &= \text{Working aisle width} \\ \text{Wa} &= \text{Turning radius} \\ \text{a} &= \text{Safety clearance} = 2 \times 100 \text{ mm} \\ \text{R} &= \sqrt{(\text{l6} - \text{x})^2 + (\text{b12} / 2)^2} \end{aligned}$$

1) When SN/BC775 then add 104 mm.

2) Dimensions vary depending on battery carriage and mast type. Ast dimensions available in table on page 7.

NSS16-20N2				
Mast Type	h3+h13	h1	h4	h2+h13
	mm	mm	mm	mm
DEV	3600	2350	4105	1847
	4200	2650	4705	2147
	4500	2800	5005	2297
TREV	4800	2150	5332	1667
	5400	2350	5932	1867
	5700	2450	6232	1967
	6300	2650	6832	2167
	7000	2883	7532	2400

NSS16-20N2i				
Mast Type	h3+h13	h1	h4	h2+h13
	mm	mm	mm	mm
DEV	3600	2355	4112	1853
	4200	2655	4712	2153
	4500	2805	5012	2303
TREV	4800	2155	5339	1673
	5400	2355	5939	1873
	5700	2455	6239	1973
	6300	2655	6839	2173
	7000	2888	7539	2406

AST dimensions, VDI2198 (4.34a)				
Basic capacity (kg)	1600		2000	
Chassis / battery carriage	Junior / BC 465	Senior / BC 775	Junior / BC 465	Senior / BC 775
Standard model	2584	2688	2632	2736
Initial lift model	2627	2731	2685	2789

AST dimensions, Ast3 (4.34b)				
Basic capacity (kg)	1600		2000	
Chassis / battery carriage	Junior / BC 465	Senior / BC 775	Junior / BC 465	Senior / BC 775
Standard model	2419	2523	2466	2570
Initial lift model	2461	2565	2520	2624

## Mast Performance and Capacity

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



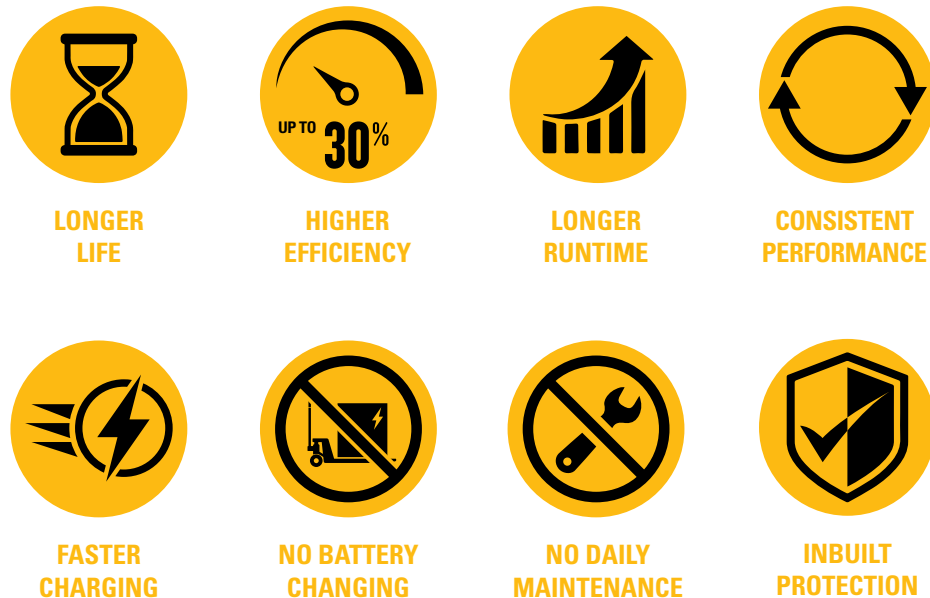
# LI-ION BATTERIES

## 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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