



# InterLink Systems, Inc.

7518 Prestwick St. Houston, TX 77025  
 Telephone and Fax: (713) 663-6361  
 jpmcadams@sbcglobal.net

## Comparison of The Precharge Calculator with the 16D 3<sup>rd</sup> Ed Sizing and Performance Tool

Feature or capability	The Precharge Calculator	16D Sizing and Performance Tool
Summary	Good for quickly testing simple ideas or cross checking other calculations. Handles heat transfer.	Handle the complex problems posed by API 16D 3 <sup>rd</sup> Ed
Helium and nitrogen	✓	✓
Argon	Not sure why you would want to, but Argon is included	No
Ideal and real gas cases	Ideal gas is included, but only for use when checking ideal gas hand calculations	No Ideal gas is not allowed by API nor is it suitable for high pressure design
Isothermal and adiabatic	✓	✓
Heat transfer between the gas and the accumulator walls	✓	No API does not allow consideration of heat transfer
Adiabatic charge	Can be handled in two steps	Yes, but not required by API
Checks each step in a sequence	✓	✓
Suitable for quick testing of ideas	Yes Complete a simple calculation by filling in only a few fields	API requires a lot of data to be entered, but the software quickly does a large amount of calculating and optimizing.
Graphical output for pressure, volume, etc. for a sequence	✓	No
Plot of useful fluid vs. precharge pressure	✓	No
Output a precharge table of pressure vs. temperature	No	✓
Handle depth compensated bottles	✓	✓
Handle accumulators with separate gas-only bottles	✓	No
Compensate for uncertainties in precharge temperature and pressure	✓	✓
Include a draw down test in the design criteria	No	✓
Handles systems with mixture of bottles on the surface and others subsea	No	✓

Handles well control, drawdown, and EDS in a single calculation/project	No	✓
Supports API 16ST	Could be useful, this is a simple tool.	Includes discharge options that 16ST needs
Warns of pressures beyond bottle rating	✓	✓
Useful for production systems	✓	Only does adiabatic and isothermal calculations
Automatically selects number of bottles required in a bank	✓	✓
Automatically calculates optimal precharge pressure	✓	✓
Automatically compensates for static heads	Sea water and control fluid only – no mud column	✓
Includes bore pressure effects	✓	✓
Provisions for comparison with experimental data	✓	Well control and EDS calculations are adiabatic and include the Method C volume factor, making correlation with a real test difficult.
Equipment library	No stand-alone library, but a special project can serve the same purpose	✓
Output in rich text format for import to word processors	✓	✓
I/O available in any mixture of English and metric units	✓	✓

Updated 28 January 2024