



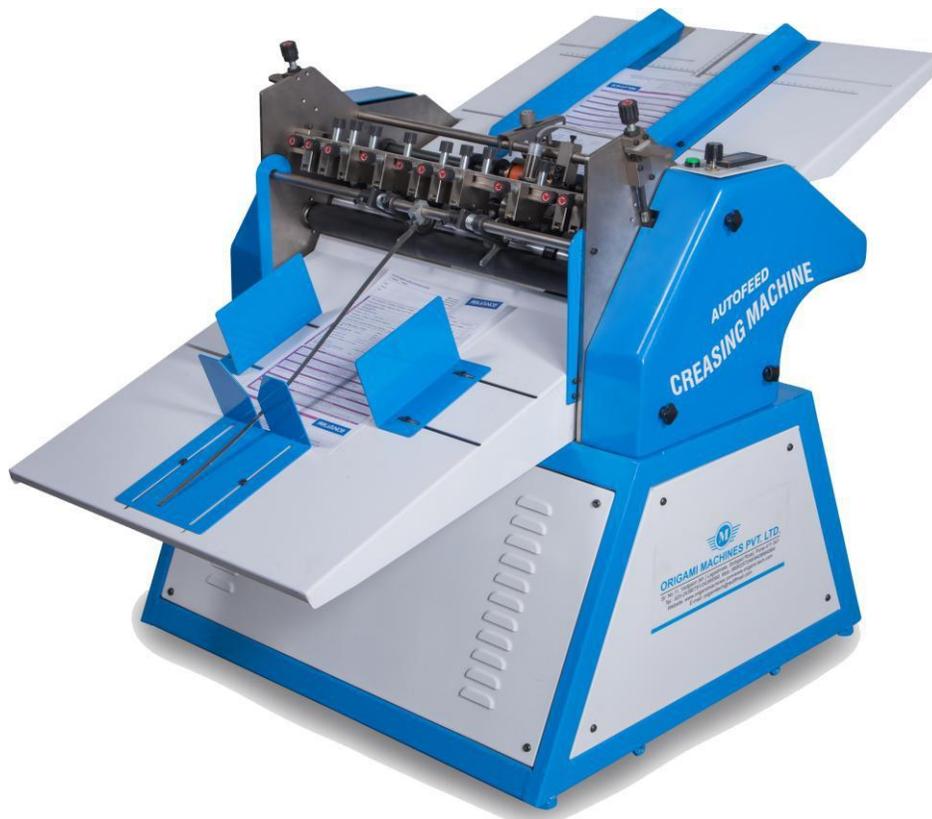
Origami Machines Private Limited

Vadgaon KH, Pune, Maharashtra

ORIGAMI Auto feed Creasing, Perforation, Half cutting Machine

User's

Manual OCM 20/OCM 25



This Manual Covers All Information about Origami Machines Pvt. Ltd.,
“ORIGAMI” range of Auto feed creasing machines with perforation and Sticker Half
cutting.



About Origami Machines Pvt. Ltd.

Established in the year 1999, “Origami Machines” is an innovative company **engaged in the manufacturing and exporting of a wide range of** Automatic Paper Folding Machines, Paper Creasing with Perforation & Sticker Half Cutting Machines, Variable Data Printing Machines with Perforation & Sticker Half Cutting, Rotary Numbering Machines with Perforation & Sticker Half Cutting.

In addition to this, we offer these products in various specifications to meet the various requirements of clients. We have a team of hard-working and dedicated people, working to deliver quality products.

Further, we test our machines on various quality parameters to ensure that no defected machine goes out of the organization. We provide services of repairing and maintenance.

Marking our presence in the Paper and Printing Industry, we have acquired overwhelming success under the able guidance of our founder and Managing Director, **Mr. Nitin Handedeshmukh.**

His futuristic business purview has given us time to time motivation to progress in our field and have prompted us to excel in our endeavors. To further expand our horizons we have participated in different trade fairs such as **Exhibition** held in different cities in India and abroad so as to give our prospective clients a fair idea about the functional attributes of our world class machines.

Also available in customized designs, these precision machines offer faster and accurate performance in different working conditions.

We provide services of repairing and maintenance. Our objective is customer satisfaction and we are dedicated to it. For more information about our products, please visit to our website and contact nos. given below.

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Introduction

Origami make Auto feed creasing, perforation & Sticker Half cutting Machine is ideally suited for all requirements of mass works. Typically for

- Stickers cutting.
- Sales Promotion Literature
- Small Booklet and Diaries

Origami's Auto feed creasing; perforation & Sticker Half cutting range of equipment are indigenously designed to perform all operation automatically.

OCM 20 Sizes: 20" x 23"

OCM 25 Sizes: 25" x 23"

Features

Origami's Auto feed creasing, perforation & Sticker Half cutting Machine has many useful features

- Fast Operation with the speed of 5000 to 10000 jobs per hour. (speed depends on paper quality & size)
- Accurate and consistent Quality
- Sharp Cut
- Easy to operate
- Low maintenance
- Compact, durable ,light weight and attractive machine
- Basic machines and attachment are standardized. Hence up gradation is possible without discarding existing machine, thus protecting your investment



About this manual

This manual explains the construction and operation of entire Origami Auto feed creasing, perforation & Sticker Half cutting Machine range of models and attachments.

The entire manual is constituted by different parts. There are following parts

We have taken efforts in providing you with all the details of Origami Auto feed creasing, perforation & Sticker Half cutting Machine in this manual.

We welcome your feedback about our product and customer support services.

Operating Principle

There are three stages of the entire operation cycle

1. Feeding
2. Creasing (also called scoring)/Perforation /Sticker Half cutting
3. stacking

Stages 1, 2 and 3 are involved in every job. To perform creasing operation a creasing cutter has to be fixed on the shaft provided and the creasing ring is supplied along with the machine. Similarly to perform Perforation and Sticker Half cutting cutters have been fixed on the shaft provided. The details are discussed in detail in this manual.



Specifications

Model OCM 20 / OCM 25 DETAILS

Mechanical Specifications

Dimension	: 1220 L x 800 W x 1000 mm H / 1220 L x 920 w x 1000 mm H
Weight	: 70 kg / 200 kg (with trolley)
Finish	: Powder Coated / Plated
Number of creasing requirement)	: Min.1, Max. 2 (as per customer requirement)
Number of Perforation requirement)	: Min. 1, Max. 4 (as per customer requirement)
Number of Half cutting	: Min. 1, Max4 (as per customer requirement)
Minimum Gap in two cutters	: 18 mm
Type of Feed	: Friction Feed
Paper Size:	
Minimum	: 150 mm (Feed Edge) x 150 mm (Length)
Maximum	: 510 mm (Feed Edge) x 400 mm (Length) : 630 mm (Feed Edge) x 450 mm (Length)
Permitted GSM	: 45 to 300 GSM

Electrical Specifications

Operating Voltage	: 230 v AC, Single Phase, 50 Hz
Operating Current	: 1 A
Power Requirements	: 0.25 HP
Motor Type	: Induction Motor, 0.25 HP 3 Phase, 230 VAC, 2800 RPM
Speed Regulation type	: Variable Speed A/C Drive
Speed Range	: 5000 to 10000 sheet per hour depending on paper quality, size & number of cutter.



Construction and Operation

OCM 20 / OCM 25 Unit Details

Operating Instructions

The Machine is equipped with different switch.

It consists of:

- 1] Speed Regulator: To Control the speed of the Machine.
- 2] ON/OFF Switch: This is a standard starter push button which operates the drive.
- 3] Counter: This is applicable only for the sheet counting with batch counters.

The entire unit OCM 20 / OCM 25.

The unit has three main parts.

- Feeding System
- Creasing, Perforation, Half cutting system
- Delivery system

Feeding System

Feeding system

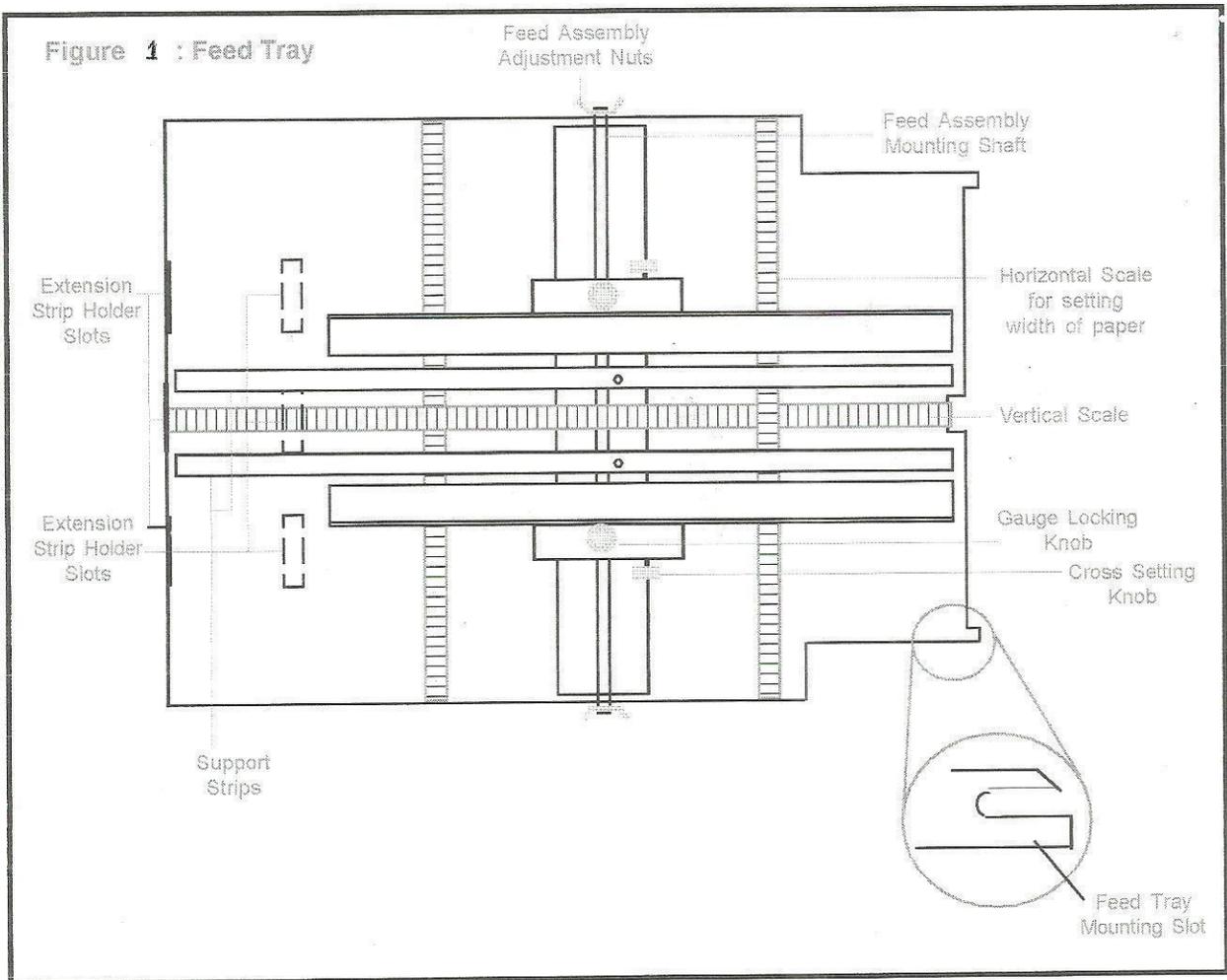
- feeds papers to the machine one by one
- ensures smooth paper feeding of papers of various types and thickness

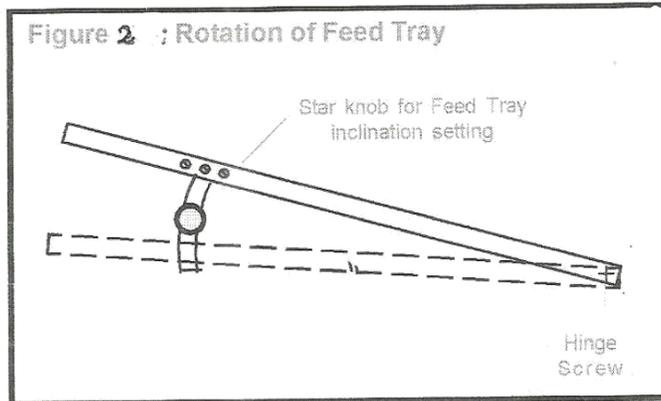
Feeding is based on Friction Feed Principle. Feeding system consists of following components.



Feeding Tray

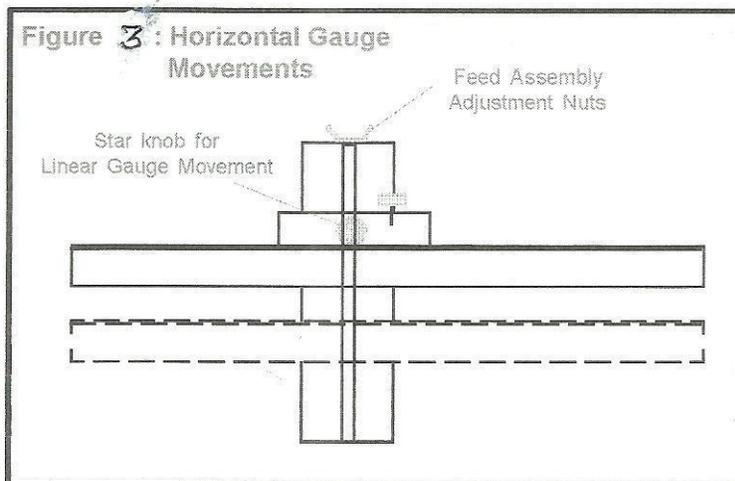
Papers are feed to and are held in the Feed tray. As shown in the figures please see **Figure No 1& 2**, Feed tray has following components and adjustment. Vertical and horizontal scales help you in setting gauges.

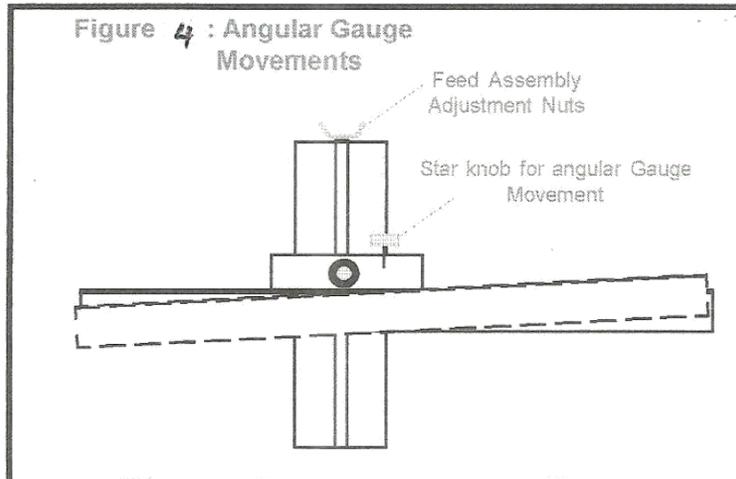




Gauge locking knob

It is used to lock the Horizontal Gauge movement on the Feed Assembly Mounting shaft. Feed gauges slide horizontally on a Feed Assembly Mounting Shaft and they can be locked at any position on this shaft with the help of gauge locking knob. Please see **Figure No.3 & 4**





Support Strips

In case of lower GSM papers, support strips are used to keep papers straight while feeding.

Extension strips

In case of long papers Extension strips are used to extend the support to the papers at their rear end while feeding. Extension strips should be inserted through the slots provided on the rear edge of feed tray and the strip holder slots welded at the bottom. For narrow papers, insert one extension strip in the center slot. For wide papers, insert two extension strips.

Feeder Assembly

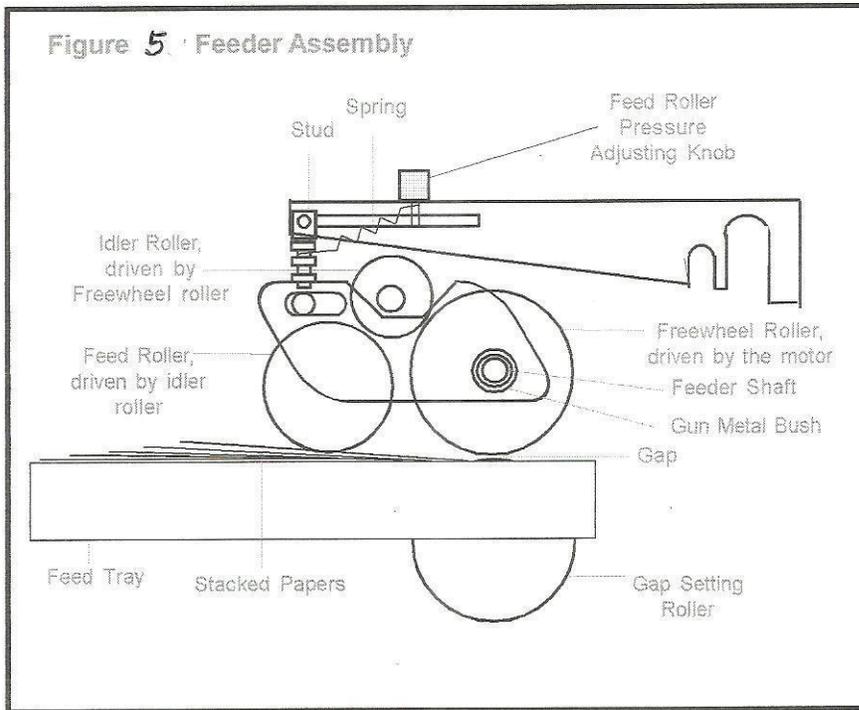
Feed roller pushes papers to the machine. Feed roller is driven by the idler roller which is in turn driven by freewheel roller. Freewheel roller is mounted on feeder shaft (F1 shaft) Allen grub screw on the freewheel roller. The feeder is driven by a pulley assembly coupled to the roller no.1. Top sheet of the paper stack is fed to the machine. Feed roller pushes it towards the gap and it is pulled by free wheel roller.

Feeder rollers are subject to frequent wear and tear. Refer to maintenance section of this Part for replacement details.

To adjust tension on the feed roller, a spring is provided. One end of the spring is coupled to the stud above the feed roller, while other end is coupled to pressure



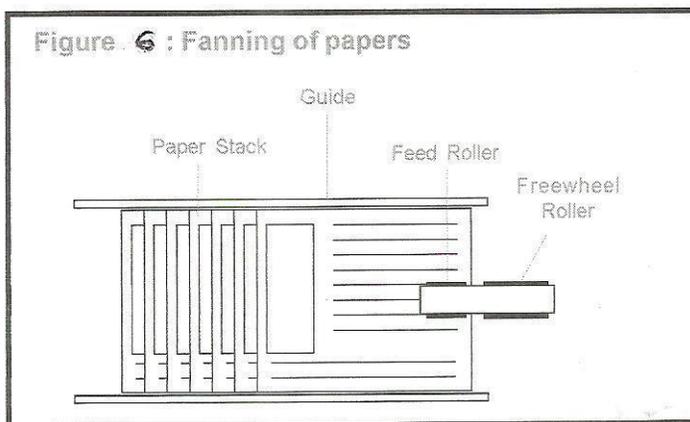
Adjustment knob. To change the pressure loosen the knob, move it to a suitable position in the slot and tighten it again. Please see **Figure No.5**



Note: *Moving the knob closer to the Feed roller will increase pressure on the roller.*

Fanning out of papers

Papers should be properly fanned (shuffled) before you feed them to the machine. This will ensure single paper feeding. Please see **Figure No.6**





Gap Setting Roller

Gap setting roller is mounted on a swiveling bar. This swiveling bar is located below the feed tray.

Note: *gap setting roller is a fixed roller. Do not make attempts to make it rotate, it may get damaged*

Gap between the freewheel roller and the gap setting roller determines the thickness of paper that can pass through. There are two methods for adjusting this gap.

1. Course Tuning Method

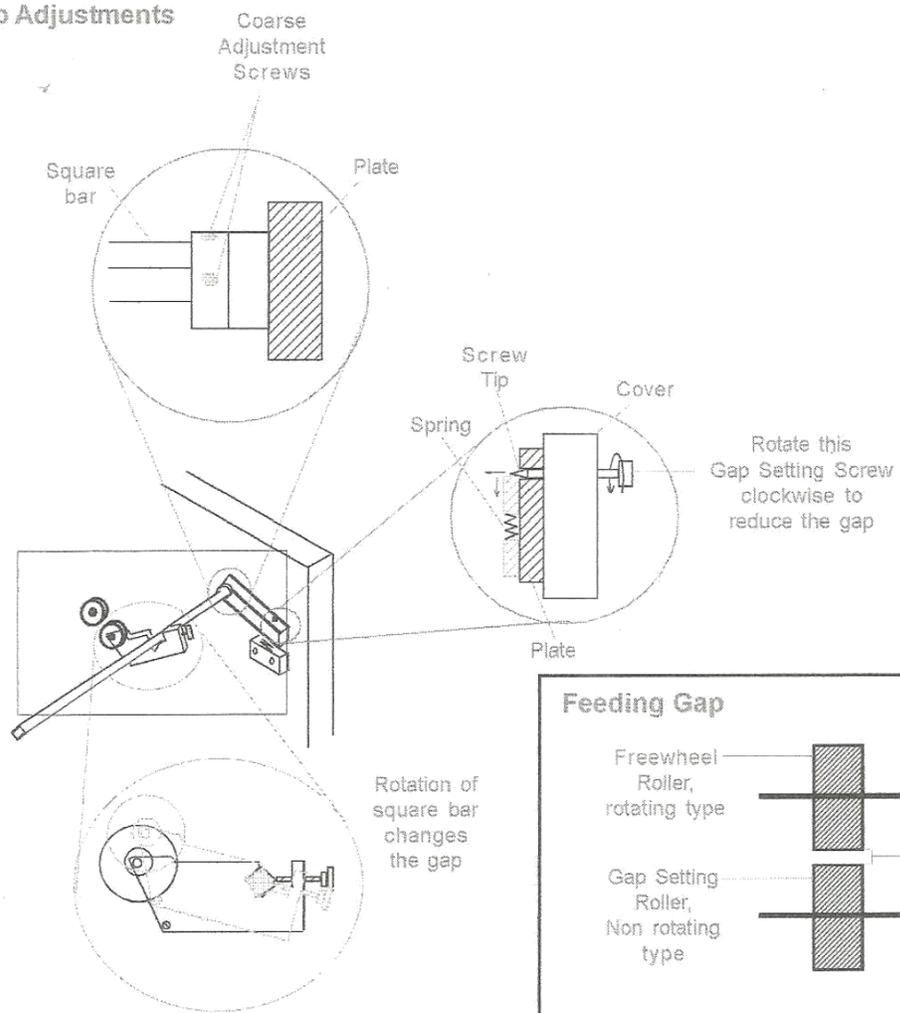
For setting more than 1 mm, you have to rotate the swiveling bar on which the gap setting roller is mounted. Loosen the Allen screws at the right hand side end (motor side) of the swelling bar. Rotate the swelling bar to adjust the gap. Tighten the screws. Use the Gap setting knob to fine the gap.

2. Fine Tuning Method

Rotate the gap setting knob provided. This will allow setting of $\pm 0.5\text{mm}$. When you rotate the knob clockwise, gap reduces and when you rotate it Anti clockwise gap increases. This setting should be used to fine tune the gap. Please see **Figure No.7**



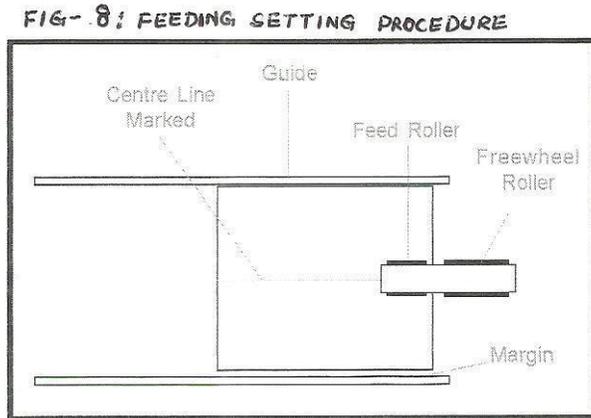
Figure 7 : Gap Adjustments





Feeding Setting Procedure

1. Take a sample of paper and fold it the way you want to be Creasing, Perforation, Half cutting. Open it and determine which edge of the paper is to be feed to the machine. For more information please Figure No. 8.

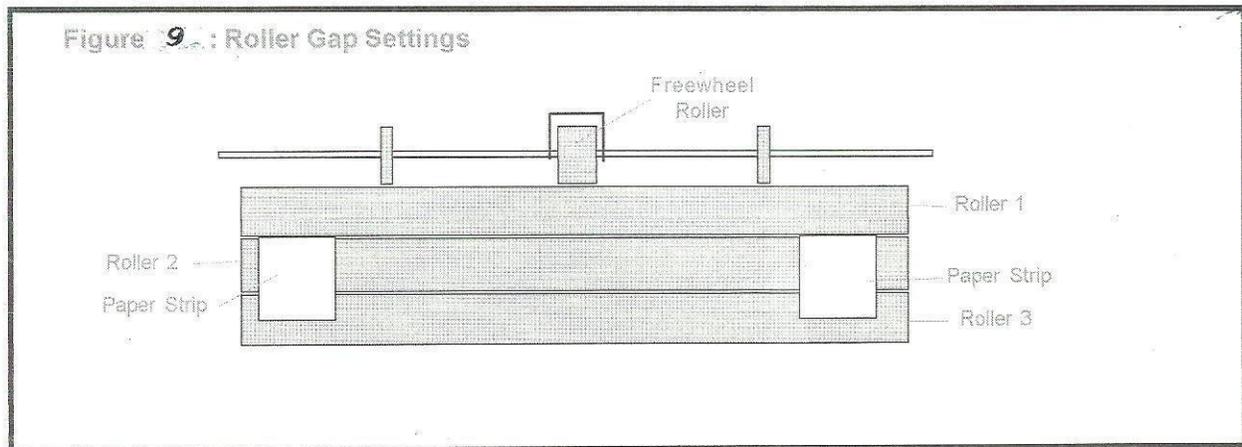


2. Fold the paper along its width to find the vertical center line. Mark this line with a pen or pencil
3. Place the paper on the feed tray such that feed roller touches the center line marked by you.
4. Adjust the feed gauges along the sides of paper. Make sure that there is slight margin between one of the feed gauges and the paper flow.
5. Insert a paper in the gap between freewheel roller and gap setting roller run the machine at very slow speed. Hold the paper at its rear end.
6. Try to pull the paper back. If the gap is less, the paper will be tired. If the gap is more you will be able to pull the paper very easily. If the gap setting is optimum, you will feel slight resistance while pulling the paper back. This is the correct setting for that particular type of paper. Use fine and coarse gap setting to adjust the gap. You can master this procedure by practice.
7. Take the stack of paper to be fed. Fan out the papers & keep the stack on the feed tray.
8. Turn the Roller manually. Ensure that one paper is being fed at a time. Adjust the pressure on feed roller if required.
9. If papers are pulled over the gauges, they may be squeezed. Adjust position of the gauges using the knobs.



Roller Pressure Adjustments

The gap is set with the help of gap setting knob provided on both sides of spring loaded rollers. For each roller two setting knobs are provided. The adjustments have to be symmetrical on both sides of roller. Rotating the setting knobs in clockwise direction increased the gap between rollers. The gap setting knob should be locked using the lock nuts. Please see **Figure No 9**



Setting Procedure

1. Choose the combination of cutters as per your required.
2. Determine the travel of paper through free wheel roller and Gap setting roller.
3. Determine the number of layers of paper passing through cutter & rollers
4. Set the gap between R1 and R2 to single paper thickness.

Delivery System

The **creased** paper is delivered by rollers. Roller No.4 and gripper rollers then paper are accumulated in collection Tray. To have them arranged one after the other in an ordered manner. Gripper Roller assembly is provided. Gripper rollers can be moved on the sliding bar. Gripper roller should be adjusted to rest on the Roller No.4. Friction between roller no. 4 and gripper rollers drives papers. Gripper roller tension can be adjusted by setting the screw. Papers are delivered by the roller no. 4 and



gripper roller & stacked in a collection tray. Stacked papers should be frequently removed from the collection tray.

Maintenance

General Precautions

- Cover the machine when not in use
- While cleaning the parts with water or kerosene take care not to let it enter the bearings
- Do not let them rest on the working edge of cutter.

While not is use

If the machine is not going to be used for more than 2 days or more,

- Apply grease to feeder shaft, swelling bar, gap setting screw, main pulley's shaft, and other parts which can get rusted
- Relies the gripper rollers pressure on the Roller no. 4 in such a way that no roller no.4 & grippers will coincide with each other.

Daily Maintenance

- Oiling at all points marked with red paint.
- Clean the rubber rollers using Kerosene and water. Take care not to spill Kerosene or water in the bearings
- Clean the dust deposition using a wet cloth. While cleaning the machine, rotate it manually using hand wheel, and do not use the electric motor drive.

Weekly Maintenance

- Remove the machine covers and grease all the gears.

Monthly Maintenance

- Check belt tensions
- Replace belts if they are worn out



Replacing Parts

Feed Roller

Remove the SS pin inserted in the feed roller nylon bush and feed assembly. The feed roller will come out with the nylon bush. Remove the nylon bush from the rubber roller. Fit it into a new rubber roller and insert it back in the place in the feed assembly. Insert the pin back.

Idler Roller

Remove the SS pin inserted in the brass bush and feeder assembly. The idler roller will come out with the brass bush. Remove the brass bush from the rubber roller. Fit it into a new rubber roller and insert it back to the place in the feeder assembly. Insert the pin back.

Freewheel Roller

Remove both end covers of the machine. Loosen the screws of the timing pulley driving the feeder shaft. (Remove the brake assembly in case of EBC fitted machine by using following procedure. Remove the brake housing fitted on stud. Remove the brake plate by unscrewing M4 grub screw. While removing the brake housing ensure that the wire will not get disturbed) Remove the bearing seat at the other end of the shaft. Move the feeder shaft towards the bearing end. Remove the shaft. Remove the side hold down roller. Loosen the Allen screws on the entire assembly from the shaft. Freewheel the roller gets separated with Polyurethane roller. Fit it into a new Polyurethane roller and insert it back to the place in the feeder assembly. Ensure that it freewheels after fitting. Replace the feeder assembly. Insert the hold down roller again in the shaft. Insert the shaft in its place. Insert the bearing side first then the pulley side. Fix the pulley in place by tightening screw. Insert the bearing back and tighten it. Place the roller at its position and tighten the Allen screw on entire assembly. Fit the brake assembly in its place back by reversing the procedure to remove it



Gap Setting Roller

Loosen the screws on the round bar arm to release it. Remove the gap setting assembly from the round shaft by turning the knob. The gap setting roller is fitted using a M6 x 35 mm bolt. Use 10 x 11 spanners to remove it. The gap setting roller will come out with the MS bush. Remove the MS bush from the rubber roller. Fit it into a new rubber roller and insert it back in place in the gap setting assembly. Put in the M6 x 35 mm screw in position. Mount the assembly back in its place. Insert a paper between the gap setting and the freewheel roller to set the gap. Put in the setting knob to an extend taper position can be seen over the round bar arm. Tighten the screws of the round bar arm. This will allow you adjustment in both the direction using the gap setting knob.

Fixed Roller (R2, R3,R4)

Remove both the side covers of the machine. Remove the (57T, 15 ID) timing pulley of R3 Roller. Remove the (24T, 12 ID, LH) gears. Remove the woodruff key. Remove the bearing housing of both sides. Remove the roller. Take a new roller. Insert the roller from outside of the plate. Place the roller on the bearings and insert washers if required so that there is no play. Place the bearing seats and mount the gear. They as were removed.

Spring Loaded Roller (R1)

Remove both the side covers of the machine. Remove the 16 Teeth Pulley on gear side & then remove (24T, 12ID) gear. Remove the spring. Remove the hinge screw. Remove the lever. Take a new roller. Place the new roller in lever. Place the hinge screw. Insert washers if required so that there is no play. Place the spring. Mount the gear. The lever should freely swing against spring pressure

NOTE : Roller No.R1 is mounted with the gear 24 T, 12 ID RH & R2,R3 & R4 is mounted with the gear 24 T,12 ID LH.



Spare Part

Feeding System

Feed Roller

Idler Roller

Freewheel Roller

Gap Setting Roller

Side Hold Down Rollers

Feeder Bracket Spring

Idler Roller Spring

Creasing Mechanism

Creasing Cutter

Cutter Holder

Creasing Cutter Sleeve

Creasing Pressure Setting Knob

Cutter Holder Locking Knob

Perforation Mechanism

Perforation Cutter

Perforation Cutter Holder

Perforation Pressure setting knob

Slitting Mechanism

Slitting Cutter

Slitting Cutter Holder

Slitting Pressure Setting knob



Drive

Motor to Main Pulley to R3 Roller

Motor Timing Pulley-20 teeth

57 XL Timing Pulley on R3 Roller

170 XL Timing Belt

Feeder drive

Timing Belts-100 XL (R1 to F1 Shaft 26 Teeth Pulley)

Roller Drive

Helical Gear- 24 teeth-RH (R1) 12 mm ID

Helical Gear 24 Teeth 12 ID, Idler RH Helical

Gear 24 Teeth 12 ID, LH (R2, R3, R4)

Woodruff Key 3mm

Nut M12

Bearings

R2, R3, R4 Shaft Bearing 6002 ZZ

R1 Roller Bearing 6802 ZZ

F1 Shaft Bearing 6802 ZZ

For Idler Gear 6800

Bearing Seat

CI Bearing Seat for R2, R3, R4 Shaft 38 OD 32 ID

F1 Bearing Seat 26 OD 21 ID



Electrical Parts

Induction Motor, 0.25 HP 3 Phase, 230 VAC, 2800 RPM

A C Drive for Induction Motor

Pot 5K Pankaj

Fault Diagnosis

Fault: Paper feeding is not continuous

Cause 1: Paper stack is very tightly held between the feed gauges

Remedy: Loosen the gauges

Cause 2: Gap between gaps setting roller and freewheel roller too tight.

You may also find papers Buckled between feed and freewheel roller.

Remedy: Increase the gap. Use Gauge adjusting knob for fine settings. For more information, refer *To Gap Setting Procedure in manual given before* .Adjust the pressure on the feed roller if required.

Cause 3: Inclination of feed tray is low

Remedy: increase the inclination of feed tray

Cause 4: Tension on idler roller spring is insufficient. Idler roller will not rotate properly.

Remedy: Replace the springs

Cause 5: Ink is deposited on freewheel roller and gap setting roller. This occurs in case of art papers.

Remedy: Clean the rollers using kerosene (or any roller cleansing agent)

Cause 6: Papers in the stack are sticking to each other

Remedy: Reshuffle the papers and feed them again

Cause 7: Pressure on the feed roller is too high



Remedy: Pull the feeder roller bracket knob away from the feed roller to reduce the pressure.

Cause 8: Paper cutting is not at right angle.

Remedy: Change the angle of the gauge with the help of gauge setting knob fitted on the gauge itself

Cause 9: Paper is not pulled by the free wheel roller from its center of the width

Remedy: Adjust the gauge so that the papers are pulled from the center of its width

Cause 10: Freewheel roller is not aligned with the gap setting roller

Remedy: Align the freewheel roll

Fault: Paper feeding paper is double and irregular

Cause1: Gap between freewheel roller and gap setting roller is too wide

Remedy: Adjust the gap

Cause 2: Feed tray inclination is too high

Remedy: Decrease the feed tray inclination

Cause 3: Ratchet and Paul mechanism is worn out

Remedy: Replace the freewheel assembly (*not the feeder assembly*)

Frequently Asked Questions

Under what condition is manual operation suitable?

Manual operation is useful under following conditions

- paper is jammed
- settings are to be adjusted

Why is the hinged table adjustment provided for feed tray?

Papers vary in size, weight and smoothness. Art papers and coated papers tend to slide into the feed roller. This can be avoided by keeping the tray inclination low. Rough papers should slide themselves down into the feed roller, hence tray inclination should be higher. The hinged table adjustment allows these settings.

How many papers can I feed at a time? Is it required to stop the machine when one stack is exhausted?



The number of papers you can feed to a machine at a time is decided by the size and thickness of the Paper. It is not required to stop the machine when first stack is exhausted. Another stack can be placed below the first stack and machine can run continuously.

Can you feed papers smaller than 125 x 150 mm, given in the specifications?

Yes! With some special attachments it is possible to feed papers up to 110mm x 150 mm. however this is an optional attachment.

Why more than one paper was were feed, even if settings are correct?

There are two reasons of this problem.

1. If the cutting machine's is not sharp, the papers are not cut properly, hence are not fed correctly.
2. If shuffling of the papers is not done correctly before feeding. This problem is frequent with power gram mage.

Why shuffling and fanning is necessary?

Shuffling separates papers from each other. Hence it becomes easier for the feeder to remove single paper from the stack.

Why is speed regulation required?

Paper feeding speed will vary depending on paper type and size, hence speed regulation is essential.

For Example, coated papers and art papers require less speed than rough papers.