Introduction to the **FISHER** FieldVue Positioner

Role of a Control Valve Positioner

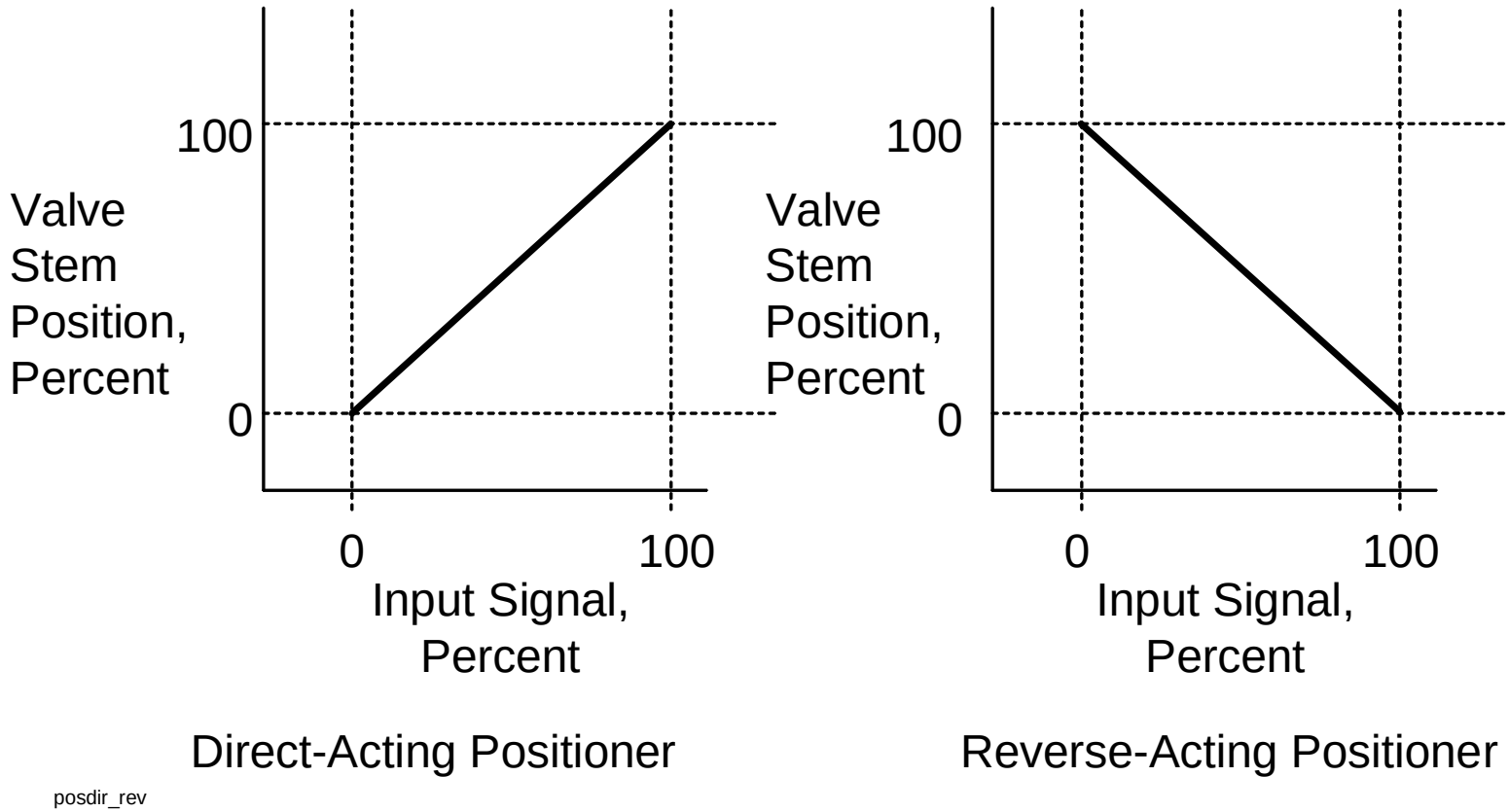


Figure 1-1. Role of a Control Valve Positioner; Precise Stem or Shaft Positioning

Overcoming Friction

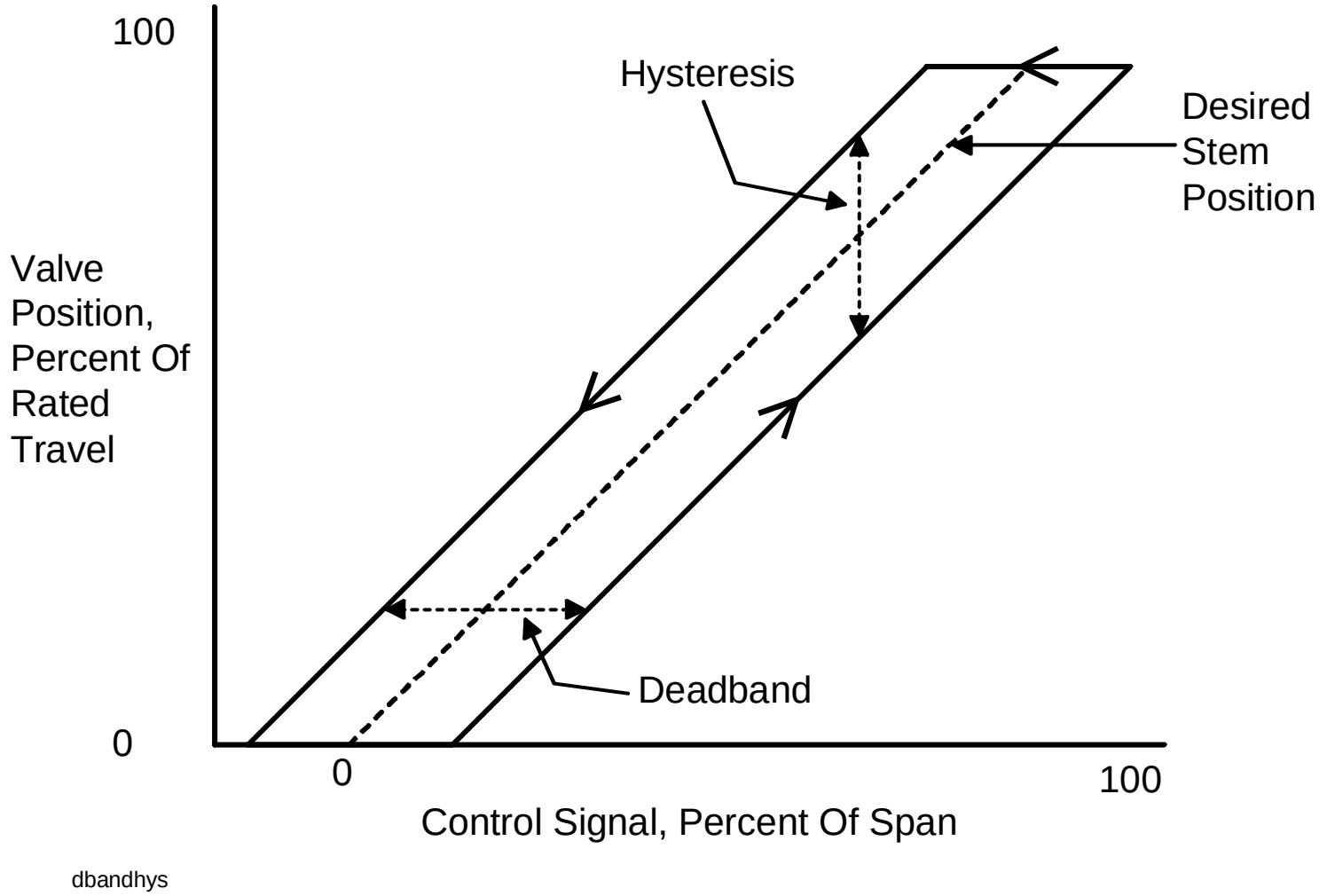
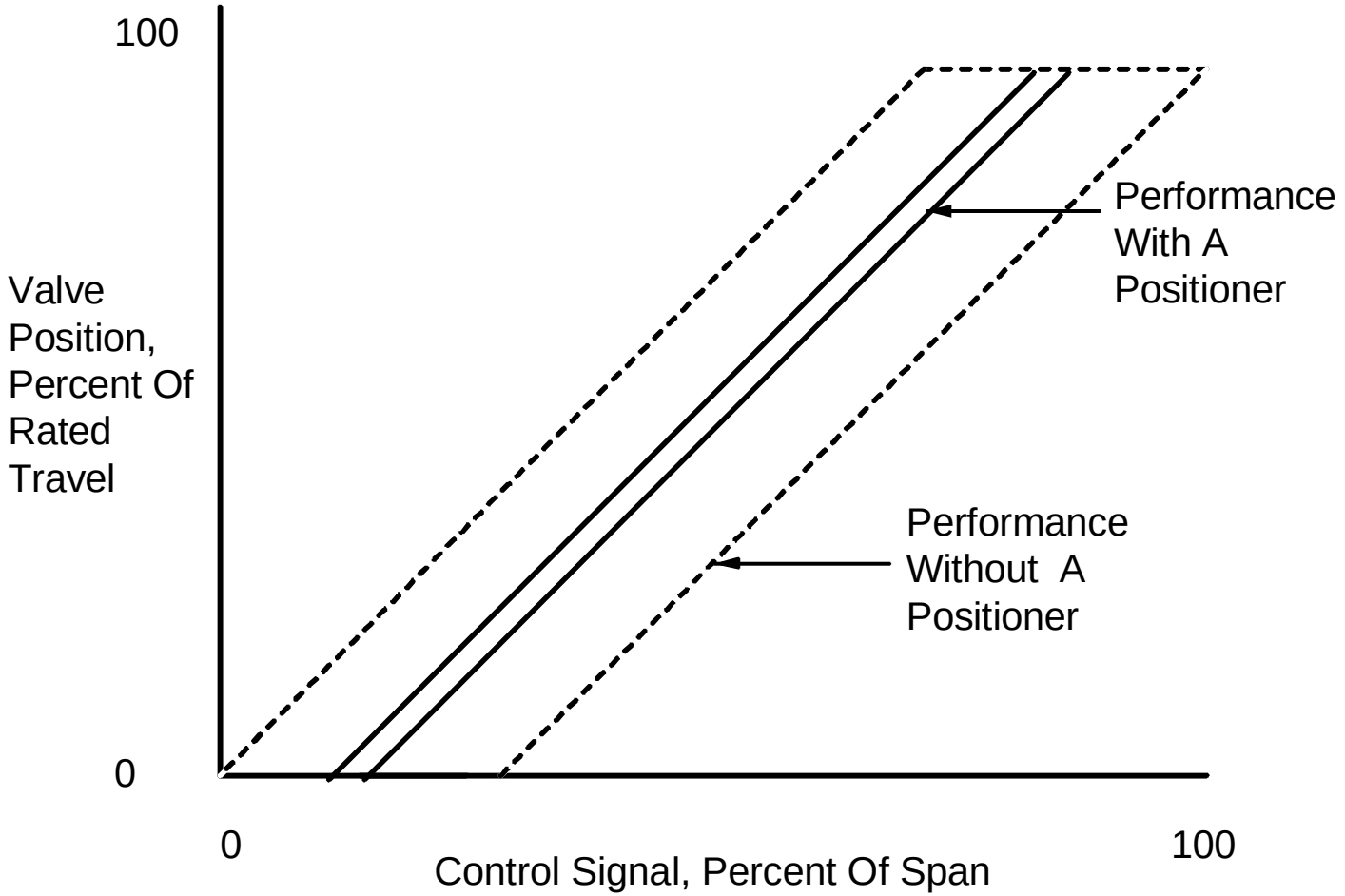


Figure 1-2. Deadband and Hysteresis that Results from Friction

Performance With and Without a Positioner



posperf

Figure 1-3. Minimizing Deadband With A Control Valve Positioner

Positioner Operation

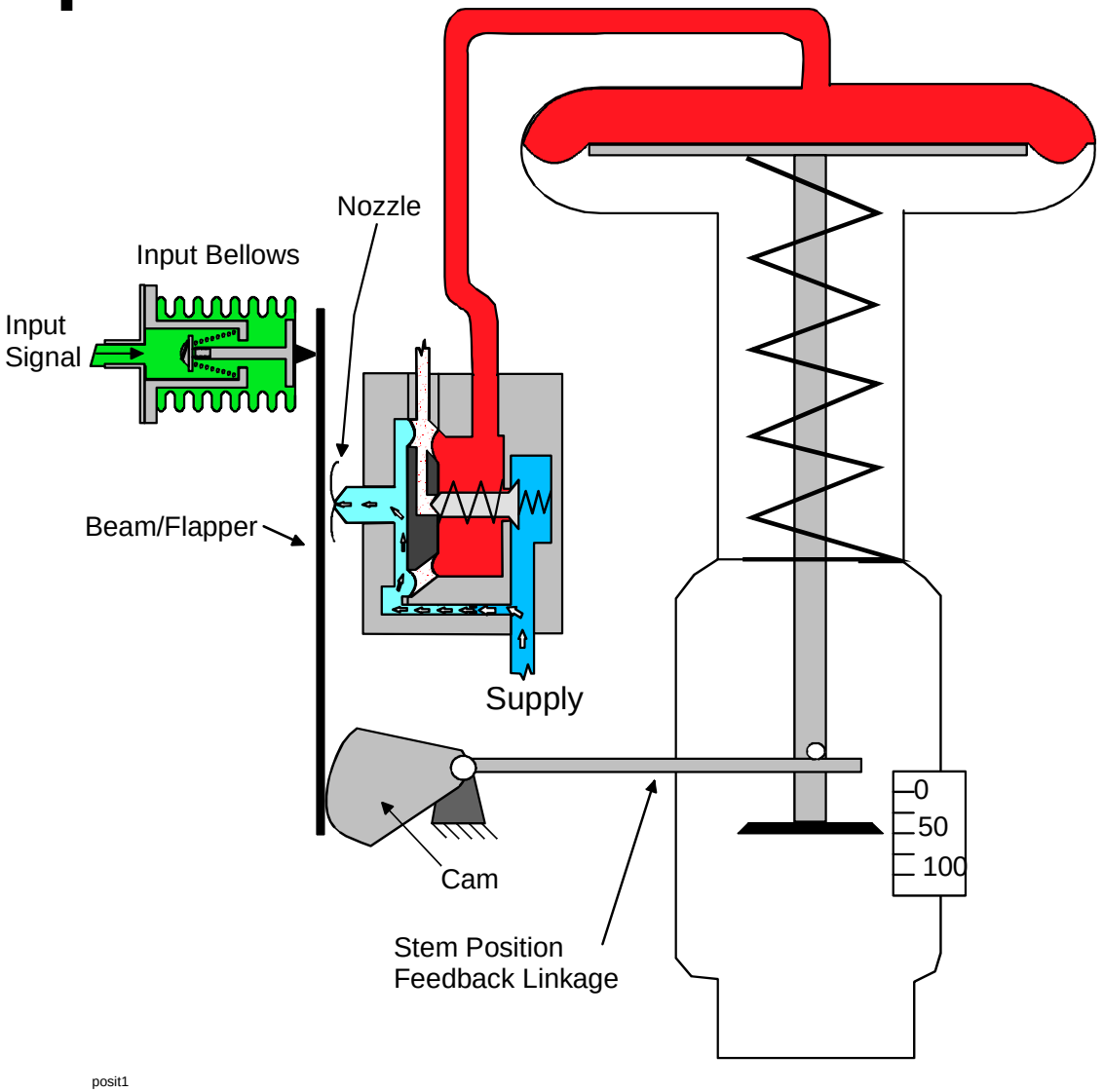
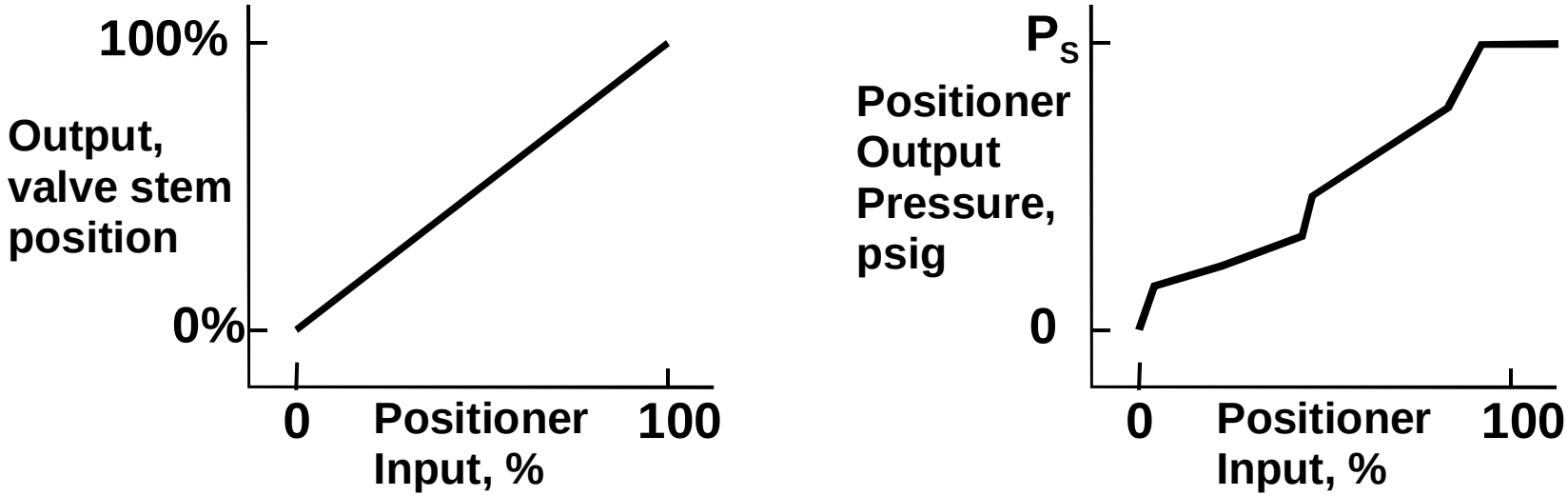


Figure 1-4. Valve Positioner at Start of Travel

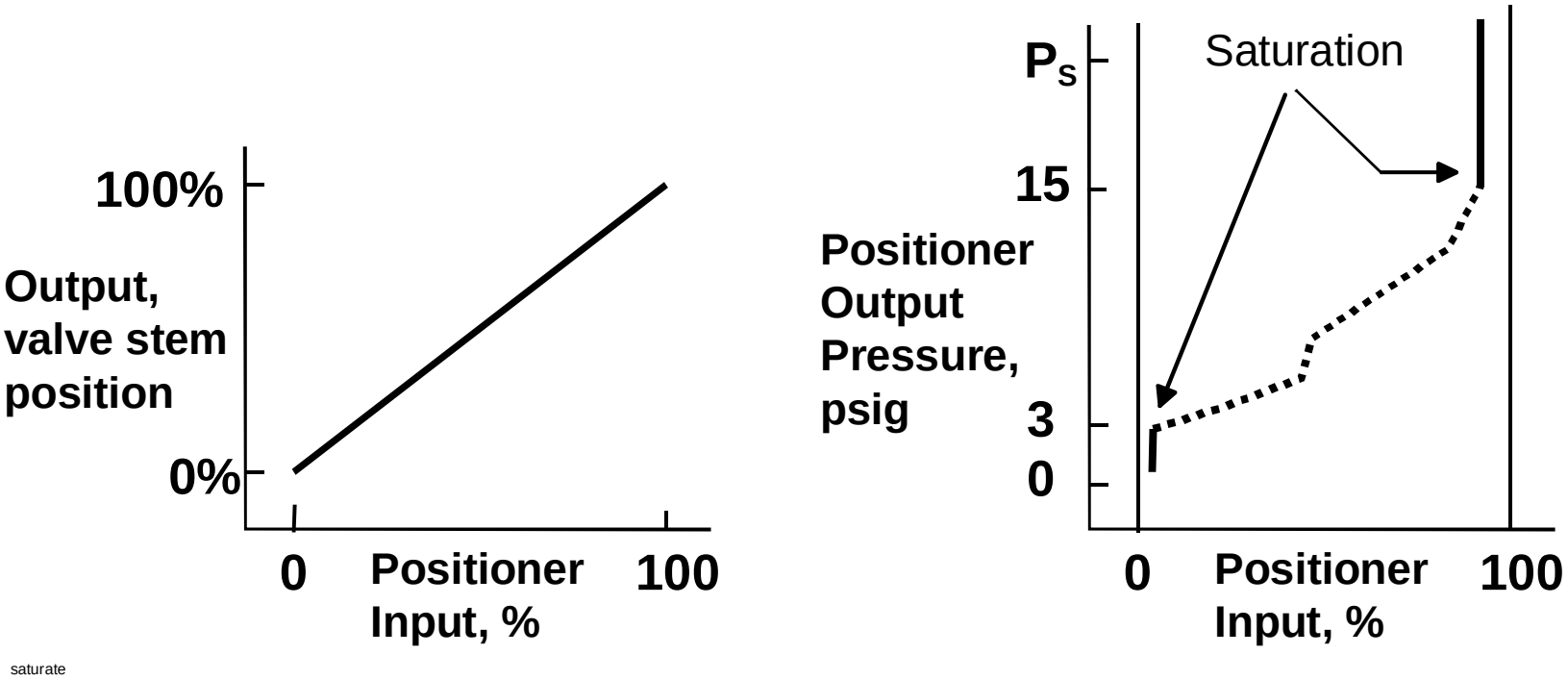
Two Graphs: Input Vs. Output



posrole

Figure 1-7. Positioner Input And Output Relationships

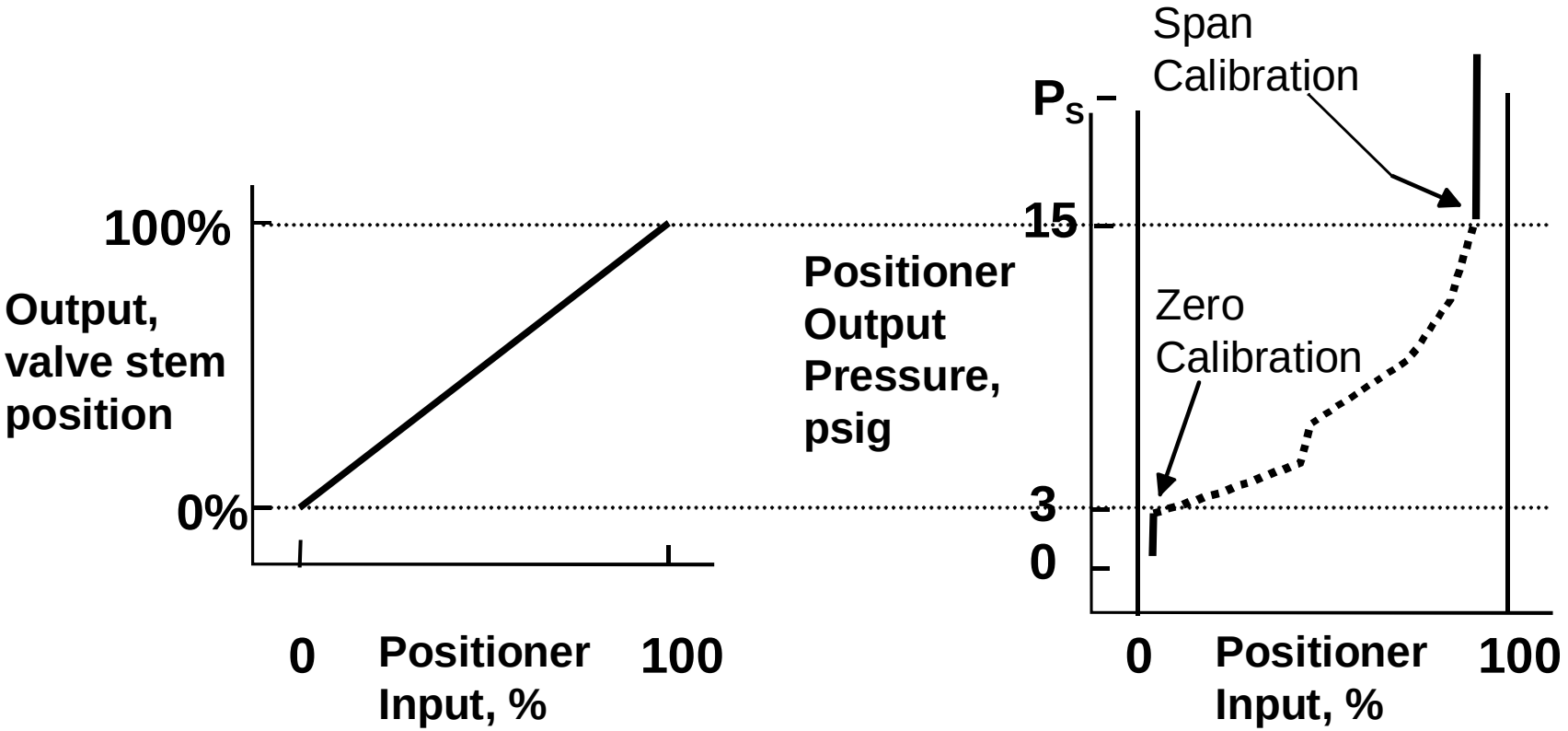
Saturation



saturate

Figure 1-8. Saturation

Zero & Span: End Points of Travel



poszerospan

Figure 1-9. Positioner Zero and Span Calibration

Basic DVC Functions

Automatic Travel Calibration

Stem Positioning Accuracy

Speed and Stability

Common Configuration Interface

Extended Features

Configurable Operating Parameters

Configurable Alerts

Advanced Diagnostics

Performance Diagnostics

Configurators

HART Handheld Communicator

ValveLink Software

AMS Software

Control System Software

Communication Options

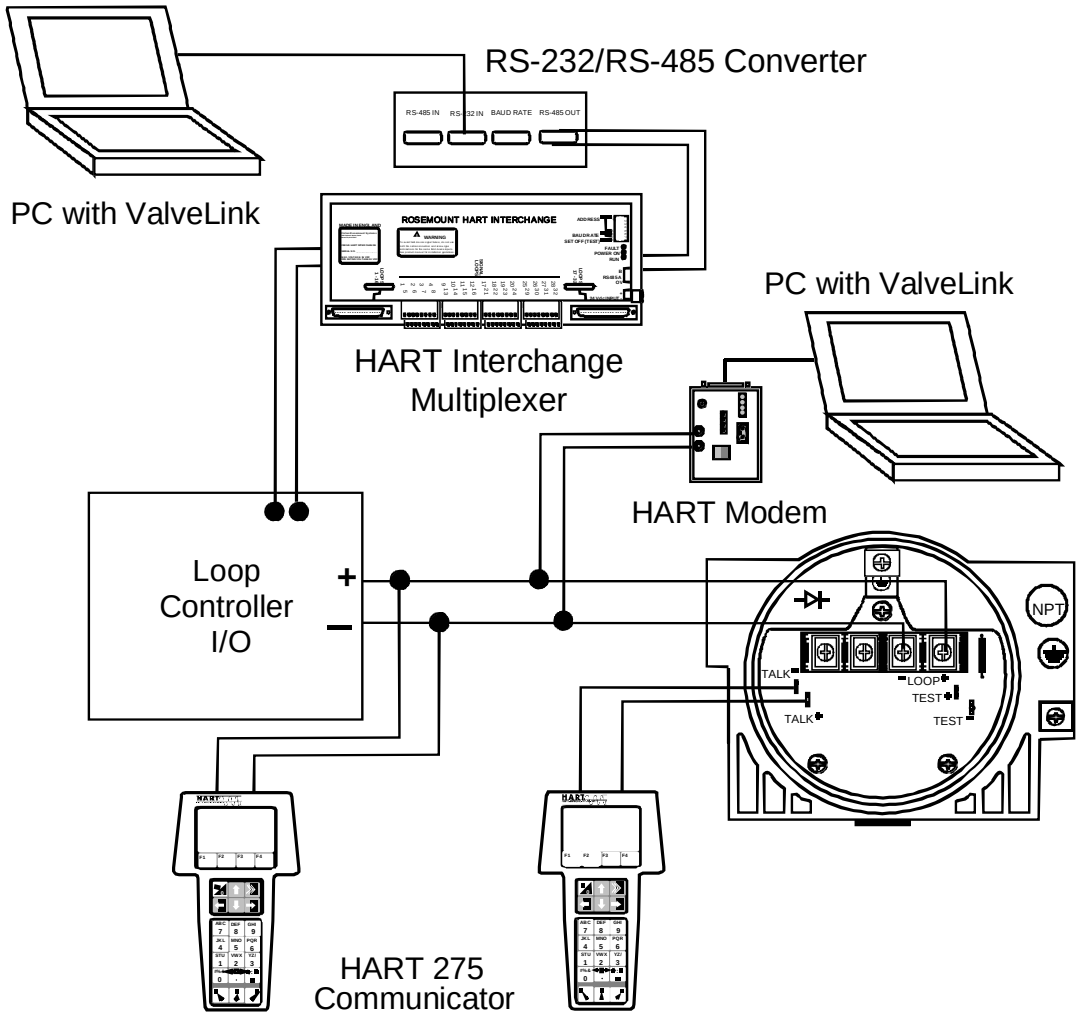


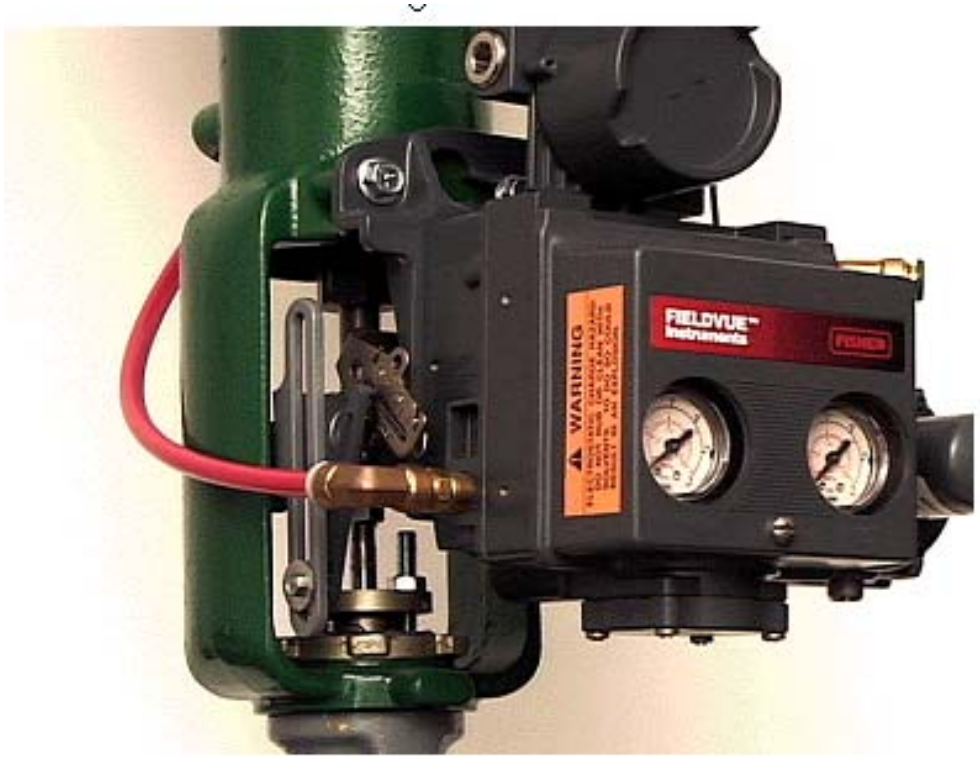
Figure 2-11. Examples Of FIELDVUE Instrument Communication Strategies

DVC Series 5000 and Series 6000

DVC5000

DVC6000

DVC 5010 & 6010: Sliding-Stem Actuator



DVC 5020 & 6020: Rotary-Shaft Actuator

DVC5000 - Principle of Operation

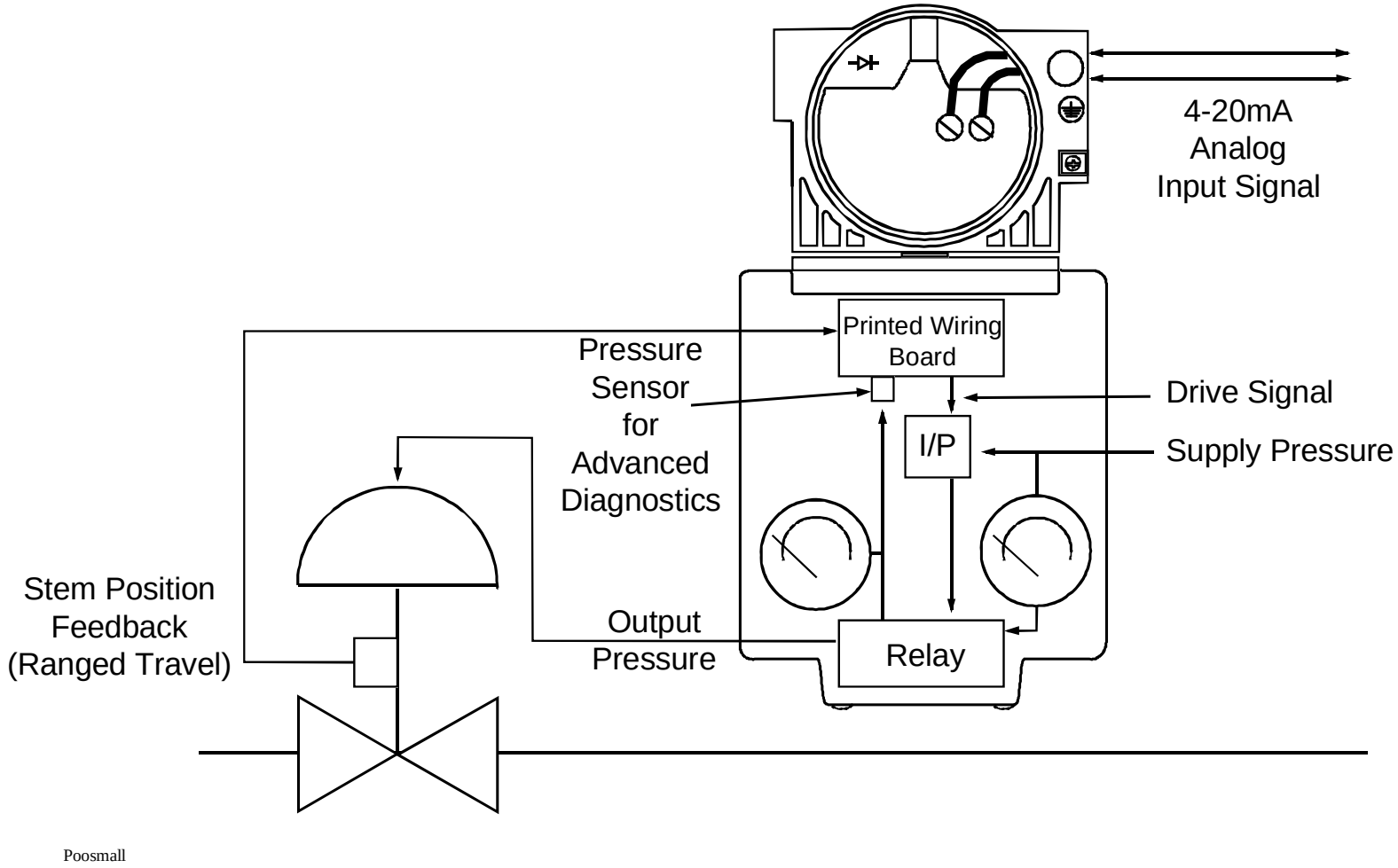


Figure 2-4. Principle of Operation-Type DVC5000

Front View of Terminal Box

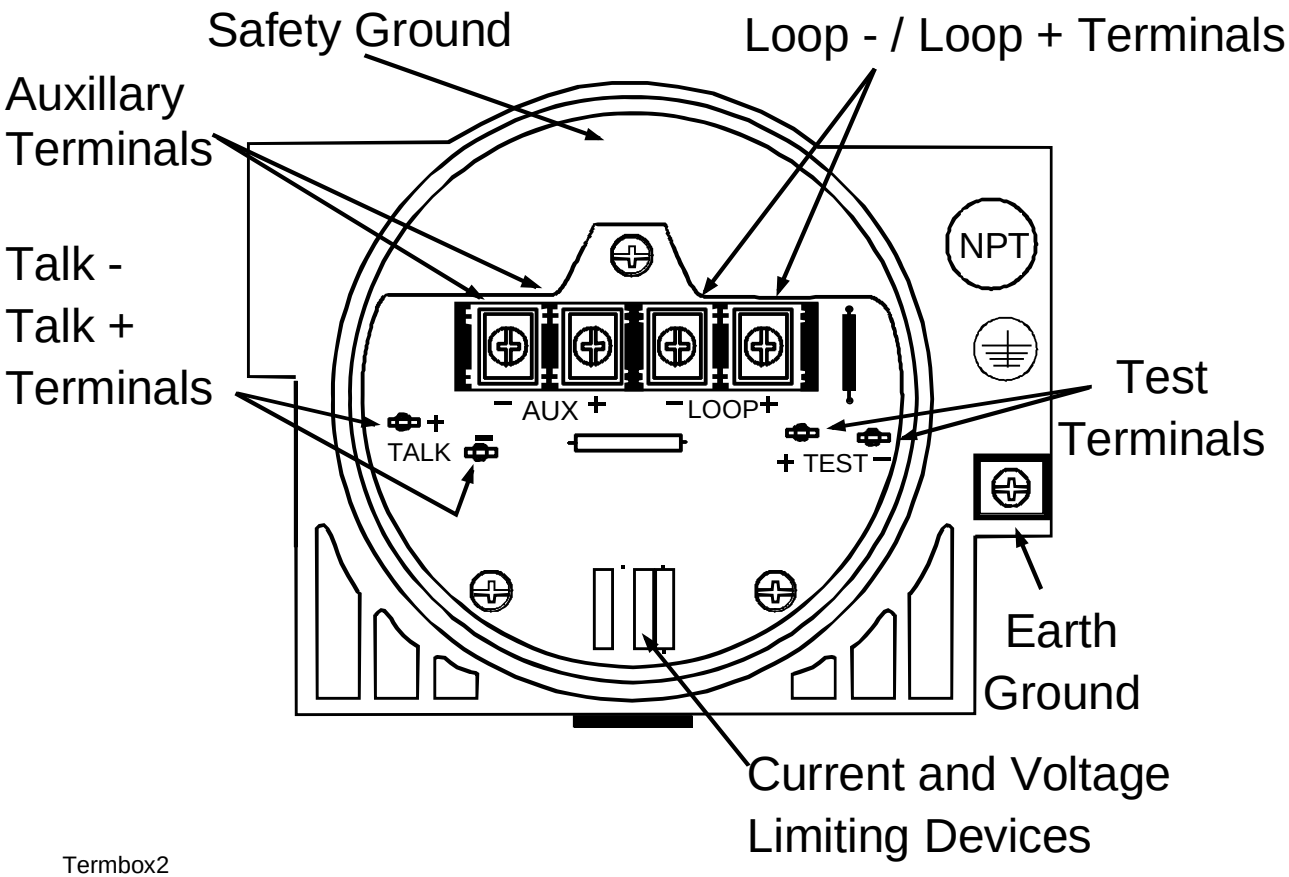


Figure 4-14. Front View of Terminal Box

Signal Path

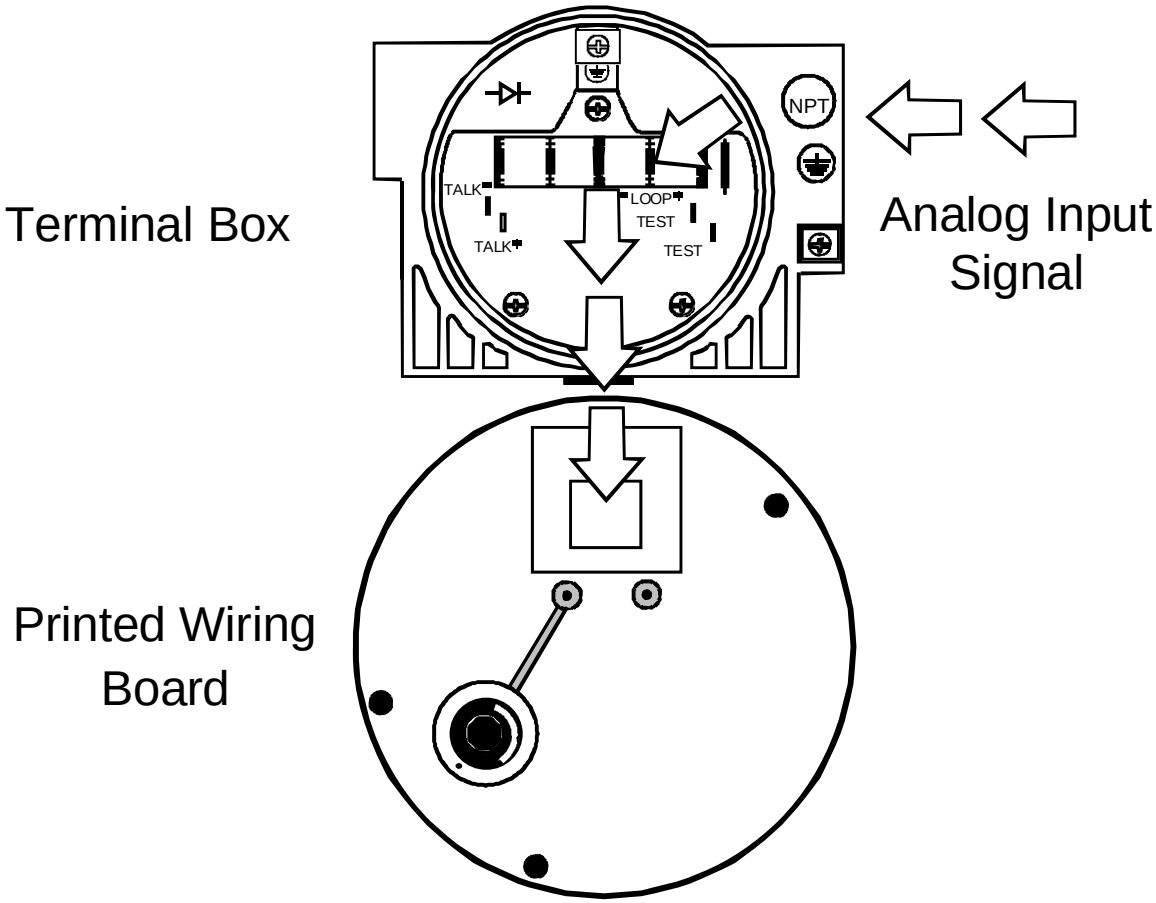


Figure 2-5. 4-20 mA Signal Path to PWB Assembly

Back of PWB Assembly (Puck)

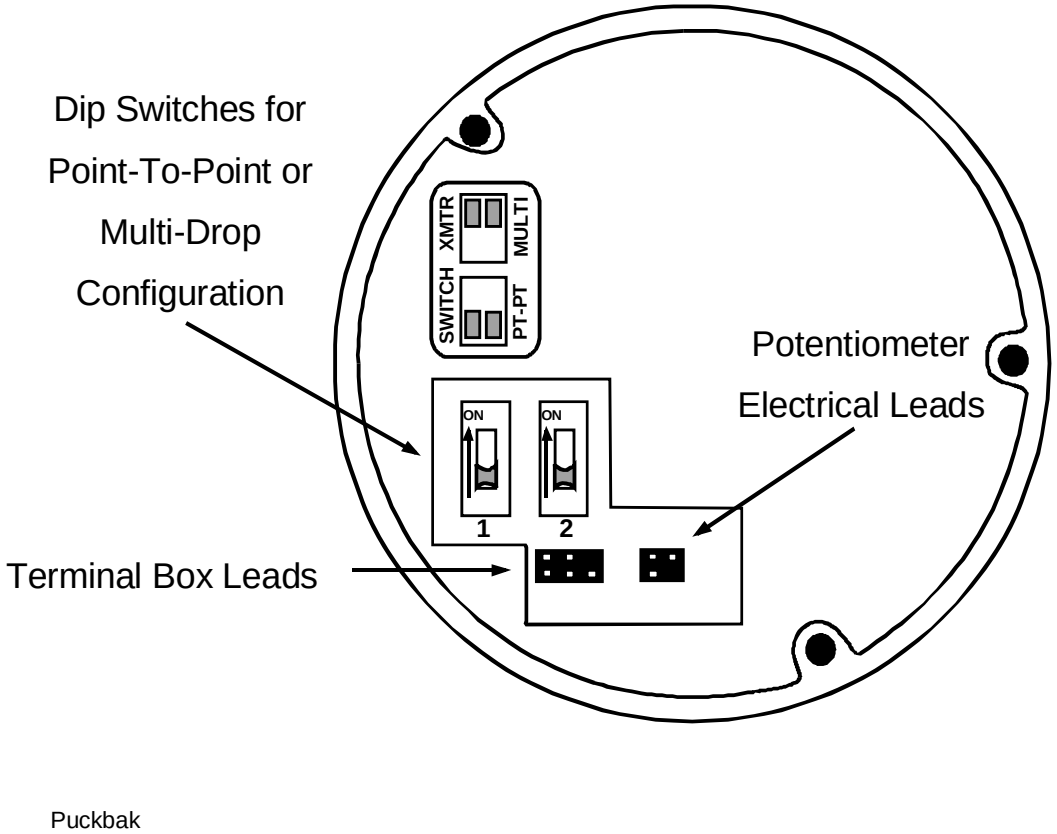


Figure 4-9. Backside of PWB assembly

Defining Drive Signal

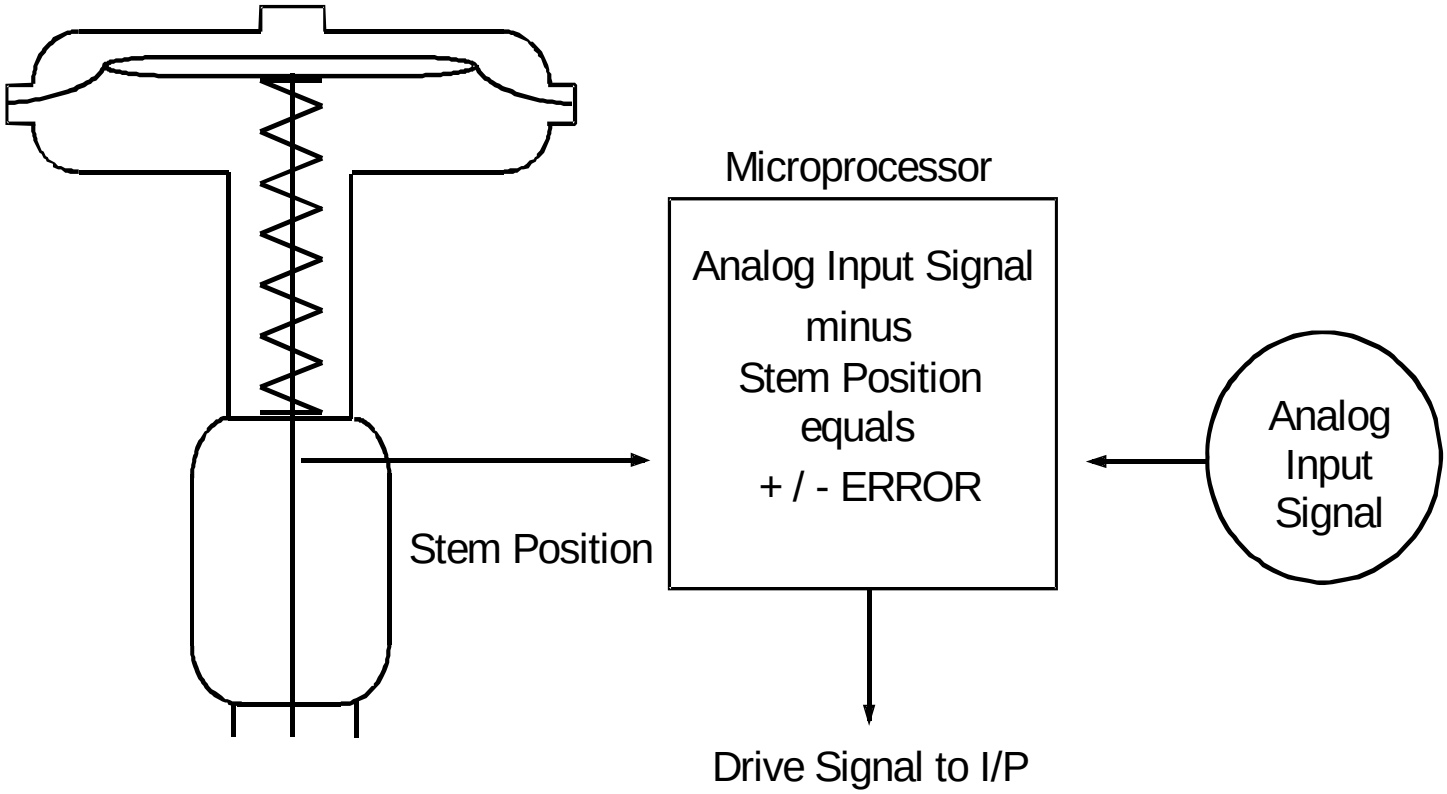


Figure 2-6. FIELDVUE PWB Microprocessor Drive Signal Equation

I/P Module - Familiar Technology

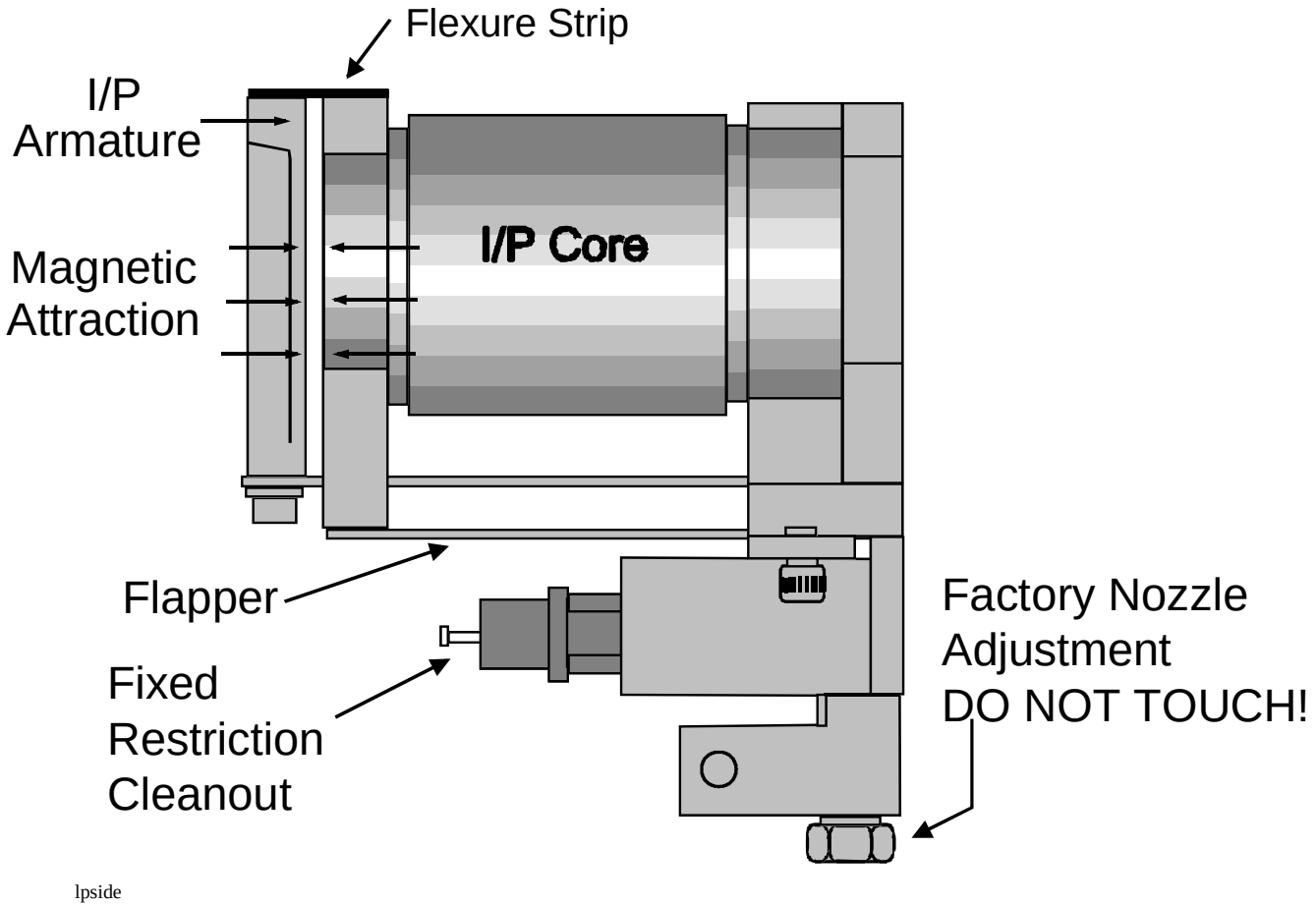


Figure 2-7. I/P Converter Drive Signal Reaction

Nozzle and Flapper

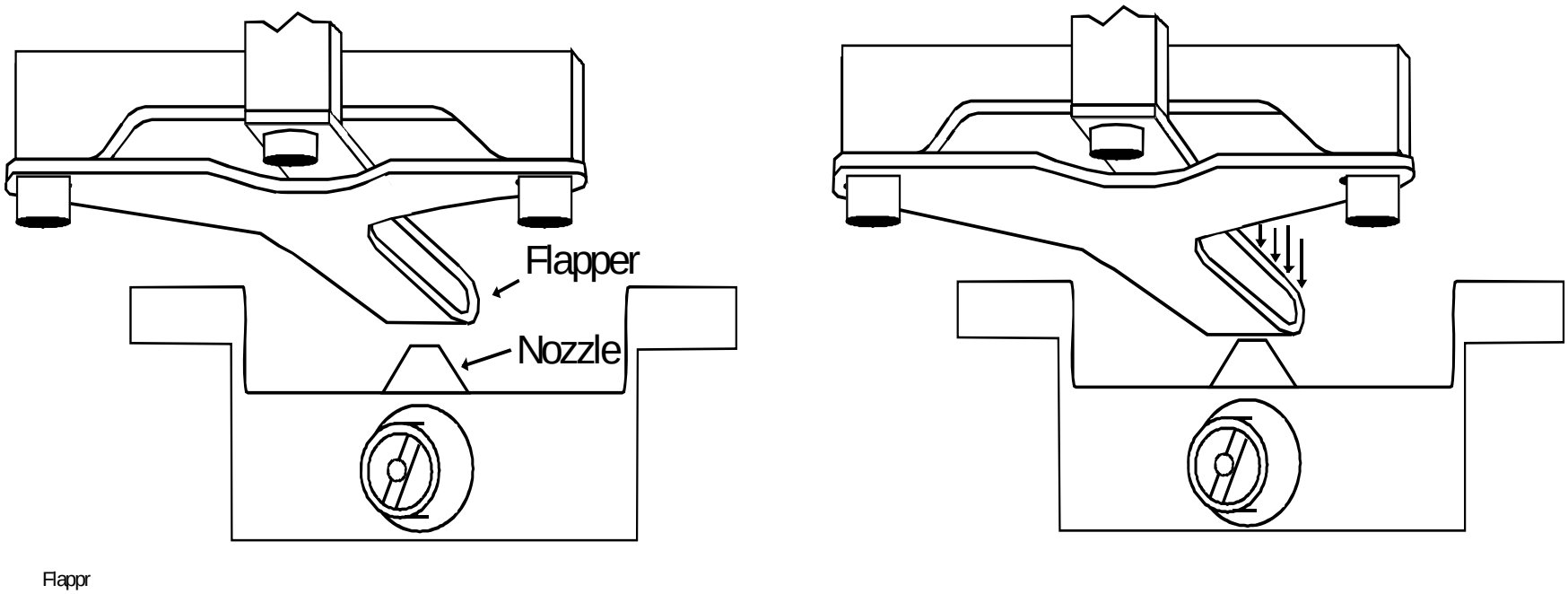


Figure 2-8. Flapper in Normal and Restrictive Positions

Reaction to Drive Signal

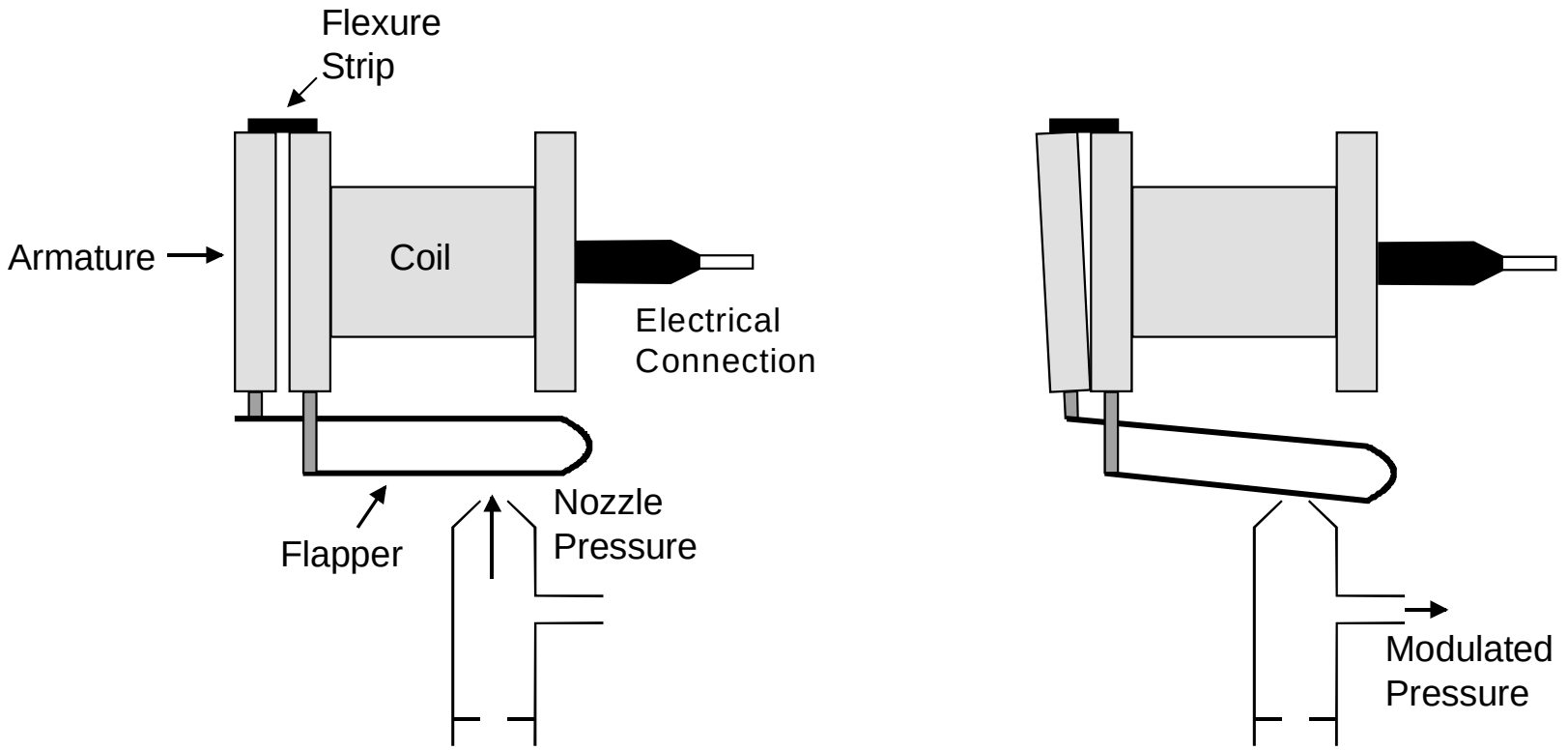


Figure 2-9. Concept of I/P Operation; Flapper Movement Exaggerated

Pressure Path

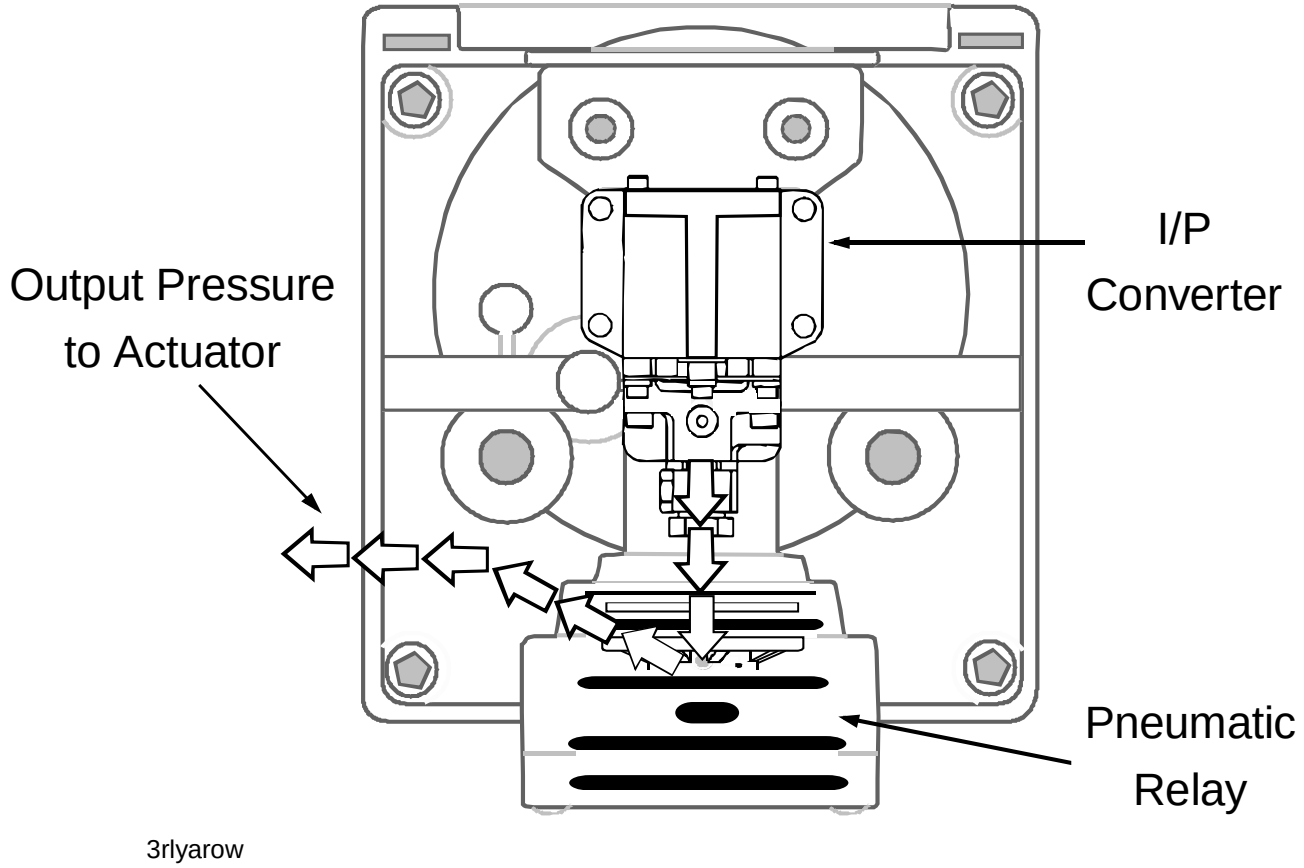
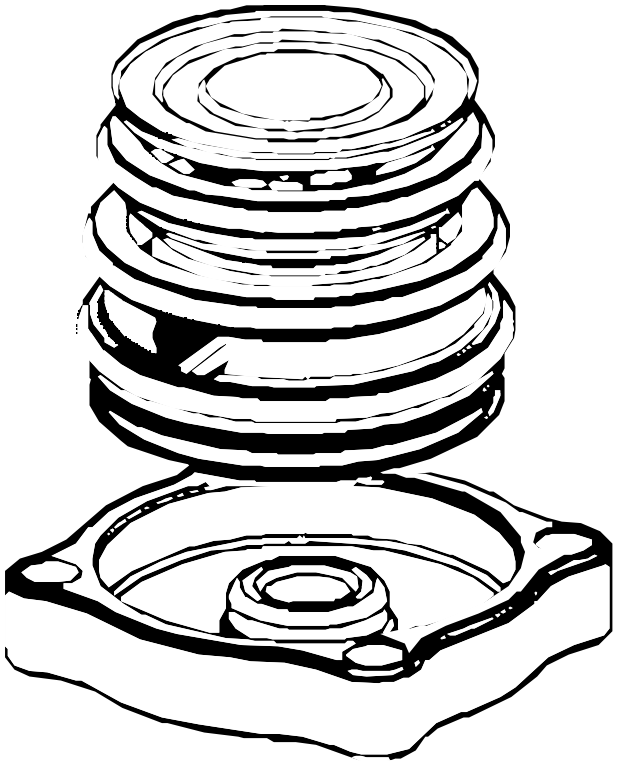


Figure 2-10. Pressure Path From I/P To Relay To Actuator

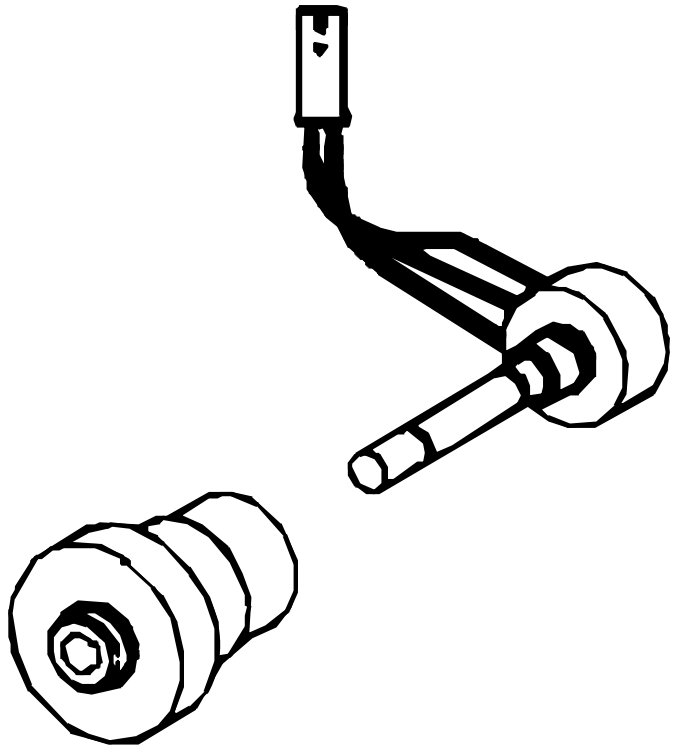
Relay



Pneurely

Figure 4-10. DVC Pneumatic Relay

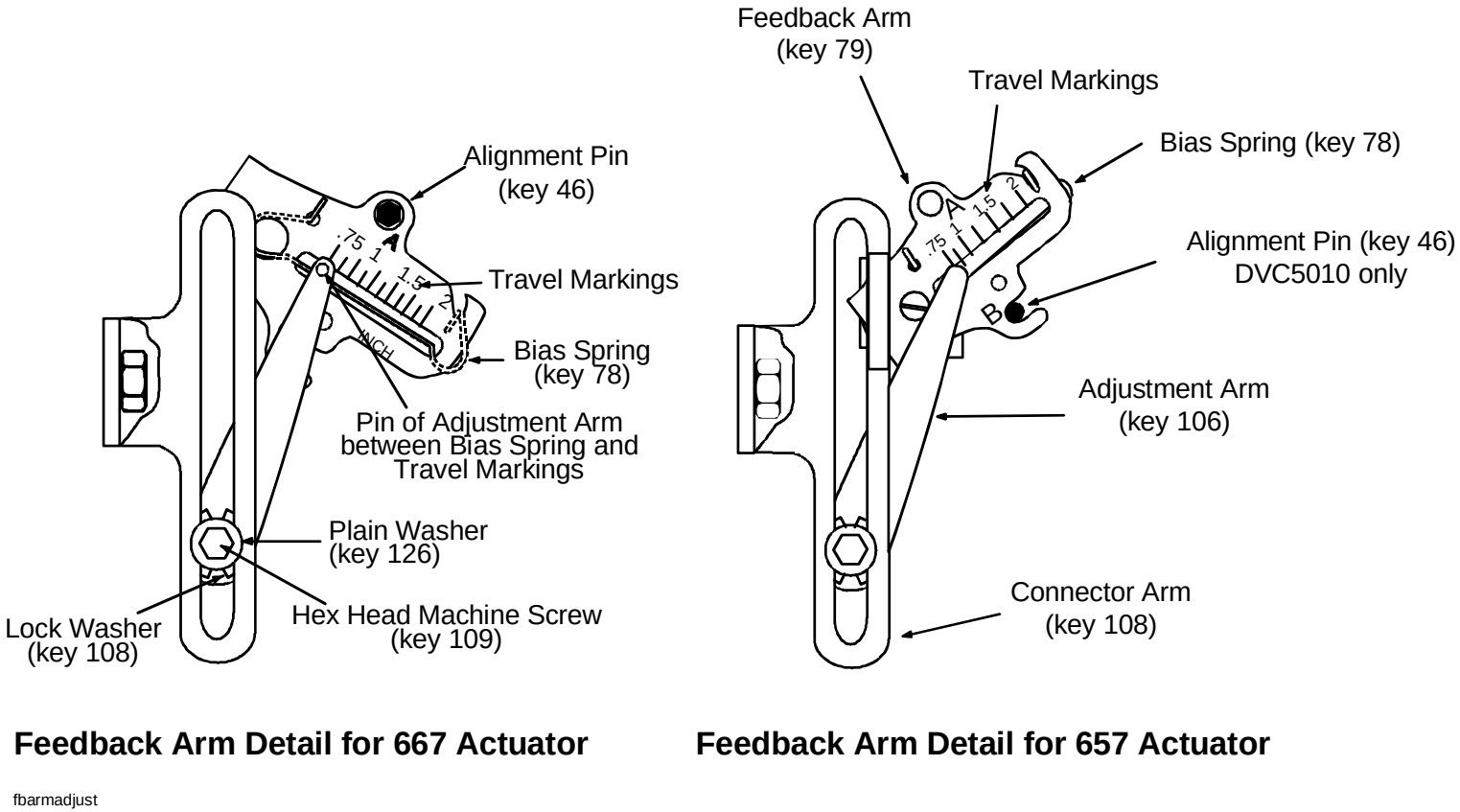
Travel Sensor



pot

Figure 4-12. Travel Sensor Potentiometer

Feedback Arm for Sliding-Stem Assemblies



Feedback Arm Detail for 667 Actuator

Feedback Arm Detail for 657 Actuator

fbarmadjust

Figure 5-2. Feedback Arm Positions to Set When Adjusting Travel Sensor Counts on a DVC 5010

Travel Feedback on 657 Actuator

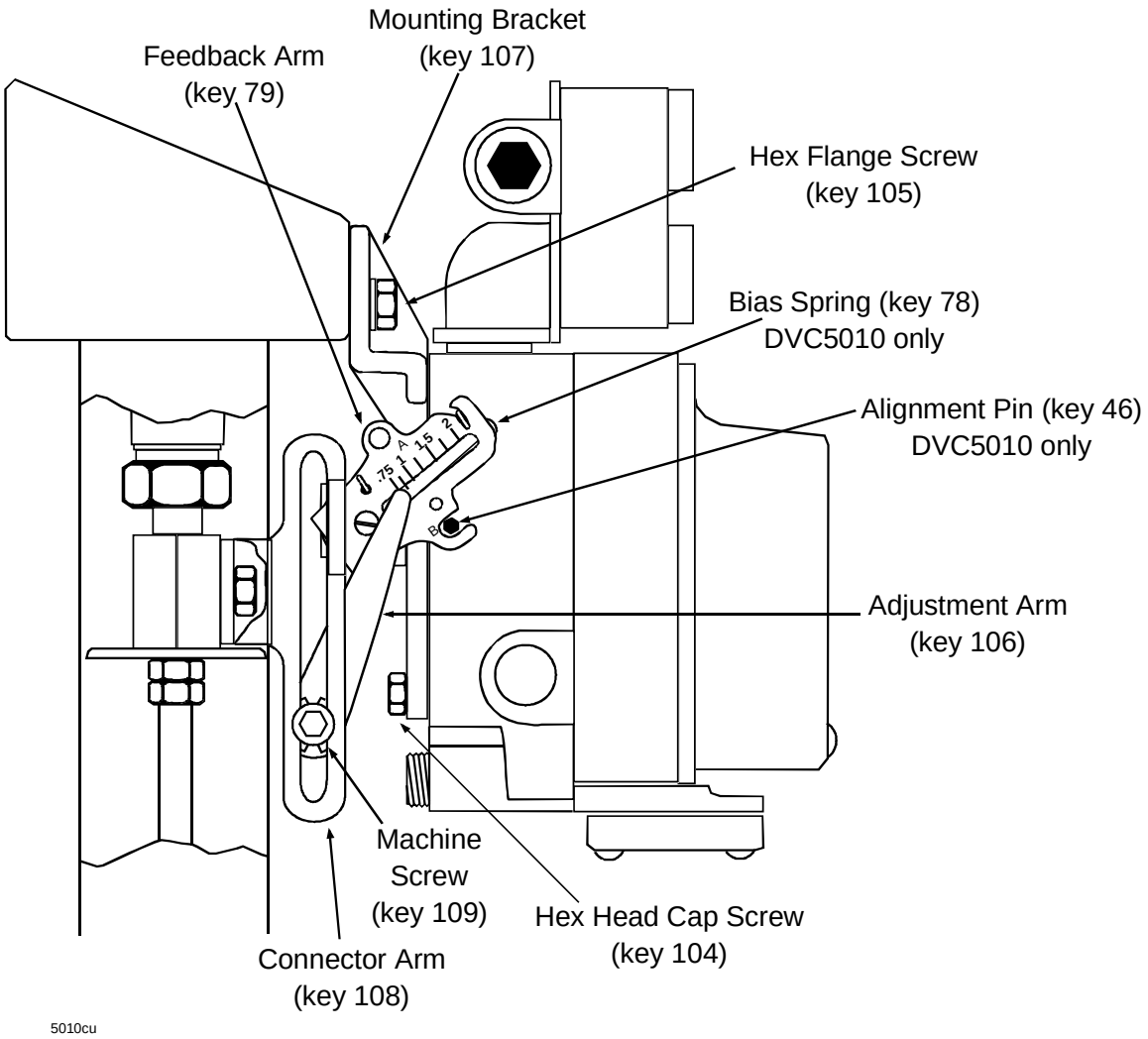
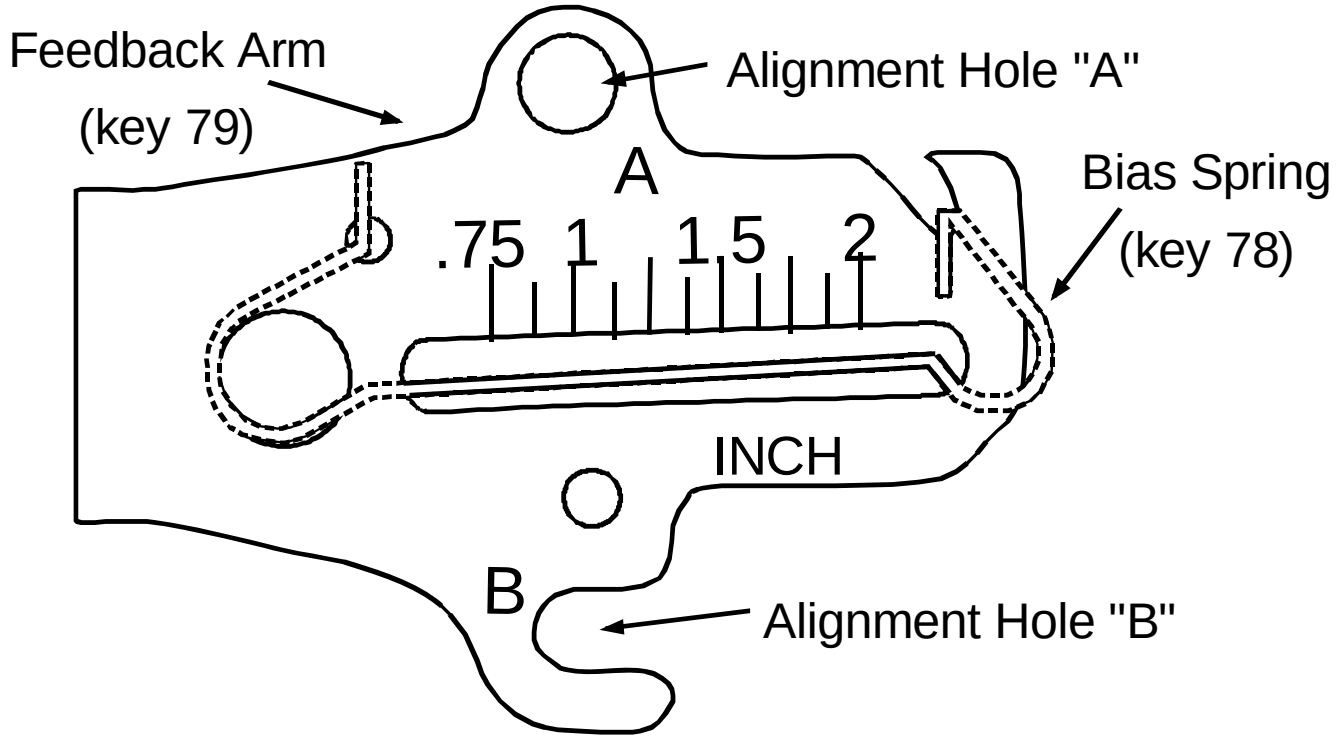


Figure 4-1. Close-up of DVC5010 Mounted On Size 30-60 Type 657 Actuator

Feedback Arm and Bias Spring



Biaspring

Figure 4-17. Proper Bias Spring Installation

Feedback Arm for Rotary Assembly

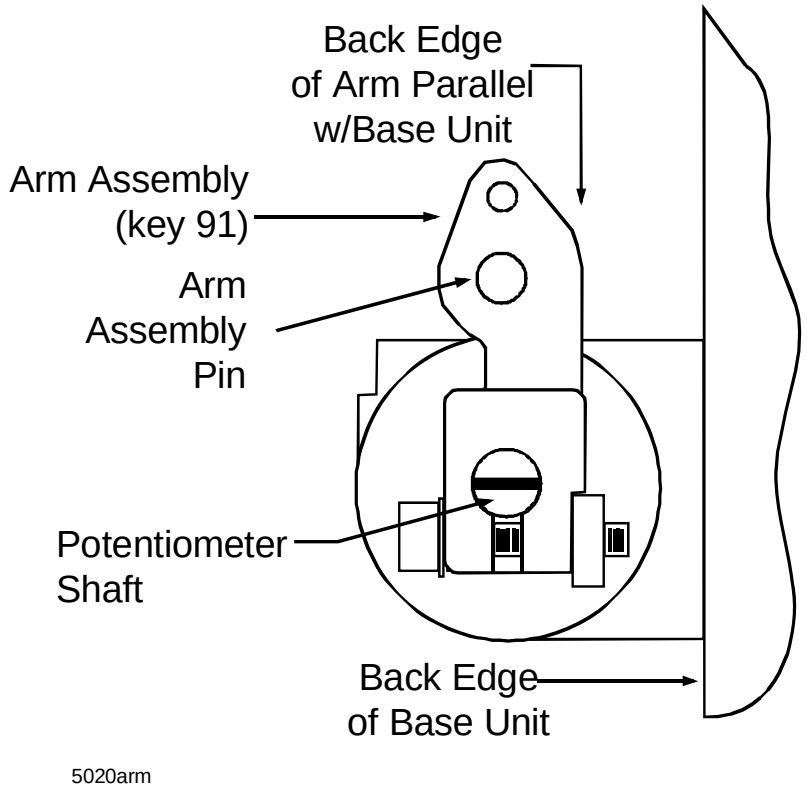


Figure 5-4. Feedback Arm Position for a DVC 5020 When Adjusting Travel Sensor Counts

Travel Feedback on 1052 Actuator

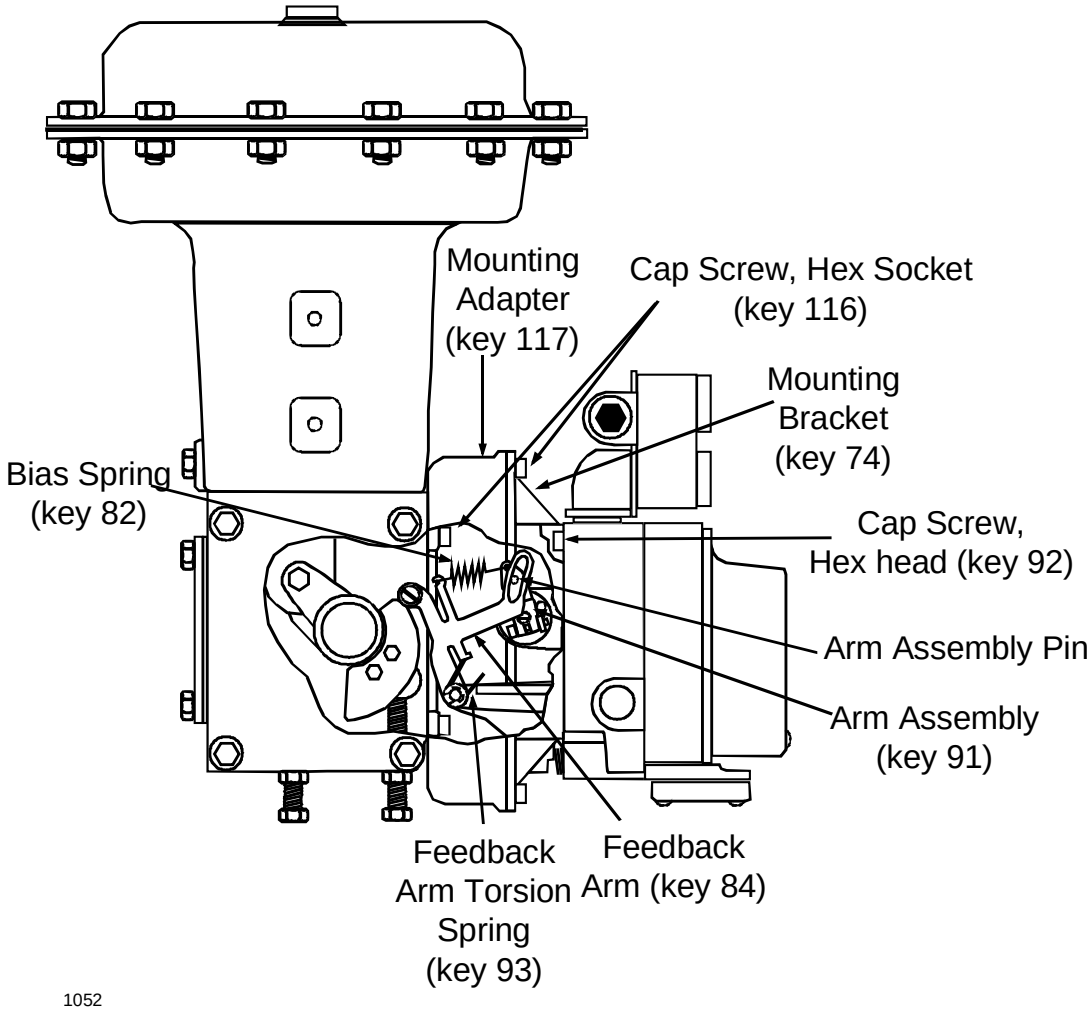


Figure 4-2. DVC5020 Mounted On Size 33, Type 1052 Actuator

Exploded View of DVC5000 Components

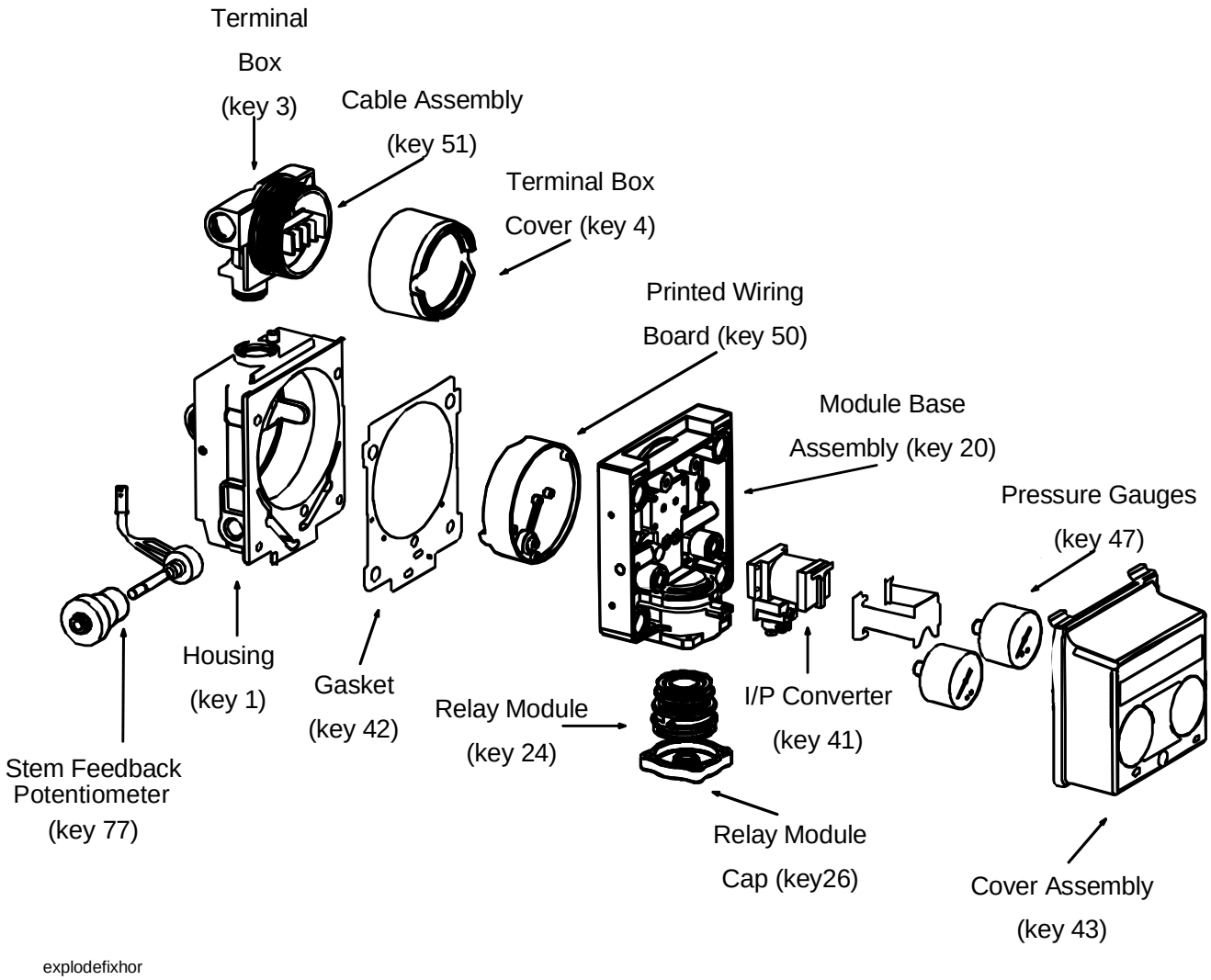


Figure 4-4. Exploded View of a FIELDVUE Instrument

Introducing DVC6000

DVC6000 is Double Acting AND Single Acting.

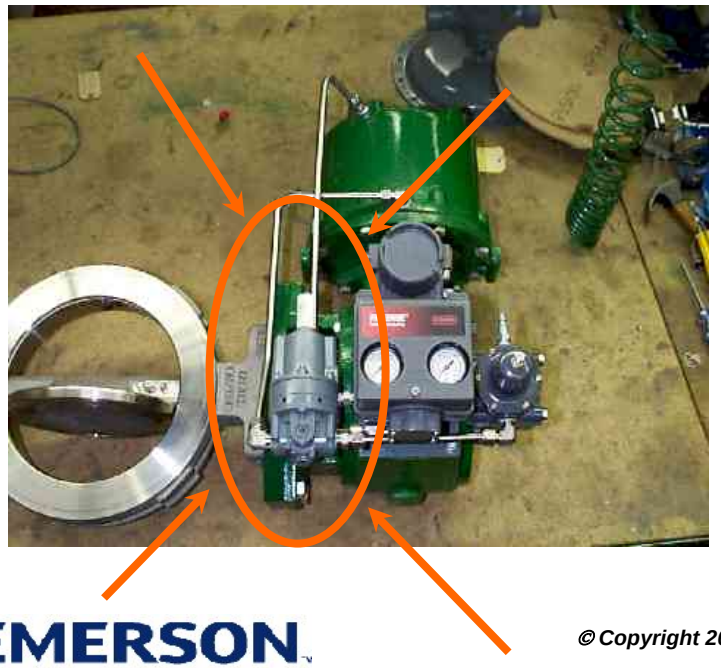
Reverse Acting DVC is now possible.

Diagnostic capabilities are enhanced.

Performance is improved!

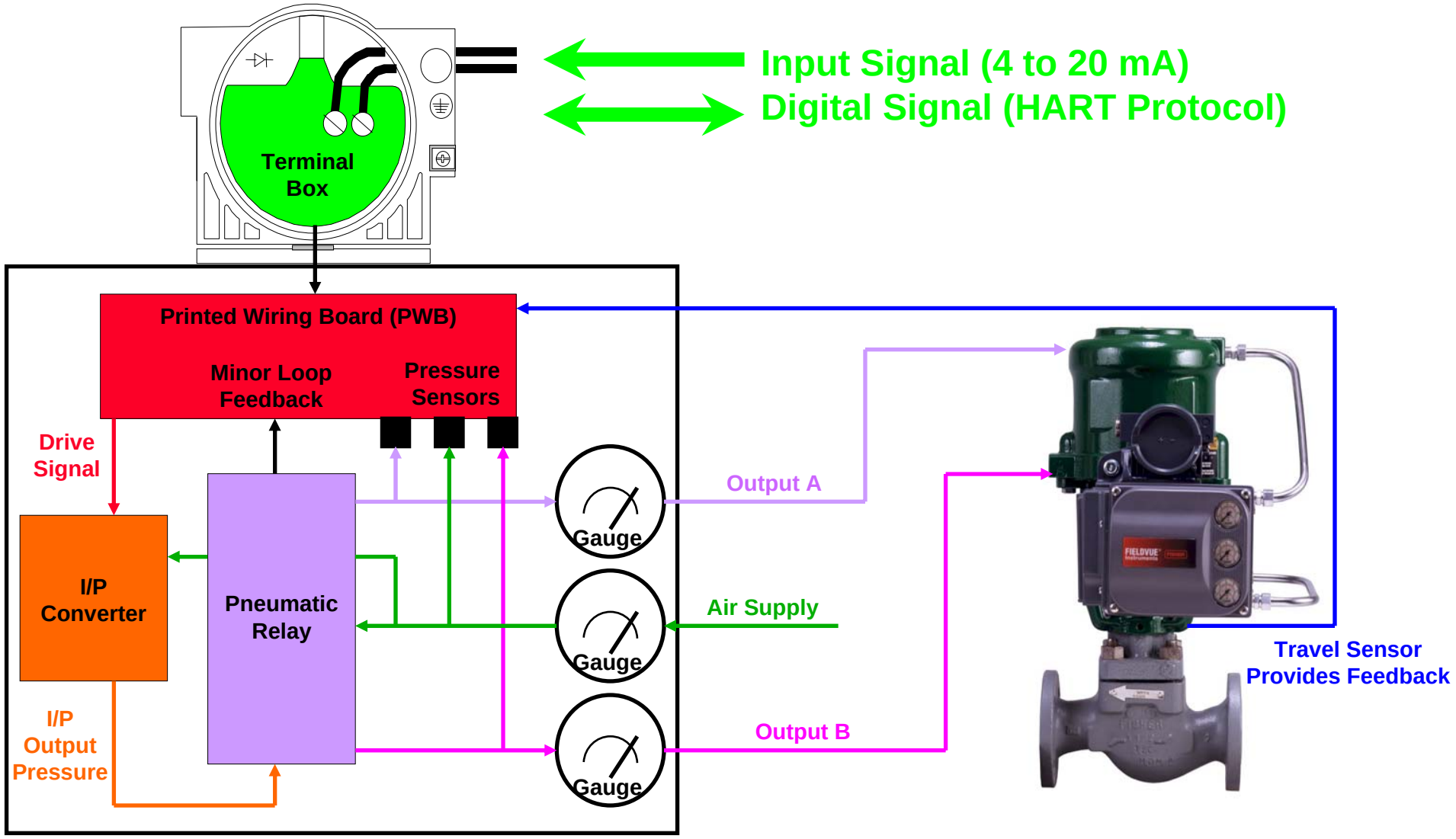
DVC Product Evolution

FIELDVUE DVC5000 Series Relay
Single Acting Only

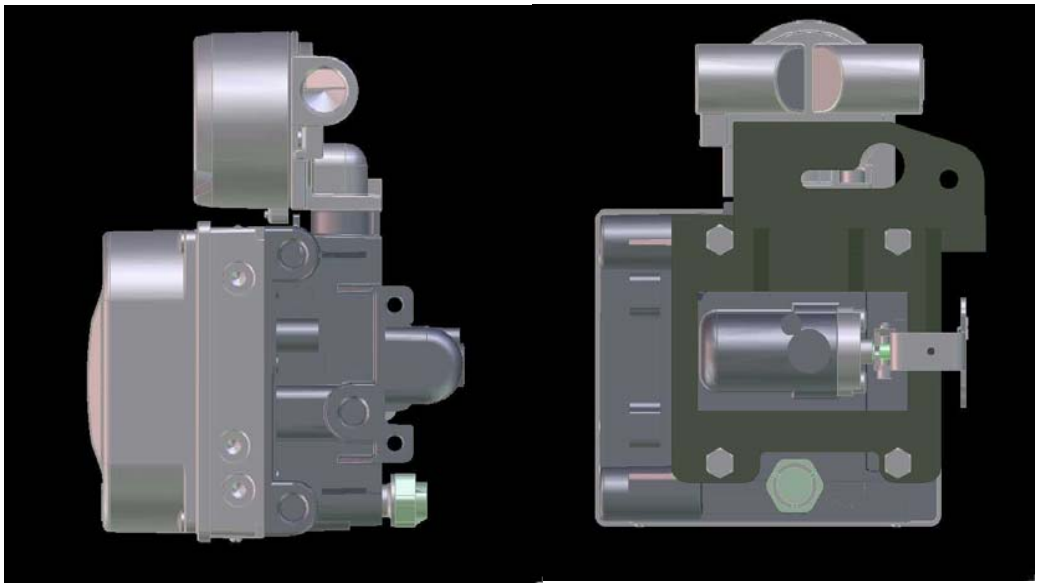


Fairchild Reversing Relay
Adds Double Acting Capability

DVC6000 - Principle of Operation



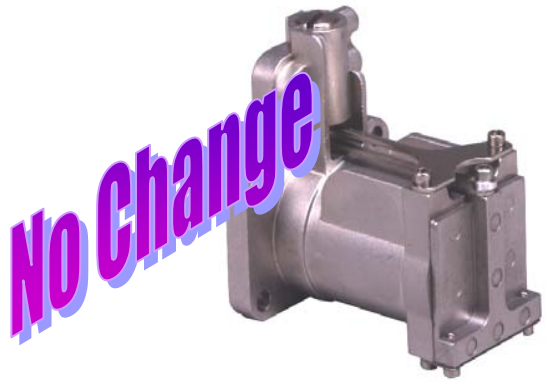
DVC6000 Features - Same Mounting



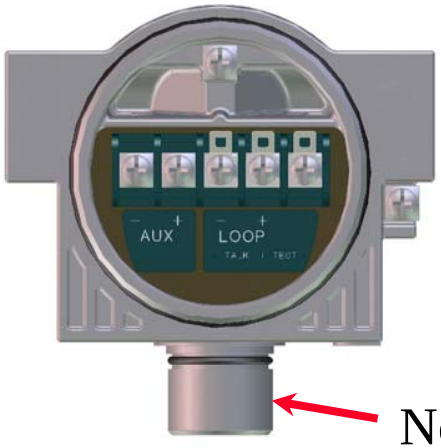
Same Mountings

Common Mounting Hardware
DVC6010, DVC6020, DVC6030
Tubing Connections - Right Side
Integral Airset
Conduit Connections - No Change

DVC6000 Hardware Enhancements



Common I/P Transducer

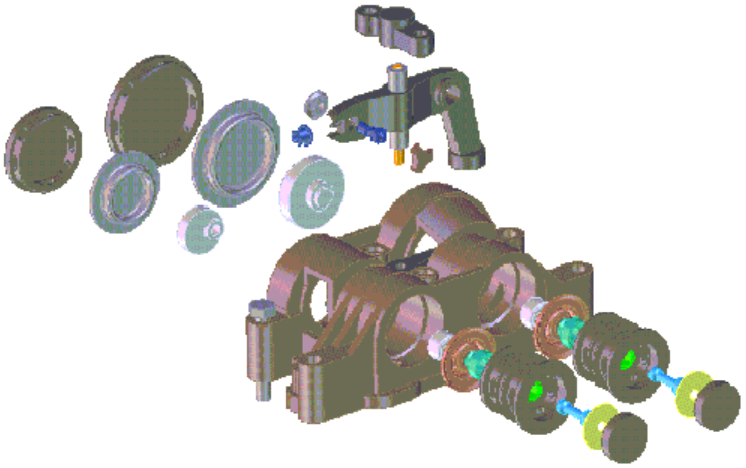


No Threads

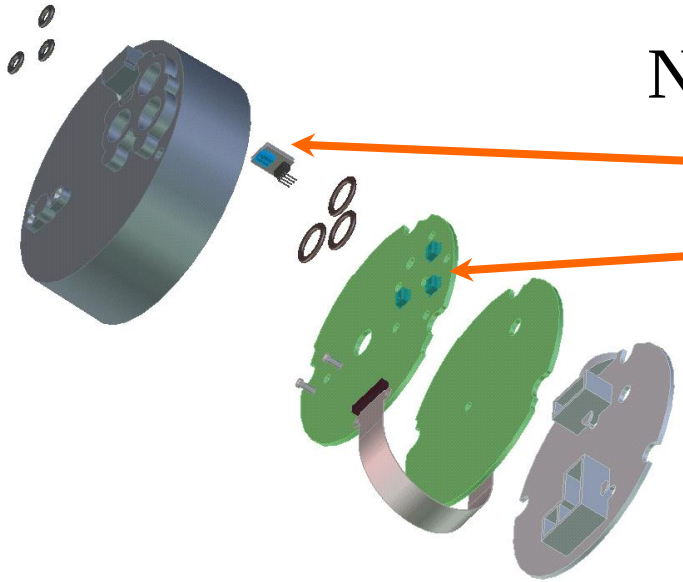
Repackaged Components (Stab-In Design)

- Terminal Box
- Feedback Potentiometer

DVC6000 Hardware Enhancements



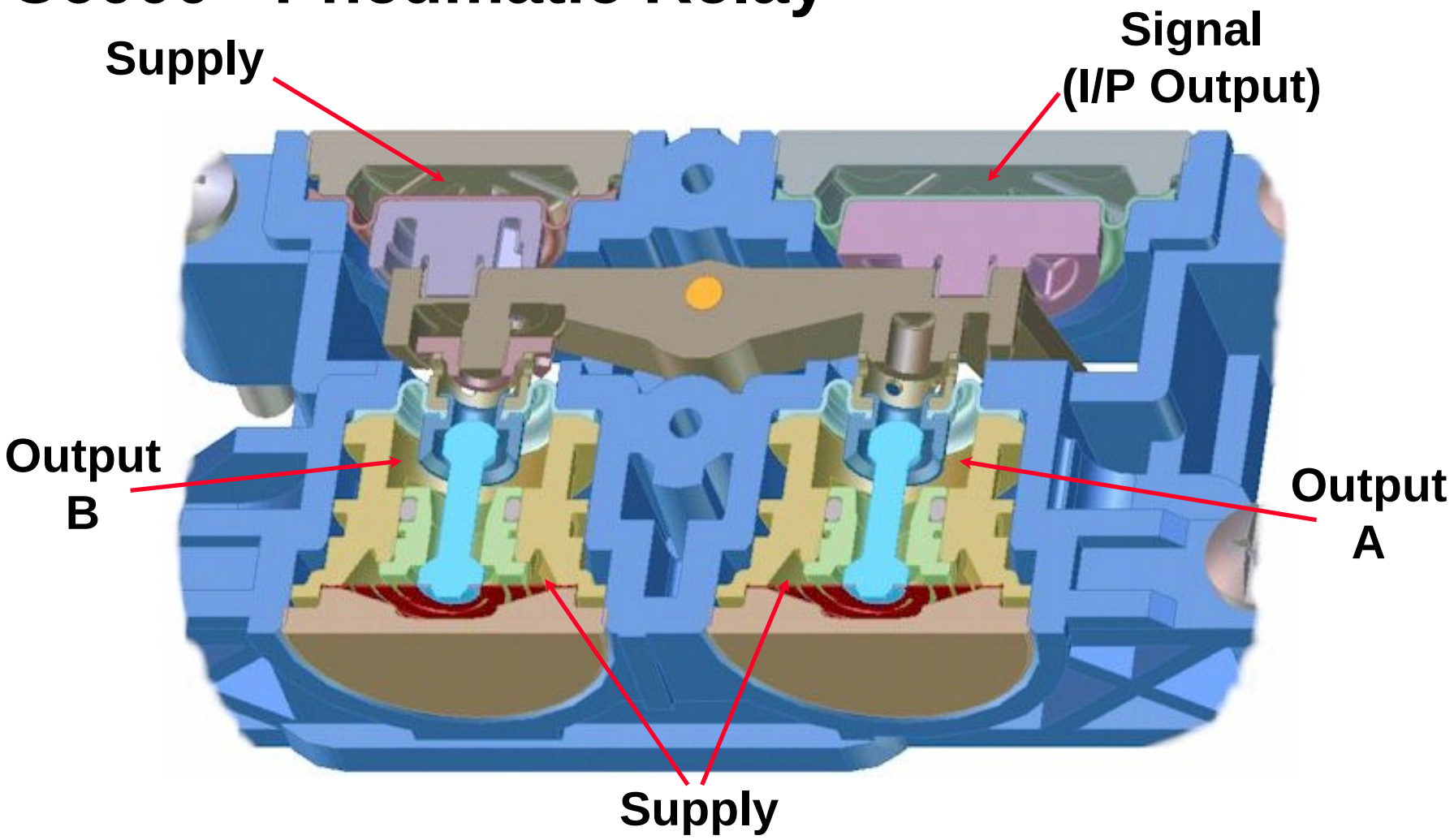
New Double Acting Relay



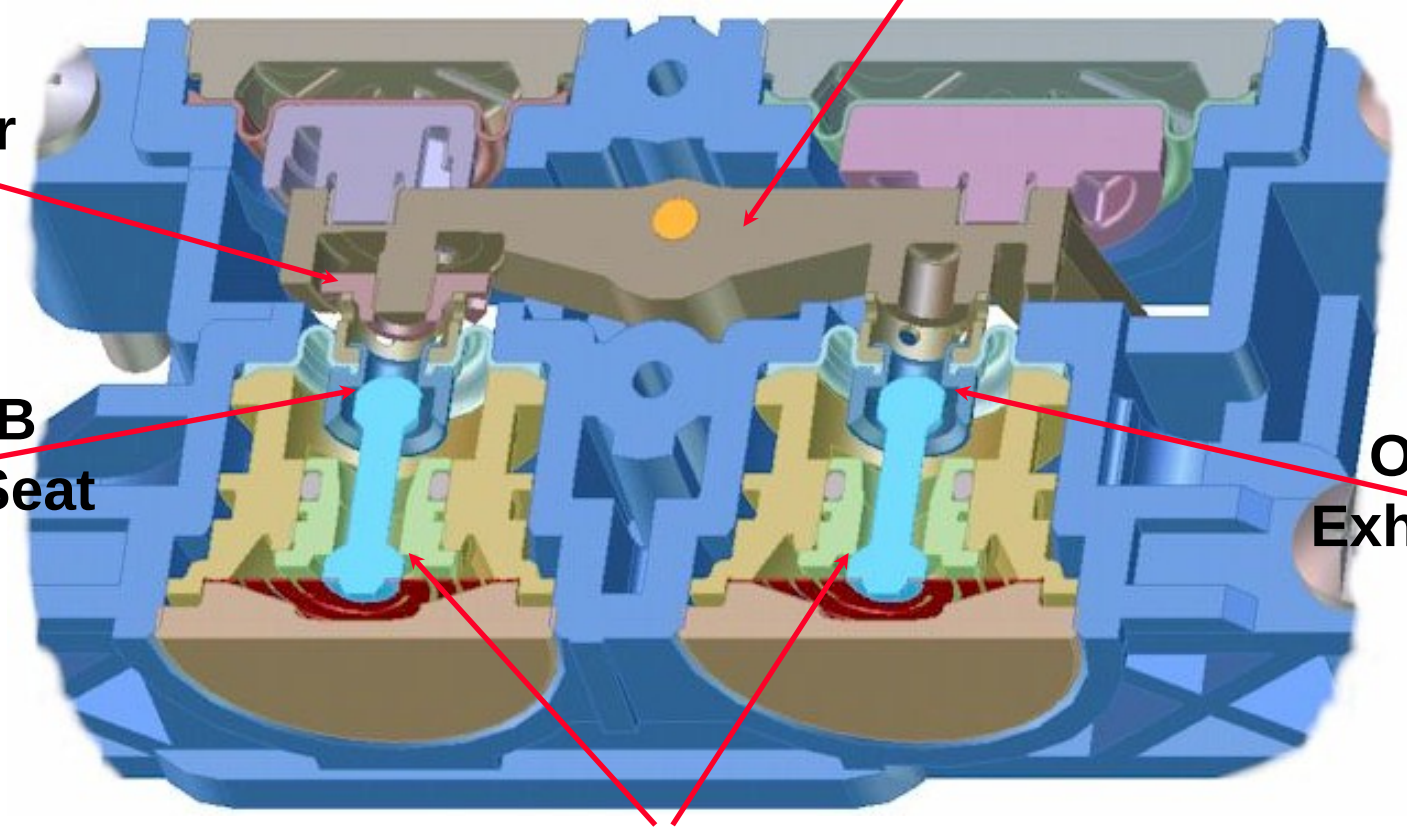
New Printed Wiring Board (PWB)

- Minor Loop Feedback Sensor
- 3 Pressure Sensors (P1, P2, Supply)

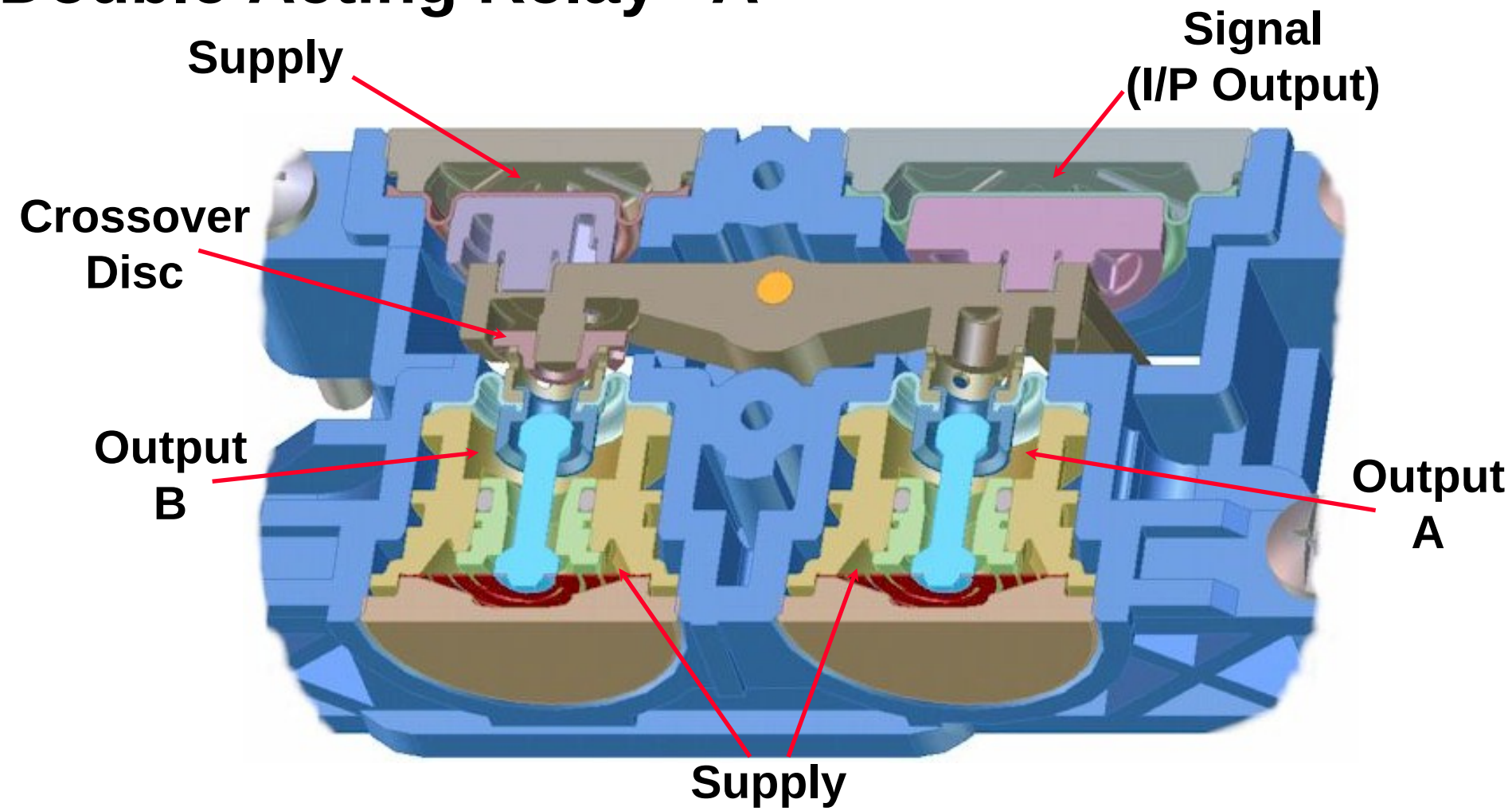
DVC6000 - Pneumatic Relay



DVC6000 - Pneumatic Relay Hardware

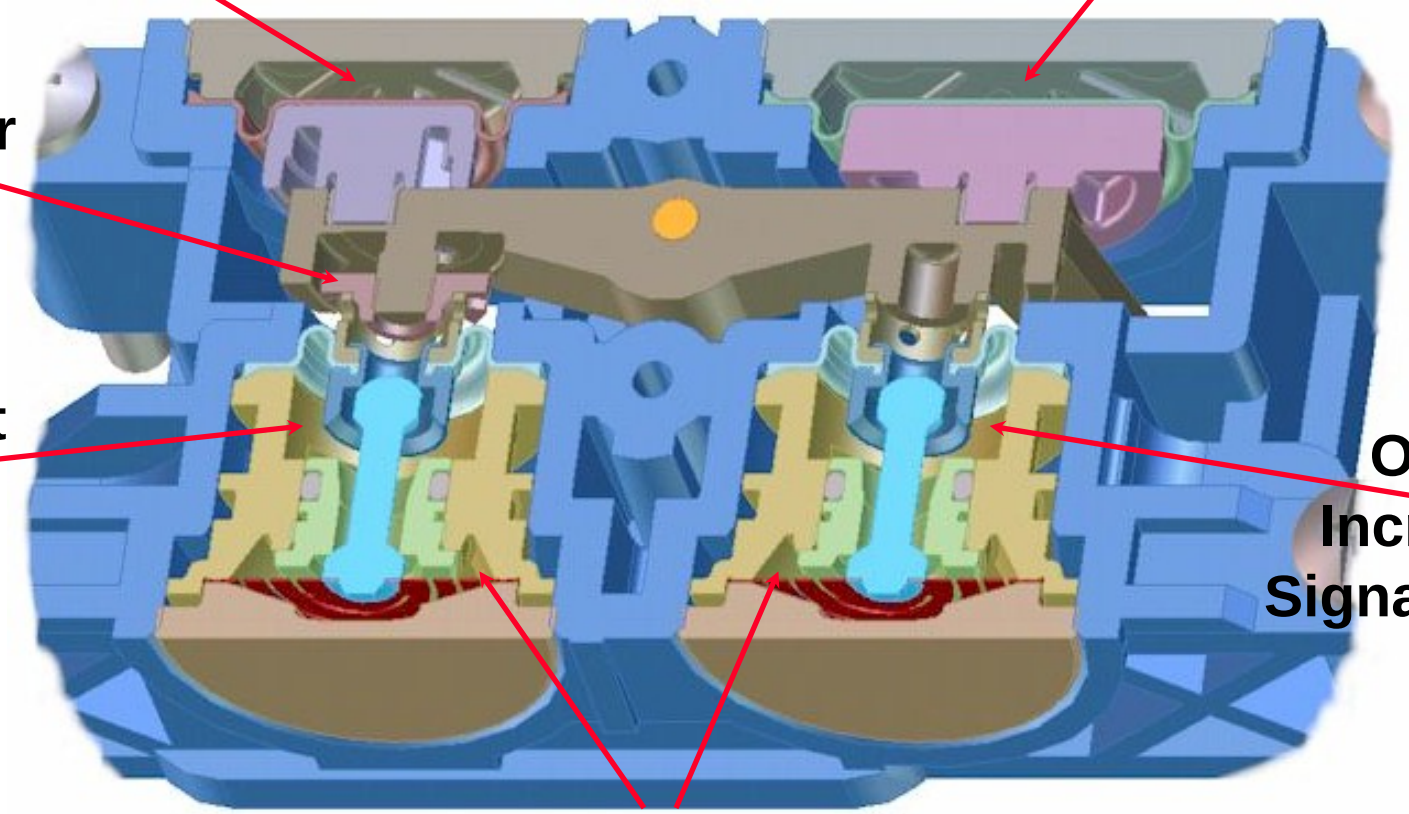


Double Acting Relay “A”



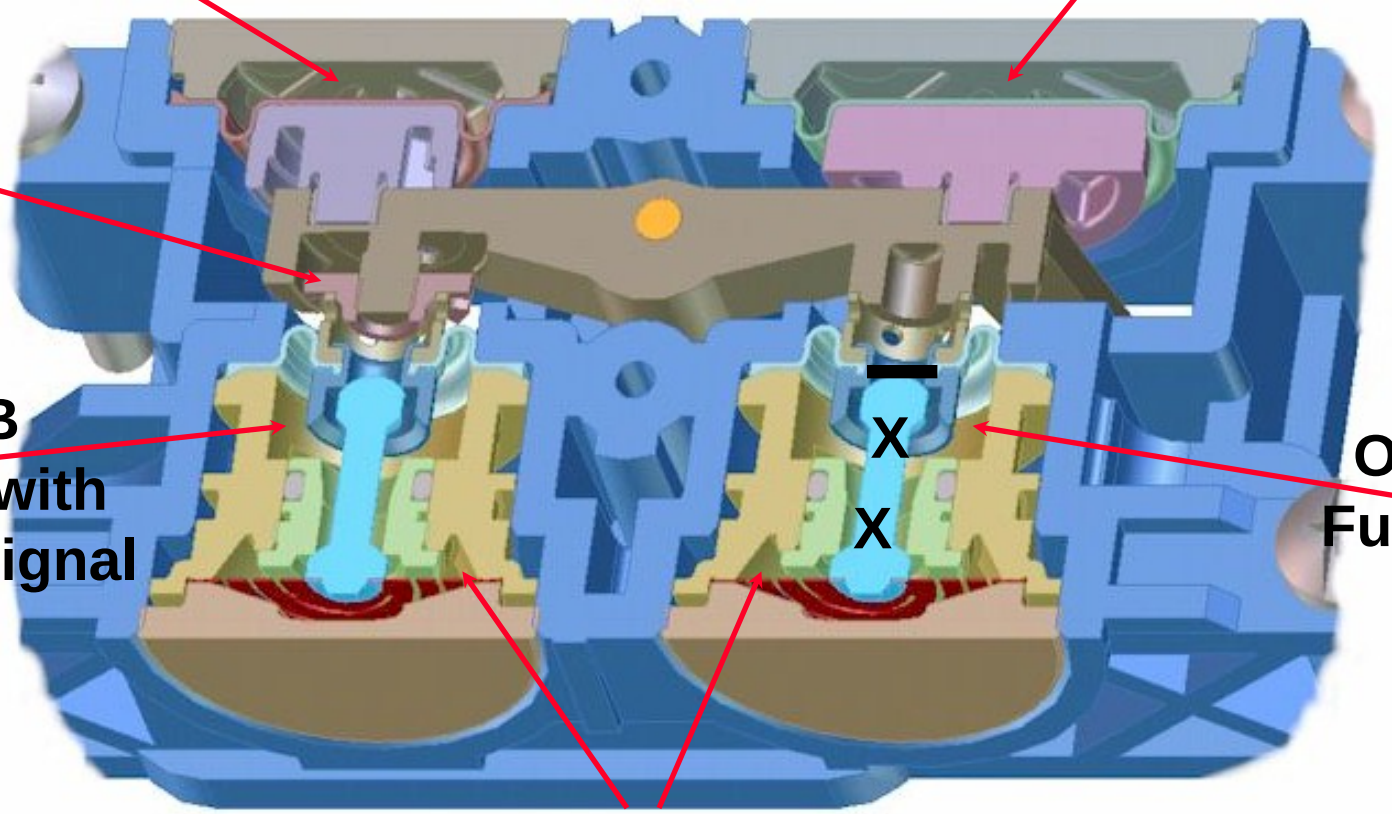
Crossover Disc - Adjusted based on supply pressure
Output A - Increases with increasing signal
Output B - Decreases with increasing signal

Single Acting *Direct* Relay "A"



Crossover Disc - Thread all the way up to the beam
Output B - 0 psig (always exhausting to atmosphere)
Supply Seat B - Never allowed to open

Single Acting *Reverse* Relay "B"



Crossover Disc - Adjusted similar to double acting

Output A - Always at full supply pressure (exhaust port sealed)

Supply Seat A - Always open (inner valve removed)

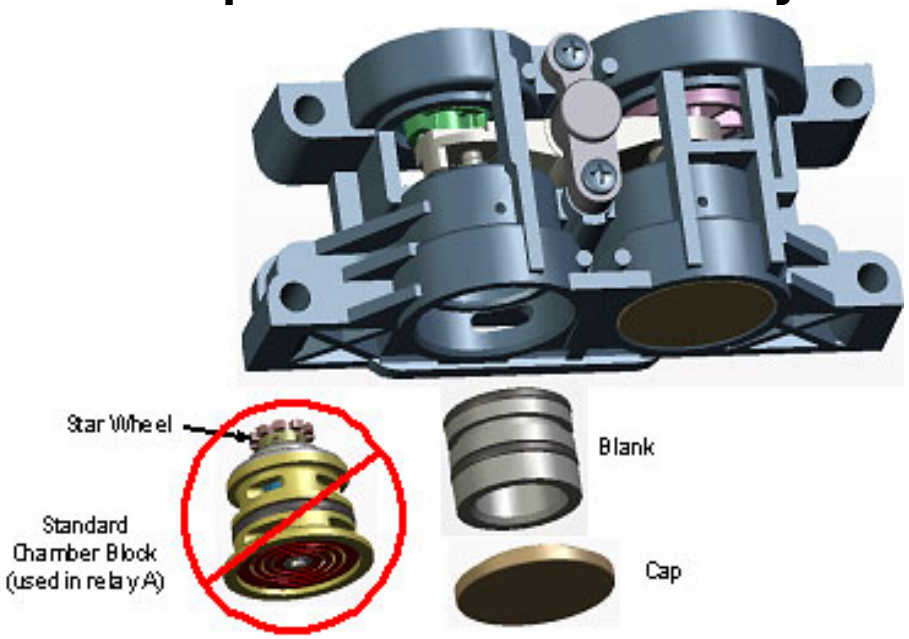
(New ‘07) Single Acting *Direct* Relay “C”

Fisher has developed a simplified relay for single acting *direct* applications.

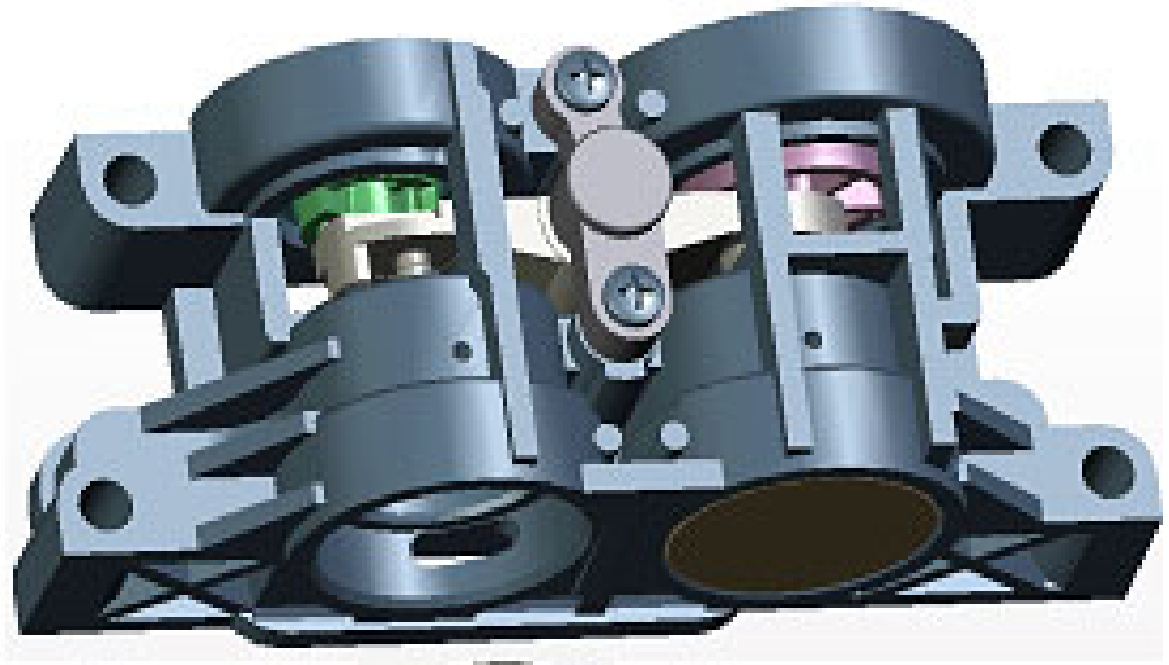
Relay C improves the reliability of the DVC6000 series instruments.

The new relay has no crossover adjustment, so it can't become misadjusted.

Less parts on the "unused output B side" of the relay means better reliability.



(New ‘07) Single Acting *Direct* Relay “C”



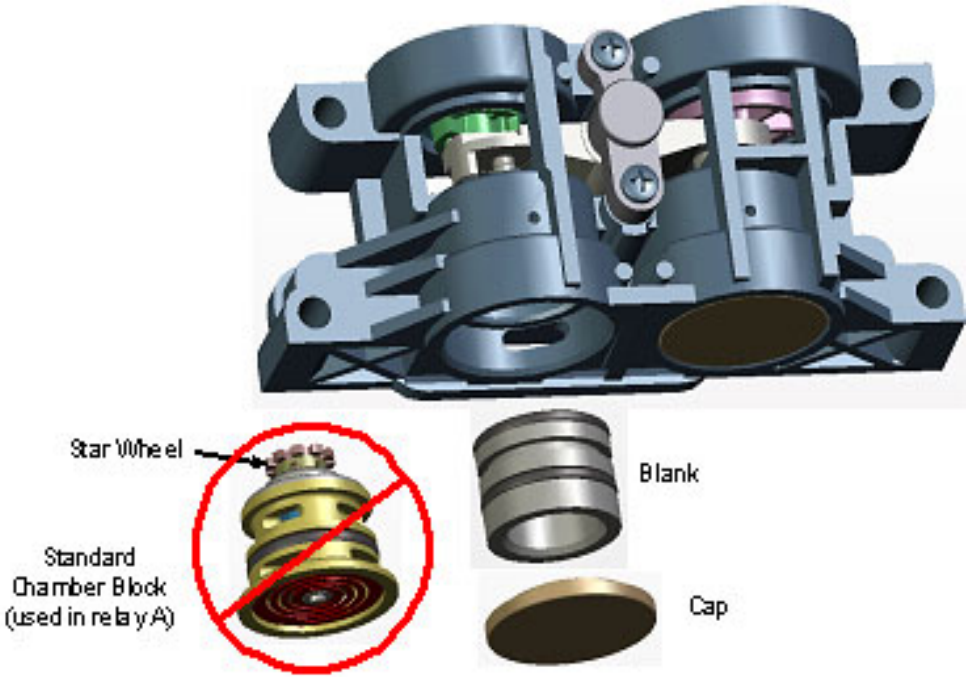
(New '07) Single Acting *Direct* Relay "C"

With the introduction of the new relay type C.

Relay A will be used only for double acting applications.

Relay B will be used for single acting reverse applications.

Relay C will be used for single acting direct applications.



Exploded View of DVC6000 Components