

# PRO SERIES®

## THE NEXT GENERATION OF BATTERY HANDLING EQUIPMENT

The EnerSys® PRO Series man-aboard battery changing systems offer new performance, reliability, and safety levels to support high-volume and high-density battery change requirements.

These products are available in various configurations up to 6-levels ensuring maximum up-time and minimum maintenance, with operator controlled or fully automatic versions available.

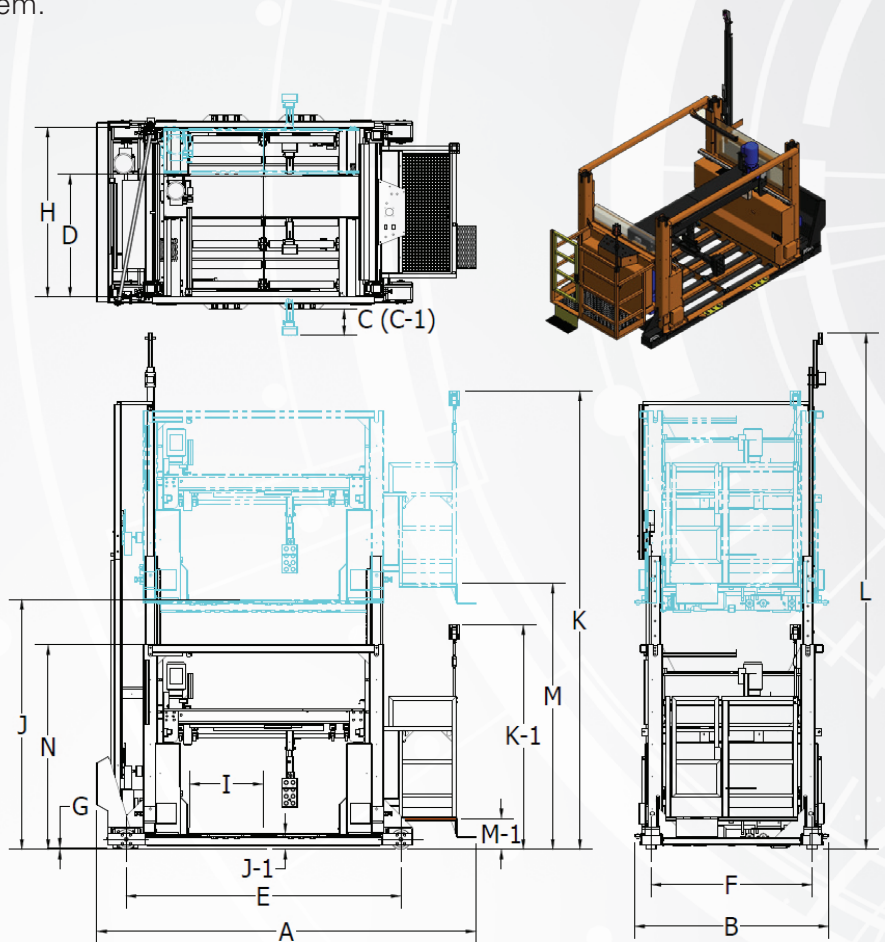


# BATTERY BULL ELECTRIC LEVELS 1-3

## BATTERY BULL ELECTRIC (BBE) LEVELS 1-3

The man-aboard Battery Bull Electric (BBE) system offers new levels of performance, reliability and safety to support your high-volume and high-density battery change requirements. This product is available as a single level system, up to a 6-level system.

The BBE is the industry's first fully electric system with no hydraulics, which ensures maximum up-time and minimum maintenance. Powerful, compact and energy efficient PLC controlled Variable Frequency Drives (VFD) are coupled with electric gear boxes to provide simultaneous power to both the lift and drive functions. The BBE battery handling equipment is one of the few options in high-volume fully electric transfer carts.



### OPTIONS AT ADDITIONAL COST

- Battery carriage/bed LED spot lamps for additional light during battery changes.
- Laser pedestrian safety protection with laser distance travel stops.
- Auto position system with PLC and touch screen control.
- Auto level system for BBE-to-rack alignment.
- Cameras and monitor for viewing roller bed and/or front of the BBE battery handling equipment.

### BBE 3 SPECIFICATIONS

DESCRIPTION		BBE-2-30		BBE-2-36		BBE-2-42		BBE-2-48	
1	Drive sytem H.P./KW	3 HP	2.25 KW	3 HP	2.25 KW	3 HP	2.25 KW	3 HP	2.25 KW
2	Raise/lower H.P./KW	2 x 5 HP	2 x 3.75 KW	2 x 5 HP	2 x 3.75 KW	2 x 5 HP	2 x 3.75 KW	2 x 5 HP	2 x 3.75 KW
3	Raise/lower speed	0-21 FPM	0-6.4 MPM	0-21 FPM	0-6.4 MPM	0-21 FPM	0-6.4 MPM	0-21 FPM	0-6.4 MPM
4	Travel speed	0-175 FPM	0-53.3 MPM	0-175 FPM	0-53.3 MPM	0-175 FPM	0-53.3 MPM	0-175 FPM	0-53.3 MPM
5	Machine duty cycle (per year)	5,500 Hrs.		5,500 Hrs.		5,500 Hrs.		5,500 Hrs.	
6-A	Input voltage/frequency /Max current drawn	415 V / 50 Hz / 23 A		415 V / 50 Hz / 23 A		415 V / 50 Hz / 23 A		415 V / 50 Hz / 23 A	
6-B	Input voltage/frequency /Max current drawn	460 V / 60 Hz / 20 A		460 V / 60 Hz / 20 A		460 V / 60 Hz / 20 A		460 V / 60 Hz / 20 A	
6-C	Input voltage/frequency /Max current down	575 V / 60 Hz / 17 A		575 V / 60 Hz / 17 A		575 V / 60 Hz / 17 A		575 V / 60 Hz / 17 A	
7	Control voltage	110 VAC	24 VDC	110 VAC	24 VDC	110 VAC	24 VDC	110 VAC	24 VDC
8	Draw bar pull magnet	1800 lbs	817 kg	1800 lbs	817 kg	1800 lbs	817 kg	1800 lbs	817 kg
9	Magnet break off point (1/4", 3/16", 1/8")	1800, 1200, 700 lbs		1800, 1200, 700 lbs		1800, 1200, 700 lbs		1800, 1200, 700 lbs	
10	Power unit type	Electric		Electric		Electric		Electric	
11	Urethane wheel (DxW)	8" x 4"	203 x 102 mm	8" x 4"	203 x 102 mm	8" x 4"	203 x 102 mm	8" x 4"	203 x 102 mm
12	Capacity (fully loaded)	10000 lbs	4536 kgs	10000 lbs	4536 kgs	10000 lbs	4536 kgs	10000 lbs	4536 kgs
13	Service weight (empty)	6900 lbs	3130 kg	6900 lbs	3130 kg	6900 lbs	3130 kg	6900 lbs	3130 kg

### BBE 3 DIMENSIONS

DESCRIPTION		BBE-2-30		BBE-2-36		BBE-2-42		BBE-2-48	
A	Overall length	153"	3886 mm	165"	4191 mm	177"	4496 mm	189"	4801 mm
B	Overall width (standard)	78"	1981 mm	78"	1981 mm	78"	1981 mm	78"	1981 mm
C	Max. magnet arm reach (standard arm)	12.25"	311 mm	12.25"	311 mm	12.25"	311 mm	12.25"	311 mm
C-1	Max. magnet arm reach (extension arm)	Customized to suit							
D	Bridge travel	53.5"	1359 mm	53.5"	1359 mm	53.5"	1359 mm	53.5"	1359 mm
E	Wheel base	110.55"	2807 mm	122.5"	3112 mm	134.5"	3416 mm	146.5"	3721 mm
F	Centerline of drive wheels	64.75"	1645 mm	64.75"	1645 mm	64.75"	1645 mm	64.75"	1645 mm
G	Ground clearance	0.5"	13 mm	0.5"	13 mm	0.5"	13 mm	0.5"	13 mm
	Grade percent	1%							
H	Battery compartment size length	64"	1626 mm	64"	1626 mm	64"	1626 mm	64"	1626 mm
I	Battery compartment overall width	30"	762 mm	36"	914 mm	42"	1067 mm	48"	1219 mm
	Max. battery length	60"	1524 mm	60"	1524 mm	60"	1524 mm	60"	1524 mm
	Max. battery width	24"	610 mm	30"	762 mm	36"	914 mm	42"	1067 mm
	Max. battery height	37"	940 mm	37"	940 mm	37"	940 mm	37"	940 mm
	Min. battery length	18"	457 mm	18"	457 mm	18"	457 mm	18"	457 mm
	Min. battery width	6"	152 mm	6"	152 mm	6"	152 mm	6"	152 mm
	Min. battery height	20"	508 mm	20"	508 mm	20"	508 mm	20"	508 mm
	Min. over travel (front)	94"	2388 mm	103"	103"	2616 mm	112"	2845 mm	3073 mm
	Min. over travel (rear)	114"	2896 mm	122"	3099 mm	132"	3353 mm	140"	3556 mm

### BBE 3 LEVEL HEIGHT DIMENSIONS

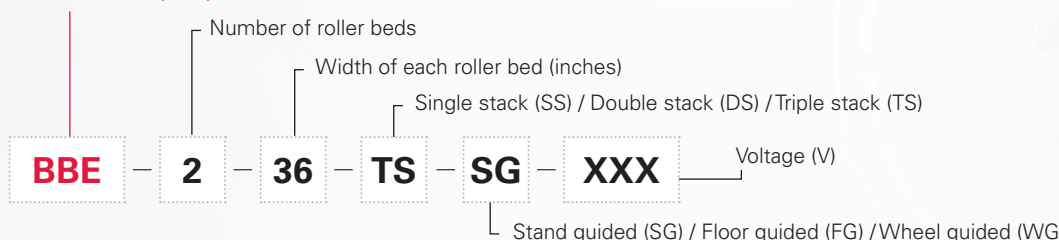
DESCRIPTION		SINGLE		DOUBLE		TRIPLE	
J	Carriage roller bed (raised)	30"	762 mm	54"	1372 mm	100"	2540 mm
J-1	Carriage roller bed (lowered)	5.5"	140 mm	5.5"	140 mm	5.5"	140 mm
K	Overall height (raised)	108"	2743 mm	139"	3531 mm	184"	4674 mm
K-1	Overall height (lowered)	89"	2261 mm	89"	2261 mm	89"	2261 mm
L	Overall height to top of tow arm	134"	3403 mm	168"	4267 mm	208"	5283 mm
M	Operator platform height (raised)	36.5"	927 mm	62.5"	1588 mm	106.5"	2705 mm
M-1	Operator platform height (lowered)	12.5"	318 mm	12.5"	318 mm	12.5"	318 mm
N	Shipping height	84"	2134 mm	84"	2134 mm	84"	2134 mm
	Upper guide* required (yes/no)	No		No		No	
	Floor variance (+ or - in 10ft/3m)	0.25"	6 mm	0.25"	6 mm	0.25"	6 mm

### MODEL / PART NUMBER BREAKDOWN

\*Guide located at the top of the unit to provide more stability for taller units

Example: BBE-2-36-TS-SG-XXX

Series identification (BBE)



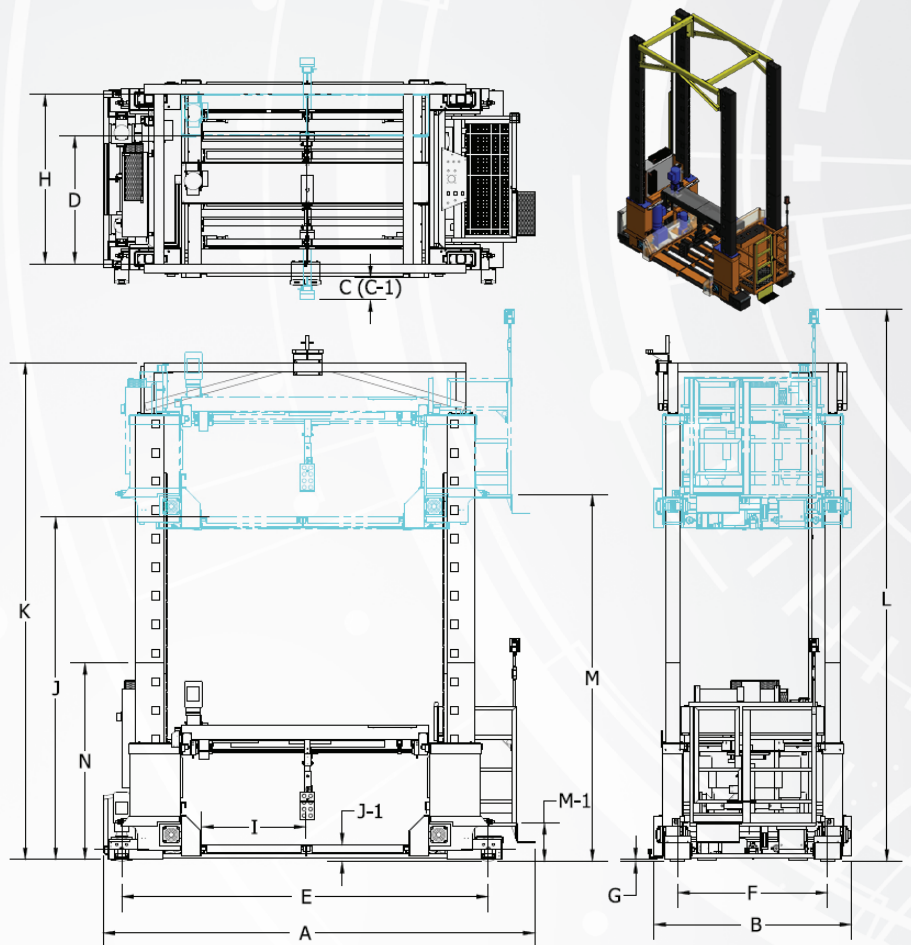
# BATTERY BULL ELECTRIC LEVELS 4-6

## BATTERY BULL ELECTRIC (BBE) LEVELS 4-6

The BBE Series man-aboard Battery Bull Electric offers new levels of performance, reliability and safety to support your high-volume and high-density battery change requirements. This product is available as a single level system, up to a 6-level system.

The BBE is the industry's first fully electric system with no hydraulics, which ensures maximum up-time and minimum maintenance. Powerful, compact and energy efficient PLC controlled Variable Frequency Drives (VFD) are coupled with electric gear boxes to provide simultaneous power to both the lift and drive functions.

The BBE is one of the few options in high-volume fully electric transfer carts.



### OPTIONS AT ADDITIONAL COST

- Battery carriage/bed LED spot lamps for improved visibility during battery changes.
- "Sick" laser pedestrian safety protection with distance-based stopping.
- Allen Bradley light tower for status and travel alarms.
- Auto position system with PLC and touch screen control.
- Auto level system for BBE-to-rack alignment.
- Cameras and monitor for roller bed and BBE front visibility.

### BBE 6 SPECIFICATIONS

DESCRIPTION		BBE-2-30		BBE-2-36		BBE-2-42		BBE-2-48	
1	Drive sytem H.P./KW	2 x 2 HP	2 x 1.5 KW	2 x 2 HP	2 x 1.5 KW	2 x 2 HP	2 x 1.5 KW	2 x 2 HP	2 x 1.5 KW
2	Raise/lower H.P./KW	2 x 7.5 HP	2 x 5.6 KW	2 x 7.5 HP	2 x 5.6 KW	2 x 7.5 HP	2 x 5.6 KW	2 x 7.5 HP	2 x 5.6 KW
3	Raise/lower speed	0-30 FPM	0-9.14 MPM	0-30 FPM	0-9.14 MPM	0-30 FPM	0-9.14 MPM	0-30 FPM	0-9.14 MPM
4	Travel speed	0-175 FPM	0-53.3 MPM	0-175 FPM	0-53.3 MPM	0-175 FPM	0-53.3 MPM	0-175 FPM	0-53.3 MPM
5	Machine duty cycle (per year)	5,500 Hrs.		5,500 Hrs.		5,500 Hrs.		5,500 Hrs.	
6a	Input voltage/frequency /Max current drawn	415 V / 50 Hz / 30 A		415 V / 50 Hz / 30 A		415 V / 50 Hz / 30 A		415 V / 50 Hz / 30 A	
6b	Input voltage/frequency /Max current drawn	460 V / 60 Hz / 28 A		460 V / 60 Hz / 28 A		460 V / 60 Hz / 28 A		460 V / 60 Hz / 28 A	
6c	Input voltage/frequency /Max current drawn	575 V / 60 Hz / 26 A		575 V / 60 Hz / 26 A		575 V / 60 Hz / 26 A		575 V / 60 Hz / 26 A	
7	Control voltage	110 VAC	24 VDC	110 VAC	24 VDC	110 VAC	24 VDC	110 VAC	24 VDC
8	Draw bar pull magnet	1800 lbs	817 kg	1800 lbs	817 kg	1800 lbs	817 kg	1800 lbs	817 kg
9	Magnet break off point (1/4", 3/16", 1/8")	1800, 1200, 700 lbs		1800, 1200, 700 lbs		1800, 1200, 700 lbs		1800, 1200, 700 lbs	
10	Power unit type	Electric		Electric		Electric		Electric	
11	Wheel type/size (dia x width)	10" x 6"	254 x 153 mm	10" x 6"	254 x 153 mm	10" x 6"	254 x 153 mm	10" x 6"	254 x 153 mm
12	Capacity (fully loaded)	10000 lbs	4536 kg	10000 lbs	4536 kg	10000 lbs	4536 kg	10000 lbs	4536 kg
13	Service weight (empty)	9775 lbs	4434 kg	10275 lbs	4661 kg	10775 lbs	4888 kg	11275 lbs	5515 kg

### BBE 6 DIMENSIONS

DESCRIPTION		BBE-2-30		BBE-2-36		BBE-2-42		BBE-2-48	
A	Overall length	154.88"	3934 mm	166.88"	4239 mm	178.88"	4543 mm	190.88"	4848 mm
B	Overall width (standard)	71.75"	1822 mm	71.75"	1822 mm	71.75"	1822 mm	71.75"	1822 mm
C	Max. magnet arm reach (standard arm)	8.75"	222 mm	8.75"	222 mm	8.75"	222 mm	8.75"	222 mm
C-1	Max. magnet arm reach (extension arm)	Customized to suit							
D	Bridge travel	53.5"	1359 mm	53.5"	1359 mm	53.5"	1359 mm	53.5"	1359 mm
E	Wheel base	127.5"	3239 mm	139.5"	3542 mm	151.5"	3848 mm	163.5"	4153 mm
F	Centerline of drive wheels	51.60"	1311 mm	51.60"	1311 mm	51.60"	1311 mm	51.60"	1311 mm
G	Ground clearance	0.75"	19 mm	0.75"	19 mm	0.75"	19 mm	0.75"	19 mm
	Grade percent	1%							
H	Battery compartment size length	58.5"	1486 mm	58.5"	1486 mm	58.5"	1486 mm	58.5"	1486 mm
I	Battery compartment overall width	30"	762 mm	36"	914 mm	42"	1067 mm	48"	1219 mm
	Max. battery length	60"	1524 mm	60"	1524 mm	60"	1524 mm	60"	1524 mm
	Max. battery width	24"	610 mm	30"	762 mm	36"	914 mm	42"	1067 mm
	Max. battery height	37"	940 mm	37"	940 mm	37"	940 mm	37"	940 mm
	Min. battery length	18"	457 mm	18"	457 mm	18"	457 mm	18"	457 mm
	Min. battery width	6"	152 mm	6"	152 mm	6"	152 mm	6"	152 mm
	Min. battery height	20"	508 mm	20"	508 mm	20"	508 mm	20"	508 mm
	Min. over travel (front)	98"	2489 mm	108"	2743 mm	116"	2946 mm	125"	3175 mm
	Min. over travel (rear)	113"	2870 mm	114"	2896 mm	131"	3327 mm	140"	3556 mm

### BBE 6 LEVEL HEIGHT DIMENSIONS

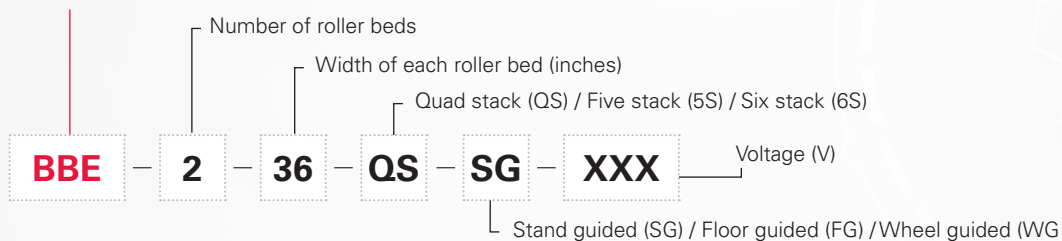
DESCRIPTION		FOUR		FIVE		SIX	
J	Carriage roller bed (raised)	144"	3658 mm	190"	4826 mm	236"	5994 mm
J-1	Carriage roller bed (lowered)	5.5"	140 mm	5.5"	140 mm	5.5"	140 mm
K	Overall height to top of frame	210"	5334 mm	256"	6502 mm	302"	7671 mm
L	Overall height to top of tow arm	223"	5664 mm	269"	6833 mm	315"	8001 mm
M	Operator platform height (raised)	254"	3912 mm	200"	5080 mm	246"	6248 mm
M-1	Operator platform height (lowered)	16"	406 mm	16"	406 mm	16"	406 mm
N	Shipping Height	84"	2134 mm	84"	2134 mm	84"	2134 mm
	Upper guide* required (yes/no)	No		No		No	
	Floor variance (+ or - in 10ft/3m)	0.125"	3 mm	0.125"	3 mm	0.125"	3 mm

### MODEL / PART NUMBER BREAKDOWN

\*Guide located at the top of the unit to provide more stability for taller units

Example: BBE-2-36-QS-SG-XXX

Series identification (BBE)

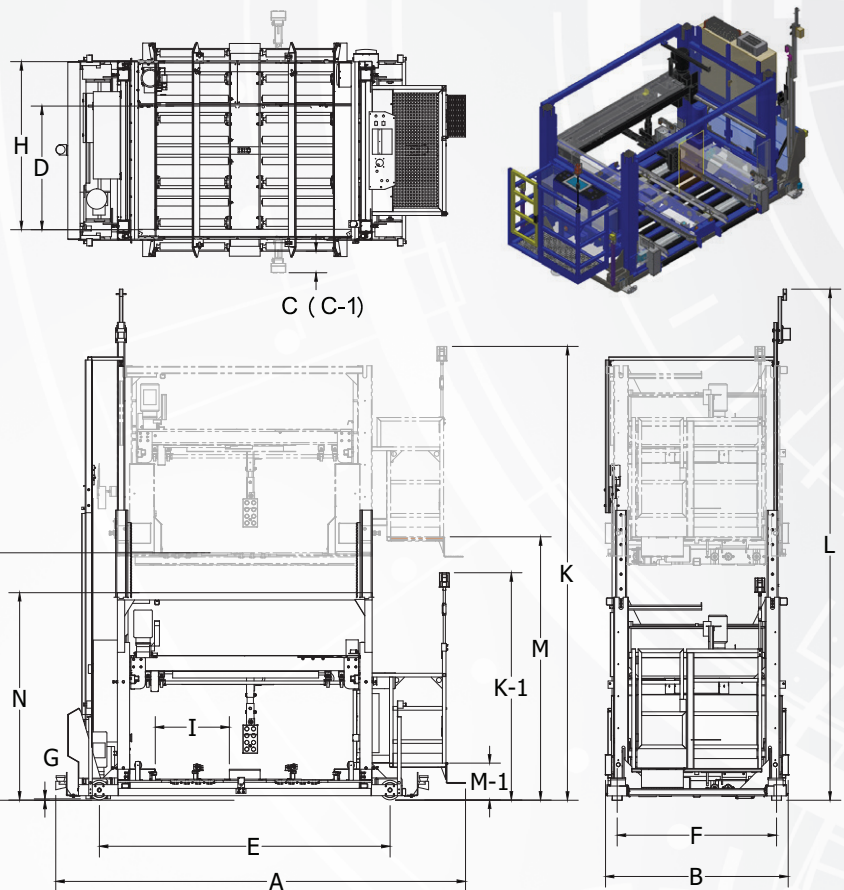


# BATTERY BULL ELECTRIC FULLY AUTOMATED

## BATTERY BULL ELECTRIC FULLY AUTOMATED (BBE-FA) SINGLE, DOUBLE & TRIPLE MODELS

The BBE-FA is a flexible and effective system to support battery change requirements for broad-scale automated applications. Employing the same high-efficiency, high-performance and low-maintenance AC power core as the rest of our BBE range, the BBE-FA leverages advanced logic programming and sensor-based diagnostics to remove the need for a human operator.

Our proven system meets and/or exceeds all of the toughest AGV industry standards and includes comprehensive self-diagnostic and logging capabilities to reduce downtime through servicing and unscheduled maintenance even further.



### OPTIONS AT ADDITIONAL COST

- Remote management interfaces for offsite management and control
- Automation level one
- Automation level two
- Integrated battery management system to optimize battery performance and life
- Custom powder coating in various colours

### BBE-FA SPECIFICATIONS

DESCRIPTION		BBE-FA-2-30		BBE-FA-2-36		BBE-FA-2-42		BBE-FA -2-48	
1	Drive system H.P./KW	3 HP	2.25 KW	3 HP	2.25 KW	3 HP	2.25 KW	3 HP	2.25 KW
2	Raise/Lower H.P.	2 x 5 HP	2 x 3.75 KW	2 x 5 HP	2 x 3.75 KW	2 x 5 HP	2 x 3.75 KW	2 x 5 HP	2 x 3.75 KW
3	Raise/Lower speed	0-21 FPM	0-6.4 MPM	0-21 FPM	0-6.4 MPM	0-21 FPM	0-6.4 MPM	0-21 FPM	0-6.4 MPM
4	Travel speed	0-175 FPM	0-53.3 MPM	0-175 FPM	0-53.3 MPM	0-175 FPM	0-53.3 MPM	0-175 FPM	0-53.3 MPM
5	Machine duty cycle	5,500 Hrs		5,500 Hrs		5,500 Hrs		5,500 Hrs	
6-A	Input voltage/frequency /Max current drawn	415 V / 50 Hz / 23 A		415 V / 50 Hz / 23 A		415 V / 50 Hz / 23 A		415 V / 50 Hz / 23 A	
6-B	Input voltage/frequency /Max current drawn	460 V / 60 Hz / 20 A		460 V / 60 Hz / 20 A		460 V / 60 Hz / 20 A		460 V / 60 Hz / 20 A	
6-C	Input voltage/frequency /Max current down	575 V / 60 Hz / 17 A		575 V / 60 Hz / 17 A		575 V / 60 Hz / 17 A		575 V / 60 Hz / 17 A	
7	Control voltage	110 VAC / 24 VDC		110 VAC / 24 VDC		110 VAC / 24 VDC		110 VAC / 24 VDC	
8	Draw bar pull magnet	1800 lb / 817 kg		1800 lb / 817 kg		1800 lb / 817 kg		1800 lb / 817 kg	
9	Magnet Break Off Point 1/4", 3/16", 1/8" 7 mm, 5 mm, 4 mm	1800, 1200, 700 lb 817, 545, 318 kg		1800, 1200, 700 lb 817, 545, 318 kg		1800, 1200, 700 lb 817, 545, 318 kg		1800, 1200, 700 lb 817, 545, 318 kg	
10	Power unit type	Electric		Electric		Electric		Electric	
11	Urethane wheel (DxW)	8" x 4" / 203 x 102 mm		8" x 4" / 203 x 102 mm		8" x 4" / 203 x 102 mm		8" x 4" / 203 x 102 mm	
12	Capacity (fully loaded)	10000 lb / 4536 kg		10000 lb / 4536 kg		10000 lb / 4536 kg		10000 lb / 4536 kg	
13	Service weight (empty)	7000 lb / 3176 kg		7100 lb / 3221 kg		7300 lb / 3312 kg		7500 lb / 3402 kg	

### BBE-FA DIMENSIONS

DESCRIPTION		BBE-FA-2-30		BBE-FA-2-36		BBE-FA-2-42		BBE-FA -2-48	
A	Overall Length	176 in	4470 mm	188 in	4775 mm	200 in	5080 mm	212 in	5385 mm
B	Overall Width (Standard)	80.5 in	2045 mm	80.5 in	2045 mm	80.5 in	2045 mm	80.5 in	2045 mm
C	Max. Magnet Arm Reach (Standard Arm)	12.25 in	311 mm	12.25 in	311 mm	12.25 in	311 mm	12.25 in	311 mm
C-1	Max. magnet arm reach (extension arm)	Customized to suit							
D	Bridge Travel	53.5 in	1359 mm	53.5 in	1359 mm	53.5 in	1359 mm	53.5 in	1359 mm
E	Wheel Base	125 in	3175 mm	137 in	3480 mm	149 in	3785 mm	161 in	4089 mm
F	Centerline of Drive Wheels	64.75 in	1645 mm	64.75 in	1645 mm	64.75 in	1645 mm	64.75 in	1645 mm
G	Ground Clearance	0.5 in	13 mm	0.5 in	13 mm	0.5 in	13 mm	0.5 in	13 mm
	Grade percent	1%							
H	Battery Compartment Size Length	64 in	1626 mm	64 in	1626 mm	64 in	1626 mm	64 in	1626 mm
I	Battery Compartment Overall Width (Urethane)	30 in	762 mm	36 in	914 mm	42 in	1067 mm	48 in	1219 mm
	Max. Battery Length	60 in	1524 mm	60 in	1524 mm	60 in	1524 mm	60 in	1524 mm
	Max. Battery Width	28 in	711 mm	34 in	864 mm	40 in	1016 mm	46 in	1168 mm
	Max. Battery Height	37 in	940 mm	37 in	940 mm	37 in	940 mm	37 in	940 mm
	Min. Battery Length	18 in	457 mm	18 in	457 mm	18 in	457 mm	18 in	457 mm
	Min. Battery Width	6 in	152 mm	6 in	152 mm	6 in	152 mm	6 in	152 mm
	Min. Battery Height	20 in	508 mm	20 in	508 mm	20 in	508 mm	20 in	508 mm
	Min. Over Travel (Front)	94 in	2388 mm	103 in	2616 mm	112 in	2845 mm	121 in	3073 mm
	Min. Over Travel (Rear)	114 in	2896 mm	122 in	3099 mm	132 in	3353 mm	140 in	3556 mm

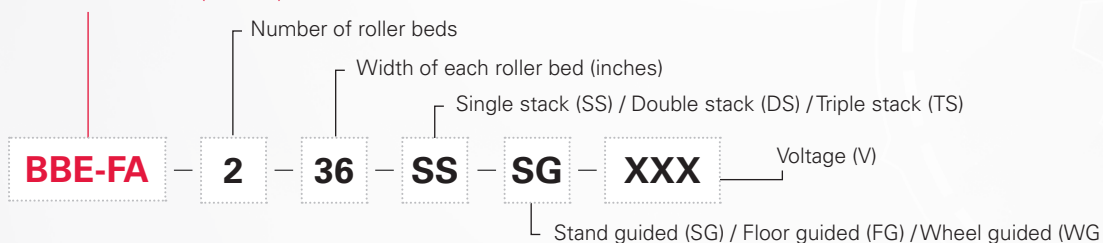
### BBE-FA LEVEL HEIGHT DIMENSIONS

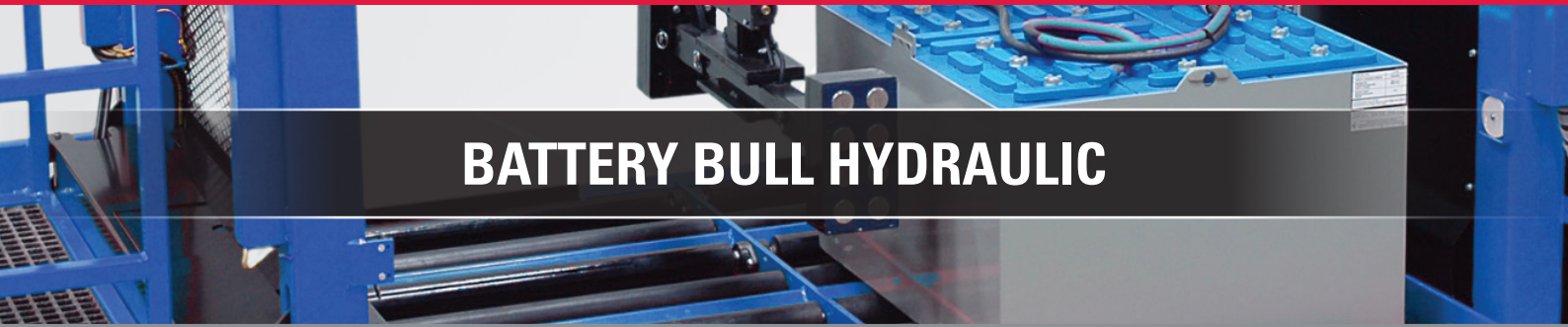
DESCRIPTION		SINGLE		DOUBLE		TRIPLE	
J	Carriage Roller Bed (Raised)	30 in	762 mm	54 in	1372 mm	100 in	2540 mm
J-1	Carriage Roller Bed (Lowered)	5.5 in	140 mm	5.5 in	140 mm	5.5 in	140 mm
K	Overall Height (Raised)	108 in	2743 mm	139 in	3531 mm	184 in	4674 mm
K-1	Overall Height (Lowered)	89 in	2261 mm	89 in	2261 mm	89 in	2261 mm
L	Overall Height to Top of Tow Arm	134 in	3404 mm	168 in	4267 mm	208 in	5283 mm
M	Operator Platform Height (Raised)	36.5 in	927 mm	62.5 in	1588 mm	106.5 in	2705 mm
M-1	Operator Platform Height (Lowered)	12.5 in	318 mm	12.5 in	318 mm	12.5 in	318 mm
N	Shipping Height	84 in	2134 mm	84 in	2134 mm	84 in	2134 mm
	Upper guide* required (yes/no)	No		No		No	
	Floor variance (+ or - in 10ft/3m)	0.25 in	6 mm	0.25 in	6 mm	0.25 in	6 mm

### MODEL / PART NUMBER BREAKDOWN

Example: BBE-FA-2-36-SS-SG-XXX

Series identification (BBE-FA)





# BATTERY BULL HYDRAULIC

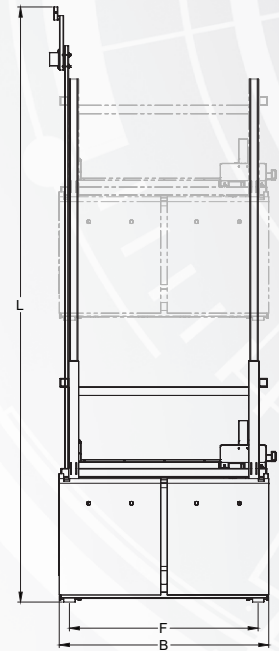
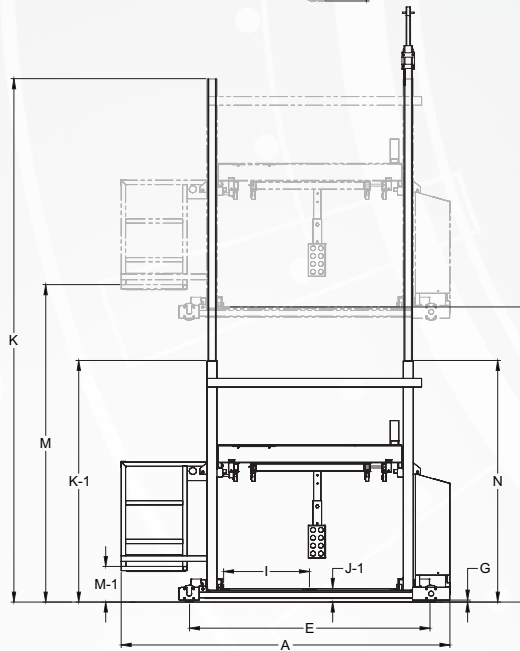
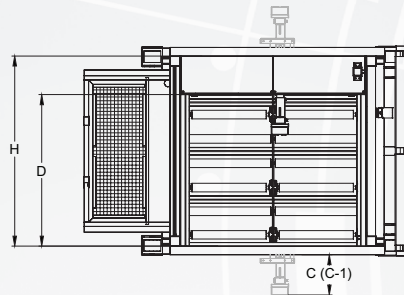
## BATTERY BULL HYDRAULIC (BBH)

The BBH system has long been proven in many applications around the world. Utilizing its hydraulic drive and lift system for single and double tier configurations ensures that customers enjoy day-in and day-out battery changing performance in medium to large fleets.

Hosting a logical user-friendly control panel, the BBH allows the operator to deliver rapid, more consistent and accurate battery changes that will keep your truck fleet productive.

The BBH utilizes a double roller bed configuration, coupled with its powerful electro magnet that has a draw bar pull of 817 kg.

The BBH delivers the highest throughput in battery changing, while maintaining a small footprint to help save your costly warehouse space.



### OPTIONS AT ADDITIONAL COST

- Hydraulic powered mechanical battery safety stops on all powered roller beds
- Forward / reverse travel interlock
- Motion safety sensors and light curtains
- Custom sizes to replace competitors
- Auto level system



### BBH SPECIFICATIONS

DESCRIPTION		BBH-2-30		BBE-2-36		BBE-2-42		BBE-2-48	
1	Raise/lower speed	0-15 FPM	0-4.5 MPM	0-15 FPM	0-4.5 MPM	0-15 FPM	0-4.5 MPM	0-15 FPM	0-4.5 MPM
2	Travel speed	0-225 FPM	0-68.5 MPM	0-225 FPM	0-68.5 MPM	0-225 FPM	0-68.5 MPM	0-225 FPM	0-68.5 MPM
3	Machine duty cycle (annual)	5,500 Hrs.		5,500 Hrs.		5,500 Hrs.		5,500 Hrs.	
4-A	Input voltage/frequency	415 V / 50 Hz / 13 A		415 V / 50 Hz / 13 A		415 V / 50 Hz / 13 A		415 V / 50 Hz / 13 A	
4-B	Input voltage/frequency	460 V / 60 Hz / 11 A		460 V / 60 Hz / 11 A		460 V / 60 Hz / 11 A		460 V / 60 Hz / 11 A	
4-C	Input voltage/frequency	575 V / 60 Hz / 9 A		575 V / 60 Hz / 9 A		575 V / 60 Hz / 9 A		575 V / 60 Hz / 9 A	
5	Control voltage	110 VAC / 24 VDC		110 VAC / 24 VDC		110 VAC / 24 VDC		110 VAC / 24 VDC	
6	Draw bar pull magnet	817 kg / 1800 lbs		817 kg / 1800 lbs		817 kg / 1800 lbs		817 kg / 1800 lbs	
7	Magnet break off point on (1/4", 3/16", 1/8") thick plate	817, 544, 318 kg 1800, 1200, 700 lbs		817, 544, 318 kg 1800, 1200, 700 lbs		817, 544, 318 kg 1800, 1200, 700 lbs		817, 544, 318 kg 1800, 1200, 700 lbs	
8	Power unit type	Hydraulic		Hydraulic		Hydraulic		Hydraulic	
9	Wheel type/size (dia x width)	Urethane 6"x2-3/4"/ 152 mm x 70 mm		Urethane 6"x2-3/4"/ 152 mm x 70 mm		Urethane 6"x2-3/4"/ 152 mm x 70 mm		Urethane 6"x2-3/4"/ 152 mm x 70 mm	
10	Capacity (fully loaded)	4536 kg	10000 lbs	4536 kg	10000 lbs	4536 kg	10000 lbs	4536 kg	10000 lbs
11	Service weight (empty)	1134 kg	2500 lbs	1588 kg	3500 lbs	1724 kg	3800 lbs	2024 kg	4500 lbs

### BBH DIMENSIONS

DESCRIPTION		BBH-2-30		BBE-2-36		BBE-2-42		BBE-2-48	
A	Overall length	117"	2972 mm	129"	3277 mm	141"	3581 mm	153"	3886 mm
B	Overall width (standard)	78"	1981 mm	78"	1981 mm	78"	1981 mm	78"	1981 mm
C	Max. magnet arm reach (standard arm)	12.25"	311 mm	12.25"	311 mm	12.25"	311 mm	12.25"	311 mm
C-1	Max. magnet arm reach (extension arm)	Customized to suit							
D	Bridge travel	53.5"	1359 mm	53.5"	1359 mm	53.5"	1359 mm	53.5"	1359 mm
E	Wheel base	84.5"	2146 mm	96.5"	2451 mm	108.5"	2756 mm	120.5"	3061 mm
F	Centerline of drive wheels	64.75"	1645 mm	64.75"	1645 mm	64.75"	1645 mm	64.75"	1645 mm
G	Ground clearance	0.875"	22 mm	0.875"	22 mm	0.875"	22 mm	0.875"	22 mm
	Grade Percent	1%							
H	Battery compartment size length	62.5"	1588 mm	62.5"	1588 mm	62.5"	1588 mm	62.5"	1588 mm
I	Battery compartment overall width (urethane)	30"	762 mm	36"	914 mm	42"	1067 mm	48"	1219 mm
	Max. battery length	60"	1524 mm	60"	1524 mm	60"	1524 mm	60"	1524 mm
	Max. battery width	24"	610 mm	30"	762 mm	36"	914 mm	42"	1067 mm
	Max. battery height	37"	940 mm	37"	940 mm	37"	940 mm	37"	940 mm
	Min. battery length	18"	457 mm	18"	457 mm	18"	457 mm	18"	457 mm
	Min. battery width	6"	152 mm	6"	152 mm	6"	152 mm	6"	152 mm
	Min. battery height	20"	508 mm	20"	508 mm	20"	508 mm	20"	508 mm
	Min. over travel (front)	94"	2388 mm	103"	2616 mm	112"	2845 mm	121"	3073 mm
	Min. over travel (rear)	114"	2896 mm	122"	3099 mm	132"	3353 mm	140"	3556 mm

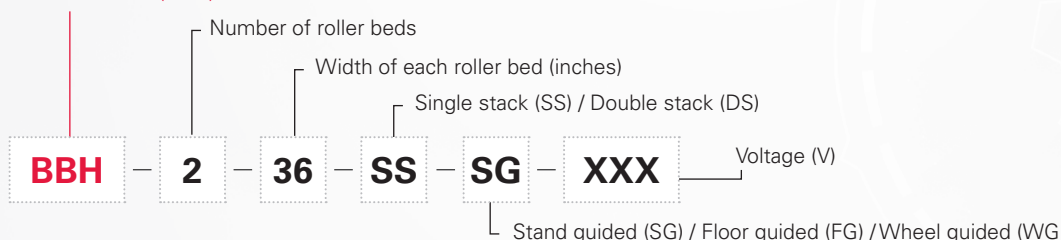
### BBH LEVEL HEIGHT DIMENSIONS

DESCRIPTION		SINGLE		DOUBLE	
J	Carriage roller bed (raised)	30"	762 mm	54"	1372 mm
J-1	Carriage roller bed (lowered)	5.5"	140 mm	5.5"	140 mm
K	Overall height (raised)	108"	2743 mm	139"	3531 mm
K-1	Overall height (lowered)	84"	2134 mm	84"	2134 mm
L	Operator height to top of tow arm	134"	3404 mm	168"	4267 mm
M	Operator platform height (raised)	36.5"	927 mm	62.5"	1588 mm
M-1	Operator platform height (lowered)	12.5"	318 mm	12.5"	318 mm
N	Shipping Height	84"	2134 mm	84"	2134 mm
	Upper guide* required (yes/no)	No		No	
	Floor variance (+ or - in 10ft/3m)	0.25"	6 mm	0.25"	6 mm

### MODEL / PART NUMBER BREAKDOWN

Example: BBH-2-36-SS-SG-XXX

Series identification (BBH)



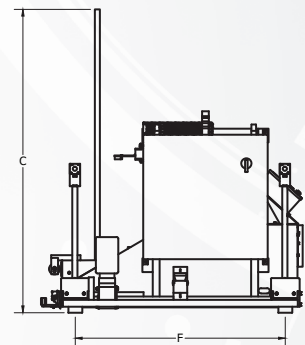
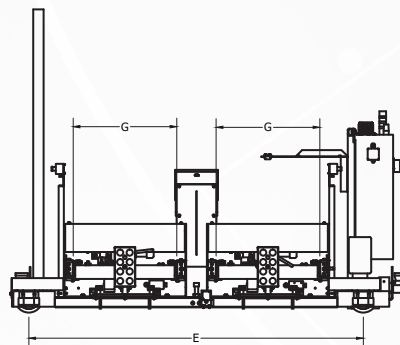
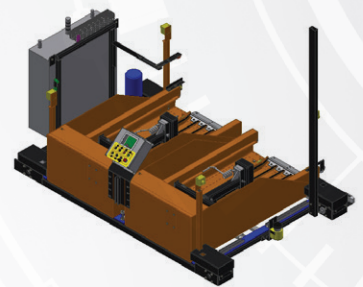
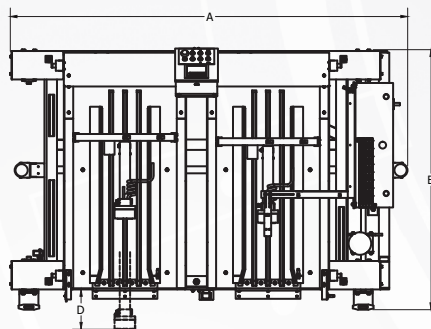
# MINI AUTO CHANGER

## MINI AUTO CHANGER (MAC)

The automatic battery changer, the Mini Auto Changer (MAC) uses a fully integrated PLC control system providing precise control and responsiveness for faster battery changes, setting the industry standard in automated battery changing.

Developed for use with Automated Guided Vehicles (AGVs), the MAC eliminates the need for any human intervention when changing batteries, adding value to the fully automated proposition.

The MAC battery handling equipment has a 15 year pedigree and is in use in a variety of industrial applications across the globe.



### OPTIONS AT ADDITIONAL COST

- Systems can be designed with a fixed roll-off height anywhere between 178mm- 660mm (7" – 26")
- MAC battery handling equipment can be customised to work with conventional material handling equipment

# MINI AUTO CHANGER

## MAC SPECIFICATIONS

DESCRIPTION		MAC2-2-30-SG	
1	Travel Speed (meters per minute)	0-175 MPM	0-53.3 MPM
2	Machine Duty Cycle (per year)	5500 hrs	
3a	Input Voltage / Frequency / Max Current Drawn	415 V / 50 Hz / 9.5 A	
3b	Input Voltage / Frequency / Max Current Drawn	460 V / 60 Hz / 9.5 A	
3c	Input Voltage / Frequency / Max Current Drawn	575 V / 60 Hz / 9.5 A	
4	Control Voltage	110 VAC / 24 VDC	
5	Draw Bar Pull Magnet	817 kg / 1800 lbs	
6	Magnet Break Off Point (1/4"/3/16"/1/8" battery tray thickness)	817 / 544 / 818 kg 1800 / 1200 / 700 lbs	
7	Urethane Wheel (Dia x Width)	203 x 102 mm / 8" x 4"	
8	Capacity (Fully Loaded)	3629 kg / 8000 lbs	
9	Service Weight (Empty)	1543 kg / 3400 lbs	

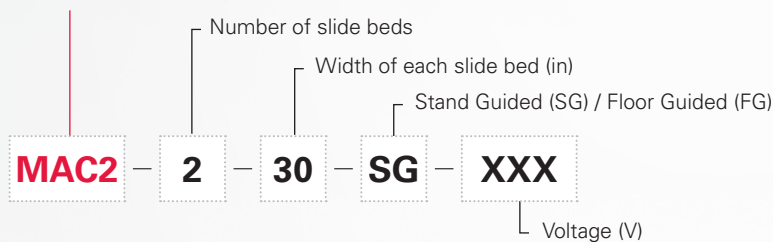
## MAC DIMENSIONS

DESCRIPTION		MAC2-2-30-SG	
		STANDARD	METRIC
A	Overall Length	103 in	2616 mm
B	Overall Width	80.25 in	2038 mm
C	Overall Height	90.25 in	2292 mm
D	Maximum Magnet Arm Reach	Customized to suit	
E	Wheel Base	90.75 in	2305 mm
F	Centreline of Drive Wheels	62 in	1575 mm
G	Battery Compartment Overall Width	30 in	762 mm
Ga	Maximum Battery Length	Customized to suit	
Gb	Maximum Battery Width	28 in	711 mm
Gc	Maximum Battery Height	32 in	813 mm
Gd	Minimum Battery Width	6 in	152 mm
Ge	Minimum Battery Height	13 in	330 mm
Gf	Floor Level Variance (+ or- in 10 ft.- fully customizable)	0.25 in	6 mm

## MODEL / PART NUMBER BREAKDOWN

Example: MAC2-2-30-SG-480

Series identification (MAC2)



Working in Partnership with  
Carney Battery Handling Ltd

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