

friends

Corrugated Board
& Box Making
Machines

EXPERIENCE
THE
DIFFERENCE



The Corrugated Industry

Corrugated boxes are everywhere. This simple yet profound packaging medium is now ubiquitous, having emerged as the largest transport packaging material. Millions of tonnes of agricultural and industrial produce are transported from the factory to markets in this cost effective yet sturdy packaging medium.

History of Corrugated

In the late nineteenth century (1871), Albert Jones discovered an ingenious way of giving strength to paper. He took a piece of paper, convoluted it into a series of flutings, by moistening it and passing it between two hot corrugated rolls. What he ended up with it is shown below:



In 1874, a fellow American named Oliver Long discovered that when a flat sheet of paper was glued to one side of the corrugated paper, it kept its shape even when it was stretched and subjected to pressure. This gave rise to what is today known as a single face corrugated and it was also the birth of the corrugated board industry.

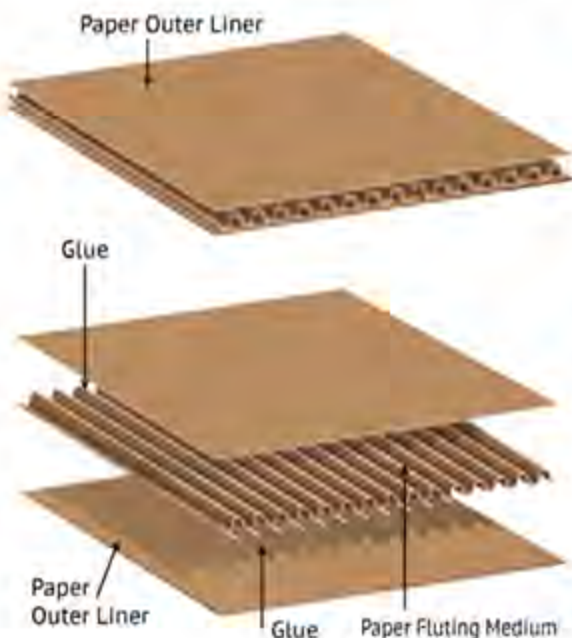


In 1926, Inland pioneered use of 100% soft grade kraftliner, which provided greater tear and puncture strength.

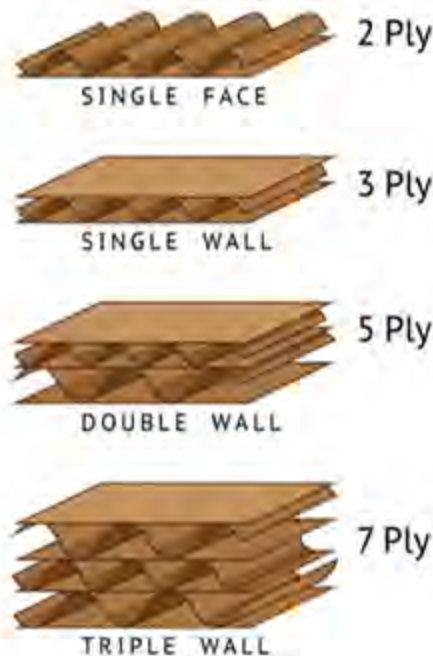
Corrugated Flutes

Cardboard flute in packaging adds additional layers of insulation and protection to corrugated packaging. Additionally, they aid in the packaging's ability to withstand crushing and punctures. The corrugated flutes help packaging boxes so they can support heavier items without folding or breaking. There are various wall thicknesses, or flute sizes, for corrugated material. Every flute size serves a useful purpose, from improved printability, reduced storage space requirements, and shipping strength.

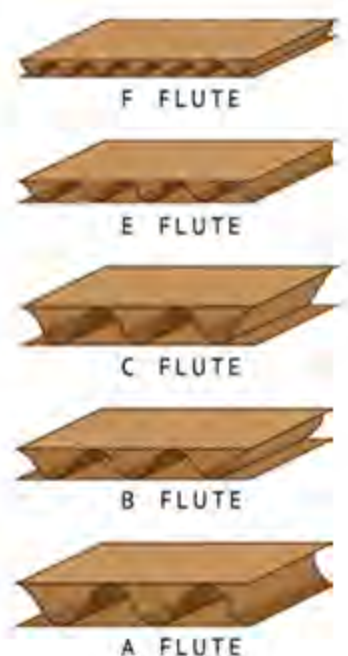
Understanding Flutes in Corrugated Boxes




BOARD STYLES





FLUTE TAPES



FLUTES BY THE NUMBERS

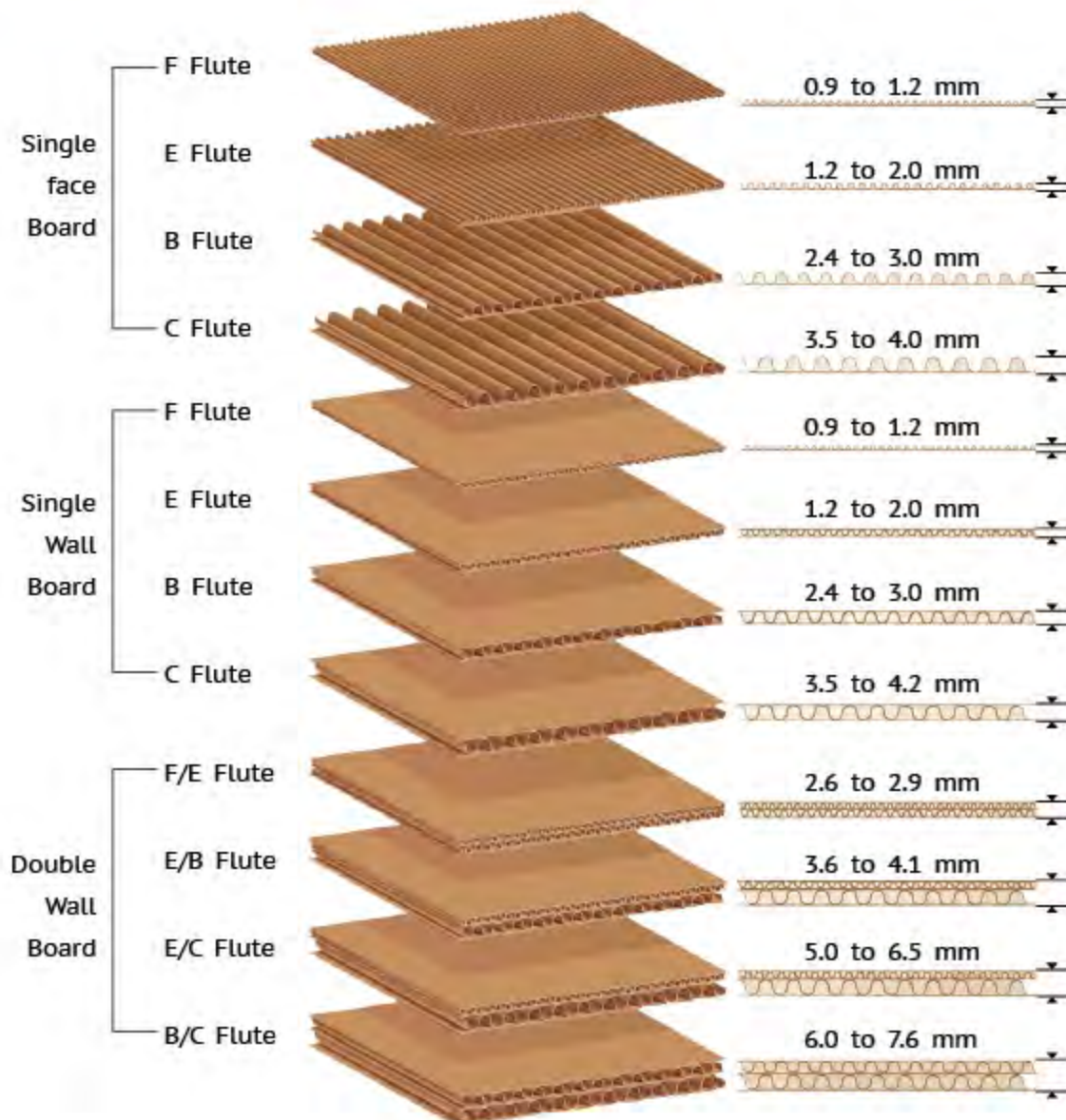
 F-Flute (Mini Micro) 1/32" - 128 Flutes per feet

 E-Flute (Micro) 1/16" - 94 Flutes per feet

 B-Flute (Narrow) 1/8" - 50 Flutes per feet

 C-Flute (Midium) 5/32" - 42 Flutes per feet

 A-Flute (Broad) 1/4" - 36 Flutes per feet



Oblique Type Paper Corrugating Machine



The oblique high speed model offers a high rate of production and enhanced efficiency. The flute rollers mounted on the roller bearings, for smoother running and longer life, impart the proper impression on the board. Dancing rolls are provided to eliminate the effect of improper winding of paper on the finished product. The machine is provided with motorized self loading twin shaft reel stand with 3 unwinding shafts. Shaftless hydraulic reel stand is recommended for this machine. The machine is to be heated by steam, Two preheating cylinders are provided with box.

Technical Parameter

Size	36"	42"	46"	52"	62"	72"
Motor (H.P.)	2	3	3	5	5	7.5
Heating Load KW	15	19	18	21	25	30
Wt. Approx.	3.0	3.5	4	4.5	5	5.5
Floor Space	7'x15'	7.5'x15'	8'x15'	8.5'x15'	9.5'x15'	10.5'x20'

Features

- Delivered with pre-heaters asunder from the three regular heaters to de-moisturize the liner
- Equipped with binary shaft motorized tone lading roll stand & bull
- Construction, operation, and bulldozing, The flute breakers are mounted on bearings for smooth operation and extended life.
- The flute breakers are made of special amalgamation sword & bull
- The main bearing are waxed with high temperature grease
- It is enabled by gum Hard chromed rollers for improved performance and machine life
- Two pre-heaters are provided to de-moisturize the paper.
- A variable speed motor is recommended for improved quality and frugality in destruction at a lower cost.
- Capacity to lift up to 1 ton roll
- This model includes a variable drive motor as standard.
- Handed with ' Goliath' type motorized Hydraulic roll stage.



Fingerless Type Single Facer



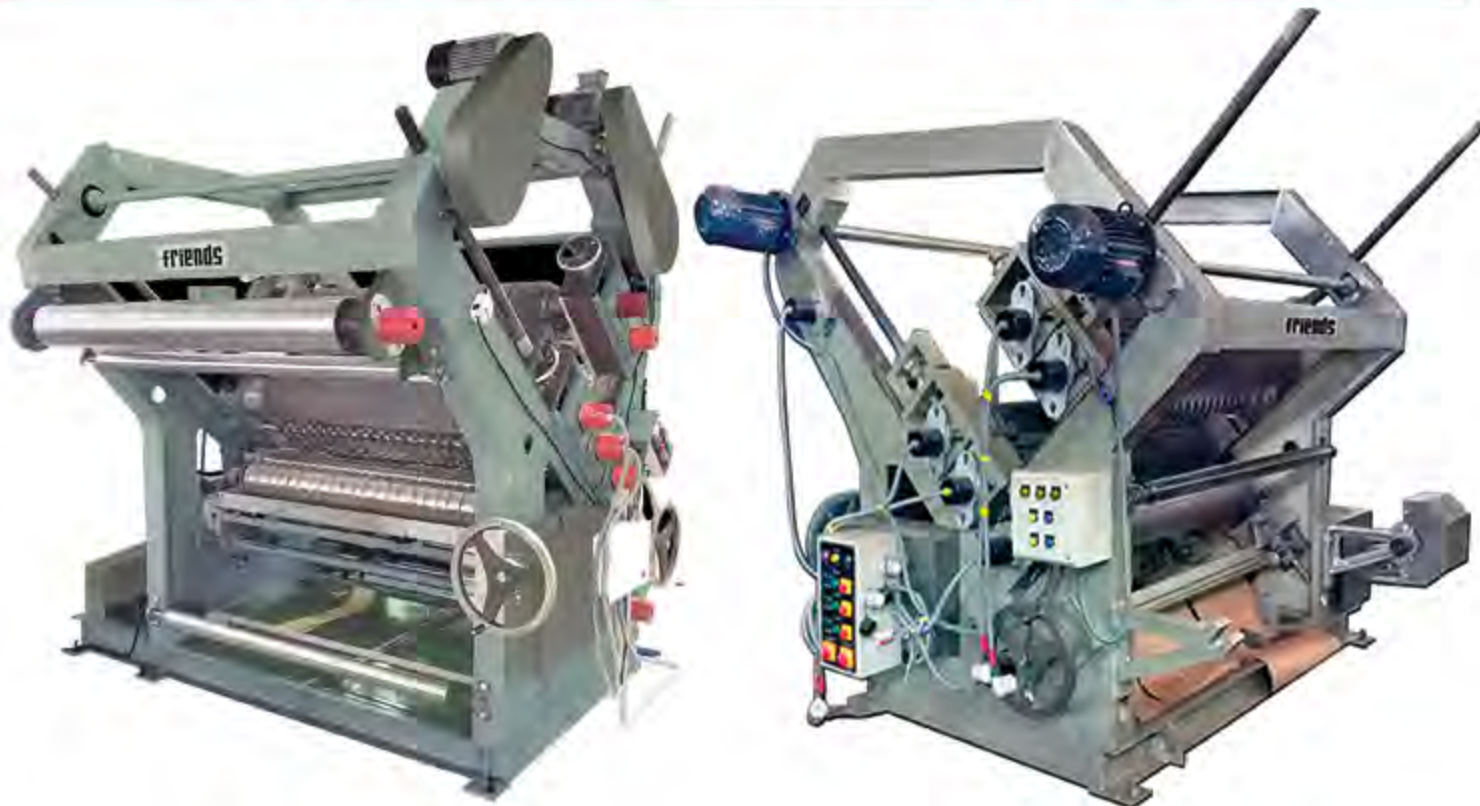
Features

- There are no Adapter Marks on the Board. Because the fingerless machine lacks a brass adapter, there is no possibility of brass adapter marks on the board.
- Compression for Increased Board Strength-Because there is a fixed flute height and diameter, the constricting strength of the board increases in a fingerless corrugation machine.
- Increased BF (Bursting Factor) of the Board-As the board's contraction strength increases, so does its BF.

Technical Parameter

Machine Size (mm)	FRIENDS 1400 - 2300		
Roller Dia. (mm)	280	320 / 360	380
Heating type	Steam / electric / oil		
Corrugated roller material	48CrMo alloy steel / 52CrMo alloy steel		
Wallboard type	Oblique / square		
Transmission type	Gear box / chain		
Feeding type	Fingerless / finger		
Design speed	100m/min	150m/min	200m/min
Pneumatic working pressure	0.4-0.9Mpa		
"Upper corrugated roller diameter"	0280mm	0320mm	0350mm
"Lower corrugated roller diameter"	0280mm	0320mm	0380mm
Pressure roller diameter	0280mm	0320mm	0385mm
Glue roller diameter	0242mm	0242mm	0268mm
Paste fixed roller diameter	0127mm	0127mm	0140mm
Preheat roller diameter	1402mm	1402mm	1402mm
Main driving motor	11KW	15KW	30KW
Wind suction motor	11KW	11KW	11KW
Control type	SIEMENS / SCHNEIDER		
Bearing	SKF / NBC / NACHI		

Double Profile Corrugation Machine



Technical Parameter

Size	Motor H.P.	Weight App. (MT)	Floor Space
42"	9.0	5.0	7.0'x16'
52"	11.5	5.5	8.5'x16'
62"	11.5	6.0	9.5'x16'
72"	14.0	6.5	10'x17'
82"	16.5	7.5	11'x18'

This machine is used for manufacturing of two different kind of Corrugated flute therefore performing in high rate of product for two ply corrugated wastes or rolls. Manufactured using the stylish quality raw material, this machine is used in colorful diligence for corrugation operations. Machine is equipped with special jack type Hydraulic / Motorised system to change the flute roll on the machine with just a button.

Features

- Construction and operation Enabled with rollers are bearing mounted and Motorised.
- Delivered with pre-heaters asunder from the regular heaters to de-moisturize the liner Equipped with binary shaft motorized tone lading roll stand & bull.
- Construction and Operation & bull The flute breakers are mounted on bearing for smooth handling & longer life.
- The flute breakers are made of special amalgamation sword & bull.
- The main bearing are waxed with high temperature grease.
- Enabled with gum Rollers that are hard chromed for better performance & life.
- Two pre-heaters are handed to de-moisturize the paper.
- The variable speed motor is recommended for better quality and frugality in destruction at an fresh cost.
- Variable drive motor is standard with this model.
- Handed with 'Goliath' type motorized Hydraulic roll stage.

Hydraulic Self Loading Reel Stand



Shaftless Reel Stand



Reel to Sheet Cutting Machine (Gear Type)

This rotary sheet cutter is designed for high production and sharp accurate cutting of 1, 2 ply Corrugated board & paper roll without damaging the flutes, as well as to cut line paper. The special feature of this machine, size can be varied by changing gears from one position to another as chart to be provided. Machine can be synchronized with single facer or can work as separate unit.



Technical Parameter

Size	Power	Cutting Length (Min/Max)	Output Range (RFT/Min)
42"	3	20 / 100	60 - 200
45"	3	20 / 100	60 - 200
55"	3	20 / 100	60 - 200
65"	5	20 / 100	60 - 200
72"	7.5	20 / 100	60 - 200

Automatic Reel to Sheet Cutting Machine (PLC With Servo Motor)

This machine adopt PLC touch screen to design. Through it operator can know all the production status adopt variable frequency motor to add just the speed. Servo control make the cutting length more exactly, making the cutting precision perfectly mechanical behavior will more fine.

It has change order fast and high cutting precision, working speed fast etc. Make little waster, when changed the order. It suit for the top grade color printing machine.



Technical Parameter

Size	45"	55"	65"
Motor H.P.	2	2	2
Wt. Approx.	1.6 M.T.	1.8 M.T.	2.0 M.T.
Floor Space	5' x 8'	6' x 8'	7' x 8'

Rotary Slotting Machine (RS4)

Uses and Features

FRIENDS series rotary slotting machine is a kind of comprehensive equipment that slotting, slitting, cutting corner, creasing. Its main feature is feeding single piece cardboard by hand, common bend card board are also OK.

Main Features

Used lead edge feeder with vacuum feeding system, fast and smoothly, (or kick feeder option).

Motorized (or PLC) adjust side and front baffle, manual adjust black buffer (motorized).

Planet gear type motorized observe and reverse adjustment in 360°.

All of shaft precision grind, chrome plated.

Electric adjusting box height (or PLC adjust).

Slotting crease joint movement by motorize control (PLC option).

High quality 48 CrMo slotting knife with induction hardness.

Frequency conversion motor drive, save power.

Equipped with the photo electricity counter, display production amount



Chain Feeding Rotary Slotting Machine (RS4)

Uses and Features

"FRIENDS" Series rotary slotting machine is a kind of comprehensive equipment that slotting, slitting, cutting corner, creasing. Its main feature is feeding single piece cardboard by hand, common card board also OK.

MAIN FEATURES

Semi-automatic chain feeding system, side lay gauge adjust feeding position, ensure feeding accurately.

Planet gear type motorize observe and reverse adjustment in 360°

Manual adjusting four box height cutter synchronous (motorize adjusting is option).

All of shaft precision gring, chrome plated.

High quality 48CrMo slotting knife with induction hardness.

Speed variable motor drive machine, speed is adjustable.

Equipped with the photo-electricity counter, display production amount.

Slotting crease joint movement by hand control.



Technical Parameter

Cutter die diameter (mm)	405		480			
Model	FRIENDS 2200	FRIENDS 2400	FRIENDS 2200	FRIENDS 2400	FRIENDS 2600	FRIENDS 2800
Max. Sheet Size (mm)	1200 x 2200	1200 x 2400	1400 x 2200	1400 x 2400	1400 x 2600	1600 x 2800
Min. Sheet size (mm)	350 x 500	350 x 500	400 x 500	400 x 500	400 x 500	400 x 500
Min. Slot distance (mm)	190 x 50 x 190 x 50					
Slot width (mm)	7		7		7	
Sheet thickness (mm)	3 - 10		3 - 10		3 - 10	
Work speed (Pcs/min)	0-60		0-60		0-60	
Power (kw)	2.2		2.2		2.2	

Rotary Die Cutting Machine



Function and Uses

The machine adopts chain feeding system and double roller rotary type. It can perform all process of slitting, creasing, corner cutting and hit special whole at one time. It has advantage of high precision, easy to operate, long service life and low cost.

Paper Feeding Unit

Adopt lead edge feeding system with vacuum adsorption auxiliary feed, (optional equipment kick feeding system)

Speed: 10000 Sheets/Hr, die-cutting precision: $\pm 0.75\text{mm}$.

Manual adjust former block board and computer control lateral block board, dial indicator.

Leading paper roll have groove glue surface to prevent the crushed card board and increase the accuracy of feeding.

Main Characteristics

The drum made of high quality steel tube, thickness 30mm, do balance treatment, plated chrome.

Full machine gear made of 45# steel have been quenched treatment, Adopts lock-alx key less and cross-head system connect with shafts finish no gap adjustment.

Driving part uses pull pump to lubricating (motorized phase adjustment type used spray lubricating).

Oil box made of thick iron plate to avoid oil leakage.

Phase adjustment by manual operate with micro-adjustment (or motorized adjust in 360°)

Die Roller (bottom roller) lift-down adopts pneumatic control, manual or automatic operation.

Rubber roller (top roller be wrapped anvil cover from "Maxdura" Brand from Taiwan (or CUE, DAY option), long use life.

Rubber roller (top roller) can move automatically, move range $\pm 40\text{mm}$.

Rubber roller (top roller) fix overrunning clutch to compensate line speed automatically, and avoid one position cutting.

Equipped with anvil cover repair device, prolong use life.

AUTOMATIC HIGH SPEED RS4 DIE CUTTING & PRINTING UNITS



Printing Unit



Rotary Slotting



Rotary Die Cutting



Technical Parameter

Parameter		FRIENDS-900	FRIENDS-1200	FRIENDS-1400
Printing Roller Dia		300mm	408mm	480mm
Control Mode		PLC / Touch Screen / Button		
Color Group		Everything can be quipped according to users' needs		
Production Speed		120/150/200		
Max. Paper Sizes		900x1800/2000/2200/ 2400/2600mm	1200x1800/2000/2200/ 2400/2600mm	1400x1800/2000/2200/ 2400/2600mm
Min. Paper Sizes	Positive knife	300x640mm	350x720mm	400x720mm
	Negative knife	300x720mm	350x740mm	400x740mm
Max. Printing Sizes		900x1600/1800/2000/ 2200/2400mm	1200x1600/1800/2000/ 2200/2400mm	1400x1600/1800/2000/ 2200/2400mm
Max die-cutting Size		900x1700/1900/2100/ 2300/2500mm	1200x1700/1900/2100/ 2300/2500mm	1400x1700/1900/2100/ 2300/2500mm
Max. Printing Plate Thickness		7.2mm		
Slot Width x Max.depth		7mmx220mm	7mmx300mm	7mmx350mm
Min. Slot Space	Positive knife	150*150*150*150mm	170 170 170 170mm	170*170*170*170mm
	Negative knife	250*90*250*90mm	260*90*260*90mm	260*90*260*90mm

Motor list

	Name	Size
Feeding unit	Main motor SIEMENS / ABB	1.5KW (Frequency)
	Separation and reunion of the machine	1.5KW 1/60 Gear reduce speed
	Left and right baffle plate	0.2KW RV-30
	Suction motor	7.5KW
	Dust exhausting fan	1.5KW
Printing unit	Phase adjustment	0.2KW RV-30(Frequency)
	Anilox roller / Ceramic roller	0.4KW 1/30(Gear reduce speed)
Slotting unit	Phase adjustment	0.2KW RV-30
	Knife seat horizontal movement (by maunal / by electrical) SIEMENS / ABB	0.37KW RV-50 1/80
Die-cutting unit	Phase adjustment	0.2KW RV-30
	Left and right tensile	0.18KW RV-50 1/80
	Repair of rubber roller	0.37KW RV-40-50 1/900
Stacking unit	Conveying belt	3.0KW (electromagnetic controlling speed)
	Lift of stack table	2.2KW RV-135 1/80

AUTOMATIC CORRUGATED BOX STITCHING MACHINE



This Machine is equipped with double servo drive, precision, which reduce the mechanical transmission part, effectively reduce the mechanical fault rate. The whole group of nail head. All computer gongs are made of special steel, precision

machining, are imported.

You can nail a single nail, double nail, once completed, can be suitable for different customers for different requirements for the nail. This transformation and adjustment of carton carton size from the nail it takes only a minute to be completed, greatly saves time and is convenient to operate. The front feeding part automatically counting, the feeding table is provided with a photoelectric sensing device, automatic rising feeder. This post with automatic counting function, finished cartons can be set according to the number (1-99) sub stack sent to lose send machine end, easy to pack up and bound. The Machine is Equipped with Nail automatic alarm after line. (to avoid the non linear when the leak to fight, less nail bad product). The operation is simple and convenient for less pay, from semifinished stapled to the finished and packaged Banding placed in the whole process of only two people operation.

Carton applied area:

Max Length (A+B) × 2	2600 mm
Min Length (A+B) × 2	720 mm
Max Width (C+D+C)	1300 mm
Min Width (C+D+C)	300 mm

Specifications

Power	6 H.P.
Length	2800 mm
Width	2800 mm
Weight	1650 Kg.
Speed	550 Staples
Stitching Pitch	30-120 mm
Number of Stitches	1-99

Features:

- One minute change size
- Simple operation, no need to experience nails, double nails, reinforced nails
- The paper feeding section automatically counts and automatically sends out after bundling
- Touchscreen
- Adopt servo system
- Nail distance can reach 100MM
- Can be nailed with lid and uncovered
- The nail distance can be set directly on the touch screen
- Direct adjustment of board thickness

DIE CUTTING PLATEN PUNCHING MACHINE



Technical Parameter

Model		Friends - 28	Friends - 35	Friends - 40	Friends - 43	Friends - 46	Friends - 54	Friends - 57	Friends - 66	Friends - 68	Friends - 76	Friends - 85	Friends - 95
Platen Size	mm	559x711	635x889	711x1016	813x1092	914x1168	1016x1372	1092x1448	1168x1676	1219x1727	1422x1930	1397x2159	1397x2413
	inchs	22x28	25x35	28x40	32x43	36x46	40x54	43x57	46x66	48x68	56x76	55x85	55x95
Inside Chase	mm	508x660	559x813	635x940	737x1016	838x1092	940x1295	1016x1372	1092x1600	1143x1650	1346x1854	1321x2083	1321x2337
	inchs	20x26	22x32	25x37	29x40	33x43	37x51	40x54	43x63	45x65	53x73	52x82	52x92
Impressions / hr		1800	1700	1500	1400	1300	1100	1000	950	900	800	750	700
Power Req'd. (HP)		3	3	5	5	7.5	7.5	10	10	15	15	15	20
Pressure Req'd. During Impression (Tons)		180	210	250	280	320	360	375	390	395	425	460	520
Wt. approx. (Tons)		2.75	3.75	4.5	5	6	7	7.5	10	10.5	13.5	15.5	18
Area req'd.	mm	1880x1500 x1570	1880x1670 x1470	1980x1880 x1520	1960x1880 x1600	2330x1980 x1670	2280x2080 x1800	2350x2230 x1950	2410x2410 x2030	2450x2450 x2070	2670x2670 x2180	2670x2920 x2180	2670x3170 x2708
	inch	74x59x62	74x66x58	74x71x60	77x74x63	88x78x66	90x82x71	93x88x72	95x95x80	97x102x88	105x105x86	105x115x86	105x125x86

Technical Features

- "FRIENDS" Brand Heavy duty Platen Punching Machine is designed for Die Cutting, Creasing & Embossing on Paper, Card board, Corrugated board, Leather, Plastic, P.V.C. Etc.
- The Main Platen Body is quite sturdy, ensuring smooth operations under trying condition to provide Maximum Rigidity; Platen Body Structure is carefully designed strictly in accordance to Aero Dynamic Study and calculations to withstand the heaviest loads to provide unsurpassed Cutting & Creasing Precision and many years of Reliable Service.
- Machine is Equipped with 4 No. EN Graded High Strength Steel shafts with good ductility and wear resistance characteristics. The main driving shaft is equipped with two sets of double helical self-lubricated imported Polyimide / steel pinion.
- Machine is Equipped with Both sided Helical Steel EN Graded gears of hardening steel and tensile strength along with steel pinion with main driving double set double helical steel gears.
- Machine is Equipped with Bearings from SKF/ NBC / NACHI.
- All Pins are grounded & Bushes from Phosphorus Bronze Alloy.
- Fastest Platen Opening to Provide Press Operator increased time to feed, Delivering greater productivity and more safety.
- Machine is Advanced with Quick & Simple Adjustment devices, working through Equalization of worm gears with Eccentric Bushes provided in the Cam up to microns for Left, Right, Up and Down of platen leveled to easy make ready (All Steel Graded)
- Machine is equipped with Centralized lubrication system to provide needed lubricants to machine through pipes connected to every moveable system.
- For Safety Measurements, Main Flywheel system is locked with Auto - Check nut system.
- Machine is equipped with Fail Safe combination - Electro Magnetic Clutch Break system with Adjustable system up to microns.
- Machine is equipped with main electric panel (operational & control) connected via detachable socket system with international standardized components i.e. Siemens / L&T / Schneider (France) / ABB etc.
- Machine is having quite silent running and outlook is excellent with best quality paint and powder coated fitting.
- All features that make the "FRIENDS" Platen Punching Machine most Simple, Reliable and Maintenance free.

SHEET PASTING MACHINE



Sheet Pasting Machine is meant for gluing the fluted side of two ply board to make corrugated board of different plies. The speed of machine is 150 meters/minute. Available in 3 rolls and 4 rolls model.

Technical Parameter

Size	45"	55"	65"	75"	85"
Motor (H.P.)	1	1	1	1	1
Wt.Approx	400	450	500	600	700
Floor Space	5'x3'	6'x3'	7'x3'	8'x3'	9'x3'

FOUR BAR ROTARY CUTTING & CREASING MACHINE



This machine is each and every commitment to the bundling venture for managing and wrinkling the folded board simultaneously. This is useful for creasing and cutting simultaneously. The machine is with two pairs of shafts. For easy feeding two guides, 4 sets of Creasing dies & 4 sets of Slittering dies are provided.

Technical Parameter

Size	65"	75"	85"	95"
Motor (H.P.)	2	2	2	3
Wt.Approx. (Tons)	1.7	2	2.2	2.8
Floor Space	7'x4'	8'x4'	9'x4'	10'x4'

ECCENTRIC SLOTTER

The Eccentric Slotter machine is given 4 opening cutters. Slotting & corner cutting is done simultaneously over this machine. It is capable of slotting a number of sheets in one stroke. The distance between two slots and slot depth is adjustable. Two guides are provided to facilitate easy feeding & correct dimension.

Technical Parameter

Size	65"	75"	85"	95"
Motor (H.P)	2	3	3	5
Max. Slot	17"	18"	18"	18"
Wt. Approx.	1.8	2.2	2.4	3
Floor Space	7'x4'	8'x4'	9'x4'	10'x4'



FLEXP BOARD PRINTER

Flexo printing Machine utilized for imprinting on straight forward Kraft paper Print through photo Polymer Stereos. Registration for right Printing fitting for short Print Run Hand Brake to deliver the Eccentric strain controlled exchange of Ink. accessible in choice of single shading unit, Double hue Unit and Tripple shading unit.



Technical Parameter

Size	52"×75"	56"×85"	65"×95"
Motor (H.P.)	3	5	5
Wt. Approx. (M.T.)	2.2	2.6	3
Floor Space	7'×12'	7.5'×13'	8.5'×14'

Registration for appropriate Printing for Short Print .

To deliver the Eccentric strain controlled exchange of ink, use the Hand Brake.

Accessible in choice of single unit, Double and Tripple Printing unit.



BOX STITCHING MACHINE

This Machine is used for last operation in box making i.e. to stitch the corrugated board boxes. Parts are standardized and interchangeable. Machine is capable of continuous running at speed. Very easy in operation and maintenance. The components are made of highest standard of appropriate metals and given precise heat treatment. The machine operates at speed of 300 stitches per minute.

Flap Sealing & Bottom Sealing Stitcher

Sizes:

20" 30" 36" 42" 48" 60"

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