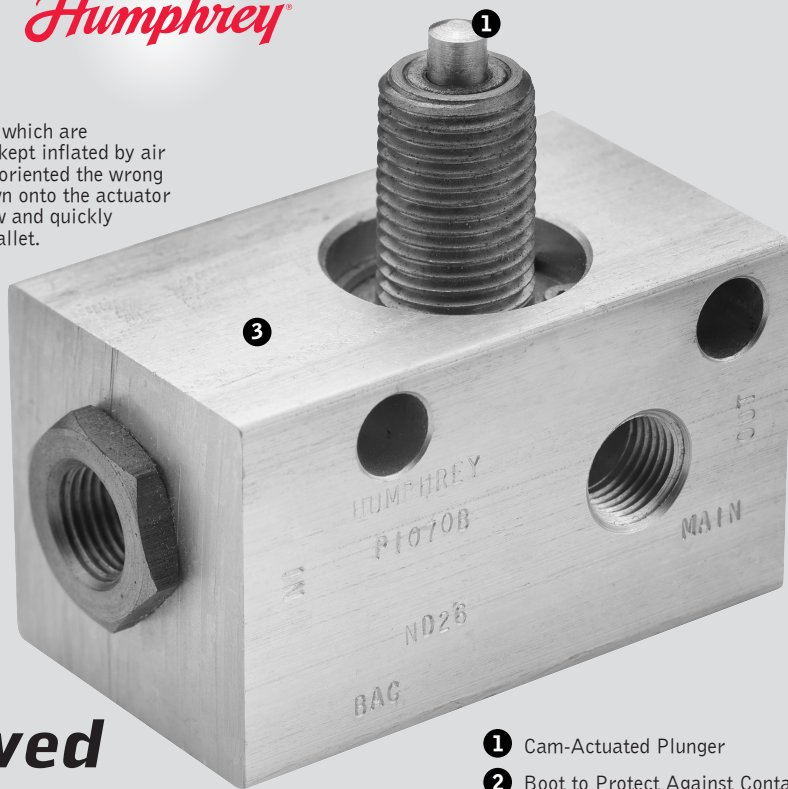
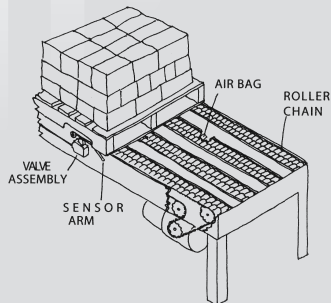


Pallets are transported on a series of parallel roller chains, which are supported by inflated air bags. Air bags in each "zone" are kept inflated by air flowing through a "normally open" valve. When a pallet is oriented the wrong way, the edge contacts a sensor arm. The arm is forced down onto the actuator plunger in the valve. This simultaneously diverts the airflow and quickly exhausts the air bag, lowering the chain and stopping the pallet.



- 1 Cam-Actuated Plunger
- 2 Boot to Protect Against Contamination (not shown)
- 3 Durable, One-Piece Assembly

Custom Valve Assembly Improved Conveyor System Reliability and Performance

THE CUSTOMER'S PRODUCT:

- The customer designs and manufactures a wide range of custom materials handling conveyor systems.
- Customer developed a design for a "wrong way" pallet accumulation conveyor.
- The existing plastic valve assembly and multiple components were not reliable, especially when used on conveyors handling 3000-pound pallets of bricks.

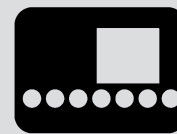
THE REQUIREMENTS:

- Valve assembly must function reliably in harsh conditions.
- Work with the existing conveyor design
- Must be field-interchangeable with the existing valve.
- Improve conveyor system performance.

THE HUMPHREY ENGINEERED SOLUTION:

- The Engineered Solutions team redesigned the circuit to include all component functions in a single module.
- Humphrey engineers developed a two-position, 3-way valve with high flow to eliminate the separate diverter and quick exhaust components.
- The hardened steel plunger and field-proven diaphragm design provided sufficient over-stroke.
- Valve could operate reliably under a wide range of conditions.
- Solid metal body and actuator boot sealed assembly from the ever-present brick dust.

SIC: 3535



MATERIALS HANDLING

THE SOLUTION:

Utilizing the Engineered Solutions approach where a Humphrey engineer works directly with the customer's engineering department, the team identified an opportunity to improve conveyor system performance.

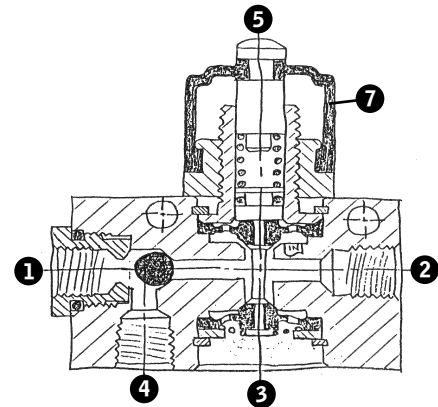
Using proven technology, Humphrey redesigned the circuit to include all component functions in a single valve assembly. This assembly was designed to work with the conveyor's existing design and operating parameters, and it was engineered for existing fittings and mounting plates.

A two-position, three-way valve was designed with high flow to eliminate the separate diverter and quick exhaust components. The hardened steel plunger and reliable diaphragm design of the valve provided sufficient over-stroke to ensure fast, positive valve action under a wide range of operating conditions. The booted actuator effectively sealed the assembly from the ever-present brick dust.

THE PROCESS:

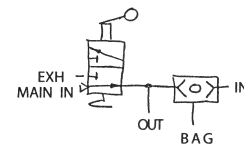
As always, the Humphrey Engineered Solutions team began with the customer's request to improve the functionality of their existing system -- in this case, improve the responsiveness and durability of their existing conveyor valve.

The customer's existing plastic valve assembly and multiple components could not function with a high degree of reliability. The problem was the massive forces being generated by 3000-pound pallets of bricks moving down the conveyor, and the ever-present brick dust that found its way into the valve components. Since the pneumatic controls in each conveyor zone were sequenced in a cascade circuit, the failure of one control would have serious consequences as upstream pallets continued to move. Using proven technology, Humphrey engineers redesigned the circuit to include all component functions in a single valve assembly. Then they utilized reliable, field-proven valve components and a solid metal body for durability. Finally, they added a protective boot over the actuator to keep out contamination. The result was a simple, more reliable pneumatic control system, which would enable the manufacturer to offer a rugged conveyor system to its customers.

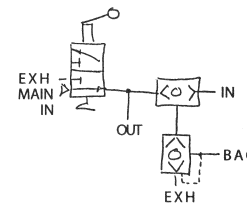


Humphrey P1070B Valve Assembly

- 1 In
- 2 Out
- 3 Exhaust
- 4 Bag
- 5 Cam-Actuated Plunger
- 6 Integral Shuttle Valve (not shown)
- 7 Boot (for contamination protection)



REVISED CIRCUIT



ORIGINAL CIRCUIT

Humphrey[®]
BUILD ON OUR EXPERIENCE