INSTALLERS, SERVICE & LINE MECHANICS: PLEASE READ THIS MANUAL AND FAMILIARIZE YOURSELF THOROUGHLY BEFORE ATTEMPTING TO INSTALL OR SERVICE THE DALEMARK EQUIPMENT DESCRIBED HEREIN. FOR FURTHER ASSISTANCE, CONSULT OUR FACTORY STAFF.

INSTRUCTION AND PARTS MANUAL

SERIES 5000
AIR OPERATED RECIPROCTING IMPRINTER
MODEL 5060A-2

SERIAL NO. _____

When ordering, always provide the following information:

- MODEL NUMBER
- SERIAL NUMBER
- PART DESCRIPTION & PART NUMBER
- AS SHOWN IN PARTS LIST

DALEMARK INDUSTRIES, INC.
EXCEL PARK 2
575 PROSPECT ST., SUITE 211-212
LAKEWOOD, NEW JERSEY 08701
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SECTION:

SECTION 1) GENERAL THEORY OF OPERATION

1. The Model 5060A Printer (Coder) is intended for use on medium speed intermittent motion packaging and processing equipment. For our purposes, *intermittent motion* is defined as motion that is *stop start relative to the 5060A Printer*. The *substrate* (the surface being printed) can be the packaging film on a vertical form-fill- seal machine or horizontal vacuum form machine, the surface of a chipboard carton as it moves through a carton former, a container on a filling line or virtually any other motion that is *stop-start or can be made stop-start* relative to the 5060A. Printing is performed only during the stop portion of the stop-start motion of the substrate. The maximum cycle rate for the 5060A is 135 prints per minute. We call the machinery that the Printer is attached to the parent machine.

1.1 Printing is performed by moving the Print Head from the surface of the Ink Cartridge to the substrate to be printed, pressing the Perma-Grip Type in the Print Head ***gently*** against the substrate, and returning the Print Head and Type to the surface of the Ink Cartridge. The 5060A moves the Type and Print Head using an air cylinder. The extension of the air cylinder pushes the print head through an arc defined by two internal cam tracks. The initial portion of the travel is directly away from the surface of the Ink Cartridge. The middle portion of the travel rotates the Print Head through 90 degrees of arc. The final portion of the travel is directly toward the surface to be printed. The straight portions of the travel insure that the Type will not have a side motion relative to the surface being printed. The air cylinder holds the Print Head and Type at the end of travel for approximately 50ms then retracts to the surface of the Ink Cartridge for re-inking.

1.2 The ink that is in the Cartridge used in the 5060A can be tailored to match the drying time requirements of your application, within certain limits. All inks require some amount of time to dry on the surface that is being printed. That time is at minimum about 1 ½ seconds on a non-absorbent (plastic). It is extremely important that the ink be given as much dry time as is possible. Ideally, the type will contact the surface to be printed just after that surface has stopped moving and will be in contact with it for as short a time as is possible.

1.3 The motion of the 5060A described in 1.1 is controlled by the operation of a 4-way electric solenoid valve. The valve is in turn controlled by either an electronic timer of an adjustable cam operated micro switch or other sensor. The digital timer is the preferred method of control, especially at high cycle rates. The length of the signal to the solenoid valve is called the impulse time or print time. *The duration and sequence of the print time signal is critical to a successful printing operation. The surface being printed must stop moving, the Type must firmly but gently contact the surface and the Type must retract from the surface before the surface being printed begins to move.*

1.4 It is very important that the type in the Print Head contact both the Ink Cartridge and the surface being printed *firmly but gently*. If the Type is allowed to slam into the surface being printed, the print will be distorted and difficult to read. Excessive impact when the Print Head returns to the Ink Cartridge will over-ink the Type, reduce the life of the cartridge and, in extreme cases, splatter ink out of the Cartridge. The velocity of the Print Head is controlled in two ways. First, the air pressure supplied to the Printer must be regulated. Normal operating pressure is 25 TO 40 psi. Secondly, the flow controls mounted on the air cylinder are used for precise control of the velocity of the Print Head during the extend and retract portions of the print cycle (when the Type is approaching the surface to be printed and when it is returning to the Ink Cartridge). The degree of impact on the face of the Ink Cartridge is also controlled by the position of the Ink Cartridge Holder relative to the retracted position of the Print Head.

SECTION 2) INSTALLATION

The installation section is divided into portions dealing with vertical form-fill-seal machines (Hayssen, Triangle, General and similar machines) and horizontal vacuum form machines (Tiromat, Multivac, Mahaffey-Harder and similar machines). Please locate the section applicable to your installation.

2.1 VERTICAL FORM-FILL-SEAL MACHINE APPICATIONS

2.1.1 MECHANICAL INSTALLATION

1) Unpack the Printer, control box (if supplied), bracket set (if supplied), Type and Ink Cartridges from the shipping boxes.

2) Assemble the bracket set following the bracket drawing supplied.

3) Attach the Platen assembly (part no. j2-40) to the bracket as shown in the bracket drawing. Adjust the platen so that there is approximately 3/16" space between the lower plate (#j2-42) and the upper plate (#j2-41).

4) Select a mounting location for the bracket. Things to consider when selecting a mounting location include the distance from the location of the printer to the first roller the printed message will contact, ease of access to the Printer for changing the Type and Ink cartridge and possible conflict with existing photo electric sensors for film registration.

5) Remove the packaging film from the packaging machine.

6) Place the bracket set and platen in the packaging machine but do not yet drill any mounting holes. **The platen must be on the side of the film that will not be printed**. The platen provides an adjustable surface for the type in the 5060A to press against.

Rethread the film on the packaging machine. Insure that the packaging film is snug against the surface of the platen when the bracket is in the chosen location—**VERY IMPORTANT**. If the packaging film is not tight to the surface of the platen, the film will move relative to the type when the 5060A is printing. Any motion of the packaging film will degrade the print quality. Center punch or transfer punch the mounting holes from the bracket to the packaging machine after you are satisfied with the location of the bracket.

7) Remove the bracket from the packaging machine; drill the mounting holes for the bracket in the machine frame.

8) Secure the bracket to the parent machine in the desired location using the bolts supplied.

2.1.2 ELECTRICAL INSTALLATION

If your order included a control box (CB1M or CB1MT) there will be an installation schematic included with the box. Please follow the instructions on that schematic.

If your order did not include a control box, the following items will be needed to send a control signal to the 5060A.

1) Solenoid valve, 4-way, 5-port, minimum operating pressure 5 psig or less. Solenoid voltage to match control voltage in your packaging machine (24VAC, 24VDC, 120VAC, 240VAC, etc.)

2) Signal source for the solenoid valve. The signal to the valve should be adjustable in duration, adjustable for position in the "film stop" portion of the bag machine cycle and should be interlocked so that the

printer will print only on a filled bag. Possible sources for this signal are microswitches triggered by a cam on a program shaft or a back-seal on signal that can be tied to a timed relay.

3) Air regulator with gauge to provide pressure control to the 5060A. ***PRESSURE SHOULD NOT EXCEED 40 PSI.***

TURN OFF POWER TO THE PACKAGING MACHINE AT THE MAIN DISCONNECT.

TURN OFF SUPPLY AIR TO THE PACKAGING MACHINE.

1) Mount the pressure regulator at a point convenient to the main supply air for your machine.

2) Mount the solenoid valve in your packaging machine, following all applicable codes and any special safety requirements your application may require.

3) Connect the signal source from the packaging machine to the solenoid valve.

4) Connect air from the main machine supply to the inlet of the regulator.

5) Connect the air line from the regulator to the inlet of the solenoid valve.

7) Pressurize the airline to the solenoid valve and mark the line from the outlet side of the valve that has air coming out. Turn off the air to the solenoid valve.

8) Connect the air line that comes from the solenoid valve that you marked as having pressure to the flow control closest to the front of the 5060A air cylinder.

9) Connect the second air line from the outlet side of the solenoid valve to the second flow control on the 5060A air cylinder.

10) Pressurize the air system. The print head of the 5060A should retract fully; the print head will be approximately in line with the front edge of the gold cartridge holder. If the print head extends away from the cartridge holder reverse the air lines on the printer cylinder.

11) Turn on the power to the packaging machine. Jog the machine to place the sealing dies approximately 1 inch below the top of their travel on the down-side. Adjust the trigger signal to the solenoid valve to activate at this point in the cycle. The signal should remain on for approximately 100 to 200 milliseconds (.1 to .2 seconds). When the solenoid valve turns on, the print head on the 5060A should extend. When the signal to the valve turns off, the print head on the 5060A should retract. The signal to the solenoid valve **must** turn off in time to allow the print head on the 5060A to retract from the film before the film begins to move.

2.2 HORIZONTAL VACUUM FORM-FILL MACHINE APPLICATIONS

2.2.1 MECHANICAL INSTALLATION

Most **5060A** systems for horizontal vacuum packaging machines will be shipped with a customized bracket specific to the machine the system is to be attached to. Installation and assembly drawings will be found in the box with the bracket set. **PLEASE FOLLOW THE INSTALLATION INSTRUCTIONS ON THE BRACKET SET DRAWINGS CAREFULLY, ESPICALLY IF ROLLERS ARE TO BE ADDED TO THE FILM PATH. ALIGNMENT OF THE NEW ROLLERS WITH EXISTING ROLLERS IS CRITAL TO A SUCCESSFUL INSTALLATION.**

TIROMAT and MULTIVAC SYSTEMS

Tiromat and ***Multiva***c brackets straddle the infeed conveyor immediately adjacent to the end of the control box. The bracket will include all required film handling rollers, the coder inner frame, manifold blocks if more than one coder is to be mounted on the machine and the riser legs. Print location is set by loosening the inner frame riser leg clamps and sliding the inner frame assembly up or down the frame as required.

DIXIE VAC SYSTEMS

For ***Robert Reiser & Co. (Dixie Vac***) machines, the frame set is a rack and pinion design that attaches to the end of the control cabinet. No film diverting rollers are required and the film path is not modified. The print location is set by turning the rack knob and moving the coder inner frame up and down the vertical portion of the web.

2.2.2 ELECTRICAL INSTALLATION

TURN OFF POWER TO THE PACKAGING MACHINE AT THE MAIN DISCONNECT.

TURN OFF SUPPLY AIR TO THE PACKAGING MACHINE.

If your order included a control box (CB1M, CB1MT or CC1MT) there will be an installation schematic included with the control box. Please follow the instructions on that schematic.

If your order did not include a control box, the following items will be needed to send a control signal to the 5060A.

1) Solenoid valve, 4-way, 5-port, minimum operating pressure 5 psi or less. The solenoid voltage should match the control voltage in your packaging machine (24VAC, 24VDC, 120VAC, 240VAC, etc.)

2) Signal source for the solenoid valve. The signal to the valve should be adjustable in duration and should be interlocked so that the printer will print only once per machine cycle. An adjustable one-shot relay is a good choice for the signal to the coder solenoid valve. Possible signal sources to trigger the one-shot relay include unused contacts on the die up/tools up relay or the film brake on signal.

3) Air regulator with gauge to provide pressure control to the 5060A. ***PRESSURE SHOULD NOT EXCEED 40 PSIG.***

1) Mount the pressure regulator at a point convenient to the main supply air for your machine.

2) Mount the solenoid valve in your packaging machine, following all applicable codes and any special safety requirements your application may require.

3) Connect the signal source from the packaging machine to the input of the solenoid valve driver (one-shot) relay.

4) Connect the signal from the output of the solenoid valve driver relay to the solenoid valve.

5) Connect air from the main machine supply to the inlet of the regulator; turn the regulator to its full off position.

6) Connect the air line from the regulator to the inlet of the solenoid valve.

7) Pressurize the air line to the solenoid valve and mark the line from the outlet side of the valve that has air coming out. Turn off the air to the solenoid valve.

8) Connect the air line from the solenoid valve that you marked as having pressure to the flow control inlet on the 5060A air cylinder. The flow control is located on the air cylinder at the end closest to the body of the printer.

9) Connect the second air line from the outlet side to the solenoid valve to the second port on the 5060A air cylinder.

10) Pressurize the air system. The print head of the 5060A should retract fully; the print head will be approximately in line with the front edge of the gold cartridge holder. ***If the print head extends away from the cartridge holder, reverse the air lines on the printer cylinder.***

11) Turn on the power to the packaging machine and run the machine one cycle. Observe the operation of the coder. When the signal to the solenoid valve turns on, the print head on the 5060A should extend. When the signal to the valve turns off, the print head on the 5060A should retract. The solenoid valve signal should remain on for approximately 100 to 200 milliseconds (.1 to .2 seconds). The signal to the solenoid valve **must** turn off in time to allow the print head on the 5060A to retract from the film before the film begins to move. Set the signal to the valve as short as possible to allow maximum drying time for the print on the film.

SECTION 3 - SETUP AND OPERATION

Setup for the 5060A is quite simple. There are only four adjustments that need to be considered, and of the four only two will need to be made more than once. Proceed as follows:

1) Remove the print head from the 5060A by pushing the head sideways in the holder. The print head is retained by a ball plunger. Put some rubber type in the head by pushing the type down over the rubber ribs on the print head mat. Replace the print head in the printer.

2) Remove the protective cover from one ink cartridge and insert the cartridge in the holder on the 5060A. You can push the print head on the 5060A away from its full retracted position to make inserting the cartridge easier. Let the print head return to its retracted position.

3) By hand, push the print head away from the face of the ink cartridge until it just clears the surface. When you release the print head, the type on the print head should push the face of the ink cartridge in approximately 1/16" at the point of contact. Adjust the position of the cartridge by loosening the ¼-20 button head screw in the case of the holder and sliding the cartridge holder forward of backward as required to achieve the proper amount of pressure on the cartridge face.

If the type does not push the face in, cartridge life will be reduced due to insufficient pumping action in the foam. If the type presses too hard, you will flood the type with ink and produce a blurry impression.

4) Adjust the pressure regulator to a setting of 15 to 25 psi.

5) If your installation included a control box, turn on the main power switch and press the switch marked TEST. If you have the 5060A wired directly to your packaging machine, cycle to machine one time to trigger the printer. The print head should extend and contact the packaging film, remain extended for a very short period of time and retract to the face of the ink cartridge. Observe how fast the print head travels toward the film and how hard the type hits the film. If the speed of the print head is excessive, turn the adjustment on the cylinder flow control in 1 turn. The farther in the flow control adjustment is turned, the slower the print head will travel. The flow control can be adjusted easily while the packaging machine is running to maximize print quality.

6) Examine the mark made on the film. If the imprint is satisfactory (it probably won't be), your setup is finished. If you have heavy print area, missing print areas or no print proceed to step 7.

7) On the top plate of the platen assembly find the 4 10-32 screws with attached knurled knobs.

7.1 If the print you made on the film is too heavy: Turn the screw closest to the area of the print that is too heavy by about ½ turn counter clockwise. If the print is too heavy all over, turn all four screws ½ turn counter clockwise. Make a test print and check the print quality. If the print is still heavy, repeat the proceeding steps until the print is satisfactory.

7.2 If your print is missing part of the letters: Turn the knurled knob closest to the missing area ½ turn clockwise. This adjustment will move the lower plate closer to the type thus increasing pressure in the area that was too light. Continue to adjust the platen until a satisfactory print is obtained.

7.3 If you have no print:

1) Confirm that there is type in the print head. If not, put type in the print head and re-try your print.
2) Confirm that the type is in contact with the ink cartridge. If not, adjust the position of the ink cartridge as in step 3. Re-try your print.
3) Remove the film from between the platen and the 5060A printer. Remove the air pressure from the 5060A and extend the print head to full travel by hand. Check the distance between the face of the type and the face of the platen.

4) Adjust the lower plate toward the type by turning the knurled knobs clockwise. Adjust the platen lower plate toward the type until the type is touching the platen lower plate. Re-try your print. If the print is too heavy, see step **7.1**. If the print is missing part of the letters or numbers, see step **7.2**. Adjust following the directions until a satisfactory print is achieved.

The quality of the imprint, once it is properly adjusted, will remain quite consistent. It will become lighter as the ink in the cartridge is used and may become "fuzzy" if the type gets dirty or is worn. Keeping good quality in the print head will help maintain good quality print.

OPERATION

Normal operation of the 5060A is quite simple. The only daily items are usually installing cartridges (see SETUP step 2) and changing the type in the print head if a message change is required (see SETUP step 1). Daily upkeep on the printer is nothing more than removing any accumulated dust or product that may be adhering to the printer.

Flow control adjustments may be required for optimum print quality. The flow control can be used to increase the imprint "pressure" by small amounts if required to "pick up" missing corners on letters or if old type is mixed with new type. The old type is frequently shorter than the new type and will require more pressure to print. Unfortunately, the increased pressure will distort the new type. The best solution is to not mix old and new type in the print head. If the message in the print head has been changed substantially (from a single line code to a full 2" x 2" printed message) platen adjustments may be required as well. For platen adjustment instructions, see SETUP step 7.

To locate the print on your package, slide the 5060A and its mounting frame up or down on the mounting bar as required. Slide the printer and platen side to side as needed for your application. Tighten the mounting lock boots firmly to prevent any drifting of the bracket during the run.

SECTION 4) MAINTENANCE

Maintenance for the 5060A is minimal. There are no lubrication points on the printer. All internal bushings are Delrin AF. The air cylinder utilizes Teflon seals. Oil in the air is not required for operation.

Daily
Clean the printer of accumulated product, seasonings, salt and/or dust.
Inspect the Type Holder mat for ink buildup. Clean if required.

Weekly
Check all screws for tightness, particularly if your operation involves a high cycle rate.
Check the adhesion of the Perma-Grip mat to the print head body.

Monthly
Check the condition of the Perma-Grip mat. If the mat is too stiff, it will not hold the type properly resulting in lost type and poor print quality. Replace if required.
Inspect the print head for wear on the dovetail slides. Excessive air pressure can damage the slides by depressing the print head against the ball plunger and allowing it to "bounce" in the print head holder. Replace as required.

SECTION 5) TROUBLESHOOTING

PROBLEM:

1) NO PRINT

Is there an Ink Cartridge with wet ink in the Printer? If no, install a new cartridge and re-test. Is there Type in the Print Head? If no, put Type in the Print Head and re-test.
Does the Type touch the face of the Ink Cartridge? If no, adjust per step SECTION 3 step 3.
Does the Printer cycle? If no:

Is the air turned on and set to 15 to 25 psi?
Is the control box turned on?
Is the signal to the control box or user installed solenoid valve active?
Is the flow control turned in too far to allow the cylinder to extend the Print Head?
Is the print signal too short to allow printing (minimum signal is .1 to .2 seconds)?
Is the solenoid valve switching the air from line 1 to line 2 (line 1 attaches to the flow control on the 5060A)?
Is the Platen adjusted to its proper distance? See SECTION 3 step 7.
Is there a mechanical restriction on the Printer?

2) PRINT NOT CLEAR

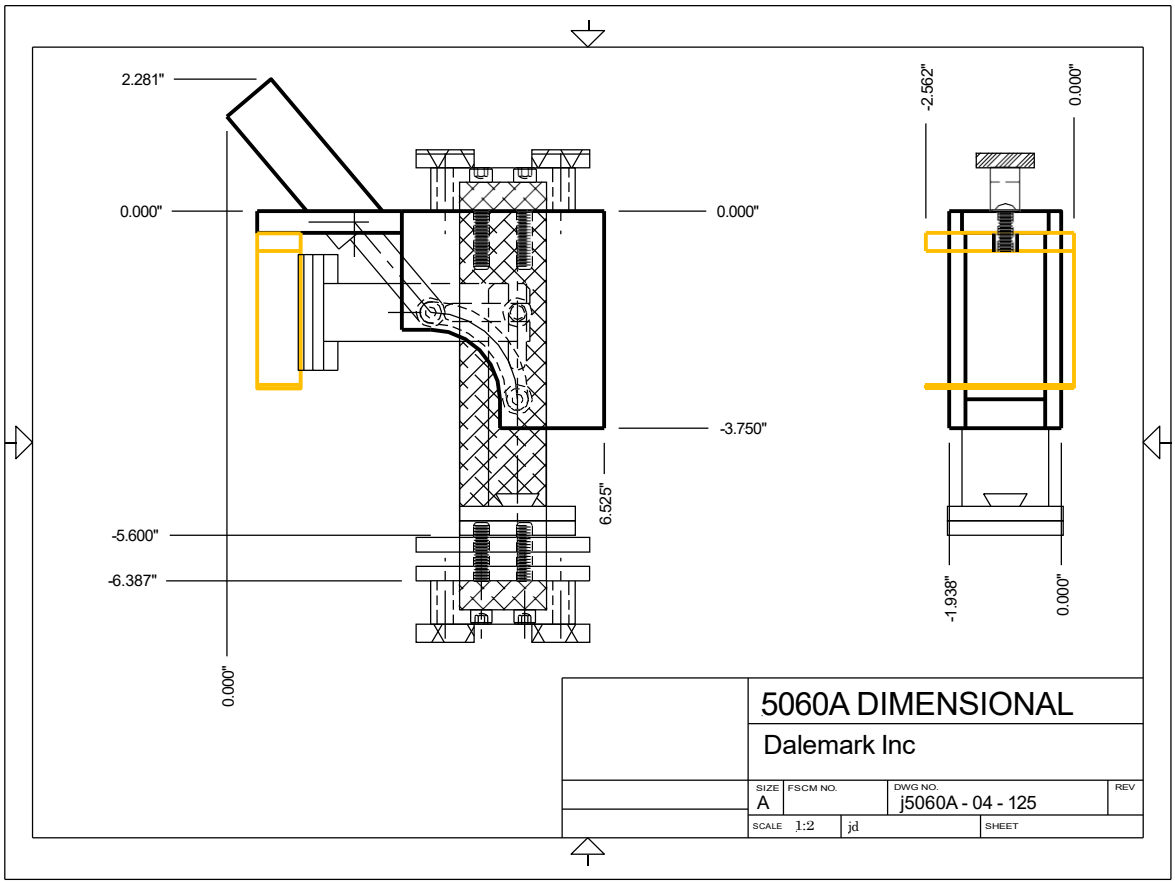
Print is too heavy and blurred….See SECTION 3 step 7.1

3) INCOMPLETE PRINT….See SECTION 3 step 7.2

4)PRINT IS SMEARED WITH STREAKS OF INK ON THE FILM

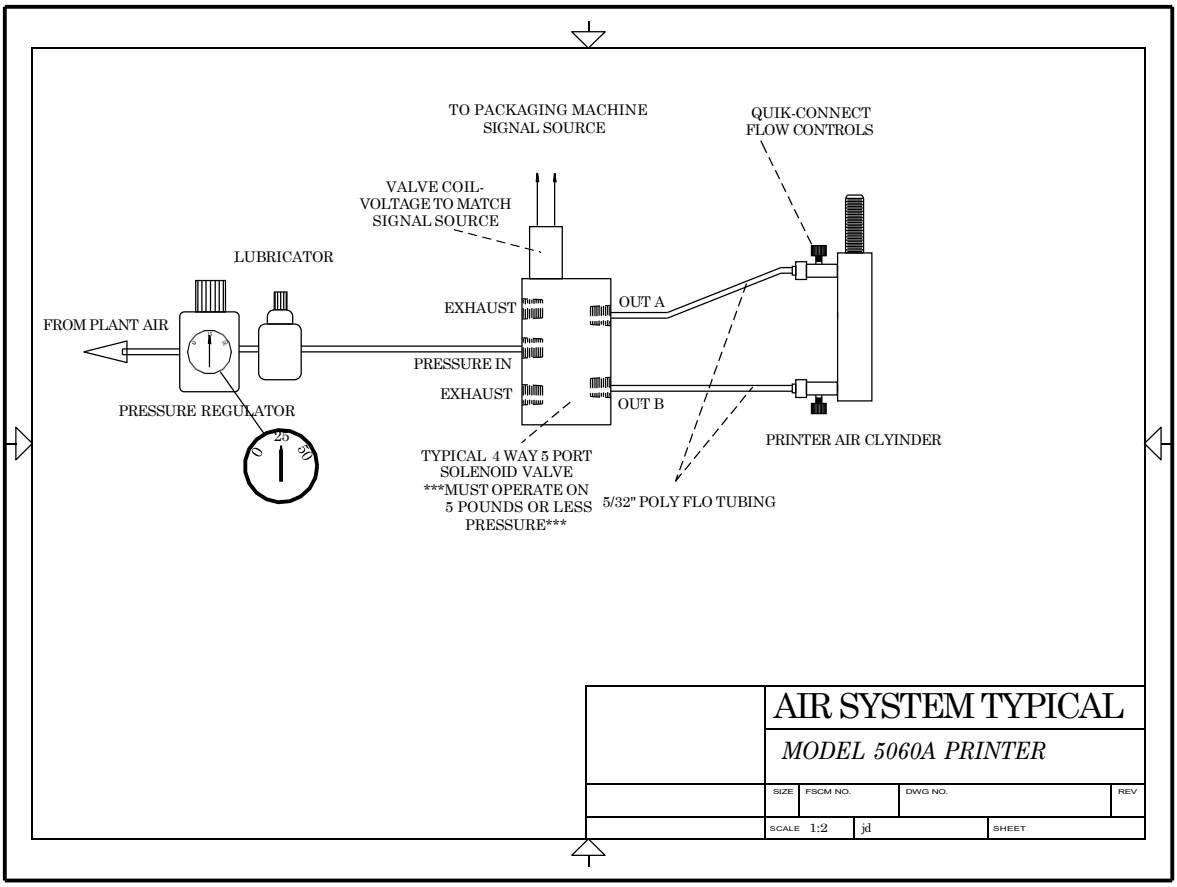
Print Head is not retracting from the film before the film begins to move. See SECTION 2.1.2 step 11.
Film is not tight to the platen face. See SECTION 2.1.1 step 6.
Platen set incorrectly. See SECTION 3 step 7.1
Ink is not dry. Install an Optional Heated Platen. Change to a faster drying ink. Wrap tape around the rollers closest to the 5060A to prevent the wet ink from touching the roller. The tape is located about ¼" either side of the area where the print passes over the roller. Ink drying time is approximately 3 seconds.

DIMENSIONAL LAYOUT - MODEL 5060A PRINTER



IF YOU ARE ASSEMBLING YOUR OWN BRACKET, NOTE THAT THE DIMENSION BETWEEN THE CODER BAR AND THE PLATEN BAR IS QUITE IMPORTANT. FOR CONVINENCE, YOU CAN USE 6.375” (6 3/8”) INSTEAD OF THE 6.387” VALUE.

TYPICAL PNEUMATIC COMPONENTS LAYOUT

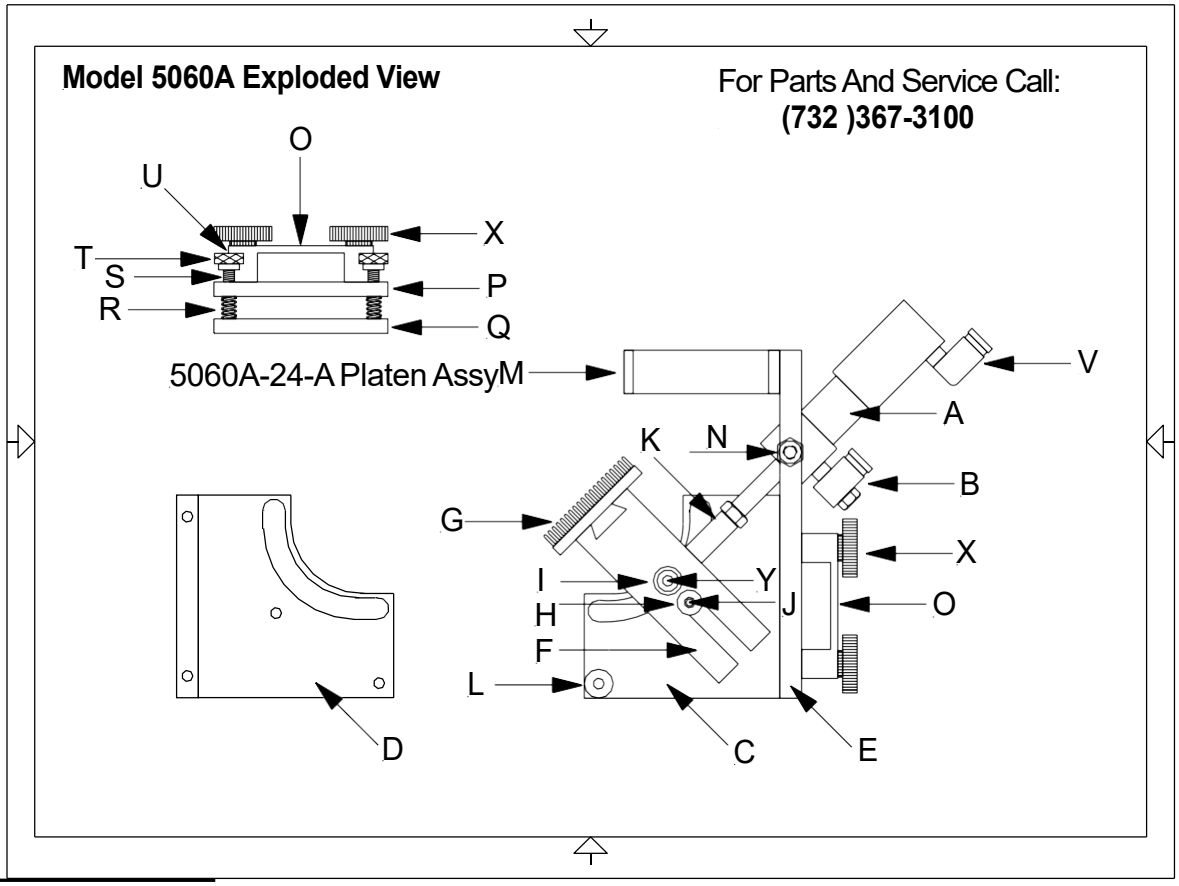


The connection to plant air should supply a minimum of .25 cfm at 50 psi. Set the regulator for 15 psi as a starting point; adjust this as required to meet machine speed needs. Use the flow controls for fine adjustments to control impact against the film and against the ink cartridge face.

A minimum amount of lubrication is required; set the lubricator for approximately 1 drop per hour if possible.

Model 5060A Exploded View

For Parts And Service Call:
(732)367-3100



Model J-2 Ink Printer: Exploded View Parts List

A: 5060A-02 Air Cylinder: 1 required
B: 5060A-02-1 Flow Control: 1 required
C: 5060A-04 Left Camplate: 1 required
D: 5060A-05-1 Right Camplate: 1 required
E: 5060A-06 Baseplate: 1 required
F: 5060A-07-A Holder Block Assembly: 1 required
Contains:
5060A07 Holder Block: 1 required per assy.
5060A-07-1 Holder Shaft **(Y)**: 1 required per assy.
5060A-07-2 Ball Plunger, ¼-20: 1 required per assy.
G: 5060A-08 Print Head w/ Base-Lock Rubber Mat: 1 required
H: 5060A-11 Pivot Shaft Bearing: 2 required
I: 5060A-12 Cam Track Bearing: 2 required
J: 5060A-13 Pivot Shaft: 1 required
K: 5060A-14/17 Rod Clevis w/Bushing: 1 required
L: 5060A-15 Top Spacer: 1 required
M: 5060A16 Cartridge Holder: 1 required
N: 5060A-19 Pivot Bolt w/ Lock Nut: 2 required
O: 5060A-20 Coder/Platen Clamp: 2 required
P: 5060A-24-1 Platen Upper Plate: 1 required
Q: 5060A-24-2 Platen Lower Plate: 1 required per assy.
R: 5060A-24-3 Platen Spring: 4 required per assy.
S: 5060A-24-4 Platen Spring Screw: 4 required per assy.
T: 5060A-24-5 Screw Knob: 4 required per assy.
U: 5060A-24-6 Knob Lock Screw: 4 required per assy.
V: 5060A-52 90 deg. Air Fitting, 5/32": 1 required
X: 5060A-61 Shear-Lok Cap Screw: 4 required
Y: 5060A-07-1 Holder Shaft: 1 required