



**NSV12N3**  
**NSV12N3I**

**NSF12N3R**  
**NSF12N3S**  
**NSF12N3IR**  
**NSF12N3IS**

**NSV16N3**  
**NSV16N3I**

**NSF16N3R**  
**NSF16N3S**  
**NSF16N3IR**  
**NSF16N3IS**

# ASSURED PERFORMANCE

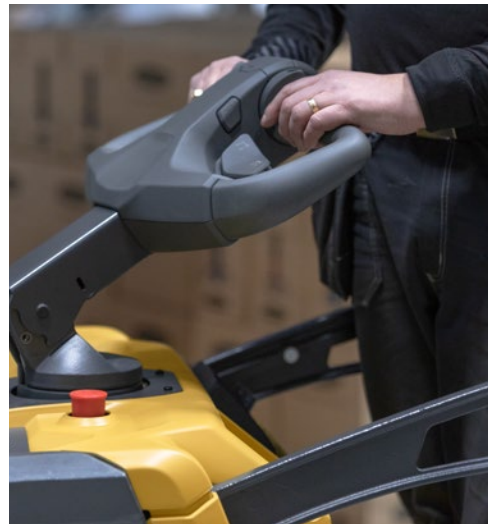
**PRELIMINARY SPECIFICATIONS**

**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.)
- 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.
- Powerful and quiet hydraulic motor is smoothly governed by stepless, speed-regulated lifting and lowering control, for quick but safe and accurate load positioning and movement.
- 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.

## 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.
- Extensive mast choice includes duplex and triplex versions with a range of standard and custom lift heights.
- 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 and side entry 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.

# STANDARD EQUIPMENT AND OPTIONS

|  | NSV12-16N3 | NSV12-16N3I | NSF12-16N3R | NSF12-16N3IR | NSF12-16N3S | NSF12-16N3IS |
|--|------------|-------------|-------------|--------------|-------------|--------------|
| <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 (double pallet handling)   | -          | ●           | -           | ●            | -           | ●            |
| 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®  | ●          | ●           | ●           | ●            | ●           | ●            |
| <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)  | ○          | ○           | ○           | ○            | ○           | ○            |

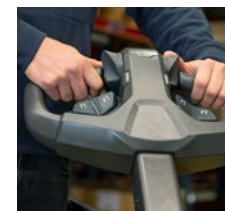
● Standard ○ Option

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

## FULL LI-ION\* BATTERY INTEGRATION

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

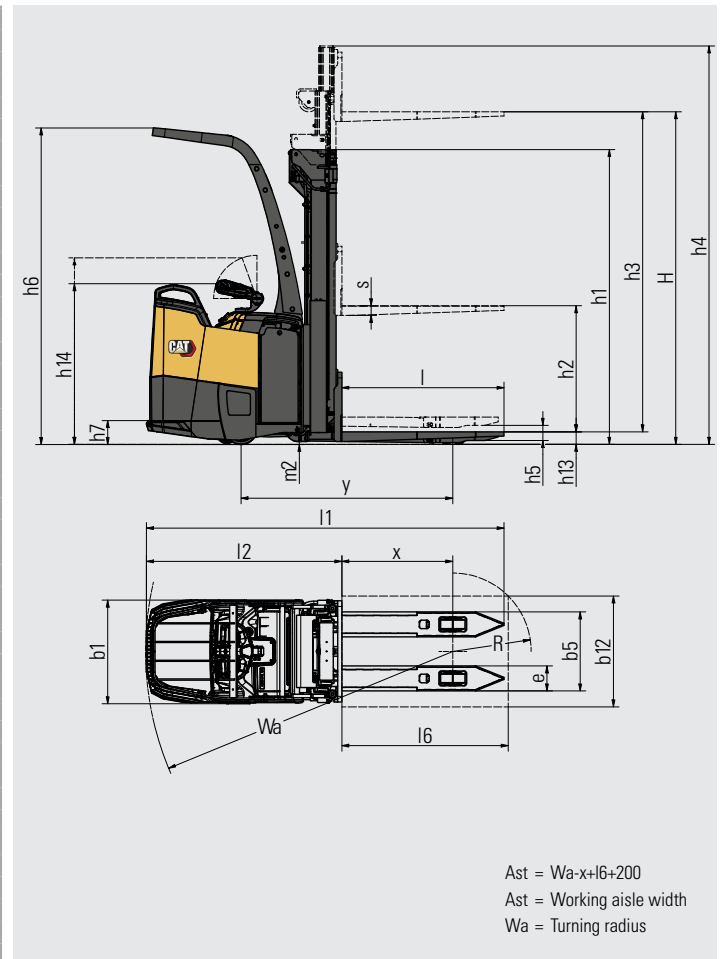
The class-leading, user-friendly *emPower* tiller head gives easy access to controls and enables rapid, precise operation.





| 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)         |

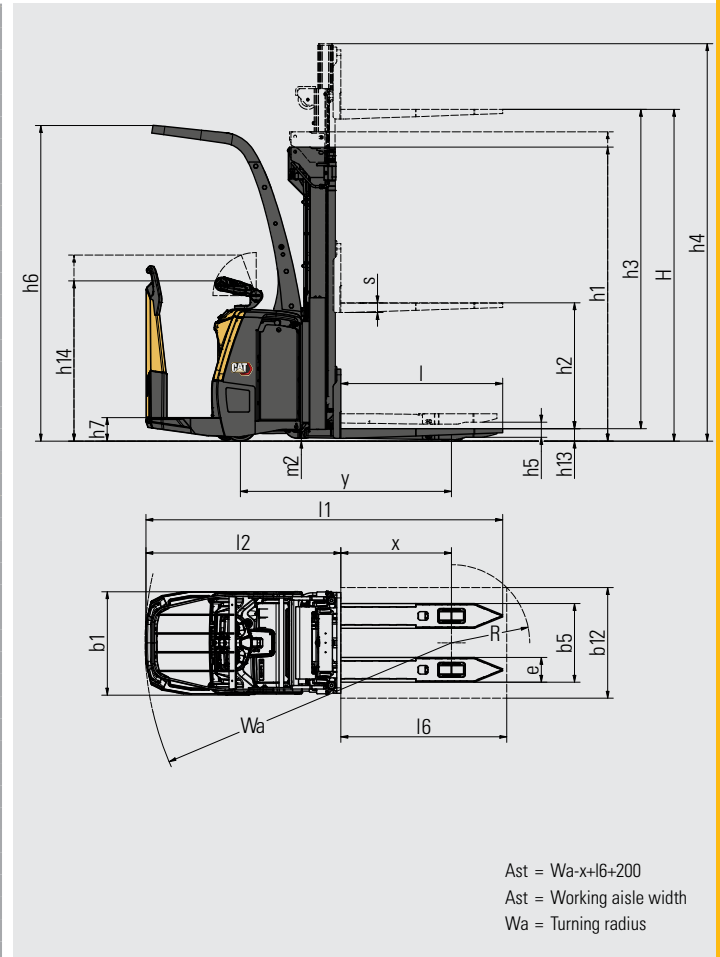
| Cat Lift Trucks          | Cat Lift Trucks          | Cat Lift Trucks               | Cat Lift Trucks            |
|--------------------------|--------------------------|-------------------------------|----------------------------|
| NSF12N3R                 | NSF12N3IR                | NSF16N3R                      | NSF16N3IR                  |
| Battery                  | Battery                  | Battery                       | Battery                    |
| Stand-on                 | Stand-on                 | Stand-on                      | Stand-on                   |
| 1250                     | 1250                     | 1600                          | 1600                       |
| 600                      | 600                      | 600                           | 600                        |
| 800                      | 800                      | 800 <sup>1)</sup>             | 800                        |
| 1429                     | 1503                     | 1503 <sup>2)</sup>            | 1533                       |
| 1370                     | 1470                     | 1580                          | 1680                       |
|                          |                          | 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>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                     |
| 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                        |



- 1) 500-1230 mm
- 2) at x=800 mm
- 3) bogie (tandem)
- 4) platform up / down
- 5) variable length 800-1600
- 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%
- 16) Varies acc. to config. 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              |   |                |
| 2.1b                | 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)         |

| 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                       |
| 1370                      | 1470                      | 1580                          | 1680                       |
|                           |                           | 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>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                        |



- 1) 500-1230 mm
- 2) at x=800 mm
- 3) bogie (tandem)
- 4) platform up / down
- 5) variable length 800-1600
- 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%
- 16) Varies acc. to config. and actual usage pattern

| NSV/NSF12N3(R)(S)                               |                |          |          |              |
|---|----------------|----------|----------|--------------|
| Mast Type<br>Narrow                             | h3 + h13<br>mm | h1<br>mm | h4<br>mm | h2+h13<br>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<br>Initial lift                       | h3 + h13<br>mm | h1<br>mm | h4<br>mm | h2+h13<br>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 |
| h3+h13      | Lifting height (fork)                      |
| h1          | Lowered mast height                        |
| h4          | Raised mast height                         |
| h2+h13      | Full free lift                             |

| NSV/NSF16N3(R)(S)                                 |                |          |          |              |
|---|----------------|----------|----------|--------------|
| Mast Type<br>Narrow                               | h3 + h13<br>mm | h1<br>mm | h4<br>mm | h2+h13<br>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<br>Initial lift                         | h3 + h13<br>mm | h1<br>mm | h4<br>mm | h2+h13<br>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         |






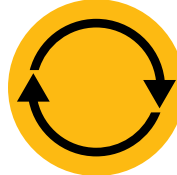




# LI-ION BATTERIES

## 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.

|  |  |   |   |
|--|--|---|---|
| <br><b>LONGER LIFE</b>      | <br><b>HIGHER EFFICIENCY</b>    | <br><b>LONGER RUNTIME</b>        | <br><b>CONSISTENT PERFORMANCE</b> |
| <br><b>FASTER CHARGING</b> | <br><b>NO BATTERY CHANGING</b> | <br><b>NO DAILY MAINTENANCE</b> | <br><b>INBUILT PROTECTION</b>    |

### 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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