



BATTERY TECHNOLOGY SOURCE CO., LTD  
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## ACID FINISHING MACHINES



## ACID FINISHING LINE



**BCM-AF-20AC**  
FULLY AUTO. CAR BATTERY ACID FILLING MACHINE



**BCM-AFL-20AC**  
FULLY AUTO. CAR BATTERY ACID LEVEL ADJUSTING MACHINE



**HM-10CS**  
SEMI-AUTO. SECONDARY LID HEAT SEAL MACHINE



**BWD-10AC**  
FULLY AUTO. CAR BATTERY WASHING & DRYING MACHINE



**PB-20AC**  
FULLY AUTO. CAR BATTERY TERMINAL POST BRUSHING MACHINE



**BHRD-1000A-AC**  
FULLY AUTO. CAR BATTERY HRD INSPECTION MACHINE



**BHRD-1500 (2)AC**  
HIGH RATE DISCHARGE INSPECTION MACHINE



**BL-20AC**  
FULLY AUTO. CAR BATTERY LABELING MACHINE



**ABF-10MS (V)**  
SEMI-AUTO. VACUUM TYPE ACID FILLING MACHINE



**BCF-8MC**  
BATTERY CASE FORMATION CHARGER MACHINE



**BHRD-300RDS (AM)**  
FULLY AUTO. 4 FUNCTION BATTERY DISCHARGE INSPECTION MACHINE



**ABF-10MS (X)**  
SEMI-AUTO. ACID BOTTLE FILLING MACHINE

# PLATE MANUFACTURING MACHINES



**PS-40 AM**

FULLY AUTO. LUG BRUSHER MACHINE



**PCS-20AH**

FULLY AUTO. MULTIFUNCTION LEAD PARTS CASTING MACHINE



**BGC-10**

FULLY AUTO. GRID CASTING MACHINE



**BSB-3S**

FULLY AUTO. CAR BATTERY PLATE BRUSHING & SLITTING MACHINE



**BIGO-10**

INTER GAS OVEN NEGATIVE PLATES DRY CHARGE OVEN



**BPP-10**

FULLY AUTO. PLATES PASTING MACHINE



**FDO-10**

BATTERY PLATES HORIZONTAL FLASH DRYING OVEN



**AHBF-10AM & BPD-10AM**

FULLY AUTO. HOLE PUNCHING & DUMPING MACHINE (WITH CONTAINER FEEDING SYSTEM)



**HEP-10AC**

FULLY AUTO. PE SEPARATOR WRAPPING MACHINE



**VGM-10M**

SEMI-AUTO. AGM SEPARATOR WRAPPING MACHINE



**PCS.20H**

SEMI-AUTO. LEAD PARTS CASTING MACHINE



**BFB-10C**

SEMI-AUTO. 3 SIDES FRAME BRUSHING MACHINE

# HIGH SPEED MOTORCYCLE BATTERY ASSEMBLY LINE



**HV-50AM (2X)**  
FULLY AUTO. SHORT CIRCUIT TEST, INTER-CELL WELD & WELD QUALITY CHECK MACHINE



**HV-60AM (E)**  
FULLY AUTO. POLARITY CHECK, INTER-CELL WELD, S/C & WELD QUALITY CHECK MACHINE



**HV-60AM (X)**  
FULLY AUTO. POLARITY CHECK, INTER-CELL WELD, S/C & WELD QUALITY CHECK MACHINE (WITH SERVO CONTROL)



**IRT-10AM (X)**  
FULLY AUTO. WELD CONDITION CHECKING MACHINE



**HM-10AM**  
FULLY AUTO. HEAT SEALING MACHINE



**HM-10AM (X)**  
FULLY AUTO. HEAT SEALING MACHINE (QUICK MOLD CHANGE)



**ATC-30AM (X)**  
FULLY AUTO. AIR LEAK TESTING & CODING MACHINE



**AHS-10AM**  
FULLY AUTO. ALUMINUM FOIL TOP SEAL MACHINE



**AHS-20AM (X)**  
FULLY AUTO. ALUMINUM FOIL TOP SEAL & SIDE SEAL MACHINE



**TIG-10AM**  
FULLY AUTO. TIG WELDING MACHINE



**BD-10AM**  
FULLY AUTO. BATTERY DUMPING MACHINE



**BSP-10AM**  
FULLY AUTO. SCREEN PRINTING & CONTAINER ROTATOR MACHINE

# HIGH SPEED CAR BATTERY ASSEMBLY LINE



**HPVT-40ACH**

FULLY AUTO. ELECTRIC WELDING & SHORT TEST MACHINE



**IRV-20ACX**

FULLY AUTO. S/C TEST & WELD CONDITION CHECKING MACHINE



**HM-20ACH**

FULLY AUTO. HEAT SEALING MACHINE



**ATC-20ACH**

FULLY AUTO. LEAK TESTING & CODING MACHINE



**TBP-20AC**

FULLY AUTO. POST BURNING MACHINE



**AHB-10AC**

FULLY AUTO. FOIL SEALING & POST BRUSHING MACHINE



**IRT-10AC**

FULLY AUTO. WELD CONDITION CHECKING MACHINE



**AH-10AC**

FULLY AUTO. ALUMINUM FOIL SEALING MACHINE



**AHB-10AC**

FULLY AUTO. HEAT SEALING MACHINE (SERVO MOTOR CONTROL)



**HMT-10CX**

SEMI-AUTO. TOP COVER HEAT SEALING MACHINE



**AH-10AC**

SEMI-AUTO. AIR LEAK TESTING MACHINE



**HM-10ACX**

SEMI-AUTO. HEAT SEALING MACHINE



# LABORATORY AND TESTING EQUIPMENT



BATTERY TECHNOLOGY SOURCE CO., LTD.

**HVT-100**  
HIGH VOLTAGE BATTERY SHORT  
CIRCUIT TESTER



BATTERY TECHNOLOGY SOURCE CO., LTD.

**VS-600VH**  
VIBRATION TESTING SYSTEM



**VS-300VH**  
VIBRATION TESTING SYSTEM



BATTERY TECHNOLOGY SOURCE CO., LTD.

**VS-5060M**  
REACTIVE TYPE VIBRATION TESTER



BATTERY TECHNOLOGY SOURCE CO., LTD.

**BTS-LT 403T**  
LOW TEMPERATURE BOX



BATTERY TECHNOLOGY SOURCE CO., LTD.

**NTHDR20/200**  
MULTI-FUNCTION DISCHARGE  
TESTER



**NT6CCDR20/50**  
MULTI-FUNCTION CHARGER AND  
DISCHARGER



BATTERY TECHNOLOGY SOURCE CO., LTD.

**BHRD-1000A-AC**  
AUTO. BATTERY HIGH RATE DIS-  
CHARGE INSPECTION MACHINE



BATTERY TECHNOLOGY SOURCE CO., LTD.

**BHRD-300RDS (AM)**  
CAPACITY TESTING DEVICE



**NTCDR230/80BP-16CH-5C**  
CAPACITY TESTING DEVICE



**NTCDR230-80-5C-16CH**  
MULTI-FUNCTION TESTING MCHINE  
FOR SMALL BATTERIES



**NTCDR-150-80-150-10CH**  
DICHARGE TEST MACHINE

## OTHER MACHINES AND MATERIAL PARTS



**BVS-300HV**  
ELECTRODYNAMIC VIBRATION  
TESTER



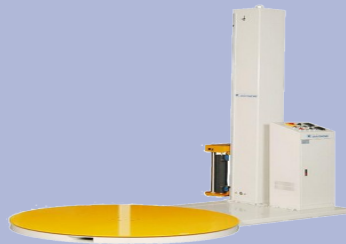
**BV-5060**  
MECHANICAL TYPE VIBRATION  
TESTER



**BOP-10AM**  
FULLY AUTO. OVEN TUNNEL MA-  
CHINE



**CONTAINER PRINTING ASS. LINE**  
FULLY AUTO. BATTERY CONTAINER  
HOLE PUNCHING & SCREEN PRINT-  
ING ASSEMBLY LINE



**WSV-1521 & 1821**  
VERTICAL WRAPPING MACHINES



**BLT-40C**  
LOW TEMPERATURE BOX FOR BAT-  
TERY QUALITY TEST LABORATORY



**GLASS FIBER SEPARATOR**



**BCF-16MCP**  
CHARGER MACHINE FOR PLATES  
FORMATION RECTIFIER



**BATTERY TERMINAL BOLT & NUT**



**SCISSOR PALLET TABLE**



**PLASTIC INJECTION MOLD**



**CAR & MOTORCYCLE BATTERY  
CONTAINER SET**



## AUTOMATIC ACID FILLING MACHINE

### Model: BCM-AF-10AC

#### Applications

1. 12N26-N200 automotive batteries
2. Liquid filling before the initial charge

#### Features

- Automatic conveying and positioning
- Timer controlled liquid filling
- Liquid filling hole: 12 tubes with 12 sets of acid filling valves
- Adjustable filling speed according to the batteries' absorption capacity
- 12 individual timers, one for each acid tube
- Acid volume tolerance: 2%-3%
- Adjustable filling head height
- Main body structure: SUS 316 and PVC
- Stainless steel motorized roller conveyor system
- 2 sets of ARO brand V-25 diaphragm pumps, with noise reduction system
- Accessory: 2 sets of adjustable filling devices
- The customer shall provide the liquid storage tank, assembly pipe and assembly line, according to the needs and condition of the facilities.
- Capacity: 120-240 pcs/h



#### Air/power consumption

- Power source: AC 3 φ 380 V 50 Hz (AC 3 φ 220 V 60 Hz)
- Air pressure: 5 kg/cm<sup>2</sup> (supplied by the customer)



## AUTOMATIC ACID LEVELING MACHINE

### Model: BCM-AFL-10AC

#### Applications

1. 12N26-N200 automotive batteries
2. Liquid filling level adjustment after the initial charge

#### Features

- Automatic conveying and positioning
- Timer controlled liquid filling
- Liquid filling hole: 12 tubes (2 batteries per cycle)
- 2 sets of filling timers (each one controlling 6 sets of filling valves) and 2 sets of vacuum timers (each one controlling 3 sets of vacuum pumps).
- 12 sets of individual valves for each acid tube
- Adjustable filling head height
- Anti acid dipping acid nozzles
- Main body structure: SUS 316 and PVC
- Stainless steel motorized rolling conveyor system
- Accessories:
  - 1 set of adjustable filling level checking devices, allowing the machine to check acid level at the same leveling head.
  - 6 sets of ARO brand V-15 diaphragm vacuum pumps, with noise reduction
  - 2 sets of ARO brand V-15 diaphragm pumps, with noise reduction
- The customer shall provide the storage tank, assembly pipe and assembly line.
- Capacity: 120-240 pcs/h



#### Air/power consumption

- Power source: AC 3 φ 380 V 50 Hz (AC 3 φ 220 V 60 Hz)
- Air pressure: 5 kg/cm<sup>2</sup> (supplied by the customer)



## AUTOMATIC ACID FILLING MACHINE Model: BCM-AF-20AC



### Applications

Liquid filling the before initial charge (12N26-N200 automotive batteries)

### Features

- Automatic conveying and positioning
- Adjustable speed (according to absorption capacity) and filling head height
- Liquid filling hole: 12 tubes with 12 sets of acid filling valves
- 12 individual timers, one for each acid tube
- 2 sets of ARO brand V-25 diaphragm pumps, with noise reduction system
- Accessories: 2 sets of adjustable filling devices
- Acid volume tolerance: 2%-3%
- SUS 316 and PVC main body structure; stainless steel motorized roller conveyor
- The customer shall provide the storage tank, assembly pipe and assembly line.
- Capacity: 9-10 s (small battery); 11-12 s (medium battery); 14-15 s (large battery)

### Air/power consumption

- Power source: AC 3  $\phi$  380 V 50 Hz (AC 3  $\phi$  220 V 60 Hz)
- Air pressure: 5 kg/cm<sup>2</sup> (supplied by the customer)



## AUTOMATIC ACID LEVELING MACHINE

### Model: BCM-AFL-20AC



### Applications

Liquid filling level adjustment after the initial charge (12N26-N200 automotive batteries)

### Features

- Automatic conveying and positioning
- Liquid filling hole: 12 tubes (2 batteries per cycle)
- 2 sets of filling and 2 of vacuum timers (each one controlling 6 and 3 sets of pumps).
- 12 sets of individual valves for each acid tube
- Adjustable filling head height
- Capacity: 9-10 s (small battery); 11-12 s (medium battery); 14-15 s (large battery)
- SUS 316 and PVC main body structure; stainless steel motorized rolling conveyor
- Accessories: 1 set of level checking devices, allowing the machine to check acid level at the same leveling head; 6 sets of ARO V-15 diaphragm vacuum pumps, with noise reduction; 2 sets of ARO V-15 diaphragm pumps, with noise reduction.
- The customer shall provide the storage tank, assembly pipe and assembly line.

### Air/power consumption

- Power source: AC 3  $\phi$  380 V 50 Hz (AC 3  $\phi$  220 V 60 Hz)
- Air pressure: 5 kg/cm<sup>2</sup> (supplied by the customer)



## FULLY AUTO. ACID LEVEL ADJUSTMENT AND LEAK TEST MACHINE Model: AFT-50ACX

### Function

This machine is meant for leak testing and acid filling/leveling.

### Machine operation process

After the operator has placed it on the conveyor, the battery is automatically sent to the first (1-3-5) air leak test station; if the battery fails, it is automatically rejected; if it is approved, it continues to the second test station (2-4-6), and is rejected or approved following the same procedure. Approved batteries are sent to the third (acid filling or extraction), fourth (acid extraction for level adjustment) and fifth station (final filling). The fifth and final station is equipped with an EIS system for checking the electrolyte level.

### Features

- The amount of acid can be regulated by setting the filling time
- Only one operator is required
- Easy maintenance and operation
- Capacity: 180-200 pcs/h

### Compressed air/energy consumption

- Electricity: 1 or 3 phases, voltage and frequency to suit the customer's specifications
- Power consumption: 5 KW

### Machine outlook

- Dimensions: approx 3780 (L) × 2916 (W) × 2487 (H) mm
- Weight: approx. 4000 kg





## ACID FILLING MACHINE Model: AVF-40AMS

### Function

This machine does the initial acid vacuum filling of small VRLA batteries.

### Machine operation process

Before the formation and charging process, the batteries have to be filled with acid. In every cycle, the machine will automatically lift up 4 batteries and fill them. After the filling is done, the batteries will return to the initial position and proceed to the weighing station.

### Features

- Quick adjustment design, easy to operate and maintain
- Capacity: 300-360 pcs/h

### Compressed air/energy consumption

- Electricity: 1 or 3 phases, voltage and frequency to suit the customer's specifications
- Power consumption: 850 W

### Machine outlook

- Dimensions: approx 5000 (W) × 1200 (D) × 1560 (H) mm
- Weight: approx. 650 kg





## SEMAUTO. ACID FILLING MACHINE Model: AF-40MS (X)

### Function

This machine performs the initial acid filling of small VRLA batteries, in semi automatic mode.

### Machine operation process

Before the formation and charging process, the batteries have to be filled with acid. In every cycle, the machine will automatically lift up 4 batteries and fill them. After the filling is done, the batteries will return to the initial position so that they can be manually collected by the operator.

### Features

- Touchscreen HMI
- HIBAR pump filling method, automatically fills the batteries with 0.1 cc tolerance
- Requires only one operator
- Stainless steel (SUS-316) frame structure
- Servo shifting and load cell weighing system
- Quick adjustment design, easy to operate and maintain
- Production capacity: 180-240 pcs/h



### Air/power consumption

- 1 or 3 phases, voltage and frequency according to the customer's specifications
- Power consumption: 1.5 KW

### Machine outlook

- Dimension: approx. 1250 (L) × 1200 (W) × 1900 (H) mm
- Weight: approx. 350 kg



## SEMAUTO. ACID FILLING MACHINE Model: AF-30MS (X)

### Function

This machine does the initial acid filling of small VRLA batteries, in semi automatic mode.

### Machine operation process

Before the formation and charging process, the batteries have to be filled with acid. In every cycle, the machine will automatically lift up 3 batteries and fill them. After the filling is done, the batteries will return to the initial position so that they can be manually collected by the operator.



### Features

- HIBAR pump filling method, automatically fills the batteries with 1 cc tolerance
- Requires only one operator
- Stainless steel (SUS-316) frame structure
- Servo shifting system, load cell weighing system and HMI touch screen controller
- Quick adjustment design, easy to operate and maintain
- Production capacity: 90-180 pcs/h

### Air/power consumption

- 1 or 3 phases, voltage and frequency according to the customer's specifications
- Power consumption: 500 W

### Machine outlook

- Dimension: approx. 1200 (L) × 700 (W) × 1560 (H) mm
- Weight: approx. 250 kg



## ACID BOTTLE FILLING MACHINE

### Model: HAF-10AB

#### Machine operation process

After the operator has manually placed the bottle on a fixed position, the control valve opens and fills it, whereby the liquid volume can be adjusted.

#### Features

- Acid resistant materials (machine body and protection cover): SUS 316
- Acid filling tube: 100 cc × 12 pcs
- Capacity: 1200-1500 pcs/8 h
- Acid tank: 125 l × 1 pc
- Pressure cover × 1 pc

#### Air/power consumption

Acid power: 1 HP hydraulic

#### Machine outlook

- Dimension: 1300 (L) × 1100 (W) × 1770 (H) mm
- Weight: 250 kg

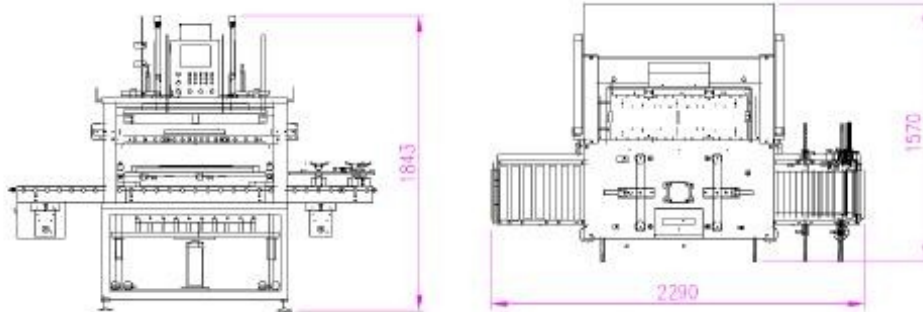


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## AUTO. SECONDARY LID HEAT SEALING MACHINE

### Model: HM-10ACS



### Function

Suitable for heat sealing the top cover and the main plastic cover after the acid filling.

### Machine operation process

The battery is conveyed to the working space of this machine. Then the machine proceeds to melt the cover and top cover, sealing and cooling them automatically. After completion of the heat sealing operation, the battery will be sent to the next working station.

### Features

- Automatically picks up the top cover by using a gripping and suction mechanism.
- Suitable for heat-sealing all types of automobile battery
- Max. heating surface: 522 (L) × 280 (W) × 240 (H) mm; min.: 150 (L) × 100 (W) × 145 (H) mm
- Pre-heating time: 20-30 min; temperature range: 0-600°C
- It is easy to change the tooling, which allows to save time and increase efficiency.
- Capacity: 90-300 batteries/h

### Air/power consumption

8 KW, 1 or 3 phases, voltage and frequency according to the customer's specifications

### Machine outlook

- Dimensions: approx. 2290 (L) × 1570 (W) × 1843 (H) mm
- Weight: 750 kg



## SEMI-AUTO. HEAT SEALING MACHINE FOR TOP COVER TO BATTERY COVER SEAL Model: HM-10MS (X)

### Function

Suitable for heat sealing the battery top and main plastic cover after the acid filling.

### Machine operation process

The operator places the top cover on the battery cover. The machine proceeds to melt both, automatically sealing and cooling them. After completion, the batteries can be collected.

### Features

- Automatically picks up the cover by using a mechanical clamp and vacuum suction.
- Only one operator required.
- Guide bar especially designed for accurate cover positioning.
- Max. heating surface: 206 (L) × 92 (W) × 165 (H) mm; min.: 68.5 × 46 × 72 mm
- Easily changeable tooling, allowing to save time and increase efficiency.
- Heating time: 15-25 min
- Temperature range: 0-600°C
- Insufficient air pressure or temperature will trigger the alarm and send the machine into auto-stop.
- Capacity: 260-300 pcs/h (2 V); 360 pcs/h (6 V)

### Air/power consumption

- 1 or 3 phases, voltage and frequency according to the customer's specifications
- Power consumption: 2.4 KW
- Compressed air: 290 L/min at 6 kg/10cm<sup>2</sup>

### Machine outlook

- Dimension: approx. 600 (L) × 650 (W) × 2100 (H) mm
- Weight: 300 kg





## SEMIAUTO VENT STRIP HEAT SEAL MACHINE

### Model: HM-10M (X)

#### Function

Suitable for heat sealing the battery's vent strip and plastic cover, in semi-automatic mode.

#### Machine operation process

The operator positions the cover/lid on the operation table and places the top chamber/vent strip on the lid. Operation will start after pressing the start button on the left and right of the machine. The machine will automatically apply heat until melting and sealing the top chamber/vent strip to the lid. After the cooling time, the operator collects the finished product for further processing.

#### Features

- The start button should be pushed from both left and right, in order to make sure the operator's hands are not in the operation area (as a safety precaution).
- Suitable for all types of motorcycle battery
- Easily changeable and adjustable mold
- Compact size, allowing to save space
- Pre-heating time: approximately 15-25 minutes
- It can be used for wet battery top cover seal (at the customer's request).
- Capacity: 260-300 pcs/h for 12 V battery (around 4-5 pcs/minute)

#### Air/power consumption

1 or 3 phases, voltage and frequency according to the customer's specifications

Power consumption: 5 KW

#### Machine outlook

Dimension: approx. 600 (L) × 600 (W) × 2100 (H) mm

Weight: 300 kg





## SEMIAUTO. TOP COVER HEAT SEAL MACHINE Model: HM-20M (SX)

### Function

Suitable for heat sealing the battery's top cover, in semi-automatic mode.

### Machine operation process

Once the battery has been filled with acid, the operator positions the top cover on the battery cover and places the battery on the work area. The process starts after pushing the start buttons on the left and the right of the machine. The battery will be automatically lifted up and sealed. After cooling, it will return to the initial position so that the operator can remove it safely.

### Features

- Auto. vacuum system to lift up the top cover
- Only 1 operator required
- 25-30 min pre-heating time
- User friendly design for easier maintenance
- Capacity: 6-7 pcs/min for 12 V battery

### Air/power consumption

- 1 or 3 phases, voltage and frequency according to the customer's specifications
- Power consumption: 5.1 KW

### Machine outlook

- Dimension: approx. 1033 (L) × 1083 (W) × 1733 (H) mm
- Weight: 840 kg





## SEMIAUTO. SECONDARY LID HEAT SEALING MACHINE Model: HM-10CS

### Function

Suitable for heat sealing the battery top and main plastic cover after the acid filling process.

### Machine operation process

The operator positions the battery on the working space. After placing the top cover on the battery cover precisely, the operator pushes the START button, and the machine begins to melt both covers, automatically sealing and cooling them. After completion, the operator collects the batteries and carries them to the next station.

### Features

- Suitable for all types of automobile battery
- Automatically secures the top cover by using both a gripping and a vacuum suction mechanism.
- Only one operator required
- Easily changeable tooling, allowing to save time.
- Stainless steel (SUS-316) frame structure
- Max. heating surface: 522 (L) × 280 (W) × 240 (H) mm
- Min. heating surface: 150 (L) × 100 (W) × 145 (H) mm
- Pre-heating time: 20-30 min
- Temperature range: 0-600°C
- Capacity: 90-120 batteries/hour

### Air/power consumption

- 1 or 3 phases, voltage and frequency according to the customer's specifications
- 12.75 KW

### Machine outlook

- Dimension: approx. 1793 (L) × 1102 (W) × 1973 (H) mm
- Weight: 1000 kg





## AUTOMATIC TOP COVER PRESSING MACHINE

### Model: BCP-10ACS

#### Function

Suitable for use with wet charged maintenance free batteries after the acid filling. It presses the secondary cover and seals it to the lid of the battery before the washing.

#### Machine operation process

The operator places the secondary cover on the top of the lid and the battery is conveyed to the working space, where it will be pressed automatically before the battery is sent to the next process.

#### Features

- Digital timer control system
- For all types of car battery
- Easily changeable, adjustable mold
- State of the art guide rail design to avoid any damage to the battery surface.
- If air pressure is insufficient, the machine will go into auto-stop and trigger the alarm.
- Production capacity: 320-360 pcs/h at 12 V
- Stainless steel (SUS-316) and PU.

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#### Air/power consumption

- 1 or 3 phases, voltage and frequency according to the customer's specifications
- Power consumption: 200W
- Compressed air consumption: 54.72 NI/min at 6 kg/cm<sup>2</sup>

#### Machine outlook

- Dimension: 1350 (L) × 930 (W) × 1675 (H) mm
- Weight: 300 kg



## SEMIAUTO TOP COVER LEAK-TESTING MACHINE

### Model: AT-10CS

#### Function

Tests the battery top cover for possible leakages after the heat sealing process.

#### Machine operation process

The operator loads the battery on the working area and pushes the START button. The testing device blocks two vent holes and blows air through the indicator hole. If no leakage is detected, the battery is qualified and sent to the next working station.

- Easily changeable and adjustable mold
- If air pressure is insufficient, the machine will go into auto-stop and trigger the alarm.
- Capacity: 80-120 batteries/hour
- Workable range:
  - Max: 400 (L) × 105 (W) × 250 (H) mm
  - Min: 68 (L) × 46 (W) × 100 (H) mm
- Stainless steel (SUS-316)

#### Air/power consumption

- 3 phase or 1 phase, voltage and frequency according to the customer's specifications
- Power consumption: 0.3 KW
- Compressed air consumption: 103.84 L/min at 6 kg/cm<sup>2</sup>

#### Machine outlook

- Dimension: approx. 1000 (L) × 600 (W) × 1850 (H) mm
- Weight: approx. 350kg





## AUTOMATIC POST BRUSHING MACHINE

### Model: PB-20AC

#### Function

After the acid filling process, this machine will brush the battery's post terminals in order to achieve the best quality before the battery is packed into the carton box.

#### Machine operation process

The brushing heads will brush the post terminals of 2 batteries at the same time. Finally, the batteries will be transferred to the next process.

#### Features

- Suitable for NS40-N200 automotive batteries
- Easily configurable touch screen control panel
- Suitable for all types of automobile battery
- Easily changeable and adjustable mold
- State of the art guide rail design, prevents damage to the batteries' surface.
- If air pressure is not enough, the machine will stop and trigger an alarm.
- Capacity: 320-360 pcs/h at 12 V



#### Air/power consumption

- 1 or 3 phases, voltage and frequency according to the customers' specifications
- Power consumption: 2 KW
- Compressed air consumption: 54.72 NI/min at 6 kg/cm<sup>2</sup>

#### Machine outlook

- Dimension: 2000 (L) × 1140 (W) × 1835 (H) mm
- Weight: 650 kg



## AUTO. CAR BATTERY WASHING AND DRYING MACHINE

### Model: BWD-10AC



### Function

This machine is used for automatically washing and drying the batteries after the acid filling.

### Machine operation process

The batteries are first sprayed with high pressure water and brushed on the front, rear, left, right and upper area using a brusher and a water spraying system. Before the drying, they are washed with fresh warm water (40°C) to make sure the acid has been properly removed. Finally, the batteries are dried with compressed air.

### Features

- HMI touch screen control system
- Battery jam detection system
- Stainless steel (SUS-316) frame and PE wrapped, easily replaceable conveyor
- Capacity: 320-360 pcs/h

### Air/power consumption

- 1 or 3 phases; voltage, frequency according to the customer's specification
- Power consumption: 2 KW
- Comp. air: 23.55 NI/min (6 kg/cm<sup>2</sup>)

### Machine outlook

- Dimension: 5300 (L) × 1200 (W) × 1600 (H) mm
- Weight: 850 kg



## FULLY AUTO. CAR BATTERY LABELING MACHINE

### Model: BL-20AC

#### Machine (side labeler + top labeler + tamp blow type)

- Side label size: 15-180 mm (H); 15-500 mm (L)
- Top label size: 10 to 100 mm (H); 10 to 100 mm (L)

#### Applications

- Product: battery
- Product size: 50 mm-550 mm (L); 30 mm-300 mm (W); 50 mm-260 mm (H)
- Product shape: rectangular/flat
- Label material: pre-cut paper adhesive labels in roll form.
- Output speed: 3-5 pcs/min

#### Specifications

1. Control cabinet consists of:
  - High grade steel construction housing
  - 5" touch screen HMI (PROFACE)
  - Made in Japan (Mitsubishi) PLC control system
  - On/off switch, emergency stop button, conveyor speed adjustment knob
2. Strong and durable machine frame consists of:
  - Stainless steel panel and frame
  - 4 units of swivel caster and level pads
3. Infeed/outlet roller conveyor consists of:
  - 3500 (L) × 300 mm (W) PVC roller conveyor
  - Stainless steel panel and stainless steel frame bracket
  - 4 units of level foot pads
  - Conveyor height adjustment from 850 mm-950 mm
  - Variable speed AC motor with inverter (adjustable up to 15 m/min)
  - Photoelectric product sensor with microtuner (German made: SICK brand)



- Rotary encoder to ensure labeling quality and accuracy.
4. Two units of labeling heads:
- One for side labeling, one for top labeling
  - Main construction in stainless steel and aluminum alloy frame
  - Driven by a variable speed step motor with made in Japan driver (Oriental brand), which is adjustable up to 25 m/min.
  - Anodized aluminum alloy, stainless steel and molded rubber rollers and web tension arm
  - Photoelectric sensor (German made, SICK brand) with microtuner
  - Adjustable labeling head height (through a lead screw, by a hand-wheel with a counter)
  - Lateral adjustment of the labeling head (from the side of the labeler by a hand-wheel with a counter)
  - Label roll disks and wasted paper rewind spool
  - Labeling head for tamp blow purpose only (label size up to 100 × 100 mm)
5. Tamp blow assembly consist of:
- Pressure regulator, filter and lubrication unit
  - Air cylinder (German, FESTO brand)
  - Vacuum generator
  - Vacuum pad for picking & placing the labels onto the labeling object.
  - Different size labels require sized pads.
  - Adjustable height (through a hand wheel with counter)
6. Product separating cylinder (FESTO brand, German made)
7. The conveyor and label dispensing speed can be synchronized in the PLC.

## Features

- Coding speed: 120-140 pcs/h
- Driven by an AC motor with gear box
- Activated by the photoelectric sensor



- Adjustable temperature control device
- Included: 2.0 mm zinc type; letters (A-Z) × 3 sets; number (0-9) × 7 sets; slug (MFG, EXP, LOT) × 2 sets
- The type holder (chase) has three rows, each of which can fit 10-14 types, depending on the ribbon width.
- Additional changes to be quoted upon customer request.

### Air/power consumption

Power source: AC 220 V, 50/60 Hz, 1 Phase

### Machine outlook

- Dimension: 3500 (L) × 2050 (W) × 1600 (H) mm
- Weight: 350 kg





## AUTO. CONTAINER ROTATING SCREEN PRINTING MACHINE

Model: BSP-10AM

### Functions

Used for printing the battery containers from different sides, automatically rotating them for that end.

### Operation process

The battery containers are automatically conveyed and positioned. A fixture descends to clip the containers, rotating them 90 degrees and putting them back on the conveyor, so that they can be sent to the printing station.

### Features

- Suitable for use with all conventional and MF types of motorcycle battery
- Capacity: 300-360 pcs/h
- Auto-stop (no feeding) and auto-start (refeeding) system
- State of the art guide rail design to prevent damage to the batteries' surface.



### Air/power consumption

- Electricity: 1 or 3 phases, voltage and frequency according to the customer's specifications
- Electricity consumption: 2.39 KW.
- Compressed air consumption: 42.98 nl/min At 6 kg/cm<sup>2</sup>

### Machine outlook

- Dimensions: approx. 1,675 (L) × 755 (W) × 1,580 (H) mm
- Weight: 250 kg



## MULTI-FUNCTION CHARGER AND DISCHARGER

### Model: NT10CCD 300-3

#### Function

- Suitable for use with formed or unformed battery plates

#### Features

- 10" touchscreen control panel
- The machine's 10 charging units can be individually or simultaneously set up and activated using the touchscreen HMI.
- The machine can simultaneously perform the same operation in all units or individual charge and discharge operations for each process.
- Each step's charge, discharge and hold functions, as well as the voltage and current value and working time (0-00 h 59 min) can be freely set up; it is also possible to set up the automatic operation variables.



- 3 control functions are available for each step: voltage, current and time.

Note: following charging functions can be set up: CC (constant current), FV (final voltage), LV (limited/constant voltage), HOLD (stationary settle down), V/T (dual time/voltage control).

- This machine can store 56 groups of programs, each of them containing 20 segments (STEPS) that can be freely set up and executed in each cycle.
- Equipped with a monitoring function that detects anomalies in each circuit's DC output current; its upper and lower limits can be set up (0-1 A).
- Power outage memory function.
- Time, voltage, current, and AH are shown on the touchscreen display.
- Accuracy: 10%
- Protective devices: (1) AC input side NFB switch; (2) high speed fuses; (3) automatic trip/correction in case of lack of power source input or reverse phase; (4) surge voltage absorption; (5) DI/DT; DV/DT; (6) soft start; (7) limited voltage and current.



## Specifications

- Each circuit's output voltage: max. DC 300 V
- Each circuit's output current: DC 0.5-3.000 A

## Control mode

- Directly set up, controlled and graded from the machine itself.
- From an external computer, using the network functions.

## Spare parts

- Fuses of every type used in this machine (×100%)

## Power source

- AC 3Ø 380V 50HZ



## MULTI-FUNCTION CHARGER AND DISCHARGER

### Model: NT2CCD 300-50

#### Function

- Suitable for use with formed or un-formed battery plates

#### Features

- 10" touchscreen control panel
- 2 or more charging units can be started or set up simultaneously or individually.
- The machine can simultaneously perform the same operation in all units or individual charge and discharge operations for each process.
- Each step's charge, discharge and hold functions, as well as the voltage and current value and working time (0-00 h 59 min) can be freely set up; it is also possible to set up the automatic operation variables.
- 3 control functions are available for each step: voltage, current and time.

Note: following charging functions can be set up: CC (constant current), FV (final voltage), LV (limited/constant voltage), HOLD (stationary settle down), V/T (dual time/voltage control).

- This machine can store 56 groups of programs, each of them containing 20 segments (STEPS) that can be freely set up and executed in each cycle.
- Equipped with a monitoring function that detects anomalies in each circuit's DC output current; its upper and lower limits can be set up (0-15 A).
- Power outage memory function.
- Time, voltage, current, and AH are shown on the touchscreen display.
- Accuracy: 1%
- Protective devices: (1) AC input side NFB switch; (2) high speed fuses; (3) automatic trip/correction in case of lack of power source input or reverse phase; (4) surge voltage absorption; (5) DI/DT, DV/DT; (6) soft start; (7) limited voltage and current.





## Specifications

- Each circuit's output voltage: max. DC 300 V
- Each circuit's output current: DC 1.5-50.0A

## Control mode

- Directly set up, controlled and graded from the machine itself.
- From an external computer, using the network functions.

## Spare parts

- Fuses of every type used in this machine (×100%)

## Power source

- AC 3Ø 380 V 50 Hz



## MULTI-FUNCTION BATTERY CHARGER

### Model: NTCCDR 300/200

#### Features

- 10" touchscreen control panel and buttons.
- Up to 90 2 V batteries can be charged at the same time.
- The machine can simultaneously perform the same operation(s) in all units as well as individual charge and discharge operations.
- Up to 20 fully automated processes (STEPS) can be freely set up and executed.
- Each step's charge, discharge and hold functions, as well as the voltage and current value and working time (0-00 h 59 min) can be freely set up.
- 3 control functions available for each step: voltage, current and time. **Note:** Following charging functions can be set up: CC (constant current), LV (limited/constant voltage), HOLD (stationary settle down), V/T (dual time/voltage control).
- Power outage memory function.
- Accuracy:  $\leq \pm 1\%$
- Protective devices: (1) AC input side NFB switch; (2) high speed fuses; (3) auto. trip/correction in case of lack of power input or reverse phase; (4) surge voltage absorption; (5) DI/DT, DV/DT; (6) soft start; (7) limited voltage and current.



#### Specifications

- Charge and discharge current: DC 2.0-200.0 A
- Each circuit's output voltage: max. DC 300 V

#### Power source

- AC 3Ø 220V 60Hz (a different source can be used at the customer's request).

#### Spare parts

- Fuses of every type used in this machine (×100%)



## CHARGER AND DISCHARGER

### Model: NTFCCR150/700

#### Function

- Plate formation

#### Features

- Output voltage: max. DC 150.0 V, can be continuously set up.
- Charging output current: can be continuously set up (up to a maximum value)
- Equipped with 10 color touchscreen control panels (in Chinese) and buttons.
- Each step's charge, discharge and hold functions, as well as the voltage and current value and working time (0-00 h 59 min) can be freely set up; it is also possible to set up the automatic operation variables.
- 3 control functions are available for each step: voltage, current and time.

Note: following charging functions can be set up: CC (constant current), FV (final voltage), LV (limited/constant voltage), HOLD (stationary settle down).

- This machine can store 56 groups of programs, each of them containing 20 segments (STEPS) that can be freely set up.
- Equipped with a monitoring function that detects anomalies in each circuit's DC output current; its upper and lower limits can be set up (0-15 A).
- Power outage memory function.
- Time, voltage, current and AH are shown on the touchscreen display.
- Accuracy: 1%
- Sampling: by force (at the beginning and at the end of each segment); periodically (at configurable intervals, between 1 s and 99 h 59 min 59 s).
- Built-in testing data storage function: after the test, data can be accessed by PC and saved in a text file; analytic charts and tables can be generated using Microsoft Excel and other similar programs.
- Network connection: Ethernet
- Protective devices: (1) NFB control loop (no fuse switch); (2) DC output switch (positive or reverse charge); (3) high speed fuses; (4) auto. trip/correction in case of lack



of power source input or reverse phase; (5) surge voltage absorption; (6) DI/DT, DV/DT; (7) soft start; (8) limited voltage and current.

## Specifications

- DC 150.0 V
- Charging current: 7-700 A

## Control mode

- Directly set up, controlled and graded from the machine itself.
- From an external computer, using the network functions.

## Spare parts

- Fuses of every type used in this machine (×100%)

## Cooling

- Oil immersed transformer rectifier, isolation transformer and reactor

## Power source

- AC 3Ø 380V 50 Hz





## AUTOMATIC CHARGER (10 CIRCUITS) Model: BTS-10C300/1

### Functions

This system includes a 10 circuit charger. Each single circuit can be controlled, operated and directed independently.

### Features

- Charge voltage: MAX DC 300 V
- Charge current: DC 0-1.000 A, continuous, adjustable and constant current control
- Control accuracy:  $\pm 1\%$
- Timer: 0-99H59M, adjustable
- When power is interrupted during operation, the working time will be memorized, so that the machine can restart automatically once power is recovered.
- Frequency of use: can be used continuously.
- Protection devices: AC input side NFB switch; fuses; DI/DT; DV/DT; surge absorption; reverse polarity; current, voltage limit.
- If the charge circuit encounters an open circuit, an indicator will light up; triggering an alarm and closing the charger.
- Voltmeter, ammeter and timer with digital display
- Spare parts: various fuses (50%)

### Air/power consumption

Power source: AC 1 $\emptyset$ , 220 V, 50 Hz

### Machine outlook

Machine dimension: 700 (L)  $\times$  750 (W)  $\times$  1800 (H) mm



BATTERY TECHNOLOGY SOURCE CO., LTD.



## BATTERY CHARGER WITH MICROCOMPUTER CONTROL FOR PLATE FORMATION

Model: BTS-NCC200/350S



### Applications

Plate formation

### Functions

- Charge output current: as shown in specification, continuously settable
- Controlled by a microprocessor and operated with digital keying.
- Charge and hold functions, as well as voltage and current can be set up separately for each individual step.
- Each step consists of voltage/current/time control functions.
  - Control function:
    - CC (CONSTANT CURRENT); FV (FINAL VOLTAGE)
    - V/T (VOLTAGE & TIME DUAL CONTROL)
    - LV (CONSTANT VOLTAGE/LIMITING VOLTAGE CONTROL)
    - HOLD (STATIONARY SETTLE DOWN); PC (PULSE CONTROL)
- Up to 99 schedules (processes) can be saved, and each one can contain 0-21 configurable steps
- Max. total accumulation for the AH value. (0-9999AH)
- The micro controller screen can display each step's execution, operational status, functions and execution time value, as well as battery voltage and the actual value of the output current from device start and the total time and AH values.
- The AH value can be displayed on the screen as well.



- The “In operation” and “operation completed” options show the time, voltage, current, and total accumulated AH values for the operation in execution or the last operation that has been completed.
- When power is interrupted during operation, the working time and AH values will be memorized, so that the machine can restart automatically once power is recovered.
- Voltage/current/time digital display
- DC output switch (change charge or reverse charge)
- Protection devices:
  - AC input side NFB switch
  - High speed fuses
  - In case of power input source lack or reverse phase, it will automatically trip or correct the process
  - Surge voltage absorption
  - DI/DT; DV/DT
  - Soft start
  - Limit voltage; limit current

### Spare parts

- Various fuses 100%

### Air/power consumption

- Power source: AC 3Ø, 415V, 50Hz
- Output voltage: Max. DC 200 V, charge 4-350 A (continuously settable)

### Machine outlook

- Dimension: 810 (L) × 1350 (W) × 1900 (H) mm
- Weight: 1200 kg