



VALVE PILOT CONTROLLERS

The VRG RPID-SN-CS Integrated Regulator Pilot Controller is a next-generation pneumatic controller for pilot-operated regulators. Its patented dual independent seat-and-nozzle architecture combines the simplicity of a conventional regulator pilot with advanced pneumatic PID performance, delivering reduced pressure droop, improved lockup, adjustable gain, independently tunable response, and superior pressure regulation in a single integrated device.

PATENT: www.vrgcontrols.com/our-patents

KEY FEATURES

DUAL SEAT & NOZZLE CONTROL

Independent loading and unloading control

ADJUSTABLE GAIN

No spring or diaphragm changes required

DYNAMIC RESPONSE

Reduced pressure spikes and oscillation

REDUCED DROOP

More accurate downstream pressure

IMPROVED LOCKUP

Better regulator shutoff performance

INTEGRATED CONTROLLER

Simplified installation

MECHANICAL PNEUMATIC DESIGN

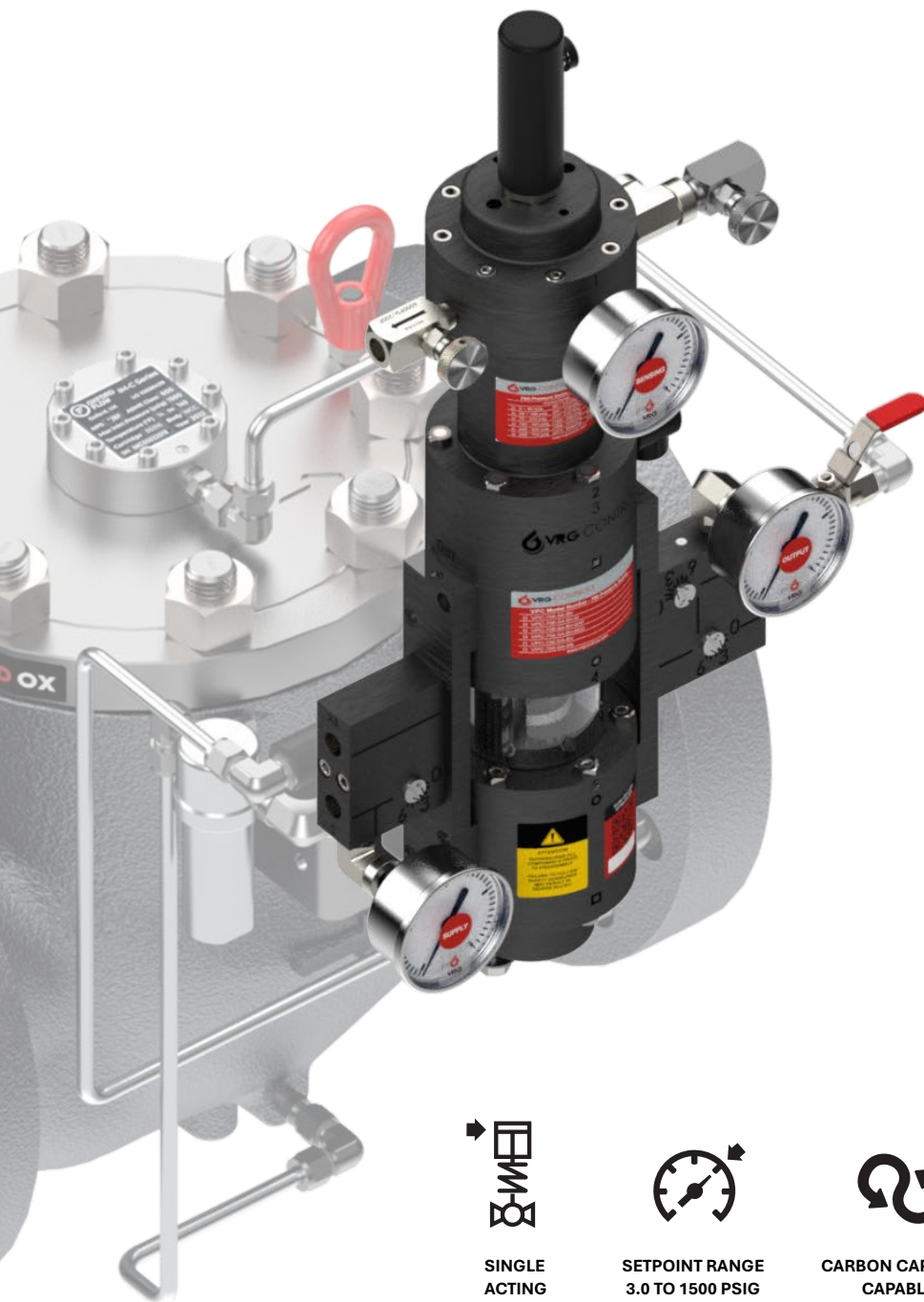
No electrical power required

CONTINUOUS MODULATION

Excellent high-pressure control capability

UNIVERSALLY COMPATIBLE

Improve the performance of virtually any pilot-operated regulator



**SINGLE
ACTING**



**SETPOINT RANGE
3.0 TO 1500 PSIG**



**CARBON CAPTURE
CAPABLE**



**REGULATOR
CAPABLE**



SPECIFICATIONS

ITEM	VALUE
TYPE	INTEGRATED REGULATOR PILOT CONTROLLER
CONTROL METHOD	DUAL INDEPENDENT SEAT & NOZZLE CONTROL ELEMENTS INDEPENDENT LOADING & UNLOADING CONTROL PATHS EXTERNALLY ADJUSTABLE GAIN
LOGIC	CONTINUOUS MODULATION
GAIN ADJUSTMENT	EXTERNALLY ADJUSTABLE
OUTPUT	PILOT LOADING PRESSURE
SETPOINT RANGE	3–1500 PSIG (<i>EXPAND LATER IF ADDITIONAL PRESSURE SERIES</i>)
INTERNAL NOZZLES	1/8 in
ADJUSTABLE ORIFICES	M (LOADING), M (UNLOADING), S (ID)
SUPPLY PRESSURE	UP TO 1200 PSIG
SUPPLY GAS	NATURAL GAS OR INSTRUMENT GAS
TEMPERATURE	-20°F TO 160°F
CONNECTIONS	0.250 IN FNPT
CERTIFICATIONS	PED • CE • ATEX (<i>AS APPLICABLE</i>)
WEIGHT	TBD
OVERALL DIMENSIONS	TBD

MATERIALS

ITEM	VALUE
INTERNALS	316 STAINLESS STEEL
SEAT & NOZZLES	HARDENED STAINLESS STEEL
DIAPHRAGMS	NYLON REINFORCED BUNA-N (STD) / VITON (OPTION)
O-RINGS	BUNA-N (STD) / VITON (OPTION)
CONTROL SPRINGS	FATIGUE-FREE PAINTED ALLOY STEEL
EXTERNAL HOUSING	MILITARY GRADE ALUMINUM ALLOY WITH ANTI-CORROSION FINISH
OPTIONAL HOUSING	304 STAINLESS STEEL
GAUGES	2.5 IN STAINLESS STEEL CASE, VIBRATION RESISTANT

EMISSIONS

ITEM	VALUE
VALVE FULL OPEN / FULL OUTPUT	ZERO
VALVE FULL CLOSED / ZERO OUTPUT	ZERO
CARBON CAPTURE CAPABLE	COMPLETE ELIMINATION OF ATMOSPHERIC EMISSIONS



COMPATIBLE DEVICES

ITEM	VALUE
ACTUATORS	VRG RHPA-SR SERIES VRG LHPA-SR SERIES VRG LD SERIES ALL RED OX REGULATORS OTHER MANUFACTURERS PILOT-OPERATED REGULATORS OTHER MANUFACTURERS ACTUATORS
ACCESSORIES & OPTIONS	ID TANK ID TANK – HIGH PRESSURE ESC ELECTRONIC SETPOINT CONTROL RSM REMOTE SETPOINT MODULE

TYPICAL APPLICATIONS

1. Pressure Reducing Stations
2. City Gate Stations
3. Compressor Stations
4. Gas Storage
5. Industrial Fuel Gas

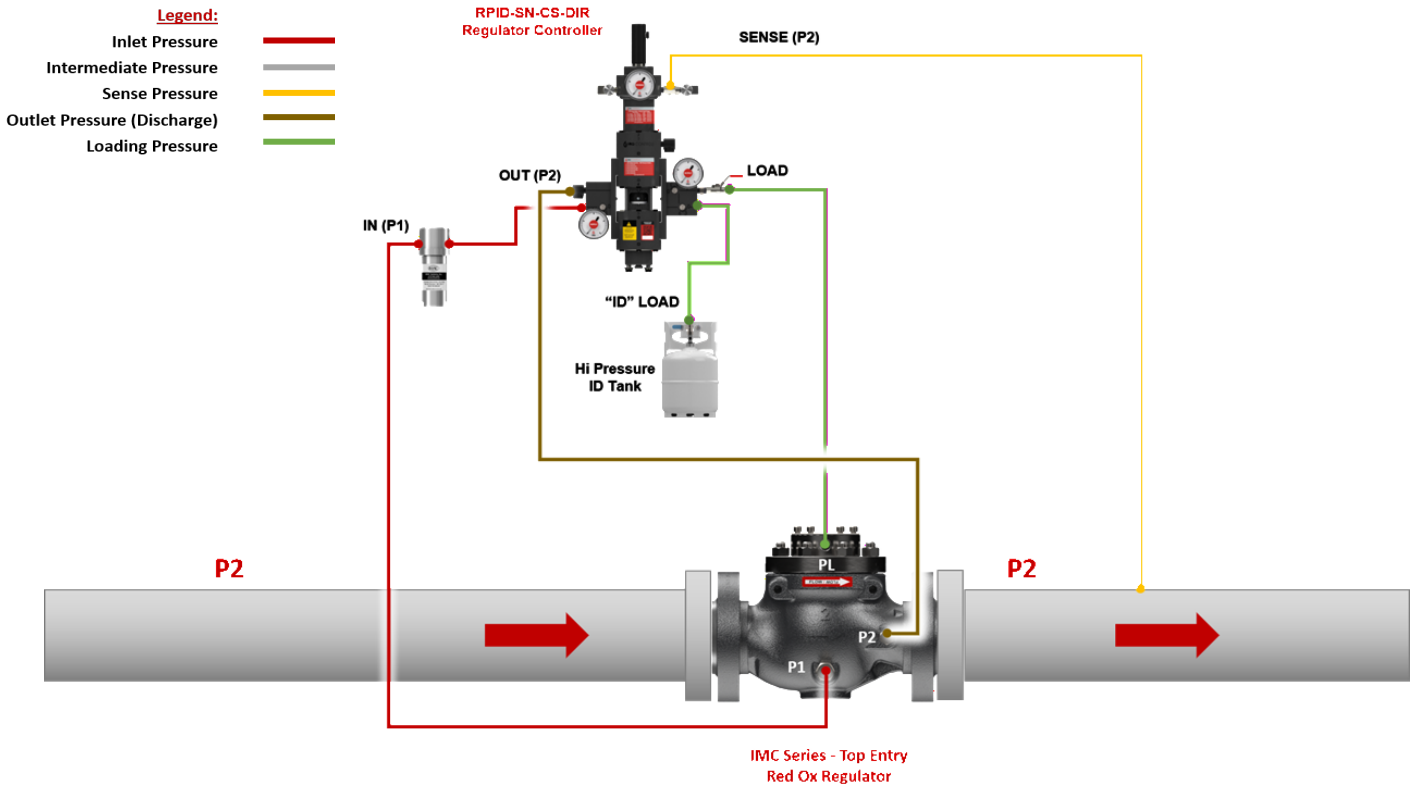


RPID-700-SN-CS-DIR
DIRECT ACTING

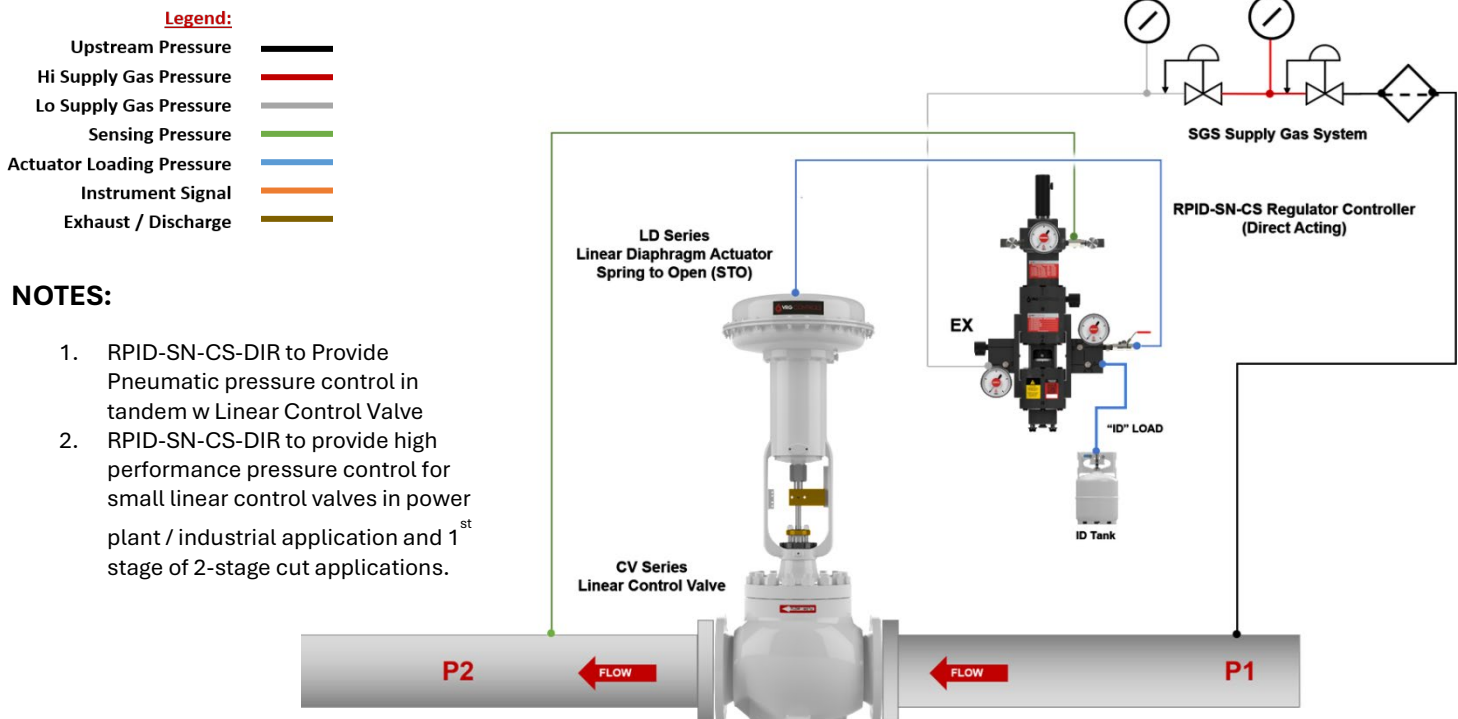


RPID-700-SN-CS-REV
REVERSE ACTING

RPID PROVIDES STABILITY & REDUCED DROOP WITH PILOT OPERATED REGULATOR



RPID ENSURES STABLE CONTROL AT LOW OPENING WITH LINEAR VALVE



NOTES:

1. RPID-SN-CS-DIR to Provide Pneumatic pressure control in tandem w Linear Control Valve
2. RPID-SN-CS-DIR to provide high performance pressure control for small linear control valves in power plant / industrial application and 1st stage of 2-stage cut applications.

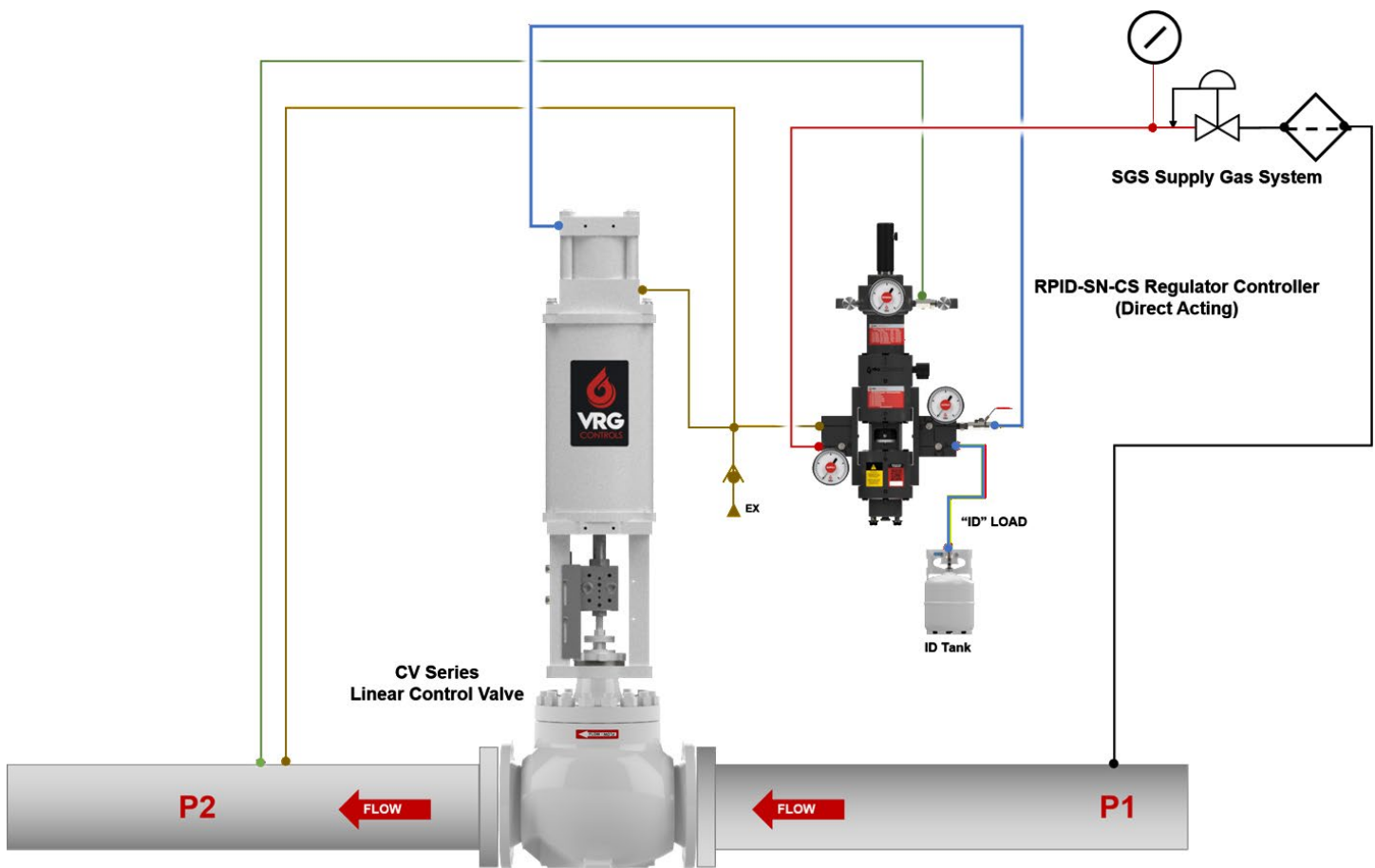
RPID CREATES EMISSIONS FREE CONTROL VALVE REGULATOR WITH LINEAR VALVE

Legend:

Upstream Pressure	—
Hi Supply Gas Pressure	—
Lo Supply Gas Pressure	—
Sensing Pressure	—
Actuator Loading Pressure	—
Instrument Signal	—
Exhaust / Discharge	—

NOTES:

1. RPID-SN-CS-DIR to Provide Pneumatic pressure control in tandem w Linear Control Valve and LHP-SR-STC Actuator.
2. RPID-SN-CS-DIR to provide high-performance pressure control for small linear control valves in power plant / industrial application and 1st stage of 2-stage cut applications.
3. All emissions to be directed downstream using Carbon Capture Feature.



**LHPA-SR-STO Series
Linear High-Pressure Actuator
Spring to Open (STO)**



PERFORMANCE SPRING RANGES

RPID PRESSURE SERIES	CONTROL RANGE	SPRING COLOR	SETPOINT CHANGE PER REV	SETPOINT ACCURACY	CONTROL SPRING PART NO.
RPID-225-SN-CS-DIR RPID-225-SN-CS-REV	3.0 - 15 psig (21 - 103 kPa)	Black	0.8 psig (5.5 kPa)	± 0.1 psig (± 0.7 kPa)	CS-0100
	5 - 53 psig (35 - 365 kPa)	Brown	3.1 psig (21.4 kPa)	± 0.2 psig (± 0.7 kPa)	CS-0110
	16 - 100 psig (110 - 689 kPa)	Grey	8 psig (55 kPa)	± 0.3 psig (± 1.0 kPa)	CS-0120
	40 - 170 psig (276 - 1172 kPa)	Orange	20.2 psig (139 kPa)	± 0.4 psig (± 2.6 kPa)	CS-0130
	65 - 205 psig (448 - 1413 kPa)	White	32.2 psig (222 kPa)	± 0.6 psig (± 4.2 kPa)	CS-0135
	100 - 225 psig (689 - 1551 kPa)	Purple	44.2 psig (305 kPa)	± 0.8 psig (± 5.6 kPa)	CS-0140
RPID-700-SN-CS-DIR RPID-700-SN-CS-REV	9 - 45 psig (62 - 310 kPa)	Black	2.4 psig (17 kPa)	± 0.4 psig (± 2.4 kPa)	CS-0100
	30 - 160 psig (241 - 1103 kPa)	Brown	9.6 psig (73 kPa)	± 0.5 psig (± 3.4 kPa)	CS-0110
	75 - 310 psig (517 - 2137 kPa)	Grey	24.5 psig (175 kPa)	± 1.1 psig (± 7.7 kPa)	CS-0120
	150 - 520 psig (1034 - 3585 kPa)	Orange	62.1 psig (423 kPa)	± 2.7 psig (± 18.6 kPa)	CS-0130
	240 - 635 psig (1655 - 4378 kPa)	White	98.9 psig (687 kPa)	± 4.4 psig (± 30.3 kPa)	CS-0135
	350 - 700 psig (2413 - 4826 kPa)	Purple	135.9 psig (926 kPa)	± 5.8 psig (± 40 kPa)	CS-0140
RPID-1500-SN-CS-DIR RPID-1500-SN-CS-REV	30 - 90 psig (207 - 620 kPa)	Black	5.0 psig (34 kPa)	± 3.5 psig (± 24 kPa)	CS-0100
	50 - 335 psig (345 - 2309 kPa)	Brown	19.7 psig (149 kPa)	± 3.5 psig (± 24 kPa)	CS-0110
	100 - 640 psig (689 - 4412 kPa)	Grey	50.4 psig (361 kPa)	± 3.5 psig (± 24 kPa)	CS-0120
	265 - 1070 psig (1827 - 7377 kPa)	Orange	127.6 psig (870 kPa)	± 5.5 psig (± 38 kPa)	CS-0130
	400 - 1300 psig (2758 - 8962 kPa)	White	203.2 psig (870 kPa)	± 9.1 psig (± 63 kPa)	CS-0135
	625 - 1500 psig (4309 - 10341 kPa)	Purple	279.3 psig (1904 kPa)	± 11.9 psig (± 82 kPa)	CS-0140

NOTES

1. RPID models ending with “DIR” are Direct Acting logic and dispatch increasing output pressure as process pressure increases. “DIR” configuration commonly utilized on pilot operated regulators and single acting control valves that are “pressure to close”
2. RPID models ending with “REV” are Reverse Acting logic and dispatch decreasing output pressure as process pressure increases. “REV” configuration commonly utilized on pilot operated regulators and single acting control valves that are “pressure to open”



COMPATIBLE ACCESSORIES



ESC Electronic Setpoint Control

Module provides remote setpoint adjustment capability when paired with VRG Controls' RP Series Regulator Pilots. ESC modules may be powered with 120 V_{AC} or 24 V_{DC} Power. 4-20 mA analog or 24 V_{DC} discrete command signal will raise / lower pressure setpoint. In event of loss of command signal or power, the ESC will render the RP pilot to "lock" at last pressure setpoint, thereby maintaining control of the process. The ESC features an easy push button programming and 4-20 mA feedback of ESC motor position.



Eliminator Pilot Filter

The Eliminator Pilot Filter provides 50μ filtration of pilot inlet gas to ensure reliable operation of your Red Ox control devices. The Eliminator features 316 Stainless Steel construction in a compact design with 0.250" FNPT inlet, outlet, and drain connections. The standard sintered polyethylene filter element can easily be changed inline.

Inlet / Outlet: 0.250" FNPT
MAOP: 5000 psig
Filtration: 50μ
Body: 316L Stainless Steel
Media: Sintered Polyethylene



ID TANK – HIGH PRESSURE

The VRG High Pressure ID Tank is an ASME pressure vessel designed to be used in tandem with RPID Regulator Pilot Controllers when installed on high pressure applications such as pilot operated regulator control. Additionally, the VRG High Pressure ID Tank is often requested when customers require associated material test reports for the tank. The High-Pressure ID Tank provides a combined "Integral + Derivative" function by limiting the rate of controller output pressure loading to a primary device. Contact VRG for other applications.

Inlet / Outlet: 0.250" FNPT
MAOP: 1500 psig
Filtration: ≥ 3μ
Body: Painted Carbon Steel



ID TANK - STANDARD

The VRG Standard ID Tank is a 5.0 Lbs. DOT Tank is most utilized in tandem with RPID Valve Pilot Controllers. The ID Tank provides a combined "Integral + Derivative" function by limiting the rate of controller output pressure loading to a primary device. Contact VRG for other applications.



FIELD INSTALLATIONS



North Dallas Metro Area, Texas – Combined Cycle Power Generation

Installed at a critical combined-cycle gas turbine (CCGT) power plant near Dallas, Texas, the RPID Regulator Pilot Controller, operating in tandem with a pilot-operated regulator, provides exceptional pressure control in a highly dynamic natural gas application. Serving as the trim valve controller within VRG's patented Bracketed Deadband® control scheme, the RPID maintained stable regulation across massive flow fluctuations with virtually zero pressure droop, supporting reliable boiler loads and duct burner operation. Its integrated pneumatic PID control delivers outstanding stability, responsiveness, and repeatable performance where conventional regulator pilots often struggle.



RPID Outperforms Conventional Regulator Pilots on High-Pressure Gas Pipeline

Installed on a high-pressure natural gas pipeline in Pennsylvania, the RPID Regulator Pilot Controller demonstrated superior performance compared with conventional regulator pilot technologies. While the previous pilot exhibited noticeable pressure droop during seasonal summer and winter load changes and experienced valve buzz and instability at very low flow rates, the RPID significantly reduced pressure droop and delivered smooth, stable low-flow control. The result was improved pressure regulation, enhanced operating stability, and more reliable performance across a wide range of operating conditions.