(1) Consider open system

rigid wall

port 1
(entrance)

port 2
(exit)

(2) Consider closed system → but,

rigid wall

center of mass is moving.

frictionless piston

adiabatic walls

fluids in 1 & 2 are in equilibrium

states 1 & 2.

piston 1 moves steadily down doing work on the system

fluid 1 remains always in state 1.