

TYPE PDA/PRA CONSTANT PRESSURE CONTROL PILOT

Type PDA
Direct acting, Air operated
Type PRA
Reverse acting, Air operated

The PDA/PRA Constant Pressure Control Pilot is a force balance, pneumatic relay combining the fast response of the on-off relay and stability of the wide proportional band controller. It does not require continuous bleed of operating medium for most services. Flat characteristic, stable throttling action and speed of response proportional to the momentary deviation from set point make it ideal for systems with short lag factors.

FEATURES:

FAST RESPONSE WITH STABILITY - high capacity, independent supply valve out performs other pilots. Highest air output per second without separate booster or positioner.

FEW MOVING PARTS - simple design eliminates flappers, linkages, lost motion, tight fitting glands and plungers. No delicate adjustments.

ECONOMICAL - non-continuous bleed operation handles most services.

UNAFFECTED BY MOISTURE OR OIL in operating air supply.

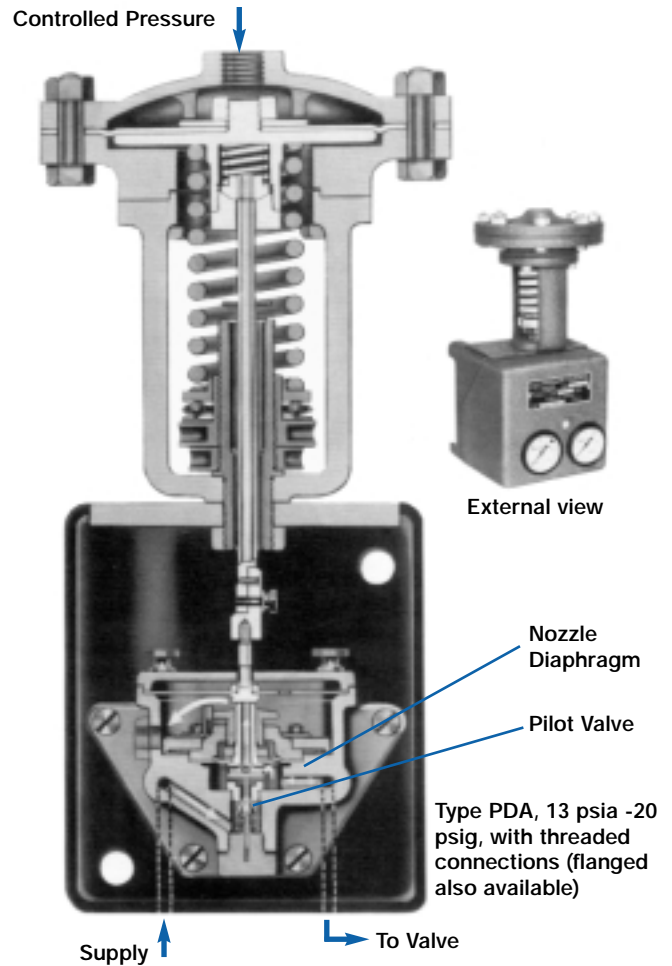
SHOCK-PROOF, DEPENDABLE - force-balance design is not affected by vibration, shock or roll of a ship.

DIAPHRAGM PRESSURE ELEMENTS give positive transmission of force from the operating medium. Neoprene-nylon diaphragm standard for most applications; Teflon facing is available for corrosive service. **CORROSION-RESISTANT MATERIALS** give long trouble-free life. Aluminum diaphragm chambers are standard: Steel or stainless steel are available for corrosive fluids.

OPERATION:

DIRECT ACTING PILOT - Process pressure on the upper diaphragm is balanced by the adjusting spring. Pressure increase causes instant downward stem movement, opening the pilot valve and increasing output pressure to control valve.

The output pressure also acts upward on the lower nozzle diaphragm opposing the change in controlled pressure on the upper diaphragm. This force-balance action stabilizes the change in output pressure in pro-



portion to the change in process pressure and moves the nozzle diaphragm against its upper stop, allowing pilot valve to close. Hunting or over-regulation is eliminated by sealing in the operating pressure until another force-balance change occurs.

Although a further increase in controlled pressure will cause the pilot valve to immediately increase operating pressure to the control valve, a slight momentary drop won't bleed off operating pressure.

This difference in response in the loading and unloading cycle results from having the upward force on the nozzle diaphragm absorbed by the nozzle stop when the pilot valve seats. A further drop in controlled pressure is necessary before the nozzle disc can lift and reduce the operating pressure to the control valve.

TYPE PDA/PRA CONSTANT PRESSURE CONTROL PILOT

SPECIFICATIONS

PILOT CHARACTERISTICS				CONTROLLER CHARACTERISTICS (Pilot with Valve)					
ADJUSTABLE RANGE PSIG	NORMAL** OPERATING FLUID PRESSURE PSI	MAXIMUM ALLOWABLE STATIC PRESSURE ON DIAPHRAGM PSI	RESOLUTION SENSITIVITY (Pressure deviation to create response) PSI	ADJUSTABLE RANGE PSIG	Controller ACCURACY OF REGULATION* PSI	MOMENTARY DEVIATION † FROM SET POINT TO OBTAIN MAX RATE OF STROKE PSI	TIME IN SECONDS ‡ for 1" valve stroke (3-15 psi operating range)		
							ACTUATOR SIZE		
							55 Sq. in.	85 Sq. in.	135 Sq. in.
13 PSIA-20 15-75	20-22 20-22	300 400	.025 .05	-1.7, 20 15-75	.25 .5	1.0 2.5	7.5	12.0	19.5
50-125 100-200 175-300	20-22 20-22 20-22	500 700 700	.1 .2 .3	50-125 100-200 175-300	1.0 2.0 3.0	3.75 7.0 10.0	7.5	12.0	19.5
275-450 400-600 550-800	20-22 20-22 20-22	700 800 900	.4 .5 .8	275-450 400-600 550-800	4.0 5.0 8.0	14.75 15.25 26.0	7.5	12.0	19.5

* Maximum deviation from control point when slowly increasing flow through control valve from zero to rated capacity (3-15 psi operating range).

† Caused by abrupt load changes with fast return to values indicated under "Controller ACCURACY OF REGULATION"

‡ Based on momentary deviation to give maximum rate of stroke using air. For control valves with other diaphragm displacements, time is directly proportional to the displaced volume.

** Maximum output PRA-1 24 psi and PDA-1 30 psi with suitable inlet pressure.

OTHER PILOTS

PDA	Direct, proportional pressure control
PRA	Reverse, proportional pressure control
PDAP	PDA with adjustable proportional band
PRAP	PRA with adjustable proportional band
UDDV	PDA with differential head
UDRV	PRA with differential head
UDDVP	UDDV with adjustable proportional band
UDDRP	UDRV with adjustable proportional band
DDD	Pressure ratio control pilot
LA	Level controller
LAP	Level control with adjustable proportional band
BP	Filled temperature controller, adjustable proportional band
BPC	BP with calibrated dial
DQ	Bimetal temperature control, direct
DTP	Bimetal temperature control, direct adjustable proportional band
DTHP	Hi-temperature DTP
RQ	Bimetal temperature control, reverse
RTP	Bimetal, reverse, adjustable proportional band
RTHP	Hi-temperature RTP

