

STANDARD ACCESSORIES

Tools	1 set
Spare parts	1 set
Bit	5 pcs.
Fuse (1A)	1 pc.
Jaw spring	2 pcs.
Delivery hose clamps	2 pcs.

A100 AcraFeed OPERATING INSTRUCTIONS

INSTALLATION

1. Mount the AcraFeed Automatic Screwfeeder on a table to the right of the working area. The table height should be approximately 1 meter from the floor and 200mm to 250 mm above the working surface for most efficient operation. When placing the unit on a table, lay the provided stand and place rubber legs of the feeder.

2. Connect the screw delivery hose, air hose and signal cable to the feeder unit. (See parts identification on page 1.)
 - Take a balance of the driver unit for easier fastening. While taking balance, make sure that the signal cable and air hose do not contact with hook or balancer wire. Care should be taken to prevent excessive bending or twisting of hoses and cables, since this can cause damage or disconnection.

 - Connect the screw delivery hose between the feeder unit and the driver as short as possible. Make sure that it is not excessively bent or twisted after installation.

3. Connect feeder unit to compressed air source with an air hose supplied.
 - Air pressure for the feeder unit is 4 - 5 kg/cm²G.

 - Since this unit has no provisions for adjusting air pressure, pressure must be controlled at the source.

4. Open the air cock at the air source to supply compressed air to the feeder unit.

5. Screw delivery air pressure adjustment :
 - Read the gauge for screw delivery air pressure on the front of the feeder unit. It should normally be set to 1.5 - 2.5 kg/cm².

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6. Screw delivery timer check:
 - Check screw delivery timer setting on the front of the feeder unit. It is set to 3 or 4 for general use.

7. Connect power cord to a single-phase AC 120V wall outlet.

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TRYOUT

1. Open the hopper cover and load hopper with a small quantity of screws.
 - Before loading with screws, check that all screws are of the same type and confirm that broken or deformed screw or any bits of metal scrap or other foreign objects are not included.
 - Do not use lubricated or magnetized screws.
2. Turn the power switch on. The power and motor pilot lamps will light, the rotary drum will start rotating and screws will be fed into the chute. Once the chute is filled, the rotary drum automatically stops and the motor pilot lamp will go off.
3. While holding the driver unit, telescope the Y-pipe manually. One cycle will send a signal to the feeder unit from the driver unit and the escapement will release one screw from the chute for delivery to the driver's tip by compressed air.
Never point the driver tip towards a person since a screw might shoot out accidentally, causing possible injury.

4. Confirmation of driver bit rotation:

- Type 40S Driver:

The driver should rotate when the bit is pressed against a flat surface while the Y-pipe is compressed. Check for any abnormal sounds during rotation.

- Types 35/40/50 Driver

The driver should rotate when the control lever is squeezed. Check for any abnormal sound during rotation.

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- Type 40S rotates clockwise only.

Type 35/40/50 have a change lever on the end of the driver unit to allow either clockwise rotation (R setting) or counterclockwise rotation (L setting).

5. Tightening torque check:

Fit the driver tip over the hole of screw to be tightened and perform test fastening.

- Type 40S Driver

The screw is driven into the hole when the driver bit is pressed against the screw.

- Types 35/40/50 Driver

The screw is driven into the hole when the driver bit is pressed against the screw and the control lever is squeezed.

- Check that the screw is fastened to the specified torque. If not, adjust fastening torque.
- Make sure that the driver is vertical to the work surface and the delivery hose is free of twists.
- Lift the driver only after the whirring noise indicating clutch release is heard.
- For types 35/40/50 drivers, fastening performance may be improved by pressing the driver to the work first and then squeezing the lever after the bit has reached the screw head.
- After completing installation and test operation, switch power off once before beginning normal operation.

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NORMAL OPERATIONS

1. After all preparatory steps have been completed, load screws into the hopper.
 - Do not fill the hopper over the maximum capacity indication. Re-supply screws only when the supply in the hopper is almost exhausted.
2. Turn power switch on.
3. Hold the driver unit and press the Y-pipe manually to confirm that a screw is seen at the tip of the driver.
4. Align the screw at the driver tip with the screw hole of the workpiece.
5. When the driver bit is pressed against the screw, (and with types 35/40/50 drivers, the lever is squeezed) the screw will be tightened.
6. Then, repeat steps 4 and 5 to tighten subsequent screws.
 - During operation, pay careful attention to the precautions set forth by item 5 “Tightening Torque Check”.

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AFTER OPERATIONS

1. Lubrication:

- Loosen the needle valve of the oiler while idling the driver. After confirming oil flow of 3 to 5 drops through the window, re-tighten the needle valve. Then, idle the driver unit alone for one or two minutes to allow oil to circulate.

2. Chute Cleaning:

- With a brush, remove dust and metal fragments from sliding surface of chute. Remove any grease with a cloth soaked in alcohol.
- Be sure power switch is turned off. Do not scratch or bruise the chute sliding surface during cleaning.

3. Power:

- Turn power switch off after completing operation. When the unit is not used for extended periods, unplug the power cord from the outlet.

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MAINTENANCE

1. Cleaning hopper interior:

- Clean the hopper interior once a week. Remove any remaining screws and dust. If the interior is extremely dirty, wipe thoroughly with a clean cloth soaked in alcohol.
- Do not use any cleaning fluids other than alcohol.

2. Oiler oil level check:

- Check that oil level is between the top and bottom marks. Supply oil if oil is running low.
- Use #60 spindle oil. To supply, close the air supply cock, and remove the oil supply plug.

Mobile Velocite oil #6

Esso Standard Spin Esso Oil #34

3. Draining water from filter:

- Water accumulated in the filter should be drained by loosening the drain cock.
- Make sure that water does not accumulate above top mark.

4. Driver bit replacement:

- Worn bits provide insufficient fastening torque and/or damages on screw heads.
- Replacement procedure: Compress the Y-pipe. Grab the bit protruding from the jaw with pliers and pull it out. Insert a new bit by pushing it lightly inward.

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5. Driver switch replacement:

When handling the driver switch (MS), pay careful attention to the following points:

- Do not drop the driver switch, or strike it roughly against a hard surface.
- When connecting or removing, hold the connector; never pull it by the signal cord.
- Do not proceed replacement until checking that air and electricity are off.
- Since many small parts are involved, take special precautions to prevent their loss.
 - a. Remove the signal cable connector.
 - b. Remove the driver switch by loosening the two screws securing it to the driver unit.
 - c. Loosen two screws to remove the microswitch, insulation plate and MS base.
 - d. Pull the microswitch out from the groove of the MS cover.
 - e. Remove the microswitch (with signal cable attached) from the driver unit.
Application of a small amount of silicone grease to the interior of the driver cover (rubber cover) makes the procedure smoother and easier.
 - f. Install a new microswitch (with signal cord attached) to the driver.
 - g. Insert the microswitch into the MS cover from the groove of the cover.
 - h. Fasten lightly the MS plate, MS base, insulation plate, and microswitch to the MS cover and secure with tightening two screws.
 - i. Slide the MS plate and confirm microswitch operation.
 - j. Check the smooth operation of the MS plate and MS cam.

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- k. By sliding the MS plate toward the signal cable, the microswitch is pushed and turned on at point of contact (clicking sound) by MS cam. When the MS plate is slid completely toward the signal cable, button movement at the **ON** position should have some play.
- l. Sliding the MS plate in the opposite direction causes the microswitch button to return, so that contact point turns **OFF** (clicking sound). When slid completely in the opposite direction of the signal cable, there should be a clearance between the button and MS cam.
- m. If operation is proved to be proper, fasten screws completely. (For added tightness, apply screw-lock adhesive.)
- n. Since the microswitch case is made of plastics, do not over tighten screws.
- o. Attach driver switch to the driver with two screws, and attach the signal cable connector.
- p. Operation should be checked several times by following operational procedures outlined in the **TRYOUT** section.

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ADJUSTMENT

1. Air pressure adjustment:

- Air pressure supply to feeder unit must be within 4 - 5 kg/cm²G.

2. Screw delivery air pressure adjustment:

- Open the cover on right of the feeder unit and adjust to proper pressure by monitoring pressure gauge on the front of the feeder unit. Normal operational level is 1.5 - 2.5 kg/cm²G.
- Excessive air pressure can cause screw to shoot out of the jaws. Insufficient air pressure can cause poor screw ejection.

3. Screw delivery time adjustment:

- Screw delivery time is the time for the screw to pass through the screw delivery hose to the driver jaws. Adjust screw delivery time by setting the timer on front of the feeder. The shortest time (approximately 0.1 second) is indicated by 0, the maximum time (approximately 2 seconds) is indicated by 10. Standard operational setting is 3 to 4.
- If the time is too short, screws may not be delivered.
- The screw delivery air pressure and screw delivery time will vary depending upon the type of screw and length of screw delivery hose. Determine the most appropriate level by trial-and-error. Confirm that screws are delivered to the driver jaws.

4. Screw delivery air volume adjustment:

- If satisfactory screw delivery cannot be obtained by air pressure and time adjustments, the screw delivery air volume must be reset by turning the switch rod adjustment screw

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on left of the feeder escapement. The volume of air supplied to screw delivery hose increases when the lock nut is loosened and the switch rod adjustment screw is turned counterclockwise. This operation also increases screw delivery speed. Turn screw clockwise to decrease air volume and slow delivery.

- After adjustment, tighten the nut securely.
- If air volume is increased excessively, the screw delivery speed becomes excessive and the hose may be damaged. Also, spool movement may be impaired because too much of the compressed air is consumed for screw delivery.
- This adjustment has been made at AcraDyne, and therefore, seldom requires readjustment.

5. Adjustment of head guide and impeller:

- The clearance between the inner impeller teeth and chute should be 0.2mm - 0.3mm larger than screw head height.
- For height adjustment of impeller, slightly loosen Bolt 1, and turn Bolt 2 clockwise to lower and counterclockwise to raise. After adjustment, tighten Bolt 1 securely.
- For adjustment purpose, the relative positions can be easily observed by loosening Bolt 3 and removing the right outer impeller. Set the distance between the head guide and chute using the same procedure. Make sure that the head guide is parallel to the chute, and that the front (narrow) end of the head guide is as close to the center of the impeller as possible.
- Front/rear adjustment of head guide is controlled by the right nut, and up/down adjustment is controlled by the left nut.
- Loosen side lock screw. Turn top adjustment clockwise until Impeller hits headguide. Turn counter clockwise until it runs free. Make minor fine adjustments if necessary. Tighten lock screw on side of Impeller. The head guide should always be in the center of the Impeller wheel. *This item was a supplemental sheet added to the manual.*

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6. Adjusting drum drive roller transmission:

- Adjust the spring-holder nut to control friction between roller shaft and drive roller. Adjust so that when the rotating rotary drum is stopped by hand, the drive roller stops and the roller shaft continues rotating.
- This section seldom requires adjustment as it is well conditioned prior to shipment.

7. Light axis alignment of photoelectric switch:

- The photoelectric switch forms control circuitry that stops the rotary drum (motor) and temporarily suspends screw supply when a certain quantity of screws are aligned on the chute. This prevents damage to screws, and reduces power consumption (screw volume control). This section rarely requires adjustment. In the rare event that it does, use the following procedure:
- Loosen the two screws on the emitter securing the photoelectric switch bracket, and align the light axis by swiveling the photoelectric switch horizontally. Light emitter should be fixed in the middle of the angle range where the motor pilot lamp lights and the drum rotates.
- If adjustments described do not correct the problem, loosen the screws on light-receiver side, and adjust both photoelectric switches in the manner described above.
- If the above steps still do not correct the problem, loosen the screw on the side of the photoelectric switch and swivel the photoelectric switch vertically. Confirm in the same way as before.
- When light axis alignment is completed, insert screws into chute and confirm operation. Apply a screw adhesive to screw for added tightness.

8. Tightening torque adjustment:

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- Remove the driver switch from the driver by loosening two screws.
- Loosen the adjustment nut, and remove the pipe cover and Y-pipe.
- For types 40s/35 driver--Secure the flat surface of the sliding base with a vise, and disassemble the driver section with a spanner.
- For types 40/50 driver--Secure the unit with a vise, loosen the flat surface of slide base with a single-ended spanner and disassemble the sliding base.
- Be careful not to damage the sliding base. To loosen, turn the spanner clockwise.
- When the sliding base is removed, the clutch section can be removed as a single piece. Lubricate with grease if necessary prior to re-assembly.
- Torque spring pressure can be adjusted by turning the nut. When pressure is increased, tightening torque likewise increases and vice-versa. If the desired torque cannot be obtained with the spring installed, please contact AcraDyne.
- After adjustment, reassemble parts in the reverse order of disassembly. During re-assembly, take precautions to prevent the intrusion of foreign matter.

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SET-UP CHANGE FOR DIFFERENT SCREWS

With the A100 AcraFeed Automatic Screwfeeding machine, screw types can be changed easily by simply replacing the cartridge type escapement, impeller unit and driver unit.

1. Remove the front cover, and open the top cover by pulling the two plugs out.
 2. Loosen five screws holding the left cover and remove the cover.
 3. Remove the nylon connector of the photoelectric switch lead wire under the power switch.
Caution: Do not pull connector out by pulling the wire.
 4. Remove impeller by loosening two screw securing it.
 5. Remove gate by lifting it upwards.
 6. Remove two piping tubes by loosening two cap nuts on the lower part of the cartridge.
 7. Remove two fixing screws.
 8. Remove the cartridge from the feeder unit.
 - Remove the chute base by holding the cartridge with the left hand and the upper end of the chute with the right.
 - Removal is easier if the impeller bracket is raised to its maximum height.
1. Clean the interior thoroughly after removing all screws remaining in the hopper and rotary drum.
 2. Install the new cartridge.
 - Hold the cartridge in the left hand while grasping the upper end of the chute with the right hand and mount the unit on the rotary drum by inserting the inducting plate first. Then, attach it to the chute base.

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- The left side of the chute base must fit onto the switch bracket.
1. When the cartridge is properly positioned, replace all bolts, cap nuts, tubes, nylon connector, etc. In the reverse order of disassembly.
 2. Replace the gate and impeller unit for the new screws. For adjustment of impeller, see the adjustment section.
 3. Attach the left cover and tighten the screws.
 4. Attach a driver unit for the type of screw to be used.
 5. After checking all connections, make several test runs following the operational procedures.

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TROUBLESHOOTING

In the event of malfunction, refer to the troubleshooting guide below. If you cannot solve the problem yourself, contact your service representative (especially for those items marked with an asterisk. Incomplete or improper repairs will not only degrade machine performance, but also can be dangerous.)

ROTARY DRUM FAILS TO ROTATE OR ROTATES INTERMITTENTLY

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|--|--|
| 1. Is power switch on? | <ul style="list-style-type: none">• Turn power switch on. |
| 2. Is power pilot lamp lit? | <ul style="list-style-type: none">• The fuse is blown. Remove the feeder unit's left cover and electric box to gain access to fuse box and replace blown fuse with one of the identical rating. |
| 3. Is motor pilot lamp lit? | <ul style="list-style-type: none">• The screw sliding speed against chute is too slow or the screw stops at the photoelectric switch, causing the control device to malfunction.• The light axis of the photoelectric switch is improperly set. |
| 4. Is there a screw jammed between the rotary drum and hopper? | <ul style="list-style-type: none">• Turn the rotary drum manually in the reverse direction to release the jammed screw. |
| 5. Is the motor running? | <ul style="list-style-type: none">• Capacitor failure. Replace if necessary.* |
| 6. Is weak drum driver roller pressure causing slippage? | <ul style="list-style-type: none">• Readjust drum roller transmission. |

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ROTARY DRUM FAILS TO STOP WHEN SCREWS ARE ALIGNED ON CHUTE.

1. Is there a screw in the light axis of photoelectric switch?
 - The light axis is improperly set.

IMPELLER FAILS TO ROTATE

1. Are any screws jammed in the impeller?
 - Remove jammed screws and check impeller height.
2. Is the impeller contacting the head guide?
 - Adjust impeller height.
3. Is the impeller slipping?
 - Clean hopper interior.
 - The transmission of driving force is weak because of deterioration of the twisted spring. Replace the twisted spring.*

ESCAPEMENT DOES NOT FUNCTION

1. Are screws jammed in the descent hole?
 - Turn off power switch and air supply source, lift head guide to remove jammed screw.
2. Is screw delivery air pressure too low (less than 1.5kg/cm²)?
 - Adjust screw delivery air pressure.

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| 3. Is driver Y-pipe functioning properly? | • See Y-pipe adjustment procedure. |
| 4. Is screw delivery timer set at "0"? | • Adjust screw delivery time. |
| 1. Is electromagnetic valve functioning properly? (Listen to clicking sound when the driver switch works.) | • Failure of driver switch.
• Failure of electromagnetic valve. Replace the electromagnetic valve.* |
| 2. Is the escapement malfunctioning? (When manually operated after setting screw delivery air pressure to zero by relief valve.) | • Improper lubrication. Apply grease to ring and spool. (Use Molykote "U" paste type grease.) |

Y-PIPE COMPRESSION IS NOT SMOOTH

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| 1. Is a screw jammed in the Y-Pipe screw inlet? | • Turn power switch OFF and remove jammed screw. |
| 2. Has dust accumulated between Y-Pipe and base? | • Clean dust by disassembling Y-Pipe. Lubricate with #90 turbine oil prior to re-assemble. |
| 3. Is lubrication between Y-Pipe and base sufficient? | • Disassemble Y-Pipe and lubricate with #90 turbine oil.
MobileVacuoline oil # 405
Esso StandardFebis oil #42 |

SCREWS SHOOT OUT OF DRIVER JAW

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| 1. Is screw delivery air pressure proper? | • Adjust. |
| 1. Is jaw damaged or worn? | • Change jaw by dismantling spring pin. |
| 1. Is jaw chucking too weak? | • Replace jaw spring. |

SCREWS DO NOT COME TO JAW SMOOTHLY

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|--|----------------------------|
| 1. Is screw delivery air pressure proper? | • Adjust. |
| 1. Is screw delivery hose clogged by dust or other foreign matter? | • Clean hose interior. |
| 1. Is screw delivery hose twisted? | • Correct all twists. |
| 1. Is screw delivery hose worn out? | • Replace with a new hose. |

SCREWS NOT ALWAYS DELIVER TO JAWS

- | | |
|---|---|
| 1. M.S. finger bottom tangs bent. | • Replace M.S. finger. |
| 1. Screws not being driven completely down. | • Increase torque or driver or air pressure to driver. |
| | • Driver backing out of adapter, loosen set screw & re-seat driver. Re-tighten set screw. |

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1. Hose crimped or internal hose damage.
 - Replace screw delivery hose. Proper size in parts book and on door of feeder (label).

1. Timer set too short.
 - Adjust timer, making blow time longer for screw delivery to head.

1. Screw jammed in feed system.
 - Clear impeller, rails, escapement, hose or head as needed.