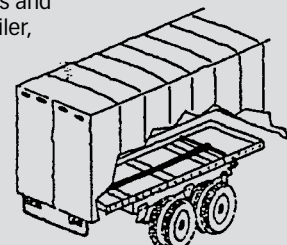


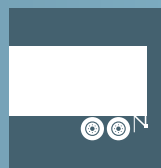
- ❶ Custom die-cast body met target costs
- ❷ Reliable Humphrey diaphragm poppet valve design
- ❸ Oversize exhaust orifice for fail-safe operation
- ❹ Custom bulkhead mounting
- ❺ Integral air filter (internal)
- ❻ Custom port locations
- ❼ Mechanical actuation

Truck trailers have a mechanical device called a “slider,” which allows the operator to manually adjust the position of the axles and suspension to balance the trailer, or shorten its turning radius for tight maneuvering. Unlike mechanical linkage that often takes great strength to operate, the pneumatic system with the Humphrey valve requires very little force.



Special Die Cast Valve Assembly

for Truck Trailer Suspension Manufacturer Met the Precise Design Requirements and Target Cost



TRANSPORTATION
SIC:3715

THE CUSTOMER'S PRODUCT

- The customer designs and manufactures truck trailer suspension systems.
- In the existing mechanical “slider” design, the driver must pull the actuation rod, which retracts the locking pins and allows the suspension to remain stationary while the driver moves the truck.
- The customer wanted to design a pneumatically operated system to reduce potential worker compensation claims.

THE REQUIREMENTS

- Provide a pre-assembled valve that meets existing mounting and porting requirements.
- Meet critical performance specifications over wide range of temperatures.
- Fit in the allowable space.
- Meet exact cost target.

THE HUMPHREY ENGINEERED SOLUTION

- Created a custom valve assembly that fit the space requirements.
- Custom die cast body to achieve cost target.
- Two-Position, 3-Way Valve
- All ports and mounting holes per customer specifications.
- Incorporates Humphrey's proven diaphragm poppet design.
- Withstands range of temperature extremes.
- Oversize exhaust to allow pressure to vent to atmosphere, eliminating possibility of locking pins accidentally disengaging.
- Integral air system filter

THE SOLUTION

Truck trailers have a mechanical device called a "slider," which allows the operator to manually adjust the position of the axles and suspension to balance the trailer, or shorten its turning radius for tight maneuvering. To change the position, the driver must pull the actuation rod, which retracts the locking pins, move the truck, and then re-engage the pins in the new position.

Unlike mechanical linkage that often takes great strength to operate, the pneumatic system requires very little force. Using truck system air fed through a Humphrey P5014D valve to an air cylinder, the operator can easily retract and re-engage the locking pins in seconds.

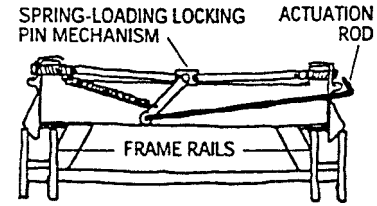
To eliminate the possibility of air building up in the cylinder and causing the pins to retract, Humphrey designed the valve with a larger exhaust orifice, so any pressure bypassing the inlet will always vent to the atmosphere. Instead of a separate in-line air system filter, Humphrey incorporated the filter into the valve body. This helped lower the total system cost. In addition, using a die cast body eliminated the need for expensive machining of bar stock. And the quantities ordered enabled Humphrey to achieve the exact cost target.

THE PROCESS

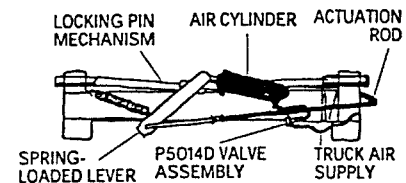
After studying the market, a major manufacturer of suspension systems for truck trailers saw an opportunity to introduce a new, pneumatically operated suspension lock pin retraction system that would take almost no effort to operate. This would make the new system very attractive to companies looking for ways to reduce their potential worker compensation claims, especially among women and older male drivers.

The system for both O.E.M.'s and the aftermarket had to meet an exact cost target, but standard components either didn't fit the allowable space, didn't provide the required features or cost too much.

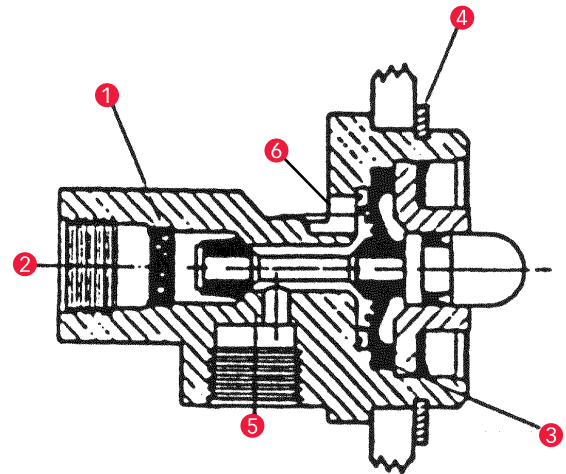
Then the manufacturer contacted Humphrey, and the Engineered Solutions team established the engineer-to-engineer process necessary to arrive at the optimal custom pneumatic solution. Since the most expensive part of a valve assembly is the extensive machining needed to create the ports and passages, Humphrey suggested a custom die cast body incorporating the proven, reliable Humphrey diaphragm valve principle. This allowed Humphrey to deliver the assembled valve with all the desired features at the target cost.



MECHANICAL SLIDER



PNEUMATICALLY ASSISTED SLIDER



P5014D Valve

- ① Filter
- ② In
- ③ Diaphragm
- ④ Retaining Ring
- ⑤ Out
- ⑥ Exhaust

Humphrey