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Comparison of The Precharge Calculator with the 16D Sizing and Performance Tool

Feature or capability	The Precharge Calculator	16D Sizing and Performance Tool
Helium and nitrogen	✓	✓
Ideal and real gas cases	✓	✓
Isothermal and adiabatic	✓	✓
Heat transfer between the gas and the accumulator walls	✓	No
Adiabatic charge	Can be handled in two steps	✓
Checks each step in a sequence	✓	Yes, but only for non-API stacks and time is not considered since the calculation is adiabatic
Graphical output for pressure, volume, etc. for a sequence	✓	No
Plot of useful fluid vs. precharge pressure	✓	No
Handle depth compensated bottles and accumulators with separate gas-only bottles	✓	No
Compensate for uncertainties in precharge temperature and pressure	✓	No
Include a draw down test in the design criteria	✓	No
API 16D rules are built in, printouts mirror the API 16D specification and examples	No, but can be set up to simulate all API sizing calculation methods.	✓
Handles systems with some bottles on the surface and others subsea	No	Only for full API stacks (limited to total volume calculations, not a sequence)
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	✓	No
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	✓	✓

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