

Cryogenic ½" Combination Pressure Builder / Economizer CBE504 Series

Application

CBE504 series regulators maintain the pressure of the cryogenic vessels (Bulk Tanks or Micro bulks) during the operation or usage. The pressure building and economizer function are both combined in one unit, saving space and weight on the tank, simplifying the tank plumbing and reducing potential leak points. Designed and suitable for use in various cryogenic industrial gases, including Nitrogen, Oxygen, Argon, CO2 and LNG. For optimum performance with carbon dioxide and nitrous oxide, use in gas phase only.

Features

- Compact design fits well in tight plumbing geometries
- Built-in economizer check included on all models to prevent reverse flow during filling and operational upset conditions
- Up to 2 times higher pressure build flow than competition as proven through PB504 design and internal testing
- Lateral economizer port provides 1.7 times larger flow area, allowing for faster response time & reducing the potential for product loss.
- Economizer seal ring between PB (pressure build) OUT and EC (economizer) OUT (as compared to PB IN and EC OUT) prevents pressure runaways
- Diaphragm senses EC OUT pressure (as compared to PB OUT), accelerating pressure building function during gas use
- Improved calibrated pressure adjustment feature on bonnet cap aids in easier, more accurate pressure adjustment
- All parts are copper alloy (brass), PTFE, and stainless steel—materials selected specifically for compatibility with cryogenic temperatures down to -320°F (-196°F)
- PTFE seat provides positive shut off at cryogenic temperatures
- Maximum inlet pressure of 600 psig (41.4 barg)
- Pressure setting range from 25 psig to 550 psig (1.7 barg to 37.9 barg) preset and tested in factory to ensure quality performance
- Monel screens included on pressure builder (PB) inlet and outlet
- Cleaned per CGA G-4.1 for oxygen service
- Can be mounted with EC port up as an alternative installation position.

Materials

Body CDA 377 (UNS C37700) Commercial Brass Alloy per ASTM B283
Bonnet Commercial Yellow Brass Alloy per ASTM B283
Delivery Spring 302 / 17-7PH Stainless Steel per ASTM A313
Return Spring 304 Stainless Steel per ASTM A313
Diaphragm Gasket..... Filled PTFE
Diaphragm Phosphor Bronze (UNS C51000) per ASTM B103
EC Poppet Seal Ring..... PTFE
PB Seat Modified PTFE
Backcap Gasket Copper (UNS C11000) per ASTM B152

Ordering Information

Part Number	Inlet/Outlet Connections in. (DN)	Operating Range psig (barg)	Weight lb (kg)
CBE504-025 to 075	Pressure Build Inlet/Outlet: ½" (15) Economizer Outlet: ¼" (8)	25 - 85 (1.7 - 5.9)	4.4 (2.0)
CBE504-076 to 155		50 - 170 (3.4 - 11.7)	
CBE504-156 to 260		100 - 280 (6.9 - 19.3)	
CBE504-261 to 450		200 - 460 (13.8 - 31.7)	
CBE504-451 to 550		400 - 550 (27.6 - 37.9)	

* Add "A" suffix to Part Number to include ½" NPTF economizer port adapter, e.g. CBE504-120A. Adapter 489-09P also sold separately.

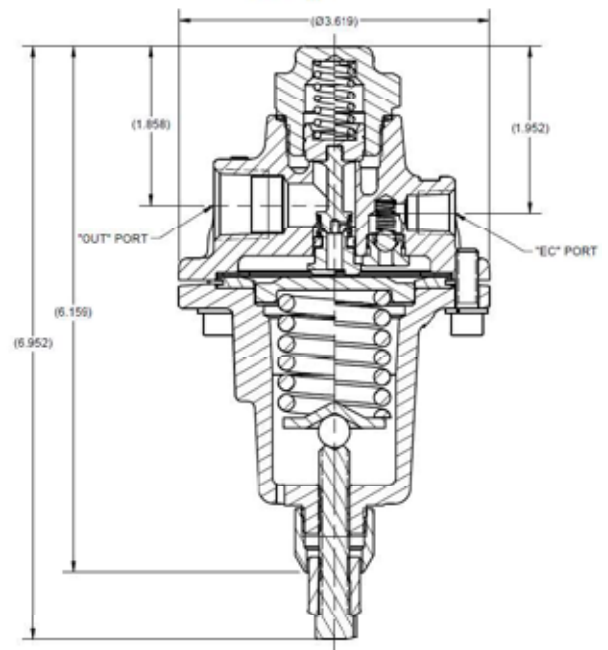
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CBE Series



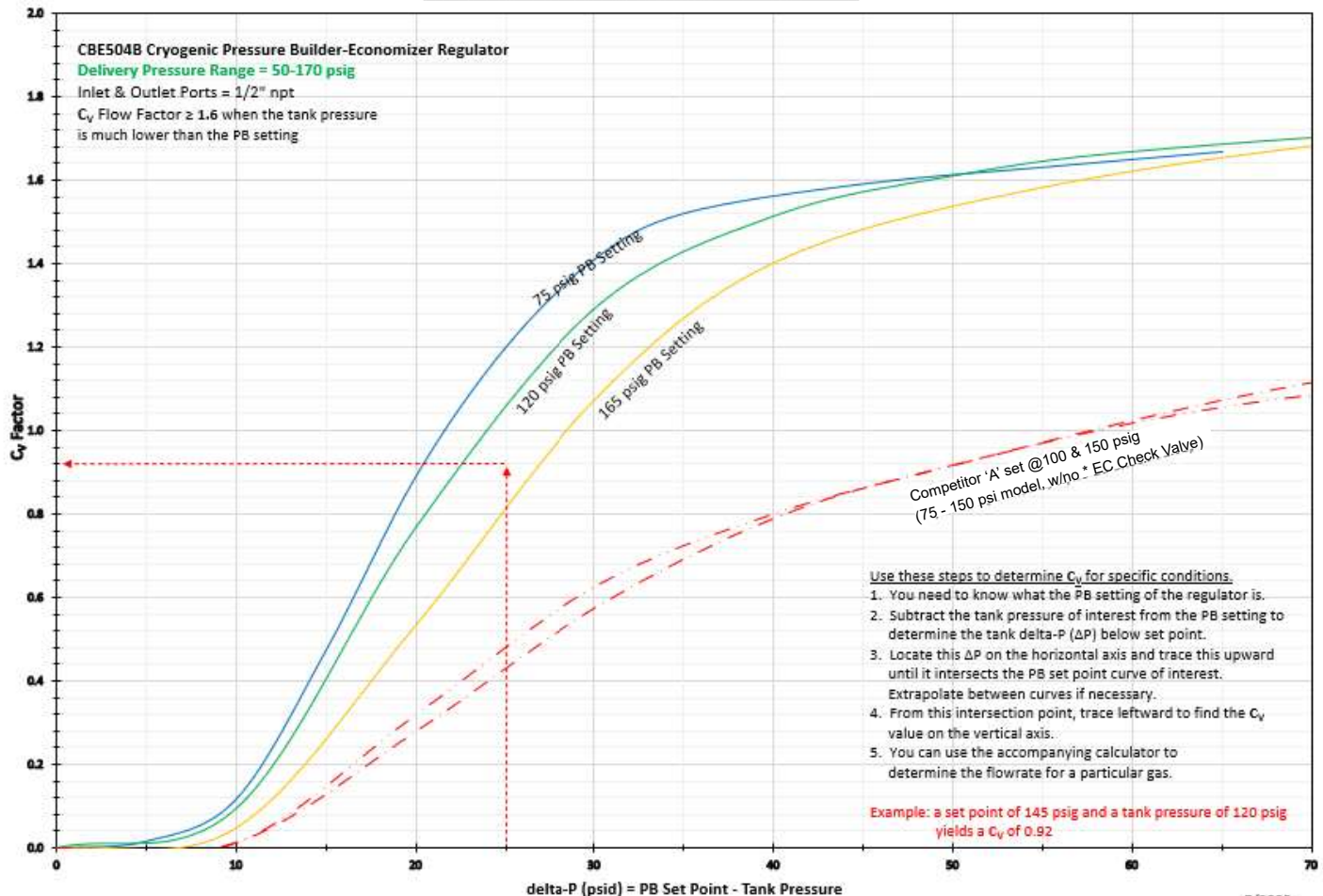
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CBE504B Flow Performance

C_v vs. ΔP at Various Set Points

Flow Factor (C_v) vs. Amount Tank Pressure is Below Regulator Set Point



* NOTE: Pressure build speed performance not impacted by use with or without internal EC Check Valve; only economizer speed impacted.

7/2022