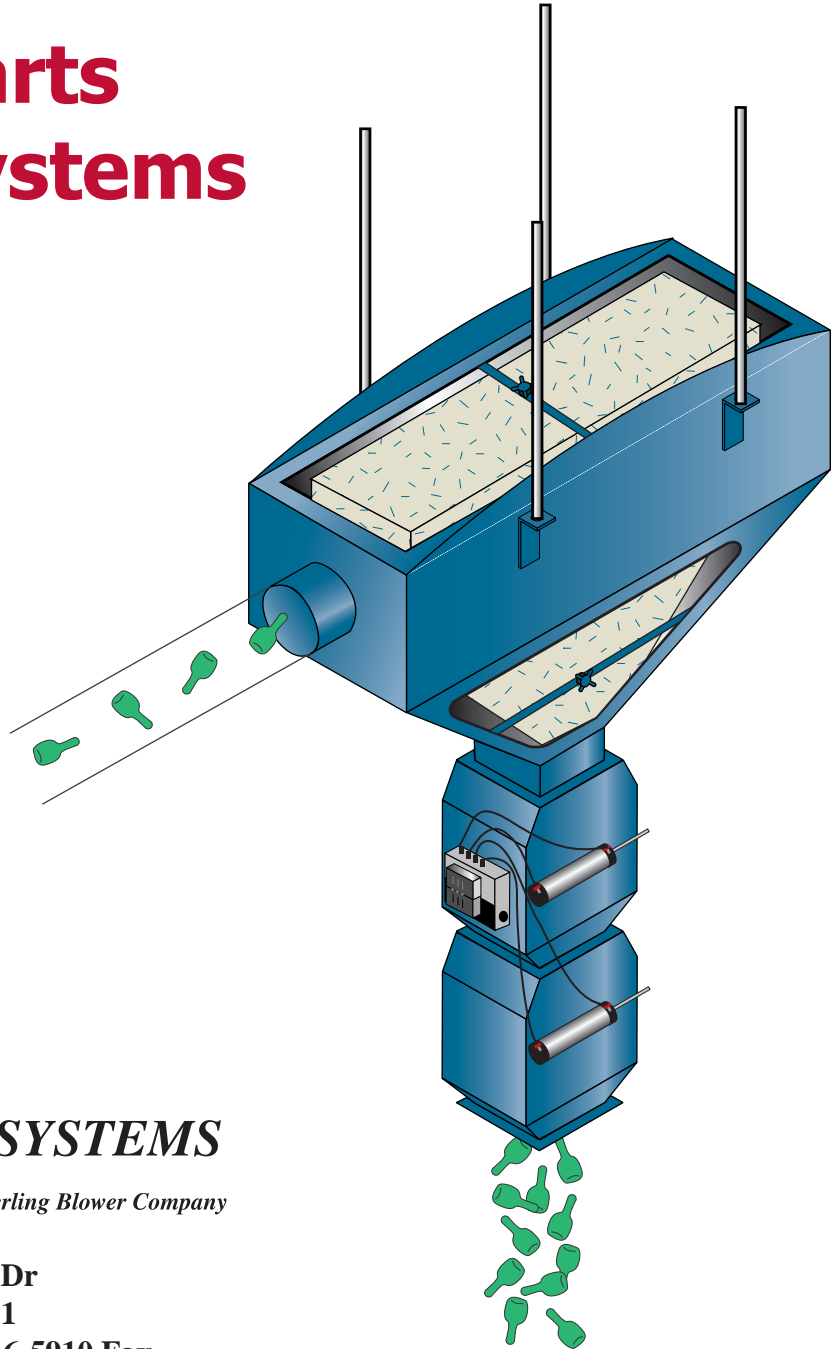


INSTALLATION, OPERATION and MAINTENANCE MANUAL

Finished Parts Transfer Systems *Negative Pressure*



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Read this manual completely before operation

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Principle of Operation

Refer to the General Arrangement Drawings, Air Circuit, and Sequence of Operation drawings. The unit runs totally on the negative pressure side of the blower for delicate handling of media using consistent-velocity air. The parts get transferred from one point to another without actually going through the blower (even though our blowers will handle material).

The advantage of a negative pressure system over a positive pressure (venturi) system is the velocities required to convey material are much lower. This prevents unnecessary damage to parts. Negative pressure systems are also capable of conveying parts at much greater distances than venturi systems.

Construction

Construction is Carbon Steel, with Polyurethane and Lexan in critical internal areas. Interiors are smooth and free of obstructions to allow free flow of material with no marking or damage to parts when airflow is set properly (see Start-Up section of this manual).

Adjacent tubing that delivers parts to the vessel is of clear Butyrate material; again to prevent damage to parts during transportation.

Air Brake

The Air Brake is used in-line with the Parts Receiver to decelerate parts just before they exit the airstream. This dramatically reduces the impact parts see as they enter the Parts Receiver.

Parts Receiver

The Finished Parts Receiver is a vessel designed to remove “finished” parts or other material from a vacuum airstream. The impact zone is designed to absorb the momentum of the parts as they enter the vessel. The parts then fall by gravity to the bottom, where they enter the Flapper Valve.

Flapper Valve

The Flapper Valve Assembly is a double-module unit using pneumatic air cylinders to sequentially open and close the valves. Its sole purpose is to discharge parts or material while maintaining system negative pressure in the Parts Receiver for constant flow. No two valves are open at any given time. The Flapper Valve units are available in compact, modular assemblies that can be mated to obtain various holding capacities. The overall height increases as capacity increases. Other options are available such as diversion into two or more collection areas. After product exits Flapper Valve, it can be discharged onto a conveyor belt, vibratory bowls, fabric chute, etc.

Note: Flapper Valve is modular, and can be oriented in 90° increments with the Parts Receiver.

INSTALLATION

Compressed Air Supply

Minimum Operating Pressure: 40 psi

Recommended Operating Pressure: 60 psi

Connection: Safety Dump-Valve 1/4" FPT
Single point connection provides air to all compressed air components of flapper valve.

Air Quality: The use of lubricated compressed air is recommended. Filtration is provided on the unit in a filter/pressure regulator pack.

Air Cylinders: Air cylinders are provided with tamper-resistant speed controls at each port. The speed controls must be adjusted according to supply air pressure, to obtain cylinder speed of approximately 1 (one) second extension time. Avoid excessive speeds to prevent undue stress on the flapper valve and the linkage attachments.

Electrical Supply

Voltage: Voltage to be specified by customer at time of order.

Solenoid Valves: Electrically activated spring return. Override push button provided for manual operation.

INSTALLATION

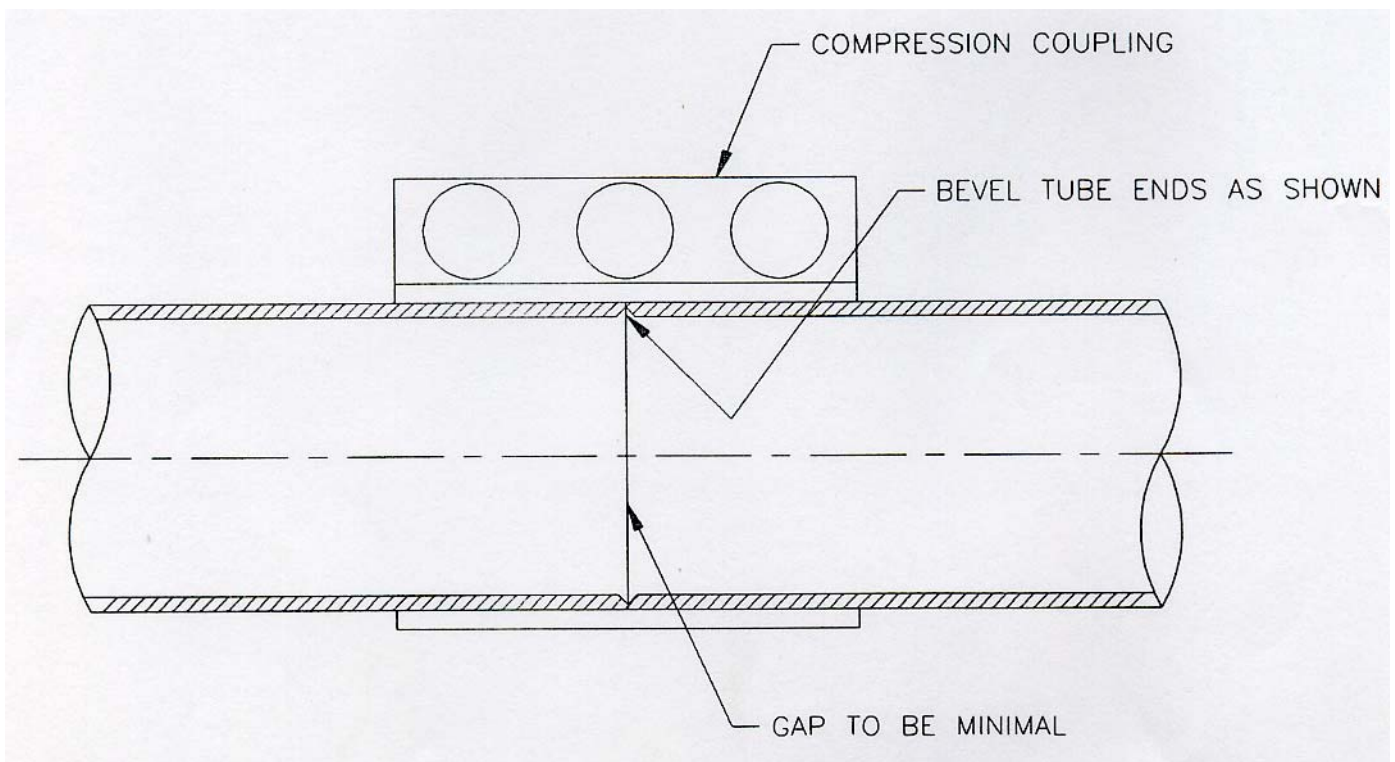
Recommended Procedure

1. Check that the interior of the Parts Receiver and Flapper Valve are clean and free of any foreign material.
2. See General Arrangement Drawing to identify the Inlet and Outlet of the Parts Receiver.
3. The Flapper Valve can be rotated in 90° increments at installation, suitable to the operation.
4. Mount Parts Receiver / Flapper Valve Assembly in desired position by hanging with threaded rod through provisions in Parts Receiver Body to suitable mounting overhead.
5. The assembly should hang plumb and level. The mounting flange where the two halves bolt together should be level.
6. Check hand knobs that secure the impact sheet are secured tightly.
7. Connect the Butyrate tubing to the Parts Receiver inlet collar using compression couplings.
8. Connect the Quick-Fit tubing (or other type) to the Parts Receiver outlet collar as required.

Installer's Note

Although not required for all applications, beveling of inside edges at tube joints is highly recommended to further reduce the risk of damage to parts being conveyed. A kit for this purpose is available for purchase from Sterling Systems.

Tube Beveling



Overview

The Parts Receiver and Flapper Valve are very durable, and are designed to keep routine maintenance to a minimum with trouble-free operation. It is important to provide the Flapper Valve (and any other associated pneumatic-actuated devices) with good quality filtered compressed air for optimum performance, and all system adjustments be made according to this manual to provide the best possible conditions to extend life of the system.

Internal Fabric Relief Head/Impact Sheet

The Impact Sheet is located inside the Parts Receiver. Even though it is visible through the inspection port door, the system should be shut down and the door removed to inspect the impact sheet properly.

Life of the Impact Sheet depends on the shape, material, speed, and frequency of finished parts that are entering the receiver.

THE IMPACT SHEET SHOULD BE REPLACED WHEN NOTICEABLE WEAR OR EXCESSIVE EROSION IS DETECTED.

To minimize these effects, the Impact Sheet and the conveying line speed should be adjusted properly to minimize wear. *See Set Up Procedure in the next section of this manual.*

If adjusted properly, the impact sheet will receive parts in an “impact zone” near where the inlet points. This “zone” sees the majority of the entering parts, and will be subjected to the most wear. If it is positioned where the parts hit near the top without spilling over the top, the sheet can then be reversed and re-used to extend the life.

Replacement of Impact Sheet:

1. Remove and lock-out power to the system.
2. Remove the Inspection Port Door on the front of the Parts Receiver vessel.
3. Remove the four hand-knob bolts on the parts receiver sides.
4. Loosen the hardware that secures the Impact Sheet to its brackets.
5. Place the new Impact Sheet in place, and secure with existing hardware.
6. Replace the Impact Sheet and its bracketry in the Parts Receiver.
7. Adjust Impact Sheet as described in the Set Up Procedure in the next section of this manual.
8. Replace Inspection Port Door.
9. Re-start the system as described in the Set Up Procedure in the next section of this manual.

Compressed Air Filter

Check periodically and replace when necessary.

Blower

See Blower Manual for proper maintenance.

SET UP PROCEDURE

Set Up

Each Parts Receiver and Flapper Valve are set up and adjusted at the factory. The only adjustment necessary under normal circumstances is the compressed air regulator. The pressure setting needs to be 40 to 60 psi.

However, the following is a checklist to insure proper set up:

1. Check that the valve pneumatics are piped correct to diagram.
 2. Check that the compressed air and electrical supplies are connected properly.
 3. Check the location and adjustment of Impact Sheet inside Parts Receiver.
 4. Check that the Flapper Valve is in the correct "receiving mode" as illustrated in the Sequence and Operation Diagram.
 5. Be sure all covers, connections, doors, etc. are in place and tight to prevent leaks.
- Note: a small amount of leakage is acceptable as long as parts or material flow is not inhibited.*

Start Up

1. Be sure the Flapper Valve is in the correct "receiving mode" as illustrated in the Sequence and Operation Diagram.
2. Adjust gate valve on blower inlet to the fully closed position.
3. Start the blower (*see blower manual for start up procedure*).
4. Place a few finished parts or material at the point where they are introduced into the conveying line.
5. Slowly open the gate to start flow.
6. Wait for further adjustment until the parts get to the first vertical run.
7. Slowly open the gate further to allow the parts to *float* up the vertical conveying line.
8. Set gate in the position where the parts exit the vertical run at the *slowest* speed possible.
9. If other vertical climbs are in the system, repeat the above procedure for the run closest to the Parts Receiver.

Note: This method should reduce the impact velocity to the Parts Receiver, thereby optimizing life and efficiency. Further adjustment may be necessary for varying conditions.

NEVER RUN THE BLOWER WITH GATE 100% OPEN UNLESS IT IS ABSOLUTELY REQUIRED TO DELIVER PARTS TO THE RECEIVER.

Principle of Operation

Refer to Sequence of Operation Drawing. *Sequence normally initiated by external signal (from timer, sensor, etc.)*

Control Packages

Standard Features: NEMA 12 Enclosure, Gray Primer Finish, AB SLC500 Processor
(24V DC or 110V AC Power).

- Standard Configuration without motor controls: Sequences flappers to discharge parts or material while maintaining system negative pressure.
- Standard Configuration with motor controls: Sequences flappers to discharge parts or material while maintaining system negative pressure, motor starting electrics for blower in same electrical enclosure. Auto and Manual modes. Auto mode disconnects power automatically from the blower if initiation signal is not received in 15 minutes (adjustable).

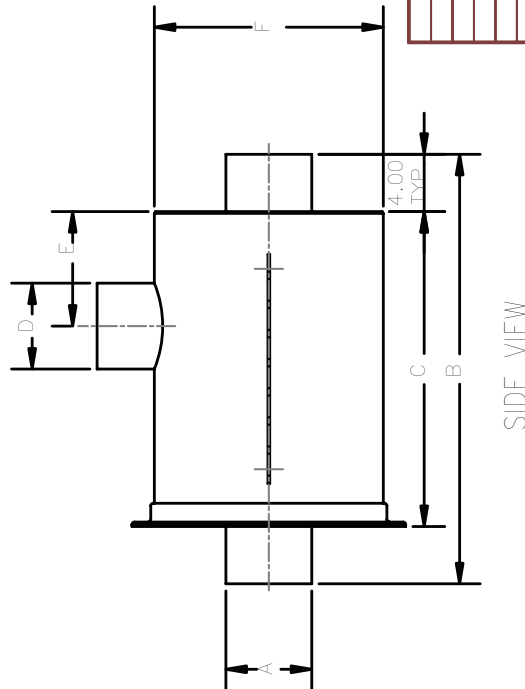
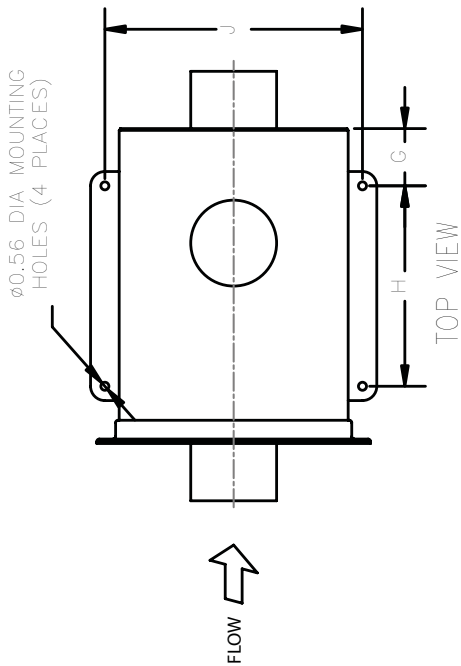
† Other Options Available:

1. Manual switching devices to operate auxiliary solenoids.
2. External sensing devices for sequence initiation.
3. Central control for Multiple Parts Receiver Stations.
4. Control of other system devices (Diverter Valves, Slide Gates, etc.)
5. Custom applications and systems.
6. Other.

† *Consult factory for guidance in application of any of the above scenarios.*

General Arrangement – Air Brake

ACTUAL DIMENSIONS ARE SUBJECT TO STERLING FABRICATION TOLERANCES, AND WILL APPROXIMATE THE DESIGN DIMENSIONS SHOWN.



| SIZE | A (OD) | B | C | D (OD) | E |
|------|--------|----|----|--------|----|
| 4 | 4 | 30 | 22 | 6 | 8 |
| 5 | 5 | 30 | 22 | 6 | 8 |
| 6 | 6 | 30 | 22 | 6 | 8 |
| 8 | 8 | 44 | 36 | 12 | 12 |
| 10 | 10 | 44 | 36 | 12 | 12 |
| 12 | 12 | 44 | 36 | 12 | 12 |

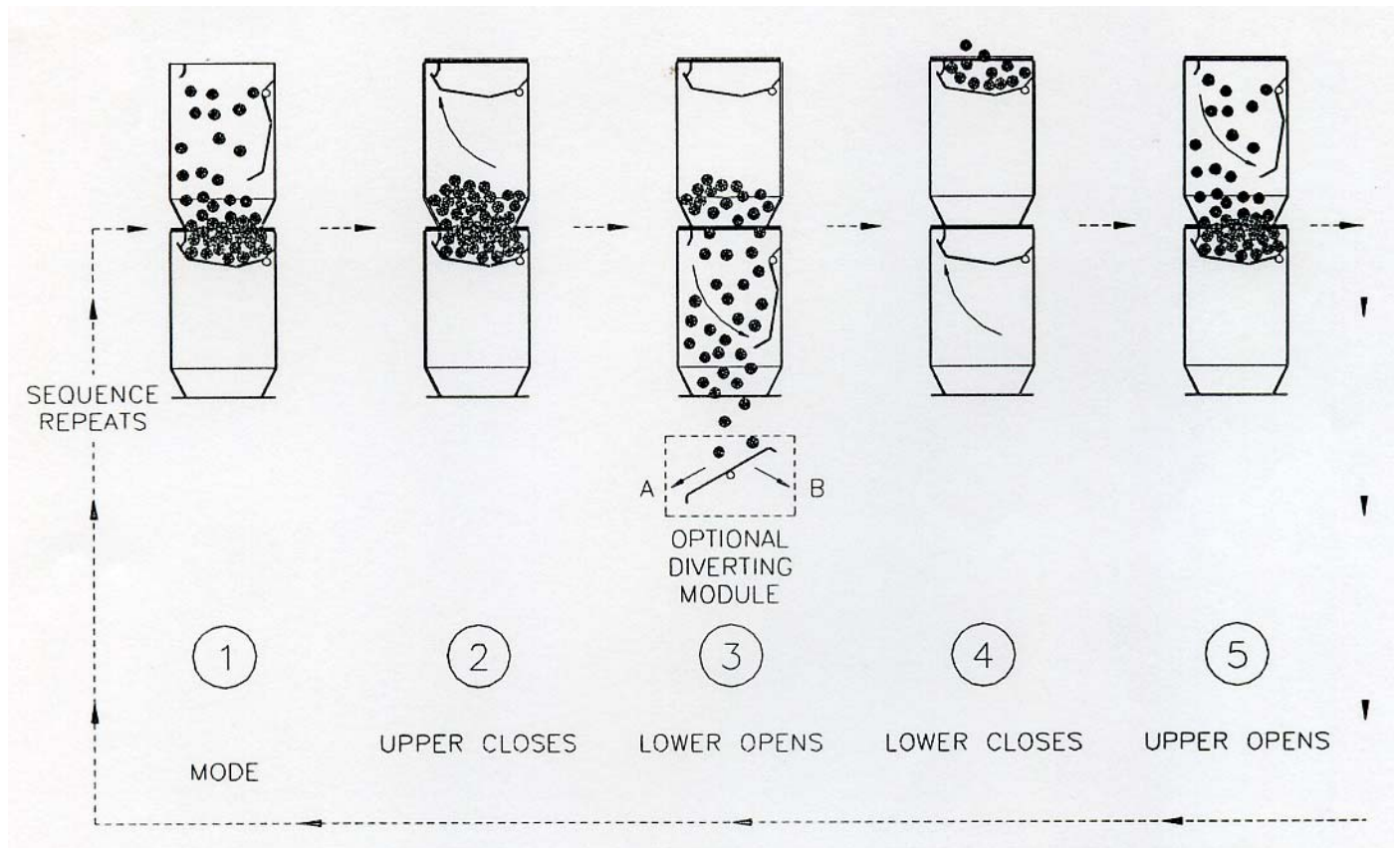
| SIZE | F (OD) | G | H | J |
|------|--------|---|----|----|
| 4 | 14 | 4 | 14 | 16 |
| 5 | 14 | 4 | 14 | 16 |
| 6 | 16 | 4 | 14 | 18 |
| 8 | 18 | 6 | 24 | 20 |
| 10 | 20 | 6 | 24 | 22 |
| 12 | 22 | 6 | 24 | 24 |

| | | | |
|-------------------------|------------|---------------------------------------|-----------------------|
| CUSTOMER | | TOLERANCES UNLESS OTHERWISE SPECIFIED | |
| ORDER NUMBER | ORDER ITEM | ANGULAR $\pm 2^\circ$ | FRACTIONAL $\pm 1/32$ |
| NUMBER | NUMBER | XX = ± 0.03 | XXX = ± 0.005 |
| PRODUCT | | DIMENSIONS ARE IN INCHES | |
| FINISHED PARTS TRANSFER | | | |
| TITLE | | | |
| AIR BRAKE— STANDARD | | | |
| DRAWN BY | CHECKED BY | DRAWING NUMBER | REVISION |
| C. CAMPBELL | | B GA1410 | — |
| DATE | DATE | SCALE | LEVEL |
| 6/30/98 | | 1/8"=1" | |

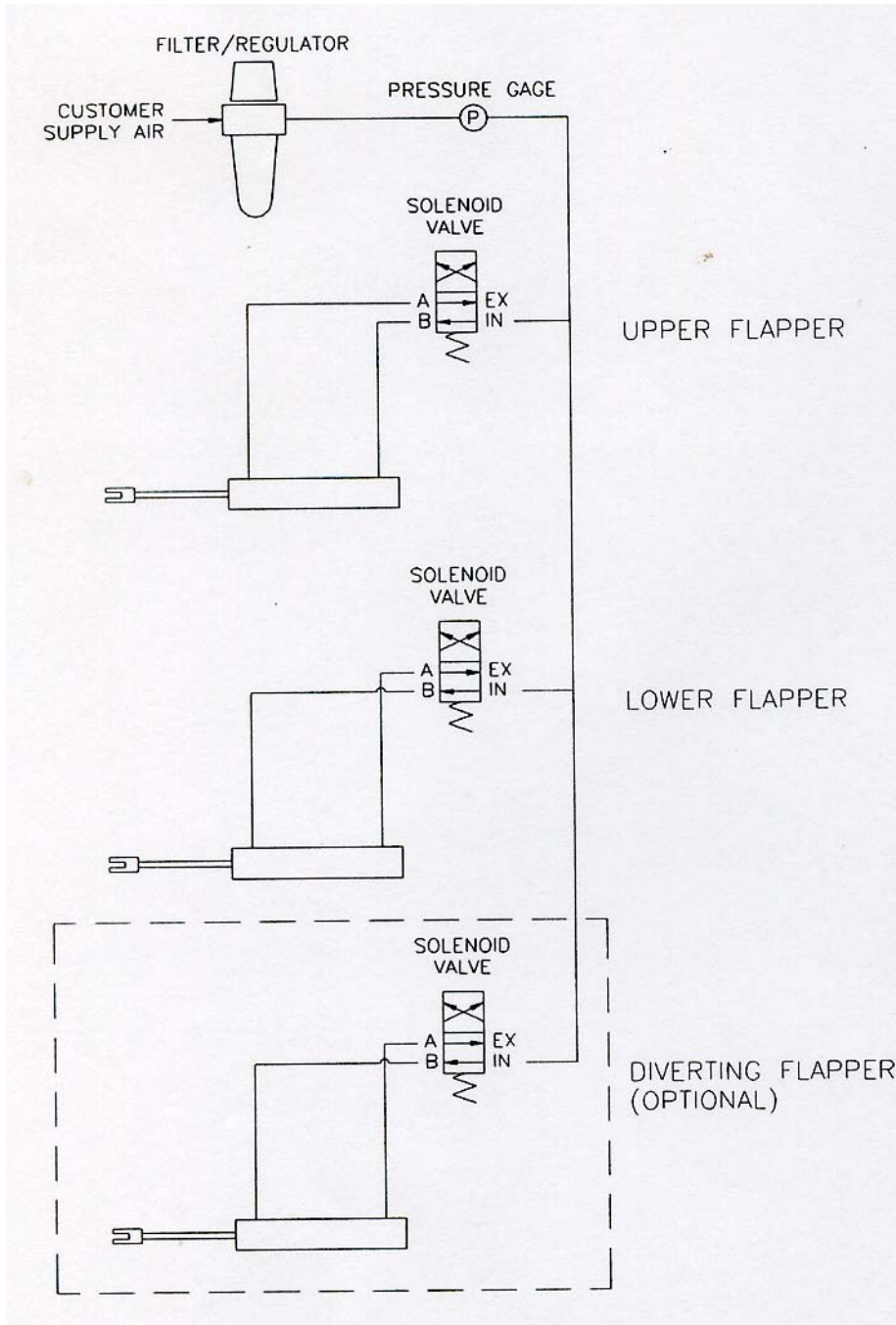


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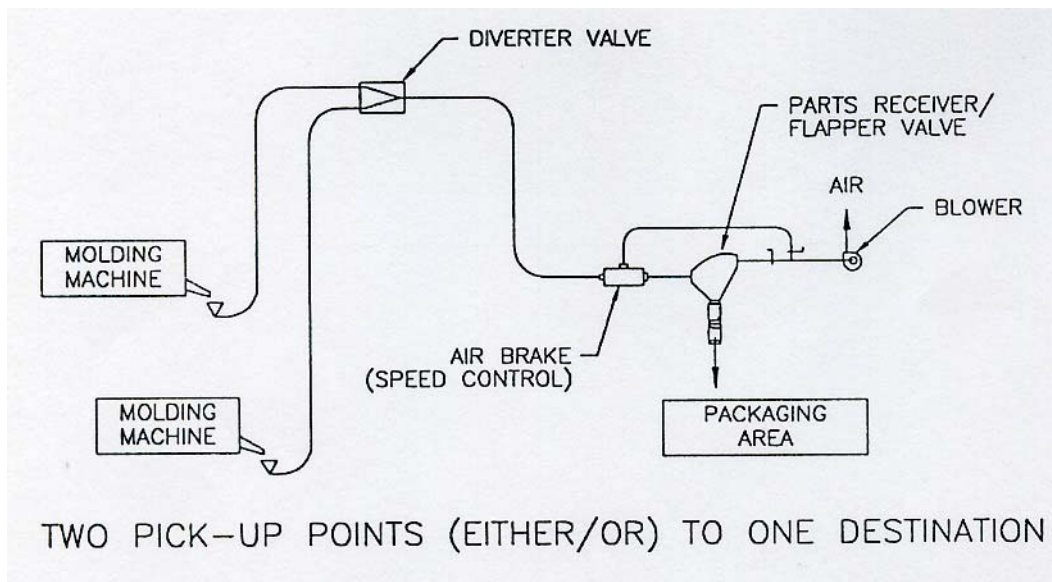
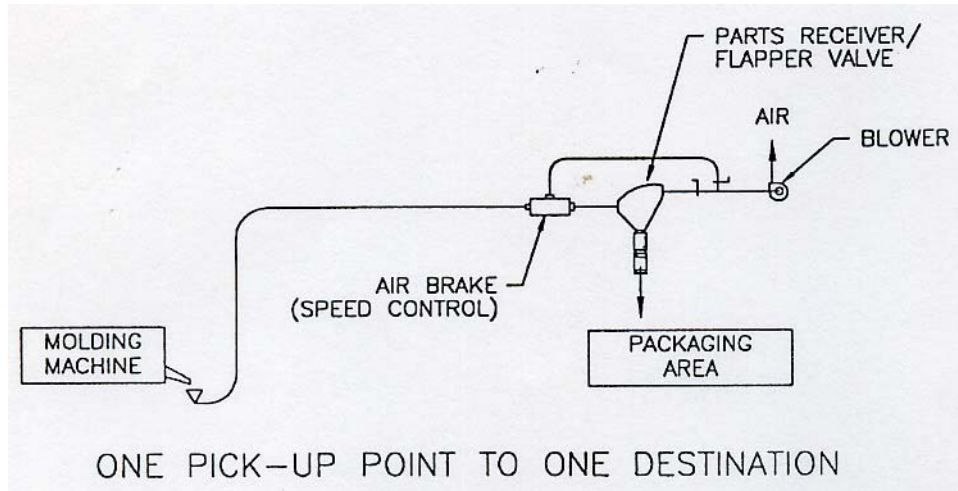
Sequence of Operation Diagram



Air Circuit



Sample System Arrangements



TROUBLESHOOTING

| PROBLEM | POSSIBLE CAUSE | RECOMMENDED ACTION |
|---|--|---|
| PARTS OR MATERIAL WON'T CONVEY | <ul style="list-style-type: none"> • IMPROPER FLAPPER VALVE SET-UP. • BLOWER NOT RUNNING; OR RUNNING BACKWARDS. • GATE VALVE(S) NOT OPEN ENOUGH. | <ul style="list-style-type: none"> • CHECK FOR PROPER SET-UP. • SEE BLOWER MANUAL • REVERSE ANY TWO OF THE THREE ELECTRICAL LEADS TO THE BLOWER TO REVERSE ROTATION. |
| PARTS ENTERING RECEIVER TOO FAST | <ul style="list-style-type: none"> • GATE VALVE(S) OPEN TOO MUCH. | <ul style="list-style-type: none"> • ADJUST GATE VALVES AS NECESSARY. |
| PARTS TRAVELING IN REVERSE PRIOR TO INLET OF RECEIVER | <ul style="list-style-type: none"> • IMPROPER BALANCE OF GATE VALVES FOR BLOWER/AIR BRAKE | <ul style="list-style-type: none"> • ADJUST GATE VALVES AS NECESSARY. |
| PARTS STOPPING IN CONVEYING LINE BETWEEN AIR BRAKE AND PARTS RECEIVER | <ul style="list-style-type: none"> • IMPROPER BALANCE OF GATE VALVES FOR BLOWER/AIR BRAKE | <ul style="list-style-type: none"> • ADJUST GATE VALVES AS NECESSARY. |
| PARTS "BRIDGING" INSIDE PARTS RECEIVER | <ul style="list-style-type: none"> • FLAPPER VALVE NOT OPERATING. | <ul style="list-style-type: none"> • CHECK FOR PROPER SET-UP. |
| PARTS NOT EXITING FLAPPER VALVE | <ul style="list-style-type: none"> • FLAPPER VALVE NOT OPERATING. • PARTS NOT BEING CONVEYED TO PARTS RECEIVER. • COMPRESSED AIR PRESSURE SETTING TOO LOW. • BRIDGING OF PARTS IN PARTS RECEIVER OR FLAPPER VALVE. | <ul style="list-style-type: none"> • REVIEW SET-UP AND START-UP PROCEDURES. |

Specifying a Parts Receiver

046 Series For 4", 5", and 6" OD conveying lines

812 Series For 8", 10", and 12" OD conveying lines

-R Basic Riser (optional, mounts between upper and lower flapper modules to provide additional accumulation capacity if desired. See chart below).

| Series | Basic Flapper Valve Volume Capacity | Plus Riser (Optional) | Total Holding Capacity | *Height of Riser |
|--------|-------------------------------------|-----------------------|------------------------|-----------------------------------|
| 046 | 0.25 ft ³ | 0.75 ft ³ | 1.00 ft ³ | 18" |
| 812 | 1.00 ft ³ | 3.00 ft ³ | 4.00 ft ³ | 28- ³ / ₄ " |

*The addition of a riser increases the overall height of the unit by the amount shown. See Drawing GA-1407.

