

Lead-Acid Automotive Battery Mfg. Equipment



Assembling Line

1. *Plate Lug Brushing & Cutting Machine*

2. *Enveloping & Stacking M/C*

3. *Stack Rotary Table*

4. *COS (Cast On Strap) 5 M/C*

5. *Cell Aligning Machine*

6. *Strap welder & H-voltage Tester*

7. *Heat Sealing Machine*

8. *Terminal Post Builder*
(Automatic Terminal Welder)

9. *Air leak testing machine*

10. *Container Hole Puncher*

Battery Formation Line

1. *Acid Filling Machine*
2. *Formation Chamber & Conveying System*

Finishing Line

1. *Acid Dumping Machine*
2. *Acid Filling & Suction Machine*
3. *Acid Level Check Tester*
4. *2nd. Cover Heat Sealing Machine*
5. *Washing & Drying Machine*
6. *2nd. Air leak testing machine*
7. *High Rate Discharge Tester*

Laboratory Equipment

1. *Battery Life Cycle Tester*
2. *Battery CCA & High Rate Tester*

Battery Manufacturing Equipment

ASSEMBLY

Plate lug brushing & cutting machine

Enveloping &
stacking M/C

Stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

High Rate
Discharge Tester

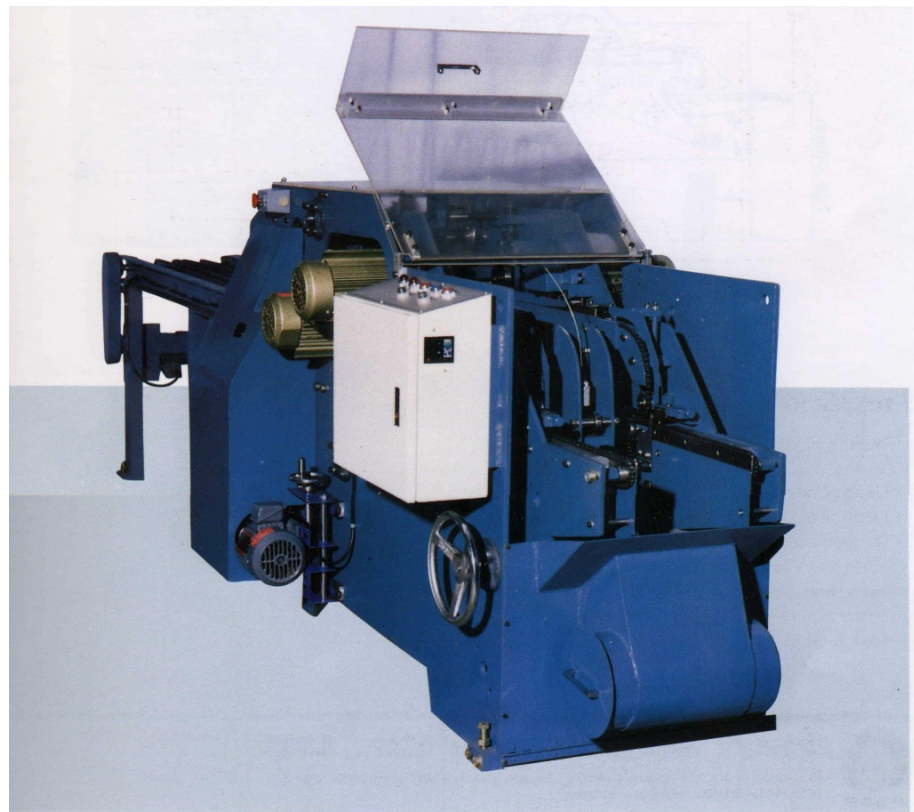
LABORATORY

Battery life cycle
Tester

Battery CCA high
current Tester

■ LUG BRUSHING & CUTTING MACHINE (UN-PCLC)

- ▶ During the sequence of brushing the lugs, trimming then and finally separating the dual panel into 2 plates. This machine ensures high productivity and superior accuracy, providing dustless and clean operation condition when connected to a proper air suction system.
- ▶ Capable up to 150 formed or unformed panels per minute of selected plate types. 4 Rubber coated steel wire brushes eliminate paste and peroxide on lugs efficiently for continuous burning or casting-on-strap
- ▶ Transparent hoods are equipped to specifically retain dusts and remove them through exhaust duct. Which allows visibility for the operator to check the whole operation through these hoods without stopping machine.
- ▶ Circular knives(2 side knives for lug trimming and 1 utter knife for plate cutting) shear panels with almost no vibration.
- ▶ Throughout the cutting panel movement is controlled by the alignment system composed of chain conveyor, side walls and two pairs of rubber wheels, which make it possible to shear panels on just correct and straight line
- ▶ Panel sizes can be changed in minutes with very simple adjustment.
- ▶ Also, knives and brushes can be removed and replaced easily.



* Photos are changeable according to the requirement or new design.

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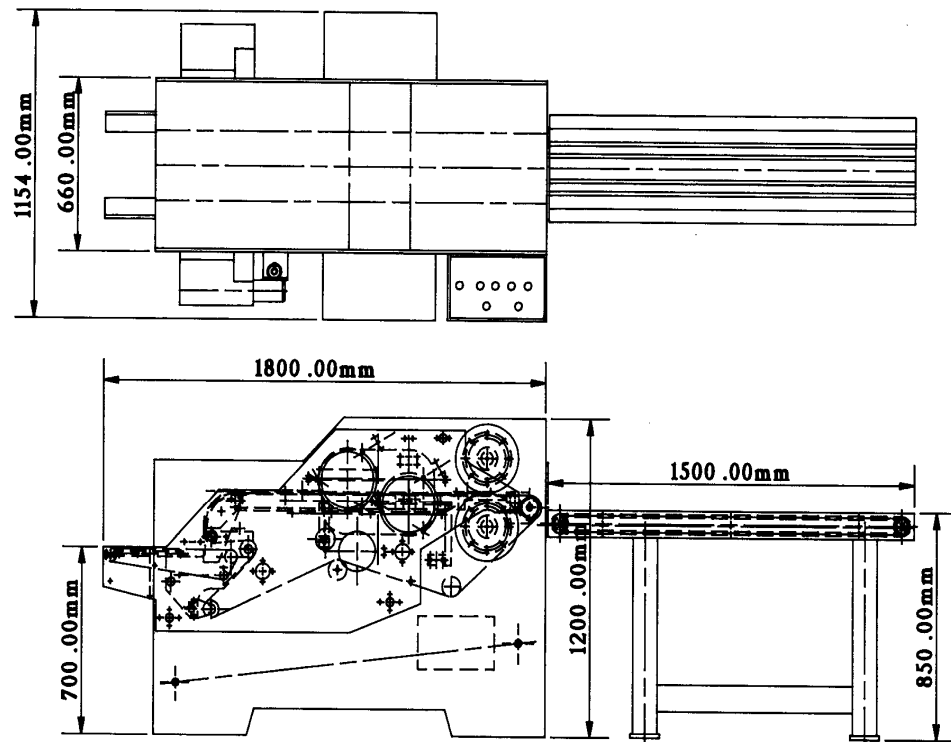
High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA high
current Tester

■ LUG BRUSHING & CUTTING MACHINE (UN-PCLC)



■ Specification

- ▶ Production speed: 80 to 150 double plate per min(according to the panel size)
- ▶ Electrical requirement: 220V/380V, 3 phase, 50Hz(or as required)
- ▶ Product limitation: Width → From 178mm to 356mm
Height → From 80mm to 165mm
Thickness → From 1mm to 4mm
- ▶ Dust duct: 57m³ per minute
- ▶ Electric motors: Main drive motor → 0.5HP / Brushing motor → 1HP
- ▶ Machine weight(approx.): 1270Kg

Drawings are changeable according to the required specification or new design.

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■ ENVELOPING & STACKING M/C (UN2000PE)

- ▶ Cutting the rolled separator in a certain length, enveloping the positive plate, grouping the negative plates, then loading the group to the next equipment.
- ▶ Highly durable structure, fully automatic speed control, automatic Double-plates detecting function with alarm, stopping the equipment, particle extraction for a cleaner working environment.



■ Controls

- ▶ Mitsubishi, Omron or Korea LS of PLC
- ▶ Operation Panel -Touch Screen

■ Inspection or sensors [optional]

- ▶ Unloaded (missed) plate
- ▶ Double plates detecting
- ▶ Pin hole marker

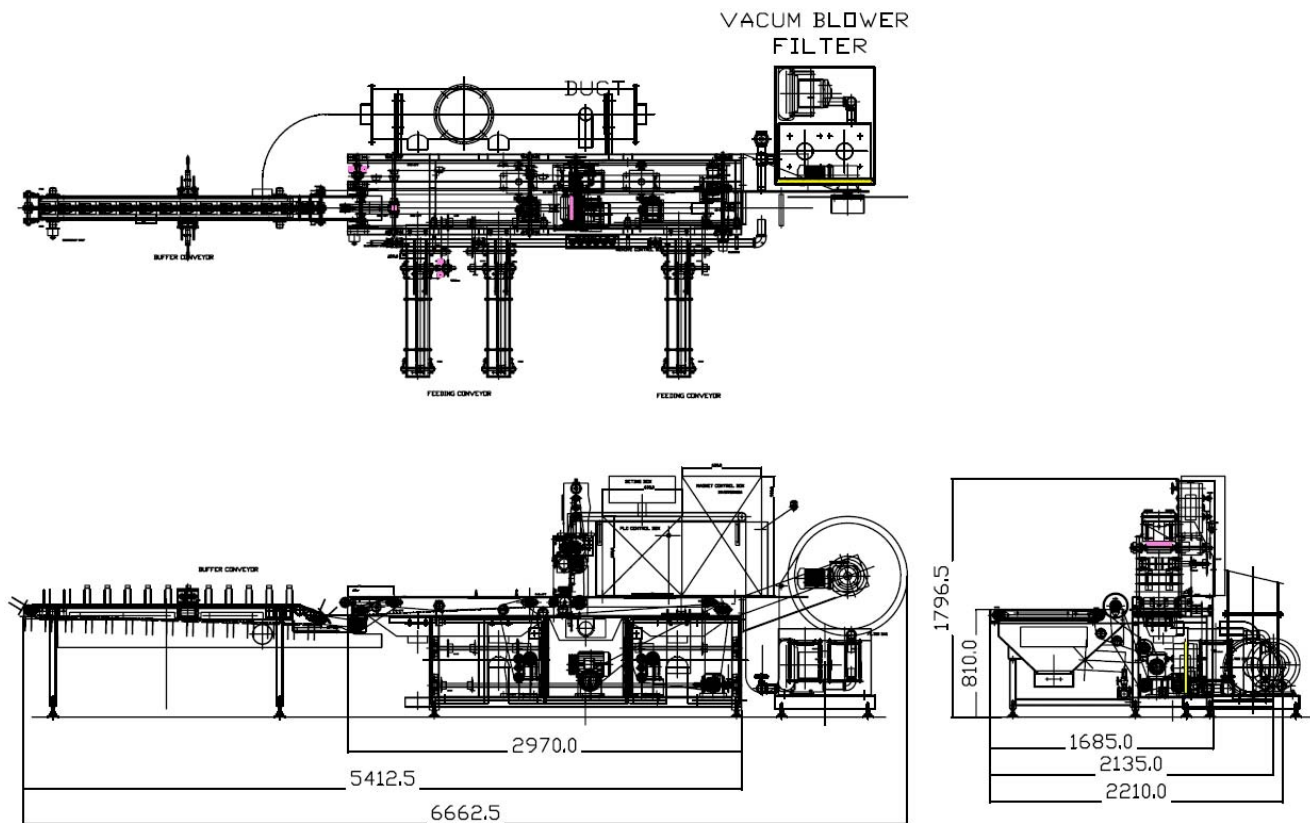
■ Standard Features

- ▶ High quality envelope sealing.
- ▶ Simple adjusting enveloping speed and quantity at a touch screen.
- ▶ Convenient maintenance by simple design.
- ▶ Centrally controlled grease input system for driving parts.
- ▶ Concentration arrangement of dust collecting hood for eco-friendly equipment.

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Battery Manufacturing Equipment

■ ENVELOPING & STACKING M/C (UN2000PE)



■ Specification

- ▶ Plates Type Expanded Metal, Cast Grid : Plates Widths 100 to 150 mm
Plate Heights 100 to 150 mm
Plate Thickness 1 to 2 mm
- ▶ Type of Seal Press weld
- ▶ Separator 255mm ID/1200mm OD
- ▶ Standard of Electrical Power : Specified by Customer
(Basic Electrical Consumption 16 Kw)
- ▶ Included Ventilation system
- ▶ Compressed Air: 0.0028 m³/min
- ▶ Machine Length 622cm , Width 214cm, Height 200cm
- ▶ Machine Weight Approx. 1,600Kg

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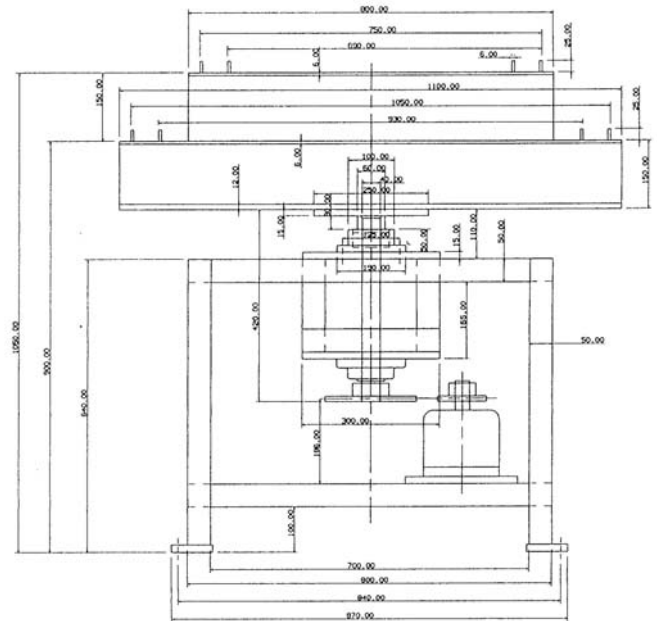
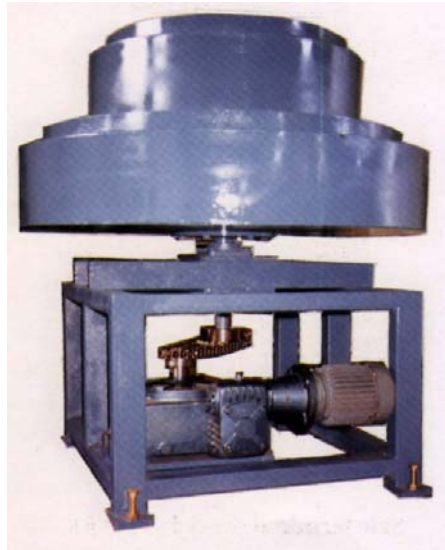
LABORATORY

Battery life cycle
Tester

Battery CCA high
current Tester

■ CELL STACK ROTARY TABLE (UNRT-1100)

- ▶ This equipment is used to accumulate many number of cell plate for COS.
- ▶ For easy work, it's design type is same as turn table.



■ Specification

- ▶ Electricity : 380V, 3phase, 50Hz, 1.5KW
- ▶ Stock capacity : min.700 ~ max.800 cell
- ▶ Motor power : 1Hp , geared 1:400
- ▶ Size : 1200L X 1200W X 1150H
- ▶ Weight : approx. 600Kg

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■ CAST ON STRAP MACHINE (COS-5)

- ▶ There are 4 working positions all, and this machine can do the following four steps automatically control by PLC.
 - First Work-station-plate group loading and alignment, If jig box is inserted, and automatic switch activated alignment is carried out automatically.
 - Fluxing : Brush off the dust on the lugs of plate group, then brush down the lead oxide layer and lead sulfate layer with wire brush, then smear the lugs of plate groups with the brush infused with fluxes evenly.
 - Cast molding station : Molten-lead bath quantitative die-casting, lead liquid transmitting, distributing. lead casting, cooling forming, demoulding in phase etc...For its various function, complex and many technological control point. So it is considered the main core of this machine. Running state of the procedure affects the quality of cast-welding plate groups directly. This procedure of the machine has been completed fully automatically.
 - Unloading table : Groups of cells out, it will be taken out manually and set in the container.



Cell jig Box



Strap Mold

■ Controls

- ▶ Mitsubishi, Omron or Korea LS of PLC
- ▶ Operation panel - Touch Screen
- ▶ Melting Timer
- ▶ Temperature controller

■ Standard Features

- ▶ High quality cell alignment
- ▶ Brush type flux Smearing unit.
- ▶ One touch on/off function of cooling water and heater power during mold change.
- ▶ Possible to adjust lead quantity of lead supply pump by Touch Screen.

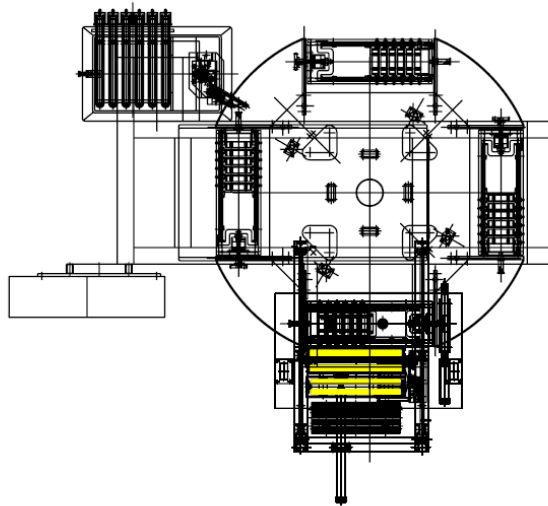
■ Remark

- ▶ Auto Unloader [Optional]
- ▶ Automatic lead ingot feeder [Optional]

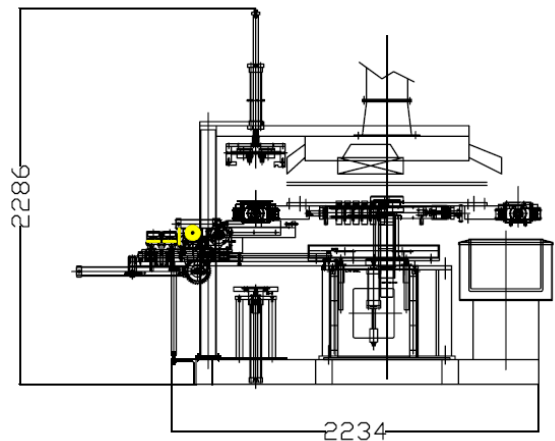
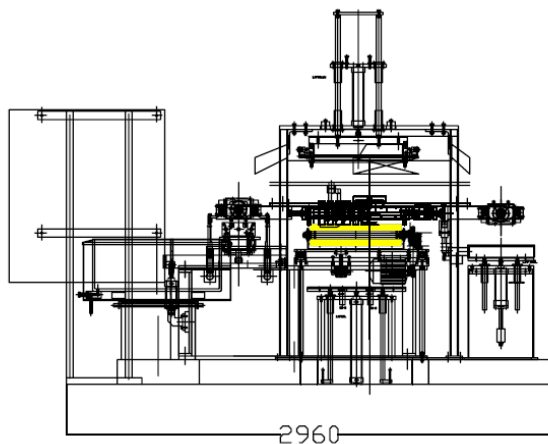
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Battery Manufacturing Equipment

■ CAST ON STRAP MACHINE (COS-5)



C O S M/C



■ Specification

- ▶ Production capacity 1 cycle / 22 to 24 sec.
- ▶ Maximum welding limit: up to 200Ah starter battery
- ▶ Personnel required: 2
- ▶ Electrical requirements : 3phase, 380 Volt, 50Hz or as required. Consumption; 30KW
- ▶ LP or LNG : Required only with gas-heated lead pots(25,200Kcal)
- ▶ Compressed air : 5~6Kg/cm²
- ▶ Water : Softened water 8.0liters/min, 25°C Water pressure > 0.15MPa
- ▶ Casting mold : All batteries are the of 6x1 or 3x1 cell lay out
- ▶ Lead pot : 1,000Kg, easy to load, gas heated lead pot
- ▶ Pouring system : Utilizes well-proven special rotary type lead pump
- ▶ Size : 3,100Lx2,450Wx1,800H(mm)
- ▶ Weight : 2600kg

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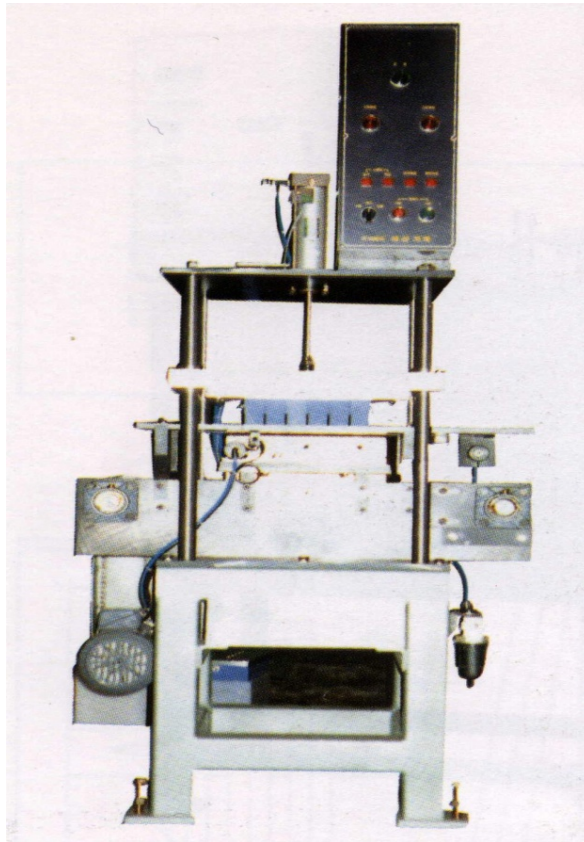
LABORATORY

Battery life cycle
Tester

Battery CCA high
current Tester

■ CELL ALIGNING M/C (UAP-1)

- This equipment used to align the strap of cell group in the container, and so it can decrease the badness during inter strap welding. It can operated simply, and it has much effective. Tool form is same as strap. So it can introduce strap to welding hole position exactly.



■ Standard Features

- Installed Strap Alignment Device
- Material alignment device: Aluminum steel
- Small size & Medium size battery [40 Ah ~ 100 Ah]

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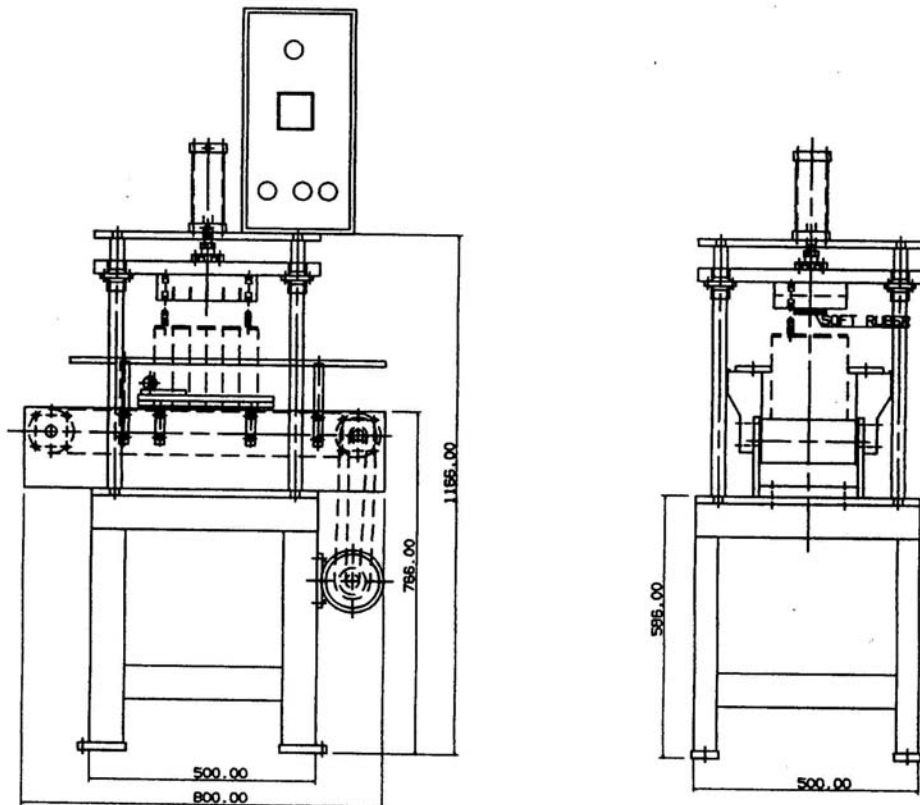
High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA high
current Tester

■ CELL ALIGNING M/C (UAP-1)



■ Specification

- ▶ Production speed : 1 Battery/10sec
- ▶ Power motor : 1/2 HP Geared motor, ratio 1:30
- ▶ Power consumption : 5Kg/cm²
- ▶ Electrical power : 380V, 3phase, 50H/60Hz, 1KW
- ▶ Compressed air : 5~6Kg/cm²
- ▶ Size : 800L X 600W X 1700H
- ▶ Weight : approx. 600Kg

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■ STRAP WELDER & HIGH VOLTAGE TESTER

► UNWD-3

This machine, as standard, produces 'X' mode, in-line cell assemblies, with up to cell 100Ah size batteries

► UNWD-4(not shown)

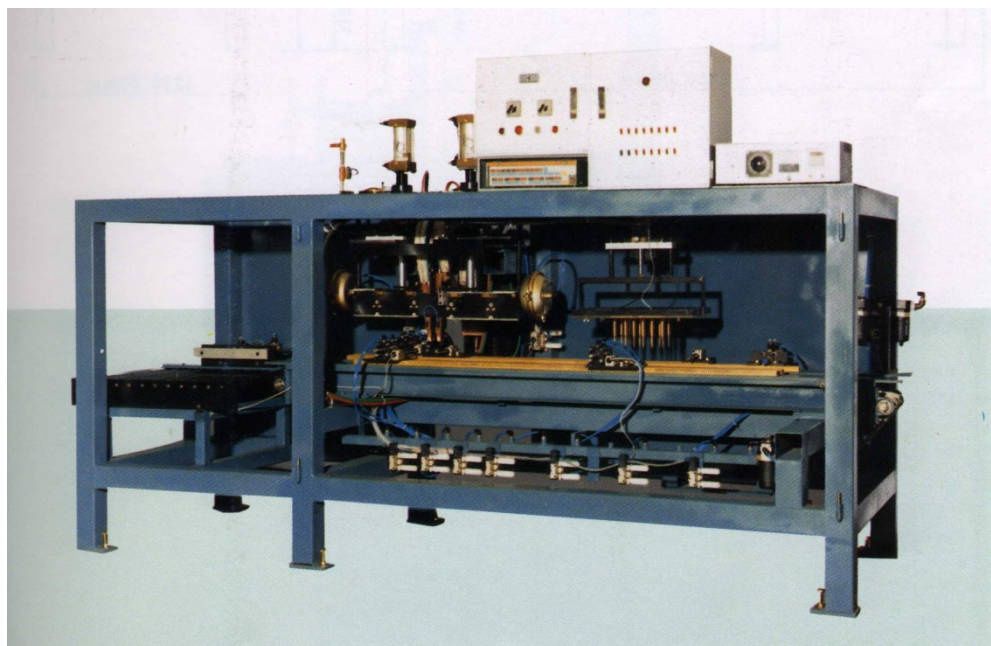
Produces 'X' mode and 'XY' mode cell layouts, up to 200Ah size batteries

This machine include high voltage tester and reject station.

► Features

Fast accurate resetting at changeover using setting gauges to ensure accuracy.

- Welds- 'Formed projection' or 'Pre-cast projection type' connectors.
- No operator required-unattended.
- High response diaphragm cylinder for weld force follow-up
- Solid state thyristor- S.C.R. contractor switched synchronously with first half cycle delayed firing for transient reduction.
- Rubust and precision built to provide the accuracy so necessary for extrusion welding.
- Program is P.L control of all weld sequence time



■ Controls

- Mitsubishi, Omron or Korea LS of PLC
- Operation panel
- Welding Timer

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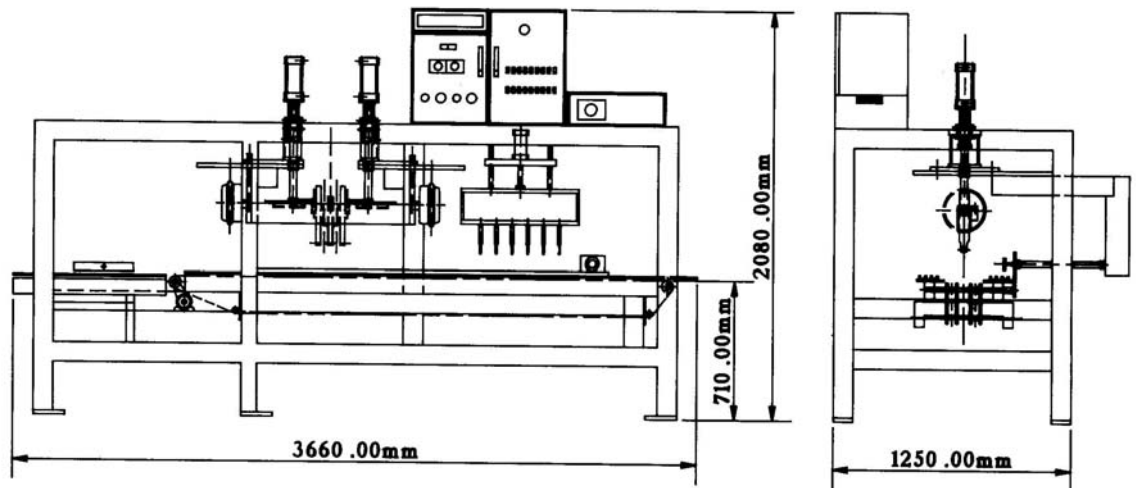
High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA high
current Tester

■ STRAP WELDER & HIGH VOLTAGE TESTER (UNWD series)



■ Inspection

- ▶ Short Tester & Welding inspection

■ Option

- ▶ 2 head (X-mode) type [40Ah~100Ah]
- ▶ 3 head (X-Y Mode) type [120Ah ~ 250Ah]

■ Specification

- ▶ Production speed : 1Batteries/22 to 24 sec
- ▶ Electric requirement : 220/380V, 3phase, 60Hz(or as required)
- ▶ Electric motor : 1HP Geared motor 30:1
- ▶ Transformer : 50KVA
- ▶ Water cooling-12Lts./min
- ▶ Compressed air pressure : 5Kg/cm²
- ▶ Machine weight(approx.) : 1,800Kg

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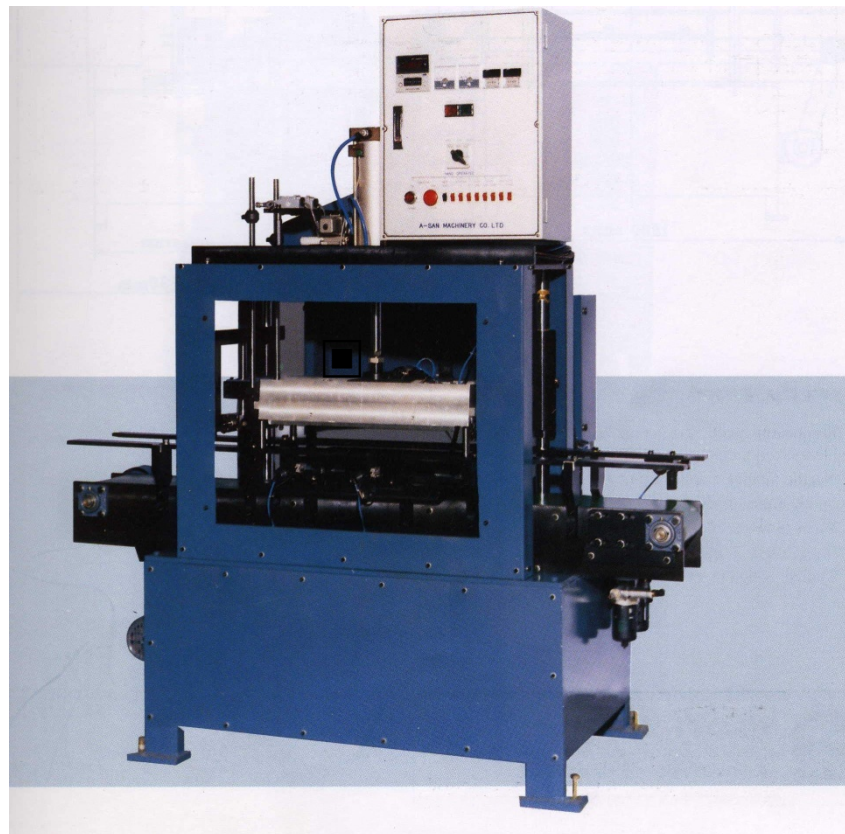
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Battery life cycle
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■ HEAT SEALING MACHINE (UNHS-1)

- ▶ The heat sealing machine (UNHS-1) has been specifically designed for heat sealing of battery containers and covers made of polypropylene.
- ▶ Operation
 - Incoming battery is transported on a driven conveyor to the sealing station, where a pneumatic stopping device locates and vises it at exact position.
 - The battery cover is lifted and held while a heating plate heats and softens the Top of the container and the bottom of the cover.
 - The cover is then clamped with uniform pressure until sealing is completed.
 - Driven conveyor feeds the battery to exit of the line



■ Features

- Accurate time control : Operation process time and heating time accurately.
- Thermostatical control of the temperature of heating plate.
- Adjust ability to any type of automotive/sealed rechargeable batteries :
The holding fizture and the heating plates are can be adjusted or changed easily in minutes.
- One of basic heat platen available for your battery size shall be supplied.

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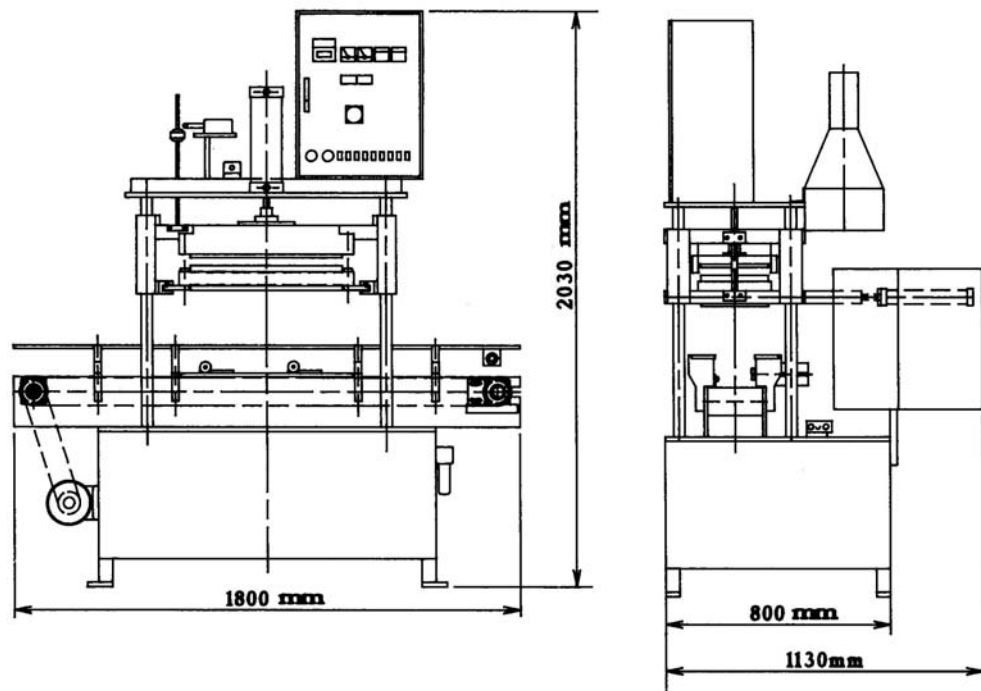
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■ HEAT SEALING MACHINE (UNHS-1)



■ Standard features

- ▶ Installed heat plate & vice clamp device
- ▶ Material device: Aluminum steel
- ▶ Small size & Medium size battery [X-mode, 40Ah ~ 100Ah]
- ▶ Large size battery [X-Y mode, 120Ah ~ 250Ah]

■ Controls

- ▶ Mitsubishi, Omron or Korea LS of PLC
- ▶ Operation panel

■ Specification

- ▶ Production speed : 2.5 batteries/min
- ▶ Heating temperature : Heat plate temp. 340°C ~ 360°C
- ▶ Electrical requirement : 220/380V, 3 phase, 50Hz(or as required)
- ▶ Compressed air pressure : 5 Kg/cm²
- ▶ Machine weigh(approx.) : 960Kg

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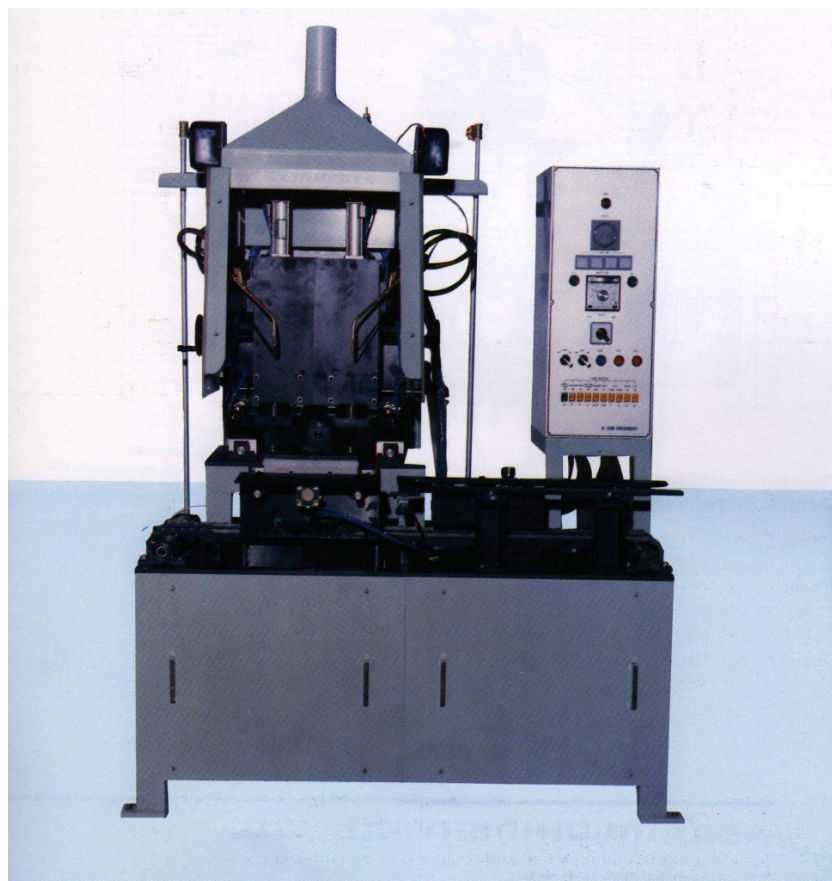
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■ TERMINAL POST BUILDER (UN-PBD)

► Comparison to conventional torch methods, the post forming system UN-PBD provides accurate control of temperature burning time, position and torches movement which ensures consistent result and high productivity.

► Features

- Burning together the poles and the bushings assures superior bonding penetration.
- Programmable microprocessor based design for high efficiency operation.
- High capability handling a shift in 20 seconds.
- Saving energy consumption by reducing the torches flame to pilot condition when they are idle.
- Exact temperature control with the cooling system (water or oil circulation on customer's requirement)
- Quick and easy changeover adjustment to meet various battery poles locations.
- Preformed bushing insert type.



■ Controls

- Mitsubishi, Omron or Korea LS of PLC
- Operation panel
- Welding Timer

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2nd Cover Heat
Sealing M/C

Washing & drying
M/C

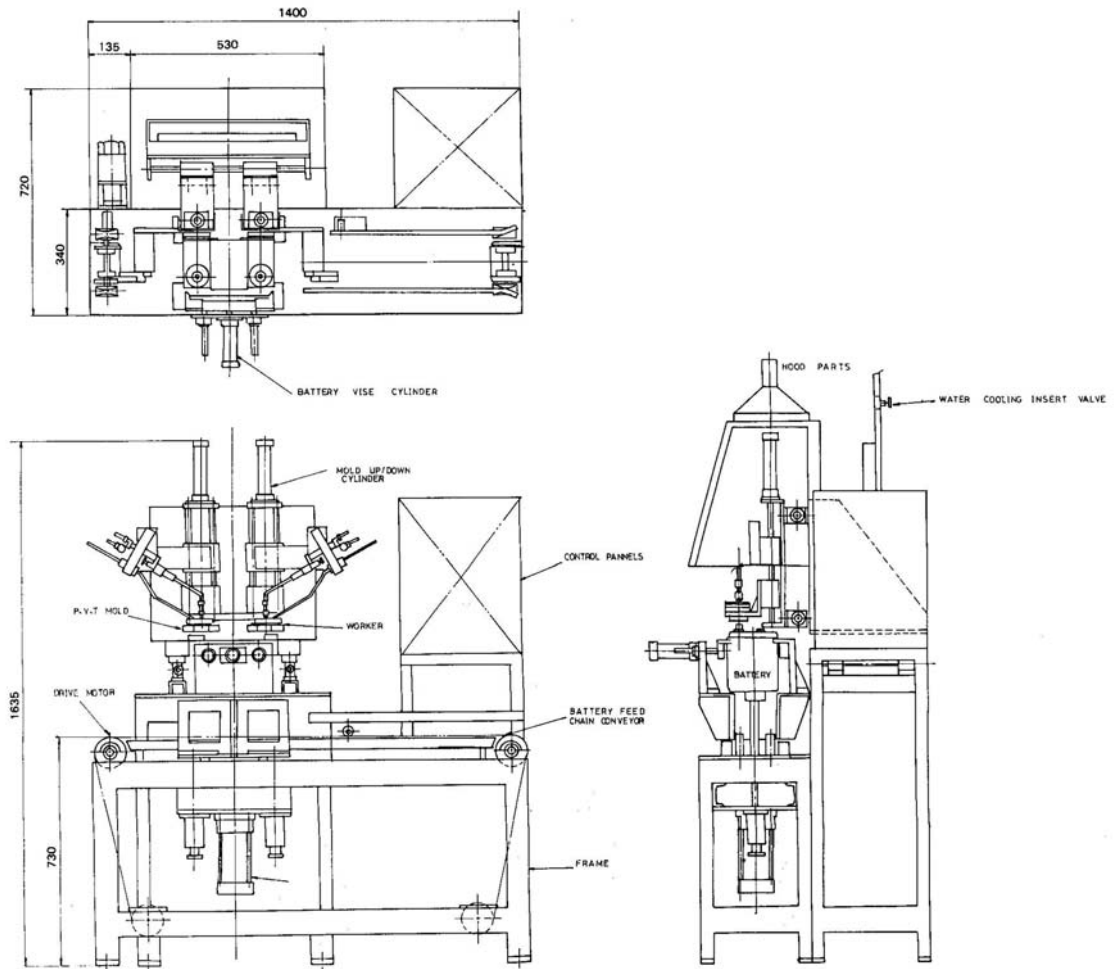
High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA high
current Tester

■ TERMINAL POST BUILDER (UNPBD)



■ Specifications

- ▶ Production speed : 4batteries/min
- ▶ Electrical requirement : 220/380V, 3phase, 50Hz(or as required)
- ▶ Electric motor : 0.5HP Geared motor 50:1
- ▶ Water cooling unit : Electrical heater 3KW
- ▶ Compressed air pressure : 5Kg/cm²
- ▶ Machine weight(approx.) : 800Kg

Drawings are changeable according to the required specification or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

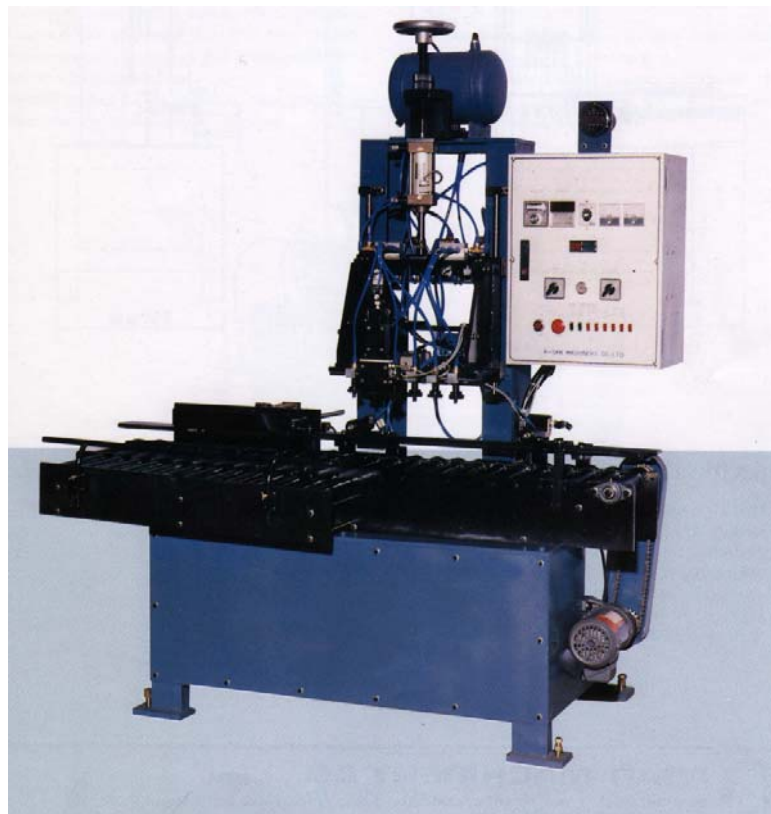
Battery CCA high
current Tester

■ AIR LEAK TEST MACHINE (UN-ALT-01)

► The machine UNLT-T specifically automated and combines the operations of Leakage test and product code carving, which is applied to a wide range of automotive and commercial sized batteries

► Features

- Performing tests to an accuracy of 0.014BAR
- Capability up to 4 batteries per minute.
- Automatic feeding stopping, clamping, testing with pressurized air and product code carving.
- Automatic detecting & rejecting batteries which fail to pass the established pressurized air leak test.
- Product code device requires no additional production floor space or operating personnel.
- Reject station.



■ Controls

- Mitsubishi, Omron or Korea LS of PLC
- Operation panel
- Leak testing timer

Photos are changeable according to the requirement or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

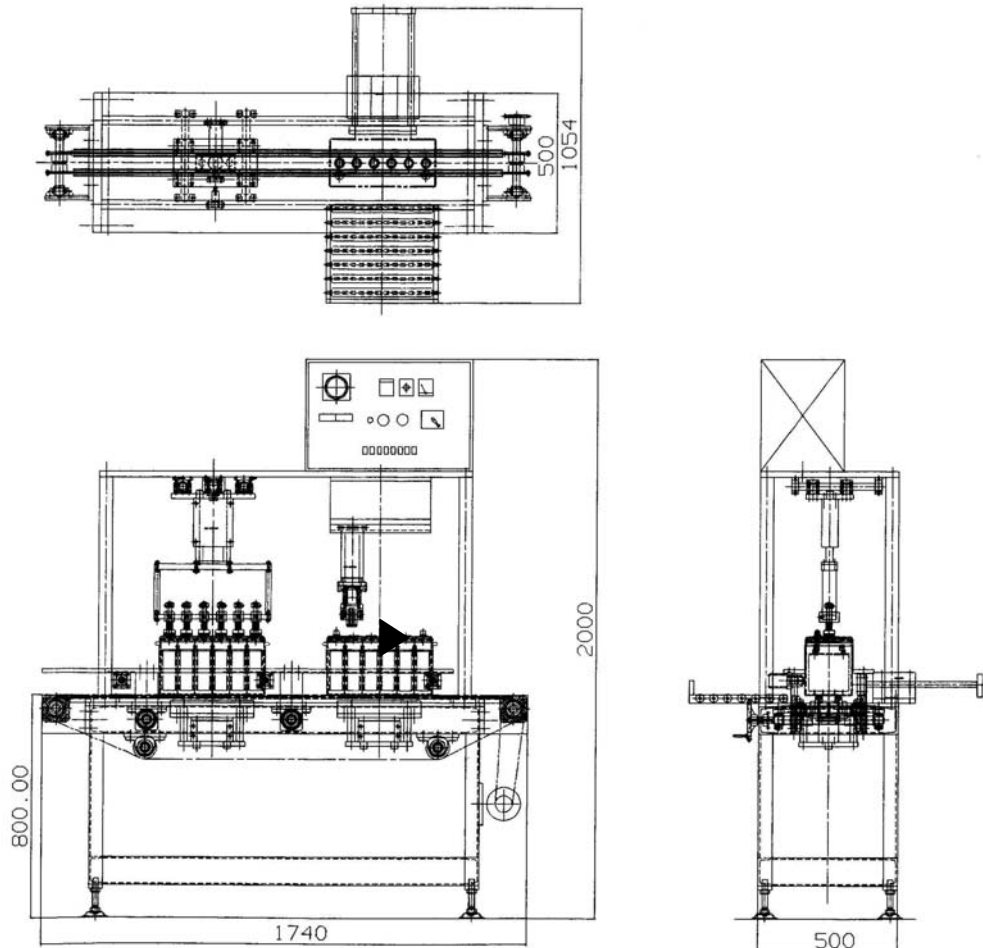
High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA high
current Tester

■ AIR LEAK TEST MACHINE (UN-ALT-01)



■ Specifications

- ▶ Production speed : 4batteries/min(less than 80Ah)
- ▶ Date/code punching time : 1 sec
- ▶ Electrical requirement : 220/380V, 3phase, 60Hz(or as required)
- ▶ Compressed air pressure : 4Kgs/cm²6Kgs/cm²
- ▶ Testing pressure : 1440mm/H₂O(0.014Bar)
- ▶ Electric motor : 0.5HP Geared motor 30:1
- ▶ Machine weight(approx.) : 800Kg

Drawings are changeable according to the required specification or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

High Rate
Discharge Tester

LABORATORY

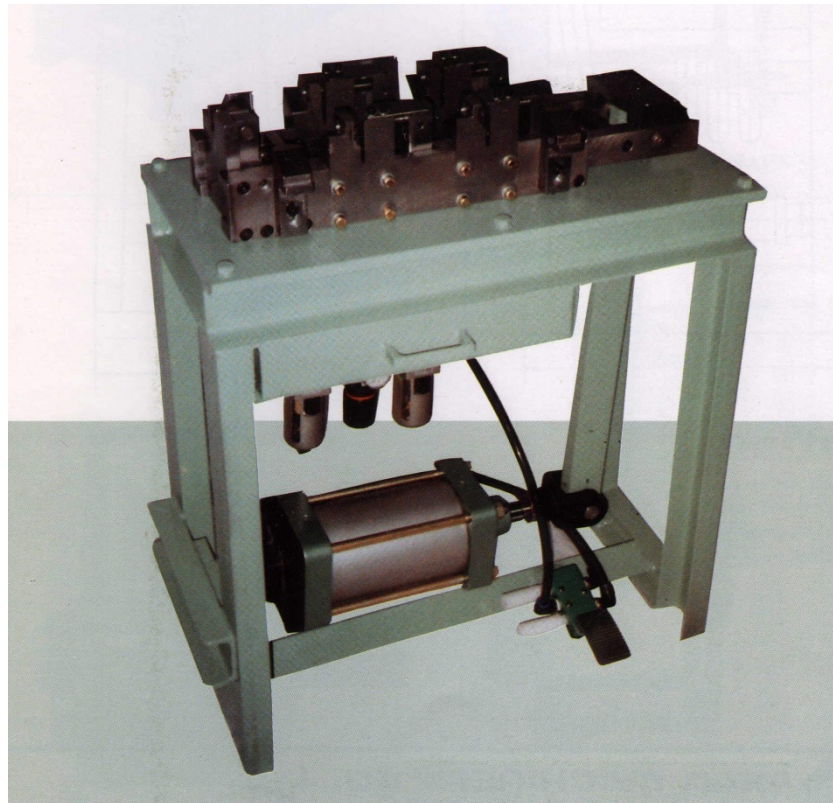
Battery life cycle
Tester

Battery CCA
Tester

■ CONTAINER HOLE PUNCHER (UN-HP-1)

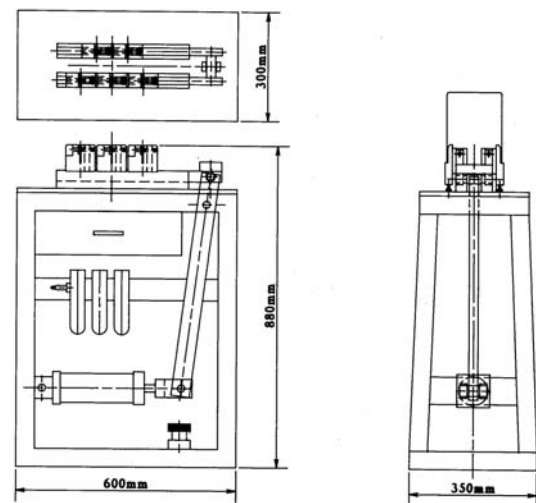
► Pneumatic type hole puncher UNHP-1 makes simultaneously 5 holes in the inter-cell partition on the polypropylene cell container.
In order to punch different types of batteries, the punch head has been designed to be replaced easily.

► Extra heads are supplied on customer's request.



■ Specifications

- Production speed: 10 containers per min.
- Compressed air pressure: 6Kgs/cm²
- Working method: 5 holes per time
- Machine weight (approx.): 100Kg



Photos are changeable according to the requirement or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA
Tester

■ ACID FILLING MACHINE (UNK500AF-1)

- ▶ All of raw material was used SUS316L or PVC to stand acid.
- ▶ Acid filling method is a natural descent in the acid tank and it is ON/OFF system to cylinder nozzle.
- ▶ It was made more simply to use touch panel.
- ▶ It was manufactured to battery model change more simply.
- ▶ The main motor is 1HP and conveyor is pp plastic belt conveyor.
- ▶ To use shuttle stopper, it was prevent to insert 1EA of battery.
- ▶ It was made to control easy to install handle which it was assist easily to control of upper & below of nozzle.
- ▶ To use air cylinder for nozzle, it was easy to control for user.



■ Controls

- ▶ Mitsubishi, Omron PLC or Korea LS
- ▶ Operation Panel -Touch Screen

■ Specifications

- ▶ Production speed: 10 containers per min.
- ▶ Compressed air pressure: 6Kgs/cm²
- ▶ Working method: 5 holes per time
- ▶ Machine weight (approx.): 100Kg

Photos are changeable according to the requirement or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor system

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

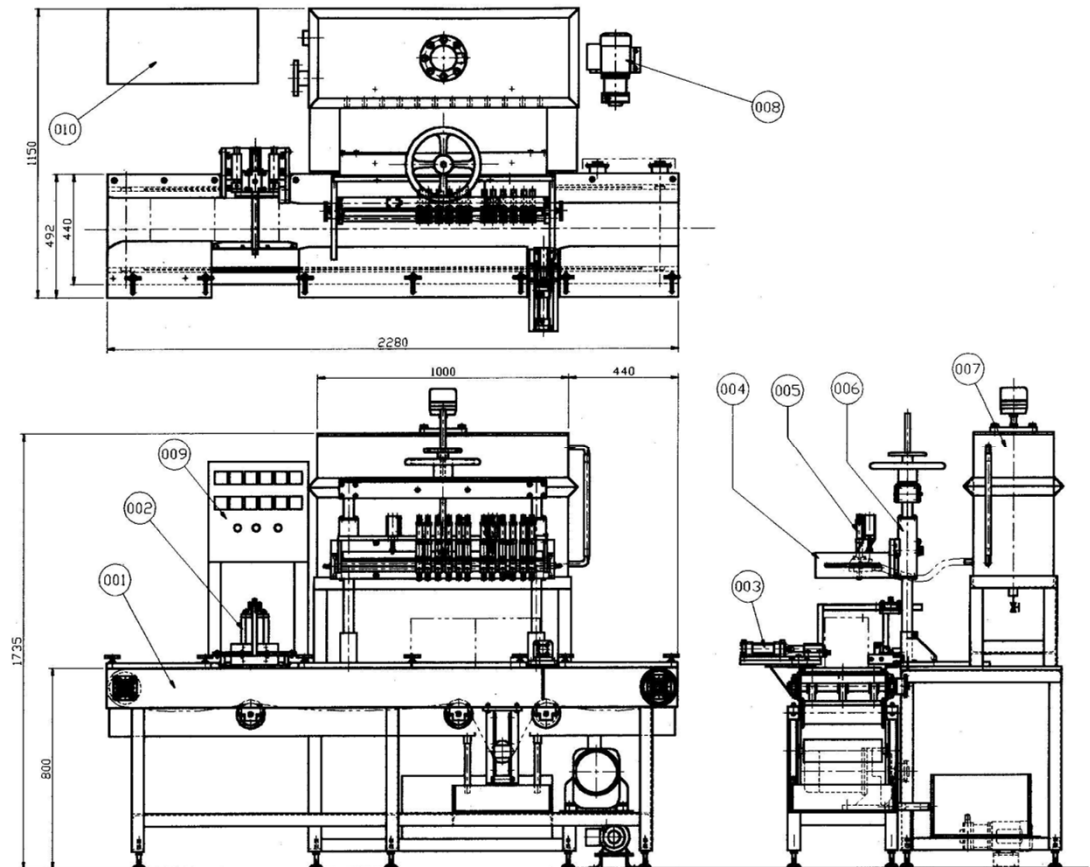
High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA
Tester

■ ACID FILLING MACHINE (UNK500AF-1)



■ Specifications

- ▶ The performance is to work equipment one(1) battery.
- ▶ Production
 - 1) Up to 12V 120Ah: 12 sec per battery
 - 2) From 12V 120Ah to 200Ah: 24 sec per battery
- ▶ The total electricity volume is 2.5kw.
- ▶ The weight of equipment is approx. 500kgs
- ▶ The main sources of electricity is in accordance with specification of buyer.
- ▶ The size of equipment is 2200(L) X 1610(W) X 1970(H)

Drawings are changeable according to the required specification or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

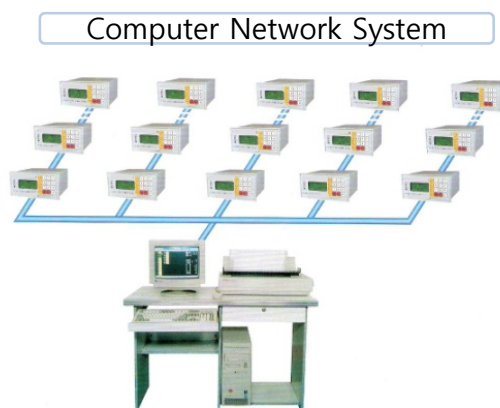
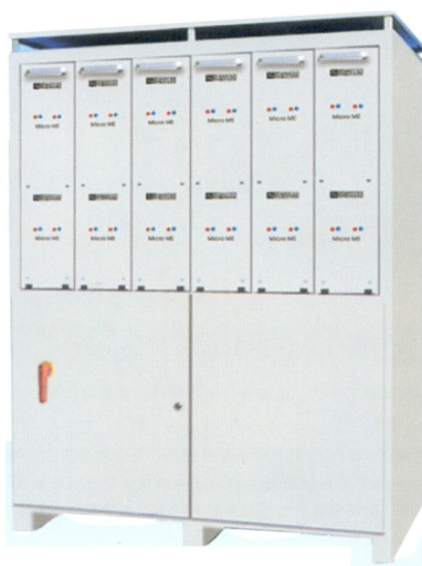
Battery CCA
Tester

■ CHARGING & DISCHARGEIN MACHINE (UNCD)

► APPLICATION: Formation charger/discharger for medium/large-capacity sealed and automotive battery .

► FUNCTION: Setting and storing many formation modes and parameters of different types of batteries. Providing the following operation modes: constant-current charging, constant-voltage charging, constant-voltage with current-limited charging, constant-current with temperature-controlled charging (optional purchase), constant-current with voltage-limited discharging, cycling, static. Step shift by time setting/voltage setting/Ah setting.

► Centre network control and data processing when connected with PC via interface.



■ Specifications

Models	Output Current(A)	Output Voltage(V)	Circuit / Cabinet	Dimension(Cm)			Weight (Kg)
				W	H	D	
UNCD-10A350	10	350	6, 8	100, 120	200	80	800-850
UNCD-25A350	30		6, 8	100, 120			780-850
UNCD-30A350	60		2, 4	100			820-800
UNCD-100A350	100		1, 2	100			590-800
UNCD-200A350	200		1	100			700
UNCD-300A350	300		1	100			780
UNCD-400A350	400		1	100			950
UNCD-500A350	500		1	100			1150

Photos and dimension are changeable according to the requirement or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
loading conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA
Tester

■ BATTERY FORMATION CHAMBER WITH CONVEYOR SYSTEM (UNJAR-HG)

- ▶ The batteries added with acid are conveyed by auto-transport line to the appointed battery formation line, which is connected with the carts. T
- ▶ The side door of battery formation line opens automatically. The batteries in turn go on the boards which separate the batteries. The intervals between the boards are adjustable. After the batteries are properly located, the side door of the battery formation line closes automatically.
- ▶ The cooling water is added automatically to certain height. The pneumatic cylinder automatically opens the observing door. After the battery wiring is connected manually, the observing door is automatically closed.
- ▶ The re-circulating cooling water begins to cool at certain temperature. The suction system begins to exhaust air with heat from the batteries and the air with heat is purified and discharged by outdoor purification system.
- ▶ After the battery formation is finished, the door is opened automatically. The battery wiring is disconnected manually and the cooling water is drained into storage water tank. The batteries are conveyed in the carts through the side door to the lower line and are conveyed to the finishing line.



■ Specifications

The battery formation system for batteries consist of upper line, lower line, carts and a list of battery formation lines. The PP boards and the PP or PVC water tank can resist heavy acid or heavy alkali and all stainless steel support are anti-corrosive.

Photos are changeable according to the requirement or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping MC

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA
Tester

■ ACID DUMPING MACHINE (UNDP-480)

► Application:

It's used for automatic acid dumping of started wet charged lead-acid battery.

► Composition of equipment:

The equipment is composed of rotary unit, reducer, support, pedestal, lead screw hold down fitting, bearing, bearing block, base plate control box (Relay control).

► Feature:

a. Dumper rotates by using screw holding down fittings, ensuring stable operation, durable in use and low motor power consumption.

b. All parts in working station are of 316L, acid dump tank is of PVC.



Photos are changeable according to the requirement or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping MC

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

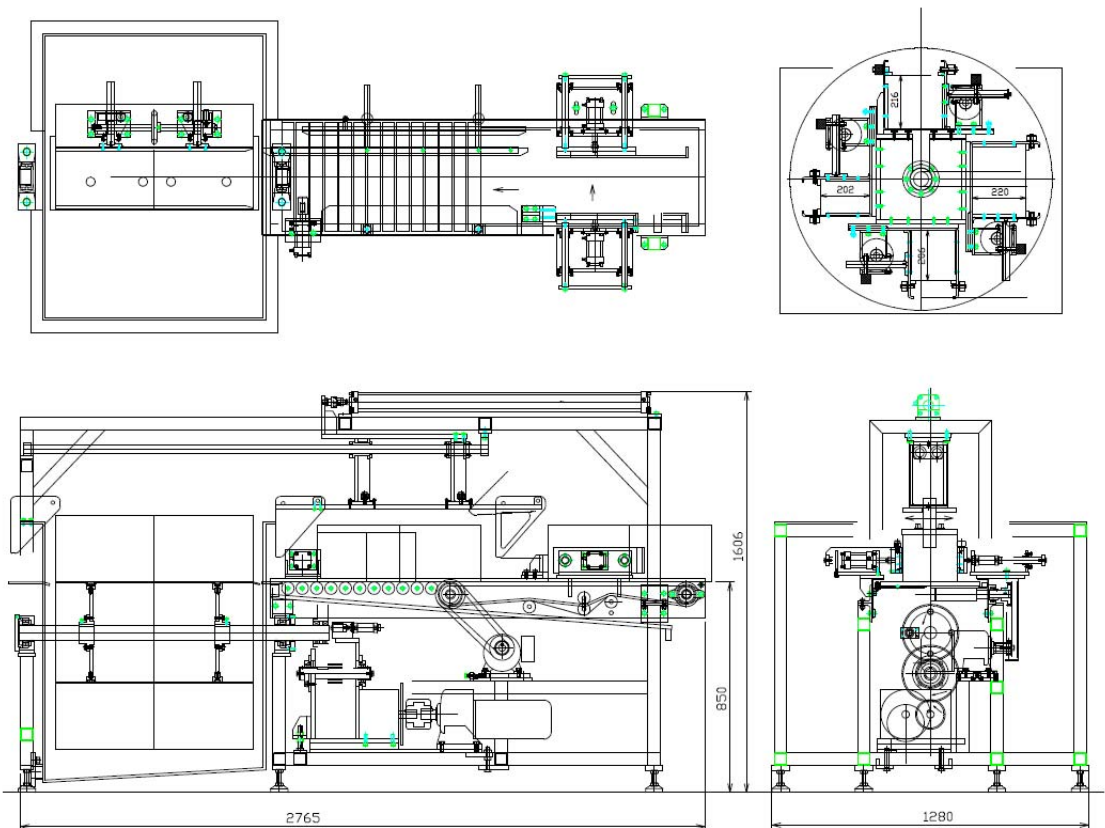
High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA
Tester

■ ACID DUMPING MACHINE (UNDP-480)



■ Specifications

- ▶ Cycle time: 60Ah: 480 batteries/hour
80Ah to 150Ah: 240 batteries/hour
160Ah to 200Ah: 120 batteries/hour
- ▶ Electric power: 4Kw
- ▶ Air pressure: 0.55Mpa, 0.05m³/min.
- ▶ Overall dimension: 3200(L)×1900(D)×2200(H)
- ▶ Weight: 1700Kg

Drawings are changeable according to the required specification or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

High Rate
Discharge Tester

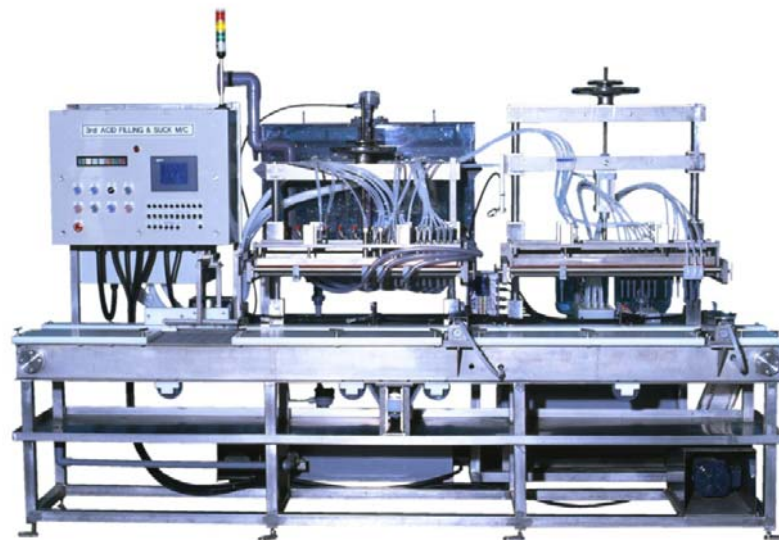
LABORATORY

Battery life cycle
Tester

Battery CCA
Tester

■ ACID FILLING & SUCTION MC (UNK500WT)

- ▶ All of raw material was used SUS316L or PVC to stand acid.
- ▶ Acid filling method is a natural descent in the acid tank and it is ON/OFF system to cylinder nozzle.
- ▶ It was made more simply to use touch panel.
- ▶ It was manufactured to battery model change more simply.
- ▶ The main motor is 1HP and conveyor is pp plastic belt conveyor.
- ▶ To use shuttle stopper, it was prevent to insert 1EA of battery.
- ▶ It was made to control easy to install handle which it was assist easily to control of upper & below of nozzle.
- ▶ To use air cylinder for nozzle, it was easy to control for user.



■ Controls

- ▶ Mitsubishi, Omron or Korea LS of PLC
- ▶ Operation Panel -Touch Screen

■ Features

- ▶ The acid volume to overflow to pump is few to install 2 step of suction tank.
- ▶ Recycle tank was used to Anti-Acid pump.

Photos are changeable according to the requirement or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Machine

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

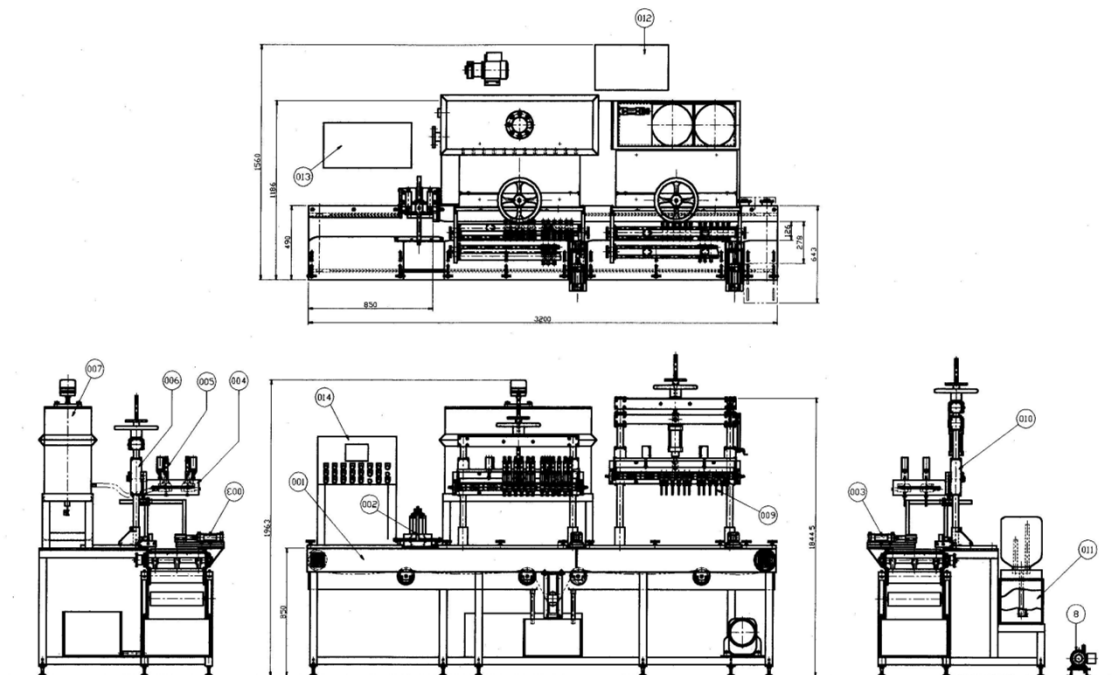
High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA
Tester

■ ACID FILLING & SUCTION MC (UNK-500WT)



■ Specifications

- ▶ The performance is to work equipment one(1) battery (Up to 200Ah). It is 22sec per battery.
- ▶ The size of equipment is 2200(L) X 1610(W) X 1970(H)
- ▶ The weight of equipment is approx. 500kg.
- ▶ The main sources of electricity is in accordance with specification of buyer.
- ▶ The total electricity volume is 2.5kw.

Drawings are changeable according to the required specification or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Tester

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

High Rate
Discharge Tester

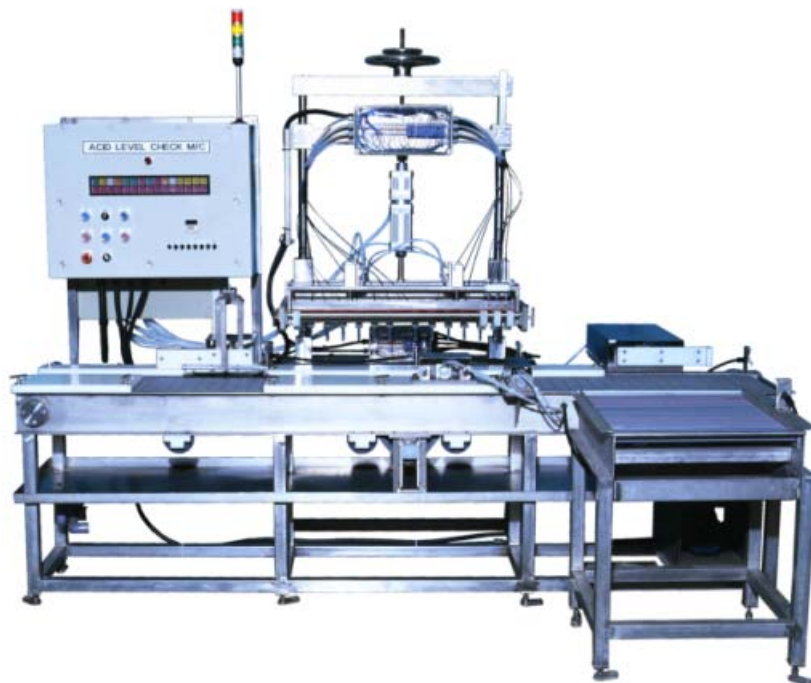
LABORATORY

Battery life cycle
Tester

Battery CCA
Tester

■ ACID LEVEL CHECK TESTER (UNK-LVC)

- ▶ The machine provides leveling of acid for 24~200Ah sealed maintenance free starter batteries.
- ▶ Taking microprocessor as controlling center. Applying home & abroad famous brands for main components and high-class anti-acid/anti abrasion material. Whole engineering-plastic body.
- ▶ Acid leveling quantity and other parameters set with figures on the panel. Possessing the following advantages; compact structure, precise quantity setting, fast speed filling, easy operation and maintenance.



■ Controls

- ▶ Mitsubishi, Omron or Korea LS of PLC
- ▶ Operation Panel -Touch Screen

■ Features

- ▶ Acid-proof stainless steel and PVC construction provides durability and long operation life.
- ▶ The performance is to work equipment one(1) battery.

Photos are changeable according to the requirement or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Tester

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

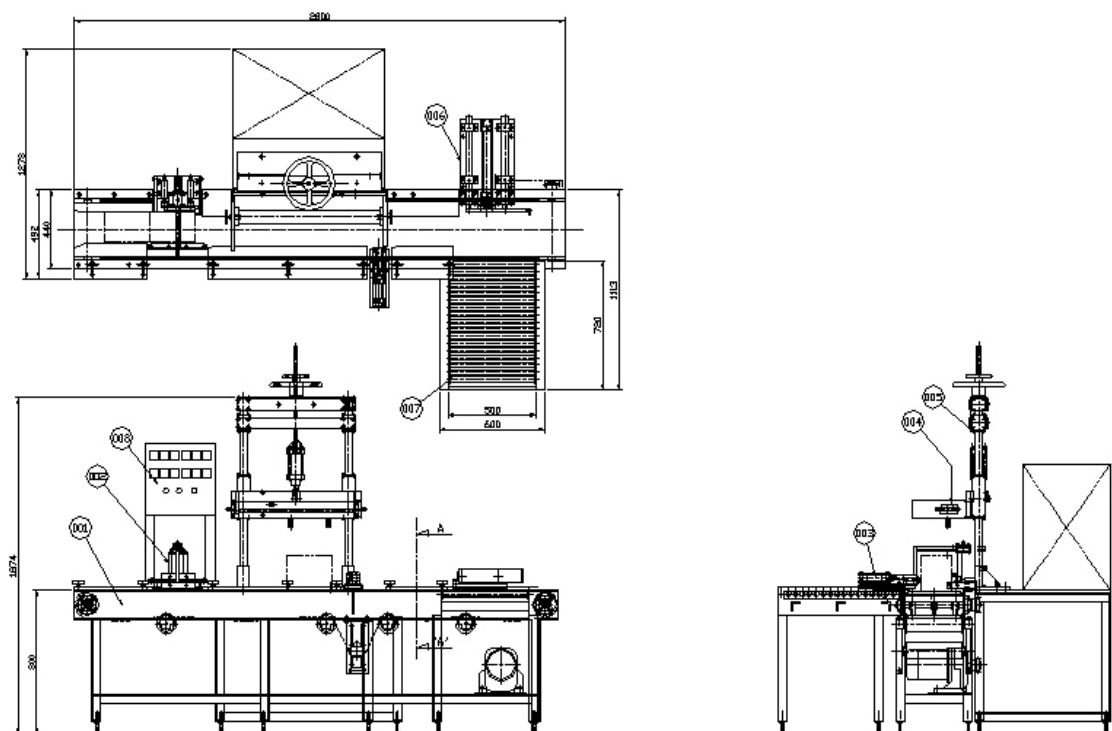
High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA
Tester

■ ACID LEVEL CHECK TESTER (UNK-LVC)



■ Specifications

► PRODUCTION

- 1) Up to 12V 120Ah: 12 sec per battery
 - 2) From 12V 120Ah to 200Ah: 24 sec per battery
- Conveyor speed : 14M/min
 - Electric power : 0.75KW , 380/220V
 - Compressed air : 4 Bar
 - Machine size : 1200W × 2230L × 2000H mm
 - Machine weight : 600kg

Drawings are changeable according to the required specification or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Tester

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

High Rate
Discharge Tester

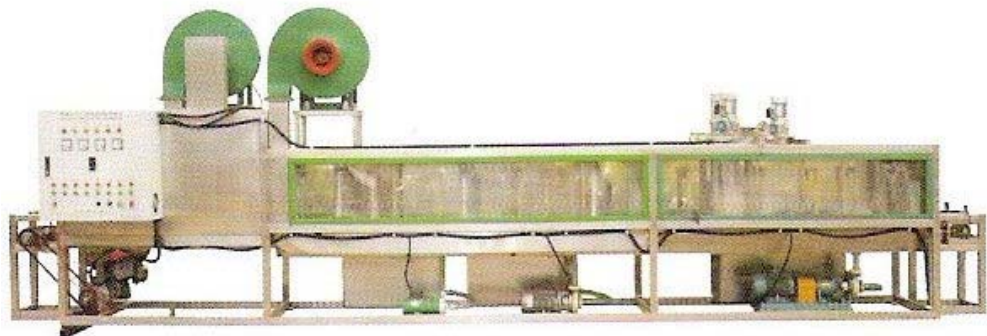
LABORATORY

Battery life cycle
Tester

Battery CCA
Tester

■ WASHING & DRYING MACHINE (UNDWM-750)

- ▶ APPLICATION: It is can be battery washing for the battery 12V 24Ah to 200Ah after formation.
- ▶ Put the water drying battery in the automatically rolling entry, then all the water cleaning drying will be completed and to the next work station.
- ▶ The machine has five work position: flush work position, wash No. 1 work position; wash No. 2 work position; air blower work position; drying work position; water tank and high pressure antiseptis water pump in the three water cleaning working position, the high pressure water can be jet from high pressure spray mouth and clean the battery;
- ▶ Clean work position: the brusher will clean the battery side and top.
- ▶ Air blower work position: compressed air spray mouth, the angel of spray mouth can be adjusted.
- ▶ Curing parts heated by electric, the temperature can be adjusted from 0-90°C.



■ Features

- ▶ All the cleaning and drying procedure is finished in the closed environment, keep the production site clean.
- ▶ Assure the acid of battery surface clean
- ▶ The material is SS304The battery conduct on the entrance of the roller, in case the battery is blocked and incline, the damaged proof structure and the material on the parts of connect with the battery.

■ Specifications

- ▶ Dimension : L7500 × W800 × H2,500
- ▶ Materials : Stainless steel & PVC
- ▶ Electric power : AC380V, 50Hz, 12Kw
- ▶ Capability :120~180 batteries per hour
- ▶ Drying temperature : 0~100°C
- ▶ Machine weight : 2900Kg

Photos are changeable according to the requirement or new design.

Battery Manufacturing equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
Puncher

FORMATION

1st Acid Filling
M/C

Charge &
Discharge M/C

Battery formation
chamber &
conveyor

FINISHING

Dumping M/C

2nd Acid Filling &
suction M/C

Acid Level Check
Tester

2nd Cover Heat
Sealing M/C

Washing & drying
M/C

High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA
Tester

■ HIGH RATE DISCHARGE TESTER (UHRD1500AT)

- ▶ This tester is designed simple, economical to test batteries under high rate condition.
- ▶ The duration of the test is automatically controlled by a 1~10 second timer which may be readily preset to the desired test time by the operator.
- ▶ The digital voltmeter continuously displays the battery voltage and discharge current.
- ▶ If the voltage decreased to less than the minimum preset by operator at anytime during the test, both the final indicator and low voltage indicator are illuminated and/or alarms.



■ Specifications

- ▶ Input power: 3 phase 380V 50Hz (as required)
- ▶ Output: DC 18V 1500A
- ▶ Discharge Method: Constant current method
- ▶ Display: Touch screen panel
- ▶ Discharge power is regenerated back to input AC power source
- ▶ Battery testing range: 12V series
- ▶ Operation panel – Touch screen

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High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA &
high current
Tester

■ BATTERY LIFE CYCLE TESTER (UNCD SERIES)

- ▶ A fully programmable micro processor based charging and discharging system.
- ▶ Suitable for testing all items of electrical performance of different lead-acid batteries.
- ▶ Detecting automatically the service life time of batteries by simulating charging & discharging process in battery real operation.
- ▶ Presetting detection mode and parameters.
- ▶ Storing various detecting process. Providing the following working mode:
Constant current & constant voltage charge(option), cycling, pause, stage-shift in time fixing, voltage fixing, ampere-hour fixing mode. Automatic working data record. Protecting against over-current, over-voltage and open circuit. Power down data storage. Automatic power on recovering. Displaying on LCD working data and cause of troubles. Checking working process and all the data. Interfacing to PC, the device and perform central network control over multiple detection, with the data, current, voltage and Ah curve to be stored and printed.



■ Specifications

MODEL	OUTPUT CURRENT (A)	OUT VOLTAGE (V)	OVERAL DIMENSION(mm)			WEIGHT (Kg)
			WIDTH	DEPTH	HEIGHT	
UNCD-10-18	10	4.5 ~ 18	680	850	2000	520/6 Module
UNCD-20-18	20					550/6 Module
UNCD-30-18	30					580/4 Module
UNCD-50-18	50					600/3 Module
UNCD-100-18	100					500/1 Module
UNCD-200-18	200					600/1 Module
UNCD-300-18	300					700/1 Module

Photos and dimension are changeable according to the requirement or new design.

Battery Manufacturing Equipment

ASSEMBLY

Plate lug
brushing &
cutting machine

Enveloping &
stacking M/C

Cell stack rotary
table

Cast On Strap
M/C

Cell aligning M/C

Strap welder &
high voltage test
M/C

Heat Sealing M/C

Terminal post
builder (Terminal
welding M/C)

Air leak Testing
M/C

Container Hole
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M/C

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Discharge M/C

Battery formation
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FINISHING

Dumping M/C

2nd Acid Filling &
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Acid Level Check
Machine

2nd Cover Heat
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Washing & drying
M/C

High Rate
Discharge Tester

LABORATORY

Battery life cycle
Tester

Battery CCA &
high current
Tester

■ BATTERY HIGH CURRENT TESTER (UNDT)

► COLD CRANKING DISCHARGE TESTS OF THE BCI, SAE, DIN, CEI, AND ELECTROCHEMICAL SOCIETY

- A fully programmable micro processor based charging and discharging system.
- Suitable for testing all items of electrical performance of different lead-acid batteries.
- Detecting automatically the service life time of batteries by simulating charging & discharging process in battery real operation.
- Presetting detection mode and parameters.
- Storing various detecting process. Providing the following working mode:
Constant current & constant voltage charge(option), cycling, pause, stage-shift in time fixing, voltage fixing, ampere-hour fixing mode. Automatic working data record. Protecting against over-current, over-voltage and open circuit. Power down data storage. Automatic power on recovering. Displaying on LCD working data and cause of troubles. Checking working process and all the data. Interfacing to PC, the device and perform central network control over multiple detection, with the data, current, voltage and Ah curve to be stored and printed.



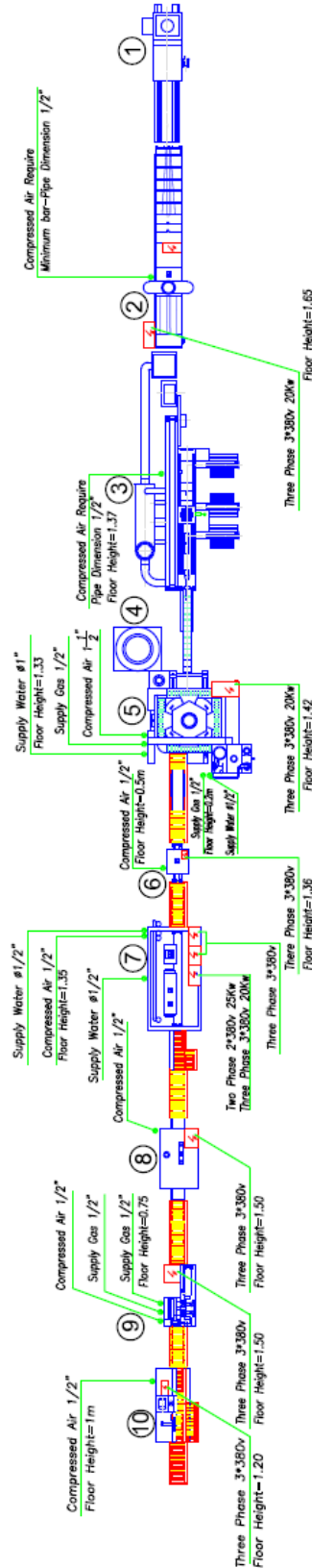
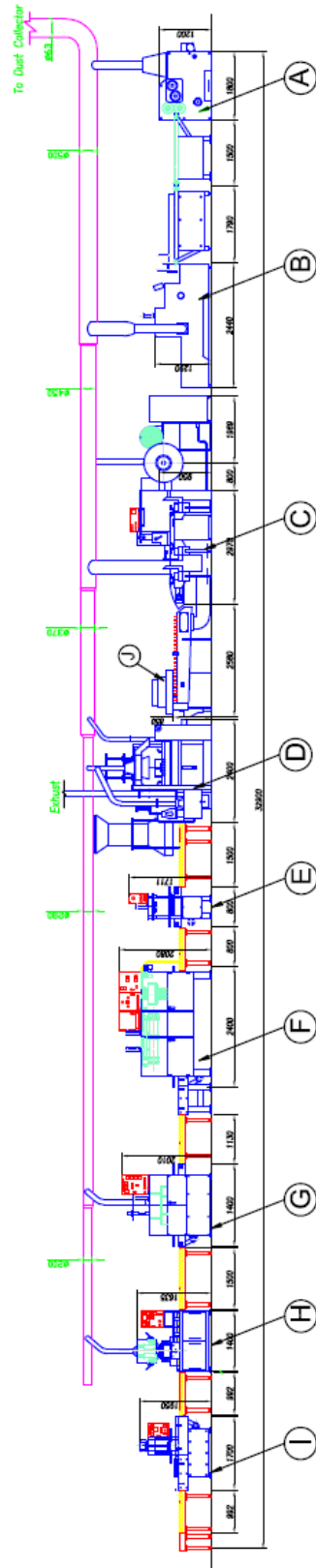
■ Specifications

MODEL	OUTPUT CURRENT (A)	OUT VOLTAGE (V)	OVERAL DIMENSION(mm)			WEIGHT (Kg)
			WIDTH	DEPTH	HEIGHT	
UBDT-18V/1000A	10	4.5 ~ 18	680	850	2000	520 / Module
UBDT-18V/1500A	20					550 / Module
UBDT-18V/2000A	30					580 / Module
UBDT-18V/3000A	50					600 / Module

Photos & dimension are changeable according to the requirement or new design.

Battery Manufacturing Equipment

Assembly Line for Starter Automotive Battery

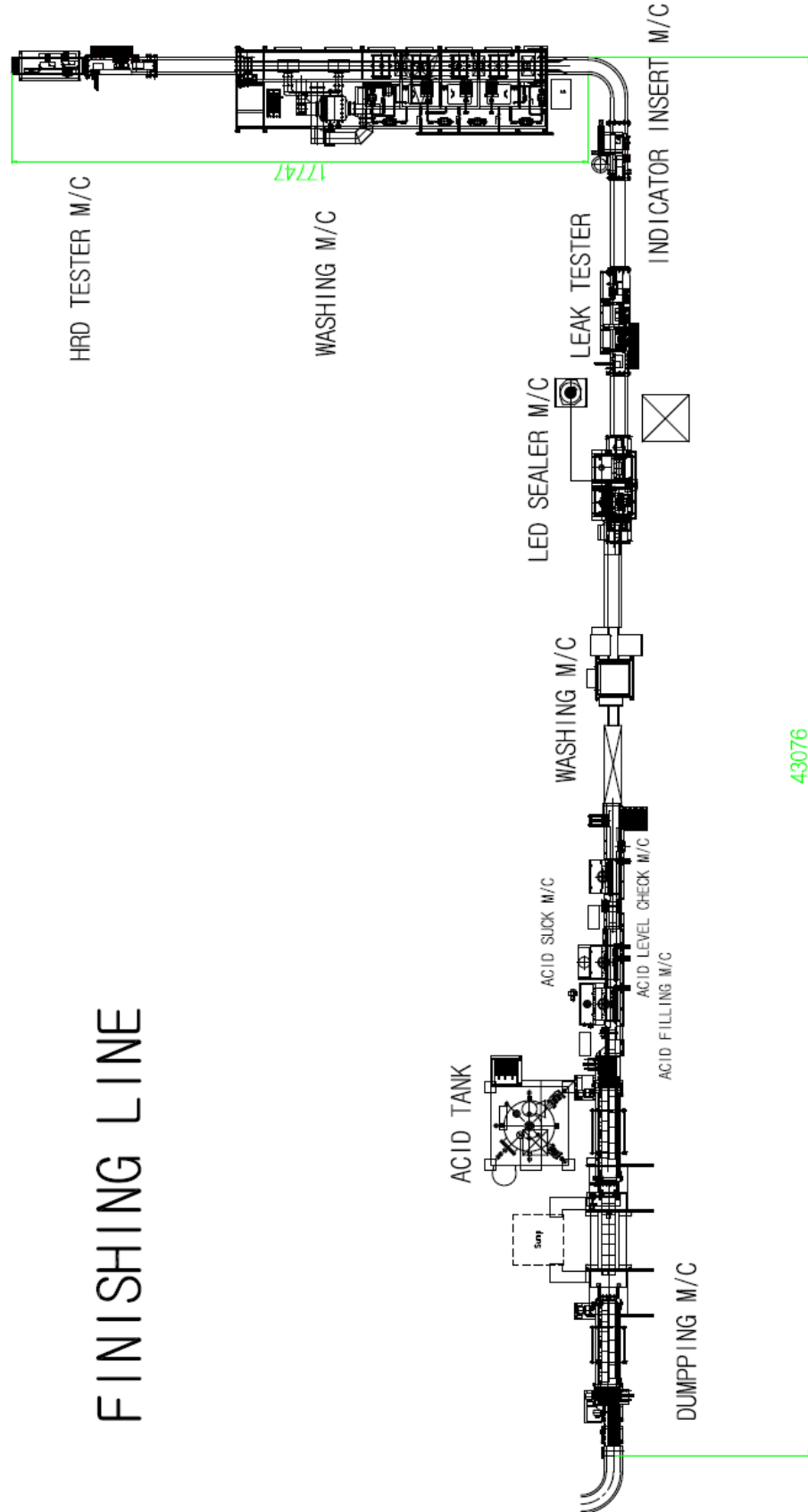


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|----|-----------------|---|----------------------|---|---------------------------|---|--------------------|---|-------------------------|
| 9 | POST BUILDER | 7 | INTER CELL WELDER | 5 | CAST ON STRAP MACHINE | 3 | ENVELOPING MACHINE | 1 | PLATE CUTTING MACHINE |
| 10 | AIR LEAK TESTER | 8 | HEAT SEALING MACHINE | 6 | CELL ALIGN PUSHER MACHINE | 4 | CELL STACK ROTARY | 2 | PLATE STACKER & BRUSHER |

Battery Manufacturing Equipment

UNIKOR BATTERY TECHNOLOGY

Finishing Line for Starter Automotive Battery



FINISHING LINE

Battery Manufacturing Equipment

Starter Automotive Battery Mfg. Process

