PULSA®

Auto-Pneumatic Stroke Adjustment

Installation Operation Maintenance Instruction

IOM-CTL-AP-2025 Rev B

PULSAFEEDER®

A Unit of IDEX Corporation
Manufacturers of Quality Pumps, Controls and Systems.

https://pulsafeeder.com

2883 Brighton-Henrietta Townline Rd.
Rochester, NY 14623 U.S.A.
ph. 585-292-8000; fax 585-424-5619

Pulsafeeder Factory Service Policy

Should you experience a problem with your Pulsafeeder - AP Controller, first consult the troubleshooting guide in this installation, operation, and maintenance manual. If the problem is not covered or cannot be solved, please contact your local Pulsafeeder Distributor or our Technical Services Department for further assistance.

Trained technicians are available to diagnose your problem and arrange a solution. Solutions may include purchase of replacement parts or returning the unit to the factory for inspection and repair. All returns require a Return Authorization number to be issued by Pulsafeeder. Parts purchased to correct a warranty issue may be credited after an examination of original parts by Pulsafeeder. Warranty parts returned as defective which test good will be sent back freight collect. No credit will be issued on any replacement electronic parts.

Any modifications or out-of-warranty repairs will be subject to bench fees and costs associated with replacement parts.

Safety Considerations:

1. Read and understand all related instructions and documentation before attempting to install or maintain this equipment.
2. Observe all special instructions, notes, and cautions.
3. Act with care and exercise good common sense and judgment during all installation, adjustment, and maintenance procedures.
4. Ensure that all safety and work procedures and standards that are applicable to your company and facility are followed during the installation, maintenance, and operation of this equipment.

Table of Contents

1. **INTRODUCTION** 4
2. **ORPERATION** 4
   - **2.1 Air Connections and Pressures** 4
   - **2.2 Realignment of the Positioner** 5
3. **UNITS WITH RATIO CONTROL** 6
4. **REQUIRMENTS WITH GAS CONTROL** 6

INSTALLATION AND OPERATION INSTRUCTIONS FOR PULSAFEEDER MODEL 680 & 880 WITH AUTO-PNEUMATIC (AP) STROKE ADJUSTMENT to be used in conjunction with IOM-PUL-80 (also controls with Ratio Control "APR")

1 INTRODCTION

The Pulsafeeder Auto-Pneumatic Stroke Adjustment for Model 680 & 880 pumps consists of a Conoflow air cylinder mounted vertically at the rear of the gearbox. Positioning of a piston within the air cylinder will vary the stroke length of the pump, which will in turn vary the output of the pump. Units with Ratio Control are further described on page 4 of this manual.

2 OPERATION

An "instrument air signal" is supplied to the Conoflow air positioner. This signal is used to balance the "supply air" to the "cushion air" when the desired piston position is reached. This balanced condition will hold the piston until the signal is changed. The Conoflow piston rod moves a wedge shaped cam to limit the return travel of the pump piston thus limiting the pump piston displacement and the discharge output of the pump. The adjustment of piston displacement has a linear relationship to the Conoflow position, thereby maintaining a direct and accurate relationship between pump output and the input signal.

2.1 AIR CONNECTIONS AND PRESSURES - Figure 1

1. Connect "Supply Air Signal" to the ¼ NPT port {A} on controller.

2. Connect "Supply Air" of instrument quality to ¼ NPT port {B} on the control instrument. The supply air pressure should be within the guidelines set by Conoflow. For reliable operation, the recommended pressure for the 680 controller is 40 psig, and for the 880 controller it is 60 psig.

NOTE: Be sure to remove the protective plugs in the vent outlets.

3. The "Cushion Air" is regulated by adjustment of the hexagonal adjusting screw {C} on the regulator. Gauge {D} will indicate the pressure provided by this adjustment.

4. Using the regulator, pressure at the gauge should be adjusted to 50% to 75% of the supply air pressure. The recommended setting for the Pulsafeeder 680 is 50% or 20 psig. The recommended setting for the Pulsafeeder 880 controller is 66% or 40 psig.

5. For convenient pump set-up, calibration and maximum flexibility it is sometimes desirable to install a manual/automatic control panel near the pump to enable the operator to vary the pump position independently of the control signal.

2.2 REALIGNMENT OF THE POSITIONER - Figure 2

***All adjustments are preset by Pulsafeeder and should require no readjustment by the customer. However, should mis adjustment occur, the following procedure is recommended to realign the positioner.**

1. With "Supply and Signal" air supplies shut off, adjust setscrew (Item1) in Conoflow shaft out until it is flush with the shaft on the cam side.

2. Turn the pump drive coupling over by hand until the pump piston is at full forward (discharge stroke) to eliminate spring pressure. Note: It may be necessary to remove the drive motor to facilitate manual pump rotation on some models.

3. Loosen the lock nut on the control rod assembly (Item 5).

4. Adjust the control rod assembly to its shortest length.

5. Loosen the retaining screw (Item 3) on the cam assembly, and slide the cam into position. The cam adjusting screw (Item 1) should make full contact with the rear face of the cam. The cam should be positioned such that the pivot pin (Item 4) of the cam is on the center line of the control rod. Lock the cam assembly in place with retaining screw (Item 3).

6. Check to be sure that the Conoflow shaft is in the extreme "UP" position and that the pump piston is still in the full forward position. Lengthen the stroke control rod assembly (Item 5) until it makes contact with the pump piston. Check for piston movement by rotating the motor coupling by hand.

   There should be no movement of the piston. If there is movement, lengthen control rod assembly slightly until no piston movement is visible.

7. Supply the positioner with air as described in Step 2 of Air Connections & Pressures and provide a 100% stroke signal. This will cause the actuator to move the Conoflow shaft downward. Rotate the pump drive coupling by hand until the pump drive cam is at its full rearward position. Adjust the cam adjusting setscrew (Item 1) to allow approximately .003 clearance between the pump piston assembly and the control rod assembly. Lock the jam-nut on the cam adjusting setscrew.

8. Recheck the "Zero" position of the Conoflow positioner. Rotate the pump drive coupling by hand until the piston is in the forward position. Provide a zero stroke signal and check to make certain that the positioner is adjusting to the zero position as described in Step 6 above.

9. For units with ratio control, see page 6.

3 UNITS WITH RATIO CONTROL "APR"

The ratio control option allows the user to adjust the controller's response to the incoming air pressure signal. Using this control, the user can limit the total travel of the actuator across the full range of input signals.

Example: A 50% adjustment of the ratio indicator knob will limit the pumps displacement to a maximum of 50%. The flow rate will now be 50% of the normal flow rate over the full input signal range. The following is a sample flow chart which shows the effect of setting the ratio control at 50%:

Input Air Signal	Normal Operation	Ratio to 50%
3 psi	0%	0%
9 psi	50%	25 %
15 psi	100%	50%

On units equipped with the ratio control option, indicator knob #24, adjustment screw #23, locking knob #22 and a scale #26 are utilized; replacing the stock setscrew and jam-nut. The ratio control option allows positioning of the cam to vary (or ratio) the pump's stroke length and, therefore, the pump displacement at any given input signal. A clockwise rotation will move the angle of the cam towards a vertical position, resulting in a corresponding decrease in pump displacement.

4 REQUIREMENTS FOR GAS CONTROLS – Figure 1

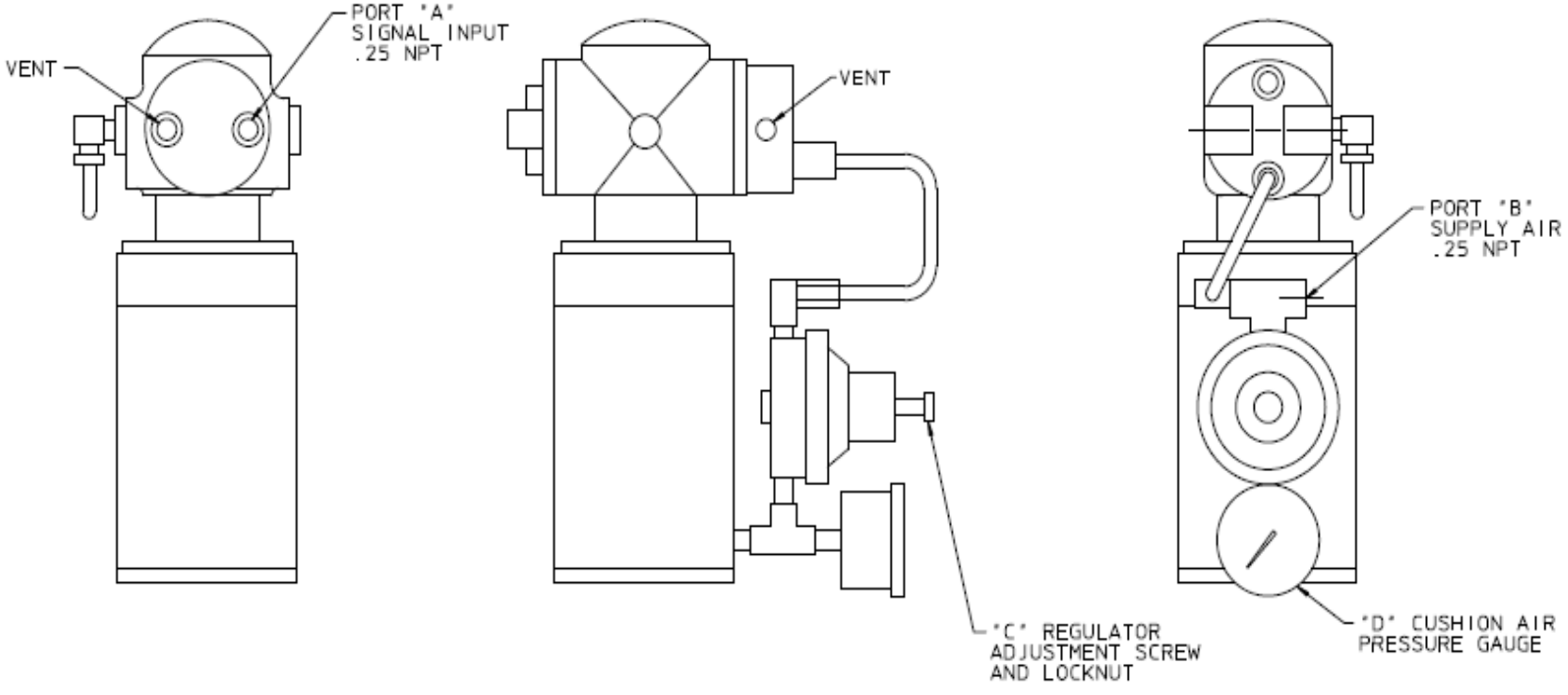
1. On gas controlled positioners, both parts labeled "Vent" are tapped to ¼" NPT and **must** be connected to a proper exhaust system.

2. It is necessary to provide adequate pipe size to avoid any back pressure or resistance in the vent lines. Should back pressure occur, it will cause the positioner to be unstable and erratic. Piston cycling may also occur due to restrictions in vent lines.

3. Install with standard pipe nipple (do not reduce size) or a tube fitting with an inside diameter not less than .25 inches. Tubing with an inside diameter of .38 or .50 is recommended.

4. Keep vent pipe as short as possible.

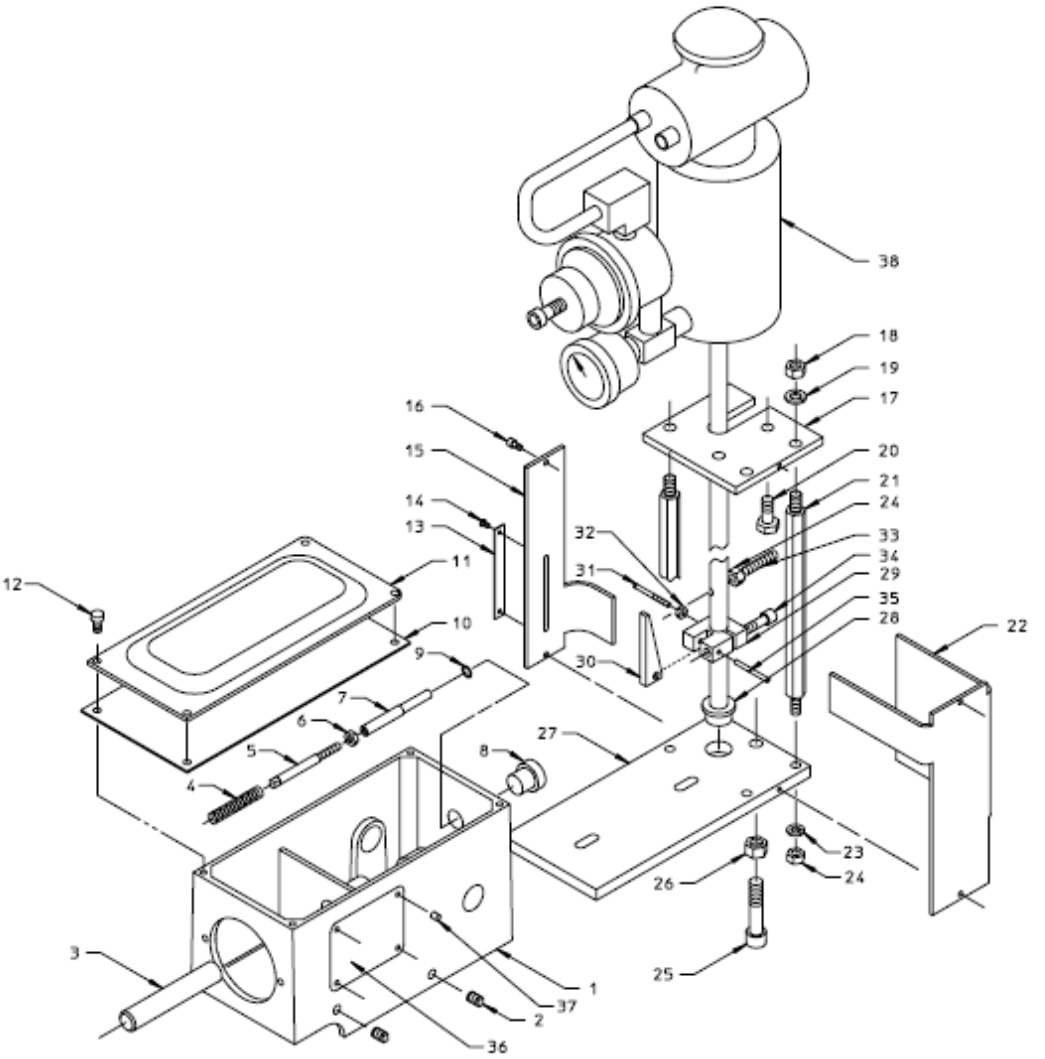
880 AP AUTO-PNEUMATIC
CONOFLOW STROKE POSITIONER



REF OLD DWG: S-9167

ALL DIMENSIONS ARE IN INCHES/mm						SCALE: NONE		Item - No.	
Customer								Model	
Project No.								Motor Pwr/Pr	
Po No./SO No.								Unit Weight	lb kg
								PULSA Series	PULSAFEEDER A Unit of IDEX Corporation
						None	Date		
					Drawn	JTN	07/24/25	Drawing No.	34765-000
Rev	Revision Description	Name	Date		Checked	PFM	07/24/25		

NOTES: 1. ITEMS 2,36 AND 37 ARE SHOWN ON THIS SIDE OF PUMP FOR CLARITY.



ITEM	PART NAME	QTY	PART NUMBER
1	GEARBOX SUB-ASSEMBLY	1	
2	PIPE PLUG	2	
3	CROSS HEAD	1	
4	SPRING	1	
5	FRONT ADJUSTMENT ROD	1	
6	HEX NUT	1	
7	REAR ADJUSTMENT ROD	1	PLEASE CONSULT
8	BUSHING	1	PARTS LIST FOR
9	O RING	1	ITEM NUMBER
10	DIAPHRAGM	1	IDENTIFICATION
11	COVER	1	
12	FILLISTER HEAD SCREW	4	
13	SCALE	1	
14	DRIVE SCREW	2	
15	GUARD	1	
16	CAP SCREW	4	
17	MOUNTING PLATE	1	
18	HEX NUT	2	
19	LOCK WASHER	4	

ITEM	PART NAME	QTY	PART NUMBER
20	HEX HEAD BOLT	2	
21	STUD	4	
22	GUARD	1	
23	LOCK WASHER	4	
24	JAM NUT	5	
25	CAP SCREW	1	
26	HEX NUT	1	PLEASE CONSULT
27	ADAPTOR PLATE	1	PARTS LIST FOR
28	BUSHING	1	ITEM NUMBER
29	CAM HOLDER	1	IDENTIFICATION
30	CAM	1	
31	PIN	1	
32	HEX NUT	1	
33	SET SCREW	1	
34	CAP SCREW	1	
35	ROLL PIN	1	
36	NAME PLATE	1	
37	DRIVE SCREW	4	
**38	CONOFLOW	1	

** CONSULT FACTORY FOR APPROPRIATE PART NUMBER

ALL DIMENSIONS ARE IN INCHES

PULSA Series PULSAFEEDER A Unit of IDEX Corporation

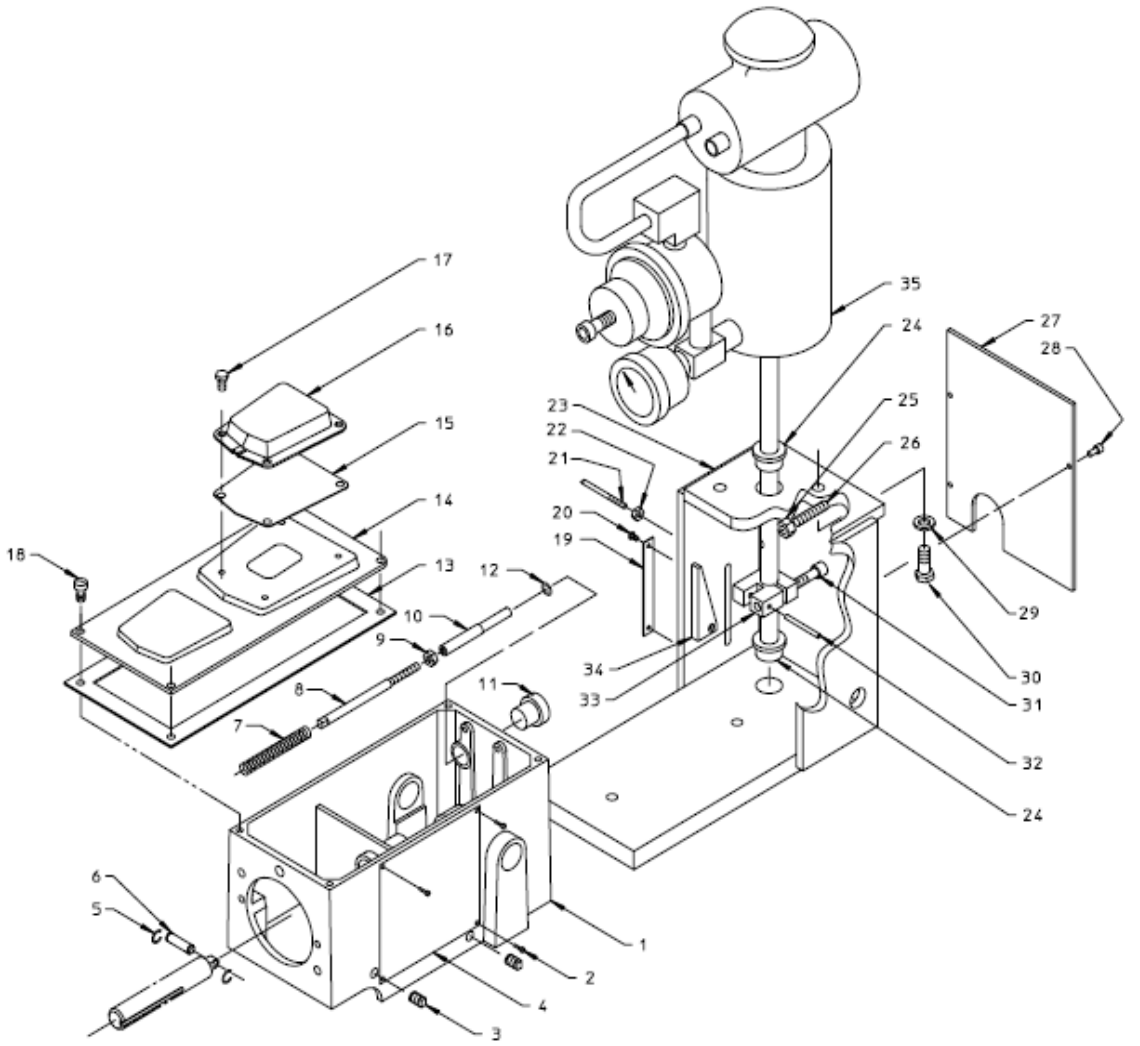
MODEL 680-AP(CONOFLOW)
CONTROL ASSEMBLY
AUTOMATIC PNEUMATIC

DWN BY: PTP
DATE: 12/11/97

AP00317-001

REF	REVISION UPDATE	DATE
A		

NOTES: 1. ITEMS 2,3 AND 4 ARE SHOWN ON THIS SIDE OF PUMP FOR CLARITY.



ITEM	PART NAME	QTY	PART NUMBER
1	GEARBOX SUB-ASSEMBLY	1	
2	DRIVE SCREW	4	
3	PIPE PLUG	2	
4	NAMEPLATE	1	
5	C-CLIP	2	
6	CLEVIS PIN	1	
7	SPRING	1	PLEASE CONSULT
8	FRONT ADJUSTMENT ROD	1	PARTS LIST FOR
9	HEX NUT	1	ITEM NUMBER
10	REAR ADJUSTMENT ROD	1	IDENTIFICATION
11	BUSHING	1	
12	O RING	1	
13	COVER GASKET	1	
14	COVER	1	
15	DIAPHRAGM	1	
16	SUB COVER	1	
17	HEX HEAD SCREW	4	
18	FILLISTER HEAD SCREW	4	

ITEM	PART NAME	QTY	PART NUMBER
19	SCALE	1	
20	DRIVE SCREW	2	
21	PIN	1	
22	HEX NUT	1	
23	MOUNTING WELDMENT	1	
24	BUSHING	2	
25	JAM NUT	1	PLEASE CONSULT
26	SET SCREW	1	PARTS LIST FOR
27	GUARD PLATE	1	ITEM NUMBER
28	CAP SCREW	3	IDENTIFICATION
29	LOCK WASHER	4	
30	HEX HEAD BOLT	4	
31	CAP SCREW	1	
32	ROLL PIN	1	
33	CAM HOLDER	1	
34	CAM	1	
**35	CONOFLOW	1	

** CONSULT FACTORY FOR APPROPRIATE PART NUMBER

ALL DIMENSIONS ARE IN INCHES

PULSA Series — PULSAFEEDER, A Unit of IDEX Corporation

MODEL 880-AP(CONOFLOW)
CONTROL ASSEMBLY
AUTOMATIC PNEUMATIC

DWN BY: PTP
DATE: 12/11/97

AP00318-001

REF	REVISION UPDATE	DATE
A		

REVISION CONTROL

REVISION LEVEL	DATE	DESCRIPTION OF CHANGES	APPROVER
A	09/1997	Initial Release	N/A
B	07/2025	Previously titled Bulletin No. 433. Update diagrams, coversheet, end sheet. Reformat.	KL

PULSA®

AP Controller

IOM-CTL- AP-2025 Rev B

Pulsafeeder, Inc
A unit of IDEX Corporation
2883 Brighton Henrietta Town Line Road
Rochester NY 14623
+1 (585) 292-8000
www.pulsafeeder.com
pulsa@idexcorp.com