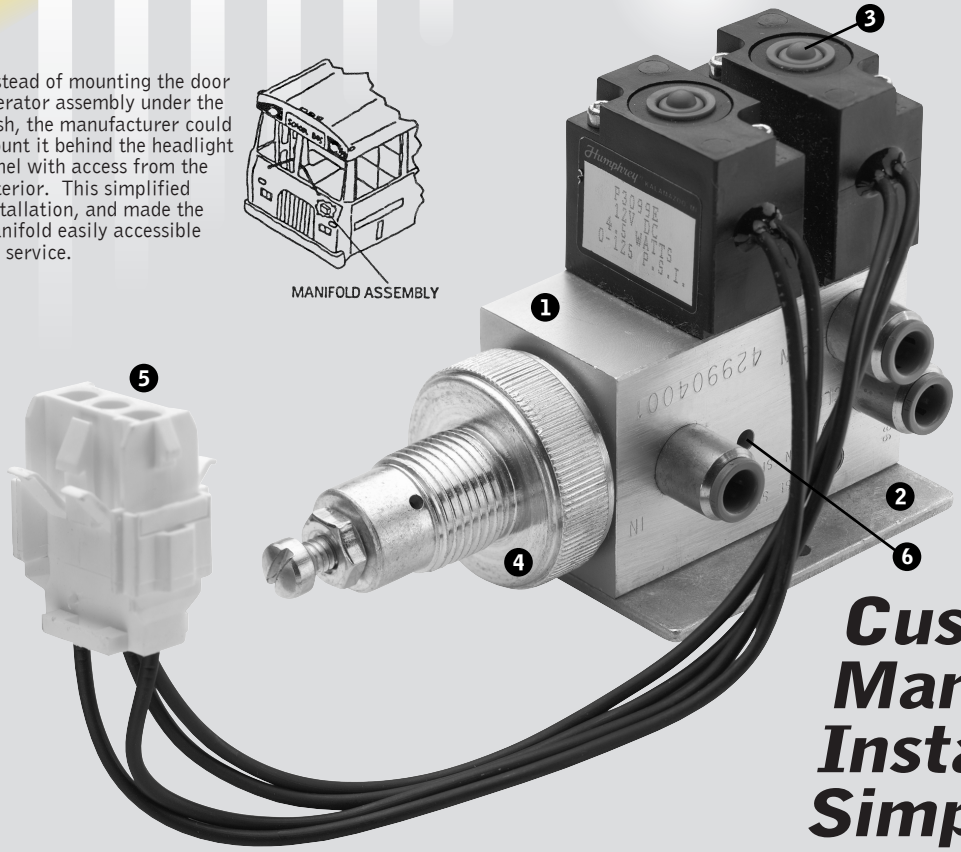
E N G I N E E R E D S O L U T I O N S

Humphrey

Instead of mounting the door operator assembly under the dash, the manufacturer could mount it behind the headlight panel with access from the exterior. This simplified installation, and made the manifold easily accessible for service.

MANIFOLD ASSEMBLY



1. All components are contained on a single manifold, eliminating complex plumbing.
2. Custom manifold mounting bracket.
3. Manual overdrive.
4. Integrated pre-set regulator.
5. Automotive-type Quick Connector.
6. Flow control for speed adjustment (see back page).

Custom Valve Manifold Made Installation Simple and Easy in a Tight Space

THE CUSTOMER'S PRODUCT:

- The customer manufactures school buses.
- Existing pneumatic door operator valve assembly would not work in their new cab-over design.
- Space was at a premium, and the long, cumbersome assembly had too many hoses and switches.

THE REQUIREMENTS:

- Design an assembly consisting of valves, a manifold with custom porting and mounting holes, regulator, quick connector for the electrical leads.
- Incorporate a fail-safe feature in the event of a power failure.
- Installation costs had to meet tight parameters.

SIC: 3713

TRANSPORTATION

THE HUMPHREY ENGINEERED SOLUTION:

- Humphrey Engineered Solutions team incorporated the proven 310 and 410 valves in a special aluminum manifold.
- Using these valves together effectively created a 4-way, 3-position function that required much less space than a conventional single 4-way valve.
- Because of clearance limitations, the air regulator was placed at the end of the manifold.
- The manifold incorporated built-in door speed adjusters, eliminating separate speed control valves, and the associated hoses.
- To make installation faster and easier, hoses and couplings were replaced with push-in fittings and flexible plastic tubing.
- Electrical leads were supplied with an automotive-type quick connect
- The manifold was mounted on a special pre-drilled bracket that serves as an installation template.

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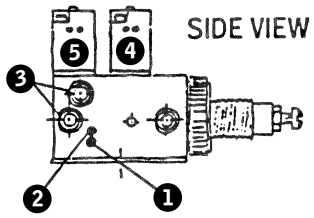
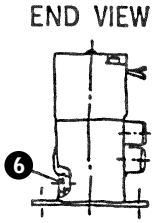
THE SOLUTION:

The Engineered Solutions approach started with a Humphrey engineer working directly with the customer's engineering department to identify all the requirements. Initially, the company wanted to replace its three-position, 4-way cast iron valve assembly with two Humphrey valves on a manifold. But the Humphrey Engineered Solutions team took an approach that provided the optimal solution.

Humphrey engineers incorporated the proven 310 and 410 valves in a special aluminum manifold. The manifold incorporated built-in adjusters for the opening and closing speed of the door, with set screws positioned for easy access in the field. This eliminated separate speed control valves, and the associated hoses. The air regulator was placed at the end of the manifold.

Air enters the Humphrey Special Manifold and passes through a regulator feeding the 310 valve, which delivers air to the 410 (4-way) valve that operates the door air cylinder. As a fail-safe feature, the 310 is always held energized. Should power fail to the 310, the 410 will exhaust the air cylinder, allowing the door to be operated manually.





1. Close Speed Adjustment
2. Open Speed Adjustment
3. Push-In Fittings Connect To Door Operator
4. Humphrey 310 valve
5. Humphrey 410 valve
6. Exhaust with Integral Muffler

THE PROCESS:

The customer realized that the existing pneumatic door operator valve assembly would not work in their new cab-over design. Space was at a premium, and the long, cumbersome assembly had too many hoses and switches. Plus, installation costs had to meet tight parameters. That's when they contacted the Humphrey Engineered Solutions team.

Responding to the customer's desire for a compact manifold assembly for the door operator on their new vehicle design, Humphrey created a special manifold that was simple and easy to install in the restricted space.

To shrink the size of the package, Humphrey engineers incorporated the proven 310 and 410 valves in a special aluminum manifold. Using these valves together effectively created a 4-way, three-position function that required much less space than a conventional single valve. Because of clearance limitations, the air regulator was placed at the end of the manifold.

The manifold incorporated built-in adjusters for the opening and closing speed of the door, with set screws positioned for easy access in the field. This eliminated separate speed control valves, and the associated hoses.

To make installation faster and easier, hoses and couplings were replaced with push-in fittings and flexible plastic tubing. The electrical leads were provided with an automotive-type quick connect and the manifold was mounted on a special pre-drilled bracket that serves as an installation template.

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