

## *Operator Aboard Battery Extractors*

Any facility operating with a large fleet of electric forklifts will require frequent battery change-outs. BHS Operator Aboard Battery Extractors (BE) are essential for exchanging batteries from forklifts, and BHS offers a variety of BE models for operations of all sizes. These industrial battery pullers are the first of their kind to offer cloud-based digital integrations, giving users access to the Industrial Internet of Things (IIoT). BHS battery changers can reduce change-out times substantially, ensuring a more productive facility.



# Operator Aboard Battery Extractors

## With IIoT (Industrial Internet of Things) Integration

Not all forklift battery extraction applications demand the same handling solutions, equipment, or stacking requirements. That is why BHS offers a variety of extraction methods with several options available to customize the system for every facility. All units have features that make them the most versatile, reliable, and cost-effective battery extractors for Industry 4.0 applications. For maximum efficiency and space-savings, BEs are also available in multi-level systems. BHS representatives will help determine which model is best for your application by considering fleet size, room dimensions, battery and charger specifications, budget requirements, and various other factors.

### FEATURES & BENEFITS

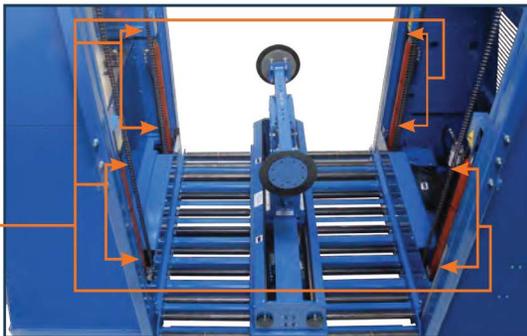
- BE-IIoT package offers real-time data and reporting, predictive maintenance notifications, operator login accountability, and asset protection (see next page for more details)
- First 6 months of the BE-IIoT package included. After initial 6 months, additional subscription fees apply.
- Heavy-duty construction for added reliability
- Low-maintenance design reduces preventative maintenance frequency
- No exposed components for added safety
- Durable powder coat finish resists both acid and scratches
- Manual control of hydraulics for easy operation
- Vacuum extraction reduces wear and tear on batteries
- Vacuum extractor arm adjustable for various reach requirements\*
- Non-proprietary hydraulic and electrical components lower replacement part costs
- Redesigned hydraulic system for increased flow capacities and consistent function speeds
- Quiet-running dual floor drive system provides positive traction on wet or dry surfaces\*
- BHS exclusive Non-Inter-Flow (NIF) hydraulic manifold system stabilizes the lift cylinders to ensure a level roller bed during load transfers\*

- Four lift cylinders, in combination with four-point equalization, assure smooth and level vertical movement of the roller bed when empty or loaded\*
- Five hydraulic-powered rollers per compartment provide a brake for safe, easy battery transfer\*
- Induction-type proximity switch disables floor drive to protect equipment when the extractor arm is outside the envelope of the compartment\*

\* Not available on BE-SS

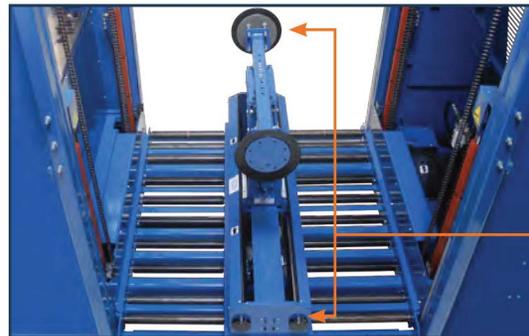


**Double Stack Battery Extractor (BE-DS) pictured with batteries, chargers, and Double Stack System Stands**



#### LIFT CAPABILITIES

Four hydraulic cylinders provide safe, smooth vertical travel on single- and multi-level systems. As the weight of forklift batteries shift during the change-out process, the BHS Non-inner-Flow Manifold carefully controls hydraulic power, limiting the stress on mechanical components while ensuring steady positioning for the operator. Inner frames maintain their level at any height thanks to a fully synchronized eight-point equalization system.



#### EXTRACTOR ARM DESIGN

Extractor arms provide the horizontal force required to push and pull large forklift batteries. Every BHS BE model provides arm travel along two chrome-hardened shafts. This dual-shaft design allows the BE to complete battery change-outs with extraordinary efficiency. Metal shielding protects components from debris, while a helical rotary actuator bolts directly to the base plate. This helical-style actuator eliminates drift, reduces maintenance, and requires 75 percent fewer components and half the assembly time compared to competing designs.



# Industry 4.0 Solutions in the Forklift Battery Room

## BE-IIoT

The BE-IIoT package is standard with BHS Operator Aboard Battery Extractors and includes software, hardware, and smart battery handling equipment that provide important safeguards, protecting users and mission-critical assets. Through a range of operational data-collection capabilities, BE-IIoT technology can extend the working life of your equipment. It also empowers managers with oversight reports and control over access. Internal sensors on the BE track an array of conditions that contribute to the machine's performance. Perhaps most importantly, BE-IIoT requires login from authorized users only. It tracks usage and productivity across every shift.



### 1. Operator Accountability

The Human-Machine Interface (HMI) touchscreen is mounted to the BE dashboard and communicates with BHS' Web Portal via the cloud (Web Portal access is free for the first 6-months). Only trained, authorized users are granted PIN-number logins required for operating the machine.

### 2. Asset Protection

Operators use a tablet provided by BHS to complete a daily checklist to verify equipment is in perfect running condition. This ensures battery handling assets are fully maintained and operate at peak efficiency and safety.

### 3. Real Time Reports & Asset Management

Access reports about the asset, alerts, and operator activity through the BHS IIoT Web Portal on your device. Manage operator and Web Portal users, and customize email notifications to ensure visibility over critical events, unsafe use, and more.

## Predictive Maintenance Sensors Monitor Machine Health



**Geospatial Gyroscopes** monitor tilt from side-to-side and front-to-back of the BE, sending notifications when factory set parameters are exceeded. This helps identify issues and prevent long term damage to the unit.



**Oil Temperature** is monitored for increases past a set limit which can identify hydraulic system component failure or maladjustment of relief valves, leading to system overheating and shortened oil life.



**Oil Pressure** is closely monitored to identify signs of a clogged filter, component failure, or maladjustment which could lead to component damage.



**Proximity Sensor** indicates when maintenance or tampering of dashboard may have occurred.



**Shock Sensor** indicates when the BE may have been involved in substantial impacts.

**Achieve greater productivity and lower costs with BHS' IIoT-enabled battery room solutions.**

**AVAILABLE OPTIONS** (• indicates option is available, S indicates standard feature)

	SINGLE SIDE (BE-SS)	SINGLE LEVEL (BE-SL)	DOUBLE STACK (BE-DS)	TRIPLE STACK (BE-TS)	QUAD STACK (BE-QS)	MTC DIRECT REPLACEMENT (BE-IMT)*
IloT INTREGRATION <b>*NEW*</b>		S	S	S	S	S
AUDIBLE ALARM	•	•	•	•	•	•
BE-MOUNTED WATER TANK		•	•	•	•	•
BLUE LIGHT		•	•	•	•	•
CUSTOM LASERED LOGO		•	•	•	•	•
EXTENDED REACH		•	•	•	•	S
FAN		•	•	•	•	•
HORN		•	•	•	•	•
LEVEL ASSIST INDICATOR		•	•	•	•	•
MAGNET EXTRACTION	•	•	•	•	•	•
OPERATOR SHIELD		•	•	•	•	•
OVERHEAD GUARD		•	•	•	S	•
POWER ROLLER CUT-OUT		•	•	•	S	•
SAFETY SCANNER	•	•	•	•	•	•
STROBE LIGHT	•	•	•	•	•	•
ELECTRIC DRIVE		•	•	•	•	•

\*Disclaimer: BHS is not affiliated with Materials Transportation Company (MTC), and MTC does not endorse or sponsor BHS or BHS products.



**Audible Alarm (BE-AUDALM)**  
Alarm is activated while machine is in operation to notify pedestrians that the Battery Extractor is in use



**Fan (BE-FAN)**  
Aids in operator comfort in warm environments



**Overhead Guard (BE-OHG)**  
Protects the operator from falling objects



**BE-Mounted Water Tank (BE-WC-SS)**  
Stainless steel water tank allows quick, easy battery maintenance from the Battery Extractor during battery change-out



**Horn (BE-HORN)**  
Horn is utilized by the operator to alert pedestrians



**Power Roller Cut-Out (BE-PRC-1/2)**  
Disengages powered rollers requiring additional input from operator to discharge battery from extractor



**Blue Light (BE-BLU-LT)**  
Projects a bright, highly concentrated blue beam pattern on the ground in the direction that the extractor is moving



**Level Assist Indicator (BE-LAI)**  
An LED on the dash of the BE alerts operator when proper vertical alignment with stands is achieved



**Safety Scanner (BE-SICK)**  
A compact system which scans the area in front and behind the BE to identify objects or pedestrians in its detection zone, stopping movement of the BE upon detection



**Custom Lasered Logo (BE-LOGO)**  
Custom logo can be added to the front panel of the Battery Extractor



**Magnet Extraction (BE-MAG)**  
Ideal when batteries are too narrow for vacuum extraction



**Strobe Light (BE-STBLT)**  
Visually notifies bystanders when machine is in operation



**Extended Reach (BE-EXTRCH)**  
Increases the reach of the extractor arm and is ideal for use with forklifts with outriggers



**Operator Shield (BE-OS)**  
Isolates operator console from BE roller deck



**Electric Drive (BE-EDRIVE)**  
Replaces hydraulic floor drive system with variable frequency drive (VFD) controlled system



**Fleet Tracker**

**Battery Fleet Management Maximizes Efficiency**

BHS Fleet Tracker® (FLT-IOT) is a cloud-based fleet-management system, with detailed reporting that allows users to right-size their fleets for optimal efficiency. Connection to the IloT allows managers to measure the health of batteries, stands, and trucks by logging into a secured Web Portal.

Fleet Tracker's touchscreen HMI mounted to the Operator Aboard Battery Extractor guides users to charged batteries, posts maintenance reminders, and updates the status of battery assets to the cloud. The Fleet Tracker system improves battery health, improves change-out efficiency, and gives managers the real-time data they need to eliminate waste by matching assets to needs exactly.



## SINGLE SIDE

The BHS Single Side Battery Extractor (BE-SS) features a heavy-duty structure with various available options to meet specific needs. The BE-SS is fully hydraulic, track-mounted, and floor-driven for added convenience. The vehicle's control console is located on the rear of the machine for unobstructed operation. The BE-SS also features eight load rollers and an 8" (203 mm) urethane drive wheel.



BE-SS

## SPECIFICATIONS (IMPERIAL / METRIC)

BE-36-1-SS	
TRAVEL SPEED	60 ft/min / 0.30 m/s
RAISE - LOWER SPEED	8 ft/min / 0.04 m/s
DRAW BAR PULL / VACUUM (12" / 305 MM ROUND CUP)	1,000 lb / 450 kg
DRAW BAR PULL / MAGNET	800 to 1,200 lb / 363 to 540 kg
VACUUM ATTACH TIME	< 1 s
VACUUM RELEASE TIME	< 1 s
INPUT VOLTAGE	240/480 V / 3 ph / 60Hz
AC CURRENT DRAW	5.8 / 2.9 A
CONTROL CIRCUIT VOLTAGE	120 V ac
HYDRAULIC POWER UNIT	2 hp / 1.49 kW
HYDRAULIC PUMP	2 gal/min / 7.57 L/min
VACUUM PUMP	1/3 hp / 0.25 kW
VACUUM	21" HG / 711 mbar
FULL LOAD CAPACITY	4,500 lb / 2041 kg
WEIGHT (EMPTY)	2,560 lb / 1161 kg
TOTAL COMPARTMENT ROLLERS	6
GUIDE TRACK	2" x 2.5" Angle / 51 mm x 64 mm
OVERALL DIMENSIONS (L X W X H)	120" x 68.5" x 67.75" / 3048 mm x 1740 mm x 1721 mm
EXTRACTOR ARM REACH (BEYOND ROLLER BED)	9" / 228 mm
EXTRACTOR ARM TRAVEL SPEED	0 to 20 ft/min / 0 to 0.10 m/s
WHEEL BASE (FRONT TO BACK)	75.75" / 1924 mm
WHEEL BASE (SIDE TO SIDE)	56.13" / 1426 mm
BATTERY COMPARTMENT WIDTH	36.38" / 924 mm
MAXIMUM BATTERY DIMENSIONS (L X W X H)	45" x 35" x 36" / 1140 mm x 890 mm x 910 mm
MINIMUM BATTERY WIDTH (W/ MAGNET)	6" / 155 mm
MINIMUM BATTERY LENGTH	24" / 610 mm
MINIMUM BATTERY HEIGHT	19" / 483 mm
ROLLER HEIGHT	5.5" Min / 25.5" Max 140 mm Min / 647 mm Max

Note: Specifications may vary  $\pm$  5% because of temperature, floor considerations, and operator efficiency. Values represented under normal operating conditions.

## SINGLE LEVEL

The BHS Single Level Battery Extractor (BE-SL) is the perfect solution for lower capacity applications with a battery fleet containing up to 99 batteries. The BE-SL makes removing and replacing discharged batteries faster and easier than ever.



BE-SL

### SPECIFICATIONS (IMPERIAL / METRIC)

	BE-24-2-SL	BE-36-2-SL	BE-42-2-SL
TRAVEL SPEED	0 to 190 ft/min / 0 to 0.97 m/s	0 to 190 ft/min / 0 to 0.97 m/s	0 to 190 ft/min / 0 to 0.97 m/s
RAISE - LOWER SPEED	0 to 10 ft/min / 0 to 0.05 m/s	0 to 10 ft/min / 0 to 0.05 m/s	0 to 10 ft/min / 0 to 0.05 m/s
POWERED ROLLER SPEED	0 to 37 ft/min / 0 to 0.19 m/s	0 to 37 ft/min / 0 to 0.19 m/s	0 to 37 ft/min / 0 to 0.19 m/s
ARM TRAVERSE SPEED	0 to 20 ft/min / 0 to 0.10 m/s	0 to 20 ft/min / 0 to 0.10 m/s	0 to 20 ft/min / 0 to 0.10 m/s
ARM ROTATION TIME	6 s to 8 s	6 s to 8 s	6 s to 8 s
DRAW BAR PULL / VACUUM (12" / 305 MM ROUND CUP)	1,000 lb / 454 kg	1,000 lb / 454 kg	1,000 lb / 454 kg
DRAW BAR PULL MAGNET*	800 lb to 1,200 lb / 363 kg to 544 kg	800 lb to 1,200 lb / 363 kg to 544 kg	800 lb to 1,200 lb / 363 kg to 544 kg
VACUUM ATTACH TIME	< 1 s	< 1 s	< 1 s
VACUUM RELEASE TIME	< 1 s	< 1 s	< 1 s
INPUT VOLTAGE	240/480 V / 3 ph / 60Hz	240/480 V / 3 ph / 60Hz	240/480 V / 3 ph / 60Hz
AC CURRENT DRAW	20.2 / 10.1 A	20.2 / 10.1 A	20.2 / 10.1 A
AC CURRENT DRAW W/ ELECTRIC DRIVE OPTION	31.8 / 15.9 A	31.8 / 15.9 A	31.8 / 15.9 A
CONTROL CIRCUIT VOLTAGE	120 V ac	120 V ac	120 V ac
HYDRAULIC POWER UNIT	5 hp / 3.73 kW	5 hp / 3.73 kW	5 hp / 3.73 kW
HYDRAULIC POWER UNIT W/ ELECTRIC DRIVE OPTION	8 hp / 5.97 kW	8 hp / 5.97 kW	8 hp / 5.97 kW
HYDRAULIC PUMP	8 gal/min / 30 L/min	8 gal/min / 30 L/min	8 gal/min / 30 L/min
POWER UNIT	Hydraulic, Variable Displacement	Hydraulic, Variable Displacement	Hydraulic, Variable Displacement
OPERATING PRESSURE	1,500 psi / 103 bar	1,500 psi / 103 bar	1,500 psi / 103 bar
VACUUM PUMP	1/3 hp / 0.25 kW	1/3 hp / 0.25 kW	1/3 hp / 0.25 kW
VACUUM	21" Hg / 711 mbar	21" Hg / 711 mbar	21" Hg / 711 mbar
FULL LOAD CAPACITY	10,000 lb / 4535 kg	10,000 lb / 4535 kg	10,000 lb / 4535 kg
WEIGHT (EMPTY)	5,800 lb / 2631 kg	6,200 lb / 2812 kg	6,500 lb / 2948 kg
TOTAL COMPARTMENT ROLLERS / POWERED	11/5	11/5	11/5
GUIDE TRACK	2" x 2.5" Angle / 51 mm x 64 mm	2" x 2.5" Angle / 51 mm x 64 mm	2" x 2.5" Angle / 51 mm x 64 mm
OVERALL DIMENSIONS (L X W X H)	130" x 72" x 70" / 3302 mm x 1829 mm x 1778 mm	154" x 72" x 70" / 3912 mm x 1829 mm x 1778 mm	166" x 72" x 70" / 4217 mm x 1829 mm x 1778 mm
VACUUM ARM REACH	4.5" to 14" / 114 mm to 356 mm	4.5" to 14" / 114 mm to 356 mm	4.5" to 14" / 114 mm to 356 mm
VACUUM ARM REACH (HYDRAULIC EXTENSION) TRUCK SIDE	9" to 23" / 229 mm to 584 mm	9" to 23" / 229 mm to 584 mm	9" to 23" / 229 mm to 584 mm
MAGNET ARM REACH (HYDRAULIC EXTENSION) TRUCK SIDE	14" to 22" / 355 mm to 559 mm	14" to 22" / 355 mm to 559 mm	14" to 22" / 355 mm to 559 mm
WHEEL BASE	95.75" / 2432 mm	119.75" / 3042 mm	131.75" / 3346 mm
DRIVE WHEEL CENTERLINE	53" / 1346 mm	53" / 1346 mm	53" / 1346 mm
BATTERY COMPARTMENT WIDTH	24" / 610 mm	36" / 914 mm	42" / 1067 mm
MAXIMUM BATTERY DIMENSIONS (L X W X H)	48" x 23" x 36" / 1219 mm x 584 mm x 914 mm	48" x 35" x 36" / 1219 mm x 889 mm x 914 mm	48" x 41" x 36" / 1219 mm x 1041 mm x 914 mm
MINIMUM BATTERY WIDTH (WITH VACUUM / MAGNET)	12" / 305 mm 6" / 152 mm	12" / 305 mm 6" / 155 mm	12" / 305 mm 6" / 155 mm
MINIMUM BATTERY LENGTH	16.5" / 419 mm	16.5" / 419 mm	16.5" / 419 mm
MINIMUM BATTERY HEIGHT	17.75" / 451 mm	17.75" / 451 mm	17.75" / 451 mm
GROUND CLEARANCE	0.63" / 16 mm	0.63" / 16 mm	0.63" / 16 mm
ROLLER HEIGHT	6.5" Min / 26.5" Max 165 mm Min / 673 mm Max	6.5" Min / 26.5" Max 165 mm Min / 673 mm Max	6.5" Min / 26.5" Max 165 mm Min / 673 mm Max

Note: Specifications may vary  $\pm$  5% because of temperature, floor considerations, and operator efficiency. Values represented under normal operating conditions. \* *Varies with battery case thickness and condition.*

## DOUBLE STACK

The BHS Double Stack Battery Extractor (BE-DS) is designed for applications with a battery fleet containing up to 149 batteries. As with all BHS Operator Aboard Battery Extractors, the BE-DS is a safe, cost-effective solution to battery handling requirements and saves vital floor space, increasing the capacity of a battery room.



BE-DS

### SPECIFICATIONS (IMPERIAL / METRIC)

	BE-24-2-DS	BE-36-2-DS	BE-42-2-DS
TRAVEL SPEED	0 to 190 ft/min / 0.97 m/s	0 to 190 ft/min / 0.97 m/s	0 to 190 ft/min / 0.97 m/s
RAISE - LOWER SPEED	0 to 16 ft/min / 0 to 0.08 m/s	0 to 16 ft/min / 0 to 0.08 m/s	0 to 16 ft/min / 0 to 0.08 m/s
POWERED ROLLER SPEED	0 to 37 ft/min / 0 to 0.19 m/s	0 to 37 ft/min / 0 to 0.19 m/s	0 to 37 ft/min / 0 to 0.19 m/s
ARM TRAVERSE SPEED	0 to 20 ft/min / 0 to 0.10 m/s	0 to 20 ft/min / 0 to 0.10 m/s	0 to 20 ft/min / 0 to 0.10 m/s
ARM ROTATION TIME	6 s to 8 s	6 s to 8 s	6 s to 8 s
DRAW BAR PULL / VACUUM (12" / 305 MM ROUND CUP)	1,000 lb / 454 kg	1,000 lb / 454 kg	1,000 lb / 454 kg
DRAW BAR PULL MAGNET*	800 lb to 1,200 lb / 363 kg to 544 kg	800 lb to 1,200 lb / 363 kg to 544 kg	800 lb to 1,200 lb / 363 kg to 544 kg
VACUUM ATTACH TIME	< 1 s	< 1 s	< 1 s
VACUUM RELEASE TIME	< 1 s	< 1 s	< 1 s
INPUT VOLTAGE	240/480 V / 3 ph / 60Hz	240/480 V / 3 ph / 60Hz	240/480 V / 3 ph / 60Hz
AC CURRENT DRAW	20.2 / 10.1 A	20.2 / 10.1 A	20.2 / 10.1 A
AC CURRENT DRAW W/ ELECTRIC DRIVE OPTION	31.8 / 15.9 A	31.8 / 15.9 A	31.8 / 15.9 A
CONTROL CIRCUIT VOLTAGE	120 V ac	120 V ac	120 V ac
HYDRAULIC POWER UNIT	5 hp / 3.73 kW	5 hp / 3.73 kW	5 hp / 3.73 kW
HYDRAULIC POWER UNIT W/ ELECTRIC DRIVE OPTION	8 hp / 5.97 kW	8 hp / 5.97 kW	8 hp / 5.97 kW
HYDRAULIC PUMP	8 gal/min / 30 L/min	8 gal/min / 30 L/min	8 gal/min / 30 L/min
POWER UNIT	Hydraulic, Variable Displacement	Hydraulic, Variable Displacement	Hydraulic, Variable Displacement
OPERATING PRESSURE	1,500 PSI / 103 bar	1,500 PSI / 103 bar	1,500 PSI / 103 bar
VACUUM PUMP	1/3 hp / 0.25 kW	1/3 hp / 0.25 kW	1/3 hp / 0.25 kW
VACUUM	21" Hg / 711 mbar	21" Hg / 711 mbar	21" Hg / 711 mbar
FULL LOAD CAPACITY	10,000 lb / 4535 kg	10,000 lb / 4535 kg	10,000 lb / 4535 kg
WEIGHT (EMPTY)	6,000 lb / 2722 kg	6,600 lb / 2994 kg	6,800 lb / 3084 kg
TOTAL COMPARTMENT ROLLERS / POWERED	11/5	11/5	11/5
GUIDE TRACK	2" x 2.5" Angle 51 mm x 64 mm	2" x 2.5" Angle 51 mm x 64 mm	2" x 2.5" Angle 51 mm x 64 mm
OVERALL DIMENSIONS (L X W X H)	130" x 72" x 92" 3302 mm x 1829 mm x 2337 mm	154" x 72" x 92" 3912 mm x 1829 mm x 2337 mm	166" x 72" x 92" 4217 mm x 1829 mm x 2337 mm
VACUUM ARM REACH	4.5" to 14" / 114 to 356 mm	4.5" to 14" / 114 to 356 mm	4.5" to 14" / 114 to 356 mm
VACUUM ARM REACH (HYDRAULIC EXTENSION)	9" to 23" / 229 mm to 584 mm	9" to 23" / 229 mm to 584 mm	9" to 23" / 229 mm to 584 mm
MAGNET ARM REACH (HYDRAULIC EXTENSION) TRUCK SIDE	14" to 22" / 355 mm to 559 mm	14" to 22" / 355 mm to 559 mm	14" to 22" / 355 mm to 559 mm
WHEEL BASE	95.75" / 2432 mm	119.75" / 3042 mm	131.75" / 3346 mm
DRIVE WHEEL CENTERLINE	53" / 1346 mm	53" / 1346 mm	53" / 1346 mm
BATTERY COMPARTMENT WIDTH	24" / 610 mm	36" / 915 mm	42" / 1067 mm
MAXIMUM BATTERY DIMENSIONS (L X W X H)	48" x 23" x 34" 1219 mm x 584 mm x 864 mm	48" x 35" x 34" 1219 mm x 889 mm x 864 mm	48" x 41" x 34" 1219 mm x 1041 mm x 864 mm
MINIMUM BATTERY WIDTH (WITH VACUUM / MAGNET)	12" / 305 mm 6" / 152 mm	12" / 305 mm 6" / 152 mm	12" / 305 mm 6" / 152 mm
MINIMUM BATTERY HEIGHT	17.75" / 451 mm	17.75" / 451 mm	17.75" / 451 mm
GROUND CLEARANCE	0.63" / 16 mm	0.63" / 16 mm	0.63" / 16 mm
ROLLER HEIGHT	6.5" Min / 56" Max 165 mm Min / 1422 mm Max	6.5" Min / 56" Max 165 mm Min / 1422 mm Max	6.5" Min / 56" Max 165 mm Min / 1422 mm Max

Note: Specifications may vary ± 5% because of temperature, floor considerations, and operator efficiency. Values represented under normal operating conditions.\* *Varies with battery case thickness and condition.*

## TRIPLE STACK

The BHS Triple Stack Battery Extractor (BE-TS) offers a greater opportunity to optimize floor space for valuable warehousing functions. This Battery Extractor is ideal for a battery fleet containing up to 299 batteries. Like all BHS Operator Aboard Battery Extractors, the BE-TS is designed and built to expand as battery handling needs grow.



BE-TS

### SPECIFICATIONS (IMPERIAL / METRIC)

	BE-24-2-TS	BE-36-2-TS	BE-42-2-TS
TRAVEL SPEED	0 to 240 ft/min / 0 to 1.22 m/s	0 to 240 ft/min / 0 to 1.22 m/s	0 to 240 ft/min / 0 to 1.22 m/s
RAISE - LOWER SPEED	0 to 26 ft/min / 0 to 0.13 m/s	0 to 26 ft/min / 0 to 0.13 m/s	0 to 26 ft/min / 0 to 0.13 m/s
POWERED ROLLER SPEED	0 to 37 ft/min / 0 to 0.19 m/s	0 to 37 ft/min / 0 to 0.19 m/s	0 to 37 ft/min / 0 to 0.19 m/s
ARM TRAVERSE SPEED	0 to 20 ft/min / 0 to 0.10 m/s	0 to 20 ft/min / 0 to 0.10 m/s	0 to 20 ft/min / 0 to 0.10 m/s
ARM ROTATION TIME	6 s to 8 s	6 s to 8 s	6 s to 8 s
DRAW BAR PULL / VACUUM (12" / 305 MM ROUND CUP)	1,000 lb / 454 kg	1,000 lb / 454 kg	1,000 lb / 454 kg
DRAW BAR PULL MAGNET*	800 lb to 1,200 lb / 363 to 544 kg	800 lb to 1,200 lb / 363 to 544 kg	800 lb to 1,200 lb / 363 to 544 kg
VACUUM ATTACH TIME	< 1 s	< 1 s	< 1 s
VACUUM RELEASE TIME	< 1 s	< 1 s	< 1 s
INPUT VOLTAGE	480 V / 3 ph / 60Hz	480 V / 3 ph / 60Hz	480 V / 3 ph / 60Hz
AC CURRENT DRAW	35 A	35 A	35 A
AC CURRENT DRAW W/ ELECTRIC DRIVE OPTION	42 A	42 A	42 A
CONTROL CIRCUIT VOLTAGE	120 V ac	120 V ac	120 V ac
HYDRAULIC POWER UNIT	20 hp / 14.9 kW	20 hp / 14.9 kW	20 hp / 14.9 kW
HYDRAULIC POWER UNIT W/ ELECTRIC DRIVE OPTION	25 hp / 18.7 kW	25 hp / 18.7 kW	25 hp / 18.7 kW
HYDRAULIC PUMP	22 gal/min / 83 L/min	22 gal/min / 83 L/min	22 gal/min / 83 L/min
POWER UNIT	Hydraulic, Variable Displacement	Hydraulic, Variable Displacement	Hydraulic, Variable Displacement
OPERATING PRESSURE	1,500 psi / 103 bar	1,500 psi / 103 bar	1,500 psi / 103 bar
VACUUM PUMP	1/3 hp / 0.25 kW	1/3 hp / 0.25 kW	1/3 hp / 0.25 kW
VACUUM	21" Hg / 711 mbar	21" Hg / 711 mbar	21" Hg / 711 mbar
FULL LOAD CAPACITY	10,000 lb / 4535 kg	10,000 lb / 4535 kg	10,000 lb / 4535 kg
WEIGHT (EMPTY)	8,000 lb / 3629 kg	8,300 lb / 3765 kg	8,600 lb / 3901 kg
TOTAL COMPARTMENT ROLLERS / POWERED	11/5	11/5	11/5
GUIDE TRACK	3" x 2.5" Angle 76 mm x 64 mm	3" x 2.5" Angle 76 mm x 64 mm	3" x 2.5" Angle 76 mm x 64 mm
OVERALL DIMENSIONS (L X W X H)	156.5" x 72" x 158.188" 3975 mm x 1829 mm x 4018 mm	180.5" x 72" x 158.188" 4585 mm x 1829 mm x 4018 mm	192.5" x 72" x 160.688" 4890 mm x 1829 mm x 4081 mm
VACUUM ARM REACH	4.5" to 14" / 114 mm to 356 mm	4.5" to 14" / 114 mm to 356 mm	4.5" to 14" / 114 mm to 356 mm
VACUUM ARM REACH (HYDRAULIC EXTENSION)	9" to 23" / 229 mm to 584 mm	9" to 23" / 229 mm to 584 mm	9" to 23" / 229 mm to 584 mm
MAGNET ARM REACH (HYDRAULIC EXTENSION) TRUCK SIDE	14" to 22" / 355 mm to 559 mm	14" to 22" / 355 mm to 559 mm	14" to 22" / 355 mm to 559 mm
WHEEL BASE	98" / 2489 mm	122" / 3099 mm	134" / 3404 mm
DRIVE WHEEL CENTERLINE	51" / 1295 mm	51" / 1295 mm	51" / 1295 mm
BATTERY COMPARTMENT WIDTH	24" / 610 mm	36" / 915 mm	42" / 1067 mm
MAXIMUM BATTERY DIMENSIONS (L X W X H)	48" x 23" x 34" 1219 mm x 584 mm x 864 mm	48" x 35" x 34" 1219 mm x 889 mm x 864 mm	48" x 41" x 34" 1219 mm x 1041 mm x 864 mm
MINIMUM BATTERY WIDTH (WITH VACUUM / MAGNET)	12" / 305 mm 6" / 152 mm	12" / 305 mm 6" / 152 mm	12" / 305 mm 6" / 152 mm
MINIMUM BATTERY HEIGHT	17.75" / 451 mm	17.75" / 451 mm	17.75" / 451 mm
GROUND CLEARANCE	0.63" / 16 mm	0.63" / 16 mm	0.63" / 16 mm
ROLLER HEIGHT	6.5" Min / 96" Max 165 mm Min / 2438 mm Max	6.5" Min / 96" Max 165 mm Min / 2438 mm Max	6.5" Min / 96" Max 165 mm Min / 2438 mm Max

Note: Specifications may vary  $\pm$  5% because of temperature, floor considerations, and operator efficiency. Values represented under normal operating conditions.

\* Varies with battery case thickness and condition.

## QUAD STACK

The BHS Quad Stack Battery Extractor (BE-QS) offers the best solution for large battery changing operations. The BE-QS provides optimum floor savings while providing the latest technological advancements in battery changing equipment. Quad Stack models are designed for fleets containing 300 or more batteries.



BE-QS

### SPECIFICATIONS (IMPERIAL / METRIC)

	BE-24-2-QS	BE-36-2-QS	BE-42-2-QS
TRAVEL SPEED	0 to 240 ft/min / 0 to 1.22 m/s	0 to 240 ft/min / 0 to 1.22 m/s	0 to 240 ft/min / 0 to 1.22 m/s
RAISE - LOWER SPEED	0 to 26 ft/min / 0 to 0.13 m/s	0 to 26 ft/min / 0 to 0.13 m/s	0 to 26 ft/min / 0 to 0.13 m/s
POWERED ROLLER SPEED	0 to 37 ft/min / 0 to 0.19 m/s	0 to 37 ft/min / 0 to 0.19 m/s	0 to 37 ft/min / 0 to 0.19 m/s
ARM TRAVERSE SPEED	0 to 24 ft/min / 0 to 0.12 m/s	0 to 24 ft/min / 0 to 0.12 m/s	0 to 24 ft/min / 0 to 0.12 m/s
ARM ROTATION TIME	6 s to 8 s	6 s to 8 s	6 s to 8 s
DRAW BAR PULL / VACUUM (12" / 305 MM ROUND CUP)	1,000 lb / 454 kg	1,000 lb / 454 kg	1,000 lb / 454 kg
DRAW BAR PULL MAGNET*	800 lb to 1,200 lb / 363 kg to 544 kg	800 lb to 1,200 lb / 363 kg to 544 kg	800 lb to 1,200 lb / 363 kg to 544 kg
VACUUM ATTACH TIME	< 1 s	< 1 s	< 1 s
VACUUM RELEASE TIME	< 1 s	< 1 s	< 1 s
INPUT VOLTAGE	480 V / 3 ph / 60Hz	480 V / 3 ph / 60Hz	480 V / 3 ph / 60Hz
AC CURRENT DRAW	45 A	45 A	45 A
AC CURRENT DRAW W/ELECTRIC DRIVE OPTION	52 A	52 A	52 A
CONTROL CIRCUIT VOLTAGE	120 V ac	120 V ac	120 V ac
HYDRAULIC POWER UNIT	25 hp / 18.7 kW	25 hp / 18.7 kW	25 hp / 18.7 kW
HYDRAULIC POWER UNIT W/ELECTRIC DRIVE OPTION	30 hp / 22.4 kW	30 hp / 22.4 kW	30 hp / 22.4 kW
HYDRAULIC PUMP	36 gal/min / 136 L/min	36 gal/min / 136 L/min	36 gal/min / 136 L/min
POWER UNIT	Hydraulic, Variable Displacement	Hydraulic, Variable Displacement	Hydraulic, Variable Displacement
OPERATING PRESSURE	1,200 psi / 76 bar	1,200 psi / 76 bar	1,200 psi / 76 bar
VACUUM PUMP	1/3 hp / 0.25 kW	1/3 hp / 0.25 kW	1/3 hp / 0.25 kW
VACUUM	21" Hg / 711 mbar	21" Hg / 711 mbar	21" Hg / 711 mbar
FULL LOAD CAPACITY	10,000 lb / 4535 kg	10,000 lb / 4535 kg	10,000 lb / 4535 kg
WEIGHT (EMPTY)	9,660 lb / 4382 kg	9,960 lb / 4518 kg	10,940 lb / 4962 kg
TOTAL COMPARTMENT ROLLERS / POWERED	11/5	11/5	11/5
GUIDE TRACK	3" x 2.5" Angle 76 mm x 64 mm	3" x 2.5" Angle 76 mm x 64 mm	3" x 2.5" Angle 76 mm x 64 mm
OVERALL DIMENSIONS (L X W X H)	168" x 74" x 223" 4267 mm x 1880 mm x 5665 mm	192" x 74" x 223" 4877 mm x 1880 mm x 5665 mm	204" x 74" x 223" 5182 mm x 1880 mm x 5665 mm
VACUUM ARM REACH	3.5" to 13" / 89 mm to 330 mm	3.5" to 13" / 89 mm to 330 mm	3.5" to 13" / 89 mm to 330 mm
VACUUM ARM REACH (HYDRAULIC EXTENSION)	9" to 23" / 229 mm to 584 mm	9" to 23" / 229 mm to 584 mm	9" to 23" / 229 mm to 584 mm
MAGNET ARM REACH (HYDRAULIC EXTENSION) TRUCK SIDE	14" to 22" / 355 mm to 559 mm	14" to 22" / 355 mm to 559 mm	14" to 22" / 355 mm to 559 mm
WHEEL BASE	109" / 2769 mm	133" / 3378 mm	145" / 3683 mm
DRIVE WHEEL CENTERLINE	51" / 1295 mm	51" / 1295 mm	51" / 1295 mm
BATTERY COMPARTMENT WIDTH	24" / 610 mm	36" / 915 mm	42" / 1067 mm
MAXIMUM BATTERY DIMENSIONS (L X W X H)	48" x 23" x 34" 1219 mm x 584 mm x 864 mm	48" x 35" x 34" 1219 mm x 889 mm x 864 mm	48" x 41" x 34" 1219 mm x 1041 mm x 864 mm
Minimum Battery Width (with vacuum / magnet)	12" / 305 mm 6" / 152 mm	12" / 305 mm 6" / 152 mm	12" / 305 mm 6" / 152 mm
MINIMUM BATTERY HEIGHT	17.75" / 451 mm	17.75" / 451 mm	17.75" / 451 mm
GROUND CLEARANCE	0.63" / 16 mm	0.63" / 16 mm	0.63" / 16 mm
ROLLER HEIGHT	6.5" Min / 136.75" Max 165 mm Min / 3473 mm Max	6.5" Min / 136.75" Max 165 mm Min / 3473 mm Max	6.5" Min / 136.75" Max 165 mm Min / 3473 mm Max

Note: Specifications may vary ± 5% because of temperature, floor considerations, and operator efficiency. Values represented under normal operating conditions.\* *Varies with battery case thickness and condition.*

## MTC DIRECT REPLACEMENT

BHS also offers the MTC Direct Replacement Battery Extractor (BE-MT) models: Single Level (BE-SLN), Double Stack (BE-DSN), and Triple Stack (BE-TSN). Each machine is designed and built for applications utilizing a 72" (1828 mm) aisle width.



BE-TSN

### SPECIFICATIONS (IMPERIAL / METRIC)

	BE-24-2-SLN	BE-36-2-SLN	BE-24-2-DSN	BE-36-2-DSN	BE-24-2-TSN	BE-36-2-TSN
TRAVEL SPEED	0 to 190 ft/min / 0 to 0.97 m/s		0 to 190 ft/min / 0 to 0.97 m/s		0 to 190 ft/min / 0 to 0.97 m/s	
RAISE - LOWER SPEED	0 to 10 ft/min / 0 to 0.05 m/s		0 to 16 ft/min / 0 to 0.08 m/s		0 to 26 ft/min / 0 to 0.13 m/s	
POWERED ROLLER SPEED	0 to 37 ft/min / 0 to 0.19 m/s		0 to 37 ft/min / 0 to 0.19 m/s		0 to 37 ft/min / 0 to 0.19 m/s	
ARM TRAVERSE SPEED	0 to 20 ft/min / 0 to 0.10 m/s		0 to 20 ft/min / 0 to 0.10 m/s		0 to 20 ft/min / 0 to 0.10 m/s	
ARM ROTATION TIME	6 s to 8 s		6 s to 8 s		6 s to 8 s	
DRAW BAR PULL VACUUM (12" ROUND CUP)	1,000 lb / 454 kg		1,000 lb / 454 kg		1,000 lb / 454 kg	
VACUUM ATTACH TIME / RELEASE TIME	< 1 s / < 1 s		< 1 s / < 1 s		< 1 s / < 1 s	
INPUT VOLTAGE	240/480 V / 3 ph / 60Hz		240/480 V / 3 ph / 60Hz		240/480 V / 3 ph / 60Hz	
AC CURRENT DRAW	20.2 / 10.1 A		20.2 / 10.1 A		35 A	
AC CURRENT DRAW W/ ELECTRIC DRIVE OPTION	31.8 / 15.9 A		31.8 / 15.9 A		42 A	
CONTROL CIRCUIT VOLTAGE	120 V ac		120 V ac		120 V ac	
HYDRAULIC POWER UNIT	5 hp / 3.73 kW		5 hp / 3.73 kW		20 hp / 14.9 kW	
HYDRAULIC POWER UNIT W/ ELECTRIC DRIVE OPTION	8 hp / 5.97 kW		8 hp / 5.97 kW		25 hp / 18.7 kW	
HYDRAULIC PUMP	8 gal/min / 30 L/min		8 gal/min / 30 L/min		22 gal/min / 83 L/min	
POWER UNIT	Hydraulic, Variable Displacement		Hydraulic, Variable Displacement		Hydraulic, Variable Displacement	
OPERATING PRESSURE	1,500 psi / 103 bar		1,500 psi / 103 bar		1,500 psi / 103 bar	
VACUUM PUMP	1/3 hp / 0.25 kW		1/3 hp / 0.25 kW		1/3 hp / 0.25 kW	
VACUUM	21" Hg / 711 mbar		21" Hg / 711 mbar		21" Hg / 711 mbar	
FULL LOAD CAPACITY	10,000 lb / 4535 kg		10,000 lb / 4535 kg		10,000 lb / 4535 kg	
WEIGHT (EMPTY)	5,300 lb / 2404 kg	5,700 lb / 2585 kg	5,500 lb / 2495 kg	6,100 lb / 2767 kg	7,500 lb / 3402 kg	7,800 lb / 3538 kg
TOTAL COMPARTMENT ROLLERS / POWERED	11/5		11/5		11/5	
GUIDE TRACK	2" x 2.5" Angle / 51 mm x 64 mm		2" x 2.5" Angle / 51 mm x 64 mm		3" x 2.5" Angle / 76 mm x 64 mm	
OVERALL DIMENSIONS (L x W x H)	130" x 67" x 70" / 3302 mm x 1702 mm x 1778 mm	154" x 67" x 70" / 3912 mm x 1702 mm x 1778 mm	130" x 67" x 92" / 3252 mm x 1829 mm x 2237 mm	154" x 67" x 92" / 3861 mm x 1702 mm x 2237 mm	156.5" x 67" x 158.19" / 3975 mm x 1702 mm x 4018 mm	180.5" x 67" x 158.19" / 4585 mm x 1702 mm x 4018 mm
VACUUM ARM REACH (STAND SIDE)	8" / 203 mm		8" / 203 mm		8" / 203 mm	
MAGNET ARM REACH (STAND SIDE)	8" / 203 mm		8" / 203 mm		8" / 203 mm	
VACUUM ARM REACH (HYDRAULIC EXTENSION) TRUCK SIDE	5" to 17" / 127 mm to 432 mm		5" to 17" / 127 mm to 432 mm		5" to 17" / 127 mm to 432 mm	
MAGNET ARM REACH (HYDRAULIC EXTENSION) TRUCK SIDE	9" to 17" / 228 mm to 432 mm		9" to 17" / 228 mm to 432 mm		9" to 17" / 228 mm to 432 mm	
WHEEL BASE	95.75" / 2432 mm	119.75" / 3042 mm	95.75" / 2432 mm	119.75" / 3042 mm	98" / 2489 mm	122" / 3099 mm
DRIVE WHEEL CENTERLINE	48" / 1219 mm		48" / 1219 mm		46" / 1168 mm	
BATTERY COMPARTMENT WIDTH	24" / 610 mm	36" / 915 mm	24" / 610 mm	36" / 915 mm	24" / 610 mm	36" / 915 mm
MAXIMUM BATTERY DIMENSIONS (L x W x H)	44" x 23" x 34" / 1118 mm x 584 mm x 864 mm	44" x 35" x 34" / 1118 mm x 889 mm x 864 mm	44" x 23" x 34" / 1118 mm x 584 mm x 864 mm	44" x 35" x 34" / 1118 mm x 889 mm x 864 mm	44" x 23" x 34" / 1118 mm x 584 mm x 864 mm	44" x 35" x 34" / 1118 mm x 889 mm x 864 mm
MINIMUM BATTERY WIDTH	12" / 305 mm		12" / 305 mm		12" / 305 mm	
MINIMUM BATTERY HEIGHT	17.75" / 451 mm		17.75" / 451 mm		17.75" / 451 mm	
GROUND CLEARANCE	0.63" / 16 mm		0.63" / 16 mm		0.63" / 16 mm	
ROLLER HEIGHT	6.5" Min to 26.5" Max 165 mm Min to 673 mm Max		6.5" Min to 56" Max 165 mm Min to 1422 mm Max		6.5" Min to 96" Max 165 mm Min to 2438 mm Max	

Note: Specifications may vary  $\pm$  5% because of temperature, floor considerations, and operator efficiency. Values represented under normal operating conditions.

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**Storage Battery Systems LLC**  
N56 W16665 Ridgewood Drive  
Menomonee Falls, WI 53051