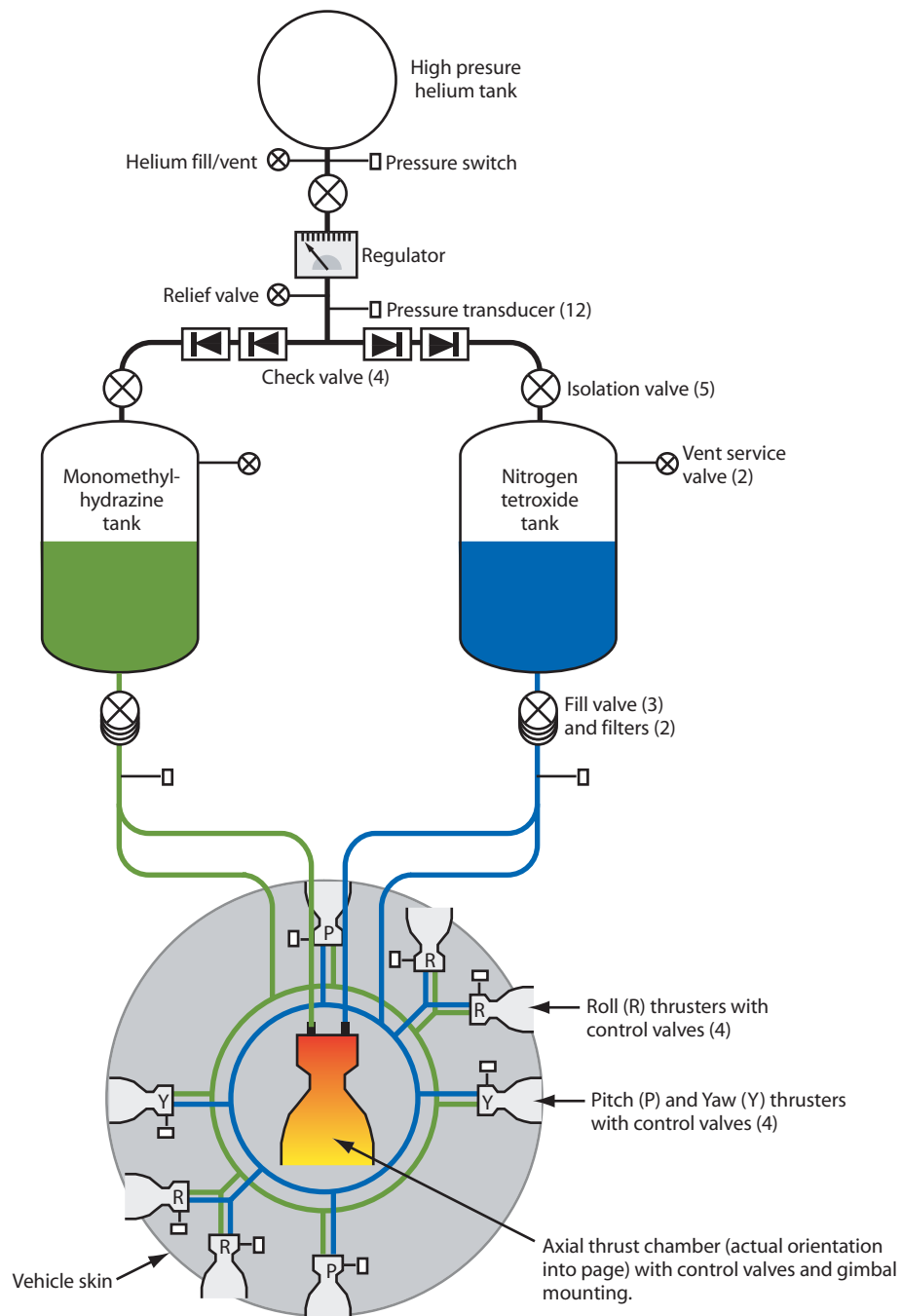


Problem T1. (Unified Thermodynamics)

Below is a schematic diagram of a helium-pressurized, bipropellant rocket engine system (for the fourth stage of the Peacekeeper ballistic missile). Describe the conversions of energy (internal, potential, kinetic and chemical) and exchanges of heat and work for this system and that of the rocket itself. Note at which points in the process heat is transferred to/from the surroundings. (LO#1, LO#2, LO#3)



(Adapted from Sutton and Biblarz, Rocket Propulsion Elements,
7th Ed., John Wiley & Sons, Inc., New York, NY, 2001, p 230)