1. Introduction

BC1050 series die-cutting machine with waste-removal features high precision, high speed, durability and stable performance. They adopt international leading configuration and have come up to international leading level in performance.

3. Technical Parameters:

A. Specifications:

Max paper size: 1050 x 740mm

Min paper size: 400 x 360mm

Paper thickness: 80-2000g/m²

Corrugated paper: ≤4mm

Max machine speed: 7500 sheets/hr
Max operating pressure: 300T

Min gripping edge size: 9.5mm

Max die-cutting range: 1040 x 730mm

Die-cutting precision: ±0.075mm

Power: 19KW

Weight: 15T

Dimension: 7000 x 4000 x 2100mm

**B. Features:**

BC-1050 series has the following advantages:

- Ability to steadily feed, die-cut and take off >60g thin paper;
- 4 suction and 4 delivery steps for feeder to ensure smooth delivery of paper;
- Nonstop fully automatic feeder and pre-piling station help improve productivity;
- Deceleration when in place: Paper stops when paper head arrives at buffering mechanism, thus improving die-cutting precision;
- Adopts self-locking design for die-cutting frame to improve safety and facilitate operation;
- Adopts unique gripper positioning materials and cam motion curve to ensure higher precision and lower noise than similar products.

Die-cutting frame adopts integrated structure (the other supplier is BOBST) and thus features high strength and high precision, and the backplate is made of stainless steel and thus features durability and attractive appearance.

Bottom die adopts HRC50-53 stainless steel plate, thus ensuring high precision and durability.

Crankshafts, pendulum shafts and worms in the heart of the die-cutting
section are all made of imported alloy steel via precision grinding, thus ensuring high precision and durability.

Circulating oil cooling system improves the die-cutting difference between hot components and hot components, and thus helps reduce scrap rate, minimize pressure-regulating attempts and extend service life. The system is equipped with 30 circulating oil circuits and 2HP oil pump, resulting in better lubrication and higher cooling speed.

Rise and drop in die-cutting pressure is displayed via electronic digital display with 0.001mm in precision to ensure high precision and easy operation.

Features attractive appearance and comes up to international leading level.

“Less but faster services”: Lower failure rate helps minimize efforts in services. Whenever service is needed, we may assign engineers to worksite within 48 hours.

C. Key Components:

1) Feeder section:

1.1 Mechanical performance:

1.1.1 Max paper size: 1050 x 740mm

1.1.2 Min paper size: 400 x 360mm

1.1.3 Paper thickness: 0.08-4mm

1.1.4 Max die-cutting speed: 7500 sheets/hr (speed may be lower for 0.08-0.15mm thin paper and corrugated paper depending actual coating and smoothness).

1.2 Control panel:

1.2.1 Manual/auto selectors;

1.2.2 Auto paper lifting/counting regulator, which adjusts paper lifting height depending on paper thickness.

1.2.3 Up/down switch for primary feeding table.
1.2.4 Up/down switch for secondary feeding table.

1.2.5 Right/left switch for primary feeding table, allowing for readjustment of the primary feeding table.

1.2.6 Emergency-stop pushbutton switch.

1.3 Plug-in secondary feeding table:

1.3.1 Fully automatic shifting between primary feeding table and secondary feeding table allows continuous paper feeding without stopping the machine.

1.3.2 Paper pile is placed on spacer bars and “secondary feeding bar” wooden trays can be inserted between paper piles.

1.3.3 When primary feeding table automatically goes up, secondary feeding table can be manually lifted up. When secondary feeding table automatically goes up, primary feeding table can be manually lifted up.

1.3.4 Eight standard plug-in bars are provided and how many of them should be used is determined by paper size, weight, strength and aligning mode.

1.4 Feeder head:

1.4.1 Forward/backward position for feeder head can be adjusted by turning hand-wheel.

1.4.2 Air quantity for presser bar can be adjusted via air valve throttle.

After adjusting feeder head position, shift primary feeding table to Auto status, start the machine to lower the feeding table until it reaches presser bar and automatically stops. Now, adjust the knob on presser bar such that the top of paper pile is just 10-20mm below guiding bars.

1.4.3 When paper pile surface is oblique or wavy, it is possible to adjust first sucker forward/backward tilting knob to ensure it sucks paper at the rear or paper that is parallel to paper pile surface or slightly tilts forward.
1.4.4 When paper end is bent downward, turn first sucker forward/backward tilting knob rightward until sucker tilts forward. When paper end is bent upward, turn first sucker forward/backward tilting knob leftward until sucker tilts backward.

1.4.5 This machine is provided with rubber suckers of various types and shapes. Lantern-face suckers are especially suitable for difficult-to-separate thin paper, and flat-face suckers are suitable for cardboard and corrugated paper. Suckers are made with special materials and feature excellent resistance to deformation and abrasion, superior to similar products.

1.4.6 The right/left position for external second suckers may vary depending on paper width. To adjust them, just unscrew setscrews on second suckers and move suckers to proper positions.

1.4.7 The suction strength of second suckers can be adjusted via air quantity valve on second suckers.

1.4.8 When paper delivery tilts rightward or leftward, it is required to adjust second suckers. Specially, turn “Bias Adjust” knob leftward (counterclockwise) when paper tilts leftward, and turn “Bias Adjust” knob rightward (clockwise) when paper tilts rightward.

1.4.9 The height of second suckers can be adjusted in operation, which substantially improves productivity compared with similar feeders where suckers cannot be adjusted in operation.

1.4.10 To avoid sucking two sheets simultaneously by first sucker, paper separating steel sheet, paper separating airbrush and auxiliary spray nozzle are provided at locations close to suckers.

1.4.11 To prevent such serious damage from occurrence, this model is provided with three safety switches: Upper limit air hammer, pressure bar switch and anti-collision switch, which will shut off circuits in case of collision.

1.5 Lateral air nozzle:

Lateral air nozzles may facilitate paper separation and ensure paper is steadily delivered on delivery board. This model is equipped with standard lateral air nozzles.
1.6 Transfer rubber rollers, delivery belts, transfer rollers, airbrush rollers and steel balls on paper table are manufactured with imported materials and adopt easy-to-adjust structure.

1.7 Double-sheet detector: The gap for double-sheet detector is easy to adjust and the sensing mechanism is very sensitive.

1.8 Decelerating system (used to decelerate speed when paper front edge reaches front guide):

When thin paper or thick paper reaches front guide while the machine is in high-speed operation, damage or displacement may occur. To prevent such events from occurrence, this machine is equipped with a decelerating system, which decelerates paper advancing speed immediately when paper reaches front guide and thus prevents paper damage or rebounding displacement. This helps ensure gripping accuracy and processing precision for all products.

1.9 Paper position-adjusting system:

1.9.1 Before entering die-cutting section, paper has to pass front guide and side guide at specific angle. Premature or belated arrival may affect normal operation.

1.9.2 This machine is equipped with rotatory position-adjusting hand-wheel, which enables paper to arrive on time.

1.9.3 When paper arrives at front guide and side guide too early, turn hand-wheel clockwise to enable paper to slow down.

1.9.4 When paper arrives at front guide and side guide too late, turn hand-wheel counterclockwise to enable paper to catch up.

2) Die-cutting section

2.1 Introduction to die-cutting section:

2.1.1 Host machine adopts international leading pneumatic clutch, entirely imported from prestigious German enterprise.

2.1.2 Crankshafts, worms and worm gears, which represent the heart of the die-cutting section, are made by prestigious Taiwanese enterprise through precision grinding and processing using nickel-chromium-molybdenum alloy steel imported from
prestigious Japanese enterprise.

2.1.3 This machine is equipped with circulation oil cooling system, which improves die-cutting difference between hot components and hot components and thus helps reduce scrap rate, minimize pressure regulating attempts and extend service life. The system is equipped with 30 circulating oil circuits and high-power oil pump, resulting in better lubrication and higher cooling speed.

2.1.4 Grippers, separators and all chains are sourced from prestigious enterprises around the world. Grippers are made with aerospace hard aluminum and thus features lightweight and high hardness. Main chains are purchased from UK RENOLO and other chains are purchased from Japanese EK.

2.1.5 Unique gripper positioning materials and cam curves feature high machining precision and low noise, remarkably superior to similar products.

2.2 Cutting mold

2.2.1 Cutting mold is a kind of 18mm-thick hard clamp with inset 23.8mm-high die-cutters and its purpose is to separate die-cut paper from cutting blades. To achieve this purpose, high-elasticity sponge has to be attached to both sides of the cutter and the standard height of the sponge is 8mm. When below this height, it may cause breakage to paper.

2.2.2 The maximum size of the cutting mold should be smaller than the internal size of the frame (1144mm x 760mm) and its minimum size should be larger than the minimum paper size (400mm x 360mm). That is, 1144mm x 760mm > cutting mold > 400mm x 360mm.

2.2.3 Even when cutting small-size paper, it is preferable to use larger-size cutting mold and evenly place some extra cutting blades to balance die-cutting pressure, achieve even cutting edge and cutting speed.

2.3 Frame

2.3.1 Cutting mold is fixed on table via frame to perform die-cutting.

2.3.2 Die-cutting frame adopts integrated structure (the other supplier
is BOBST) and thus features high strength and high precision, and the backplate is made of stainless steel and thus features durability and attractive appearance.

2.3.3 Frame adopts automatic pneumatic locking mechanism to ensure high safety and easy operation. Also, it adopts the world’s first four-corner asynchronous locking mechanism to avoid slight deformation to frame in the locking process.

2.3.4 Bottom die adopts HRC50-53 stainless steel plate, thus ensuring high hardness and durability.

2.4 Front guide and side guide:

Front guide for this machine features easy adjustment. Side guide has pull function and push function. Pull function is used for thin paper and push function is used for thicker paper or corrugated paper.

2.5 Pressure bar and safety bar:

Pressure bar may correctly lead paper into paper grippers. Safety bar can prevent foreign materials from entering die-cutting section and thus avoid damage to the machine. Side guide is protected by safety bar.

2.6 Die-cutting pressure adjustment:

2.6.1 Die-cutting pressure is adjusted by adjusting the position of the table, and the extent of adjustment is set via the stamping-purpose computer touch-screen.

2.6.2 Die-cutting pressure is adjusted depending on paper (die-cutting pressure for stamping is adjusted depending on hot stamping foil) with adjusting precision within 0.01mm.

2.6.3 Pressure readjustment: If pressure setting is slightly too high or too low, press pressure readjustment button to adjust. This machine adopts electric readjustment with 0.001mm in fine-tuning precision, which makes operation easier and faster and substantially reduces time for preparation.

2.6.4 Instant pressure and safe pressure for die-cutting (or stamping): Die-cutting/stamping machine is equipped with instant pressure monitoring and overload protection mechanism. When instant
pressure is higher than safe pressure (300T), it will give out alarm and stop the machine.

2.7 Optimized design for two guide rails in main chains: Adopts materials imported from Japan, thus extending service life and substantially reducing noise.

2.8 Adopts German BECKER blower pump and thus features low noise and stable performance.

3) Delivery section:

3.1 Adopts nonstop delivery system for standard version.

3.2 Easy-to-operate paper-aligning mechanism.

3.3 Airbrush (holding paper) mechanism and horizontal blowing and pressing device:

3.3.1 Airbrush: May avoid paper crease or curl arising from paper tails pushing against paper heads when paper is delivered at high speed.

3.3.2 Horizontal blowing: May avoid paper crease or misalignment arising from premature falloff.

3.3.3 Pressing device: May avoid paper crease or curl arising from paper adrift in air for too long when paper is delivered at high speed.

3.4 Adopts automatic paper-beating mechanism for standard version. Customers may preset the number of sheets to be printed for counting purpose.

4) Waste removal section

4.1 Adopts upper, middle, lower three dies, the waste removal can completed by them

4.2 Waste removal frame are made in high quality material, it is convenient to use and if high accurateness.

4.3 The upper and lower frame can be released to stop the waste removal section when it is unnecessary
5) **Lubrication and maintenance:**

5.1 Die-cutting core lubrication: As an important section, the die-cutting core must have forced lubrication pumped by circulating lubricant pump.

5.2 Lubricant filter: A filter is equipped in front of the pump inlet. Turn handle every day before work to allow impurities to settle into oil cup. Open oil plug every week to discharge sediments, remove and clean oil cup and filter every month.

This machine is equipped with oil pump, chiller and circulating oil filter imported from Taiwan.

5.3 Follow lubricating procedures to lubricate other parts.

D. **Troubleshooting:**

This machine is equipped with automatic troubleshooting functions. In case of breakdown, its visual and easy-to-operate man-machine interface will automatically tell you where the trouble is as well as the method to eliminate that trouble.

Abnormal oil pressure: Check if oil pressure gauge has reached preset value; if oil pump motor is working and if circulating oil tank and/or filters are blocked. Check as indicated and reset.

Double sheet: Adjust double-sheet detector/sensor, delivery height and sucker air quantity depending on paper thickness. Check as indicated and reset.

Excessive feeding height: Check if the upper limit for primary/secondary feeding tables is sensitive; if the air hammer switch is sensitive; and if the entire feeder head is so high that it contacts feeder upper limit. Check as indicated and reset.

Foreign material buildup on paper: Check if there is any foreign material colliding paper level-limiting device or if paper collides pull guide. Readjust pull guide distance and reset.

Abnormal pull guide at operator side: Paper is not in place at pull guide. Adjust bolts and tension on pull guide and take out paper. Check and reset.

Paper not in place at pull guide: Adjust bolts and tension and take out
abnormal paper. Check as indicated and reset.

Abnormal in idle operation: Check if any foreign material or dust blocks photoelectric sensor. Take out foreign material, clean photoelectric sensor and reset.

Abnormal front guide at operator side: Paper is not in place at front guide. Check if the delivery belt is too slow or the force from the wheel is too low. Take out paper, clean photoelectric sensor and reset.

Abnormal front guide at drive side: Paper is not in place at front guide. Check if the delivery belt is too slow or the force from the wheel is too low. Take out paper, clean photoelectric sensor and reset.

Abnormal upper frame: Check if upper frame is firmly locked or if air quantity at pneumatic board is too low. Or check corresponding proximity switch and reset.

Platform withdraw: Checks if platform withdraws or if single-side positioning is firmly locked or if door at operator side is closed. And then check corresponding test switches and reset.

Paper falloff: Check if foreign material blocks photoelectric switch at the outlet of grippers. Remove foreign material and reset.

Paper backward: Check if the force of grippers is too low. Readjust gripper distance and reset.

Side window remains open: Check if side window is closed or its detection is normal and then reset.

Back door remains open: Check if back door is closed or its detection is normal and then reset.

Paper delivery excessively high: When reaching upper limit in automatic operation, delivery table will stop automatically. Check and reset.

Torque gauge abnormal: Excessive high mechanical torque may cause paper to escape detection. Check machine speed and operation status. The problem is caused by failure of the torque detection proximity switch. Care should be taken for this kind of failure. After troubleshooting, it is required to manually move the disc before resetting.

Flywheel hood remains open: Check if flywheel hood is closed. The
problem may be caused by failure of the test switches at the two doors of the flywheel hood. Check and reset.

Emergency-stop locked: E-stop button is locked. Check if E-stop buttons on each panel are released. Only when E-stop buttons are released can machine start operation.

4. Aftersale services and component replacement:

Our machine is assembled in China using imported components. Therefore, we have large spare part inventory in China. In case of any failure that cannot be solved by customers, our aftersale service engineers will arrive at customer’s site as soon as possible.

5. Packaging:

Adopts moistureproof and shockproof packaging suitable for long-distance road transportation and various types of weather conditions, including a full set of maintenance and operation manuals.

6. Delivery Date:

As agreed by both parties, equipment shall be delivered from Seller’s factory within 30-45 days after payment of deposit.

7. Terms of Payment:

Buyer shall pay 20% of the contract price after signing the contract, 70% at the sight of the bill of loading at the delivery of the machine at port and 10% after the machine starts.

8. Installation

The seller will send engineers to install and test the machine at the buyer’s factory. The buyer will pay for their accommodation, the food and other local needs.

9. Quality Assurance:

Seller hereby assures that the equipment covered hereof fully complies with the contract in quality and quantity. Seller provides a 12-month warranty period, commencing on the date of completion of equipment installation and test run. All losses arising from mechanical damage caused by improper operation shall be borne by Buyer.
10. Brands and Specifications for Key Components:

2. Nickel-chromium-molybdenum alloy steel: Imported from Japanese DID and processed in Taiwan;

2). Worm gears and worms: Made of nickel-chromium-molybdenum alloy steel processed in Taiwan;

3. Crank bearings: Imported from German SKF, Japanese KOYO and NSK;

4. Bottom punching section: Austria;

6. Die-cutting frame: Integrated molding;

7. Air pump for sucker: German BECKER;

8. Oil pump and chiller: Technical cooperation between Germany and Taiwan;

9. Air pressure clutch: Technical cooperation between Germany and Taiwan;

10. Main solenoid valve and oil separator: U.S. MAC;

10). Main motor: Taiwan;

11). Separator: Taiwan;

12). Main chain: UK RENOLO;

13). Other chains: Japanese EK;

14). Electric components and buttons: French TE, Japanese Omron and German Siemens;

15). Drive belt and conveyer belts: Japan;

16). Feeder head: 8 suction feeder heads and 8 delivery heads;

17). PLC: Taiwan FATEK.