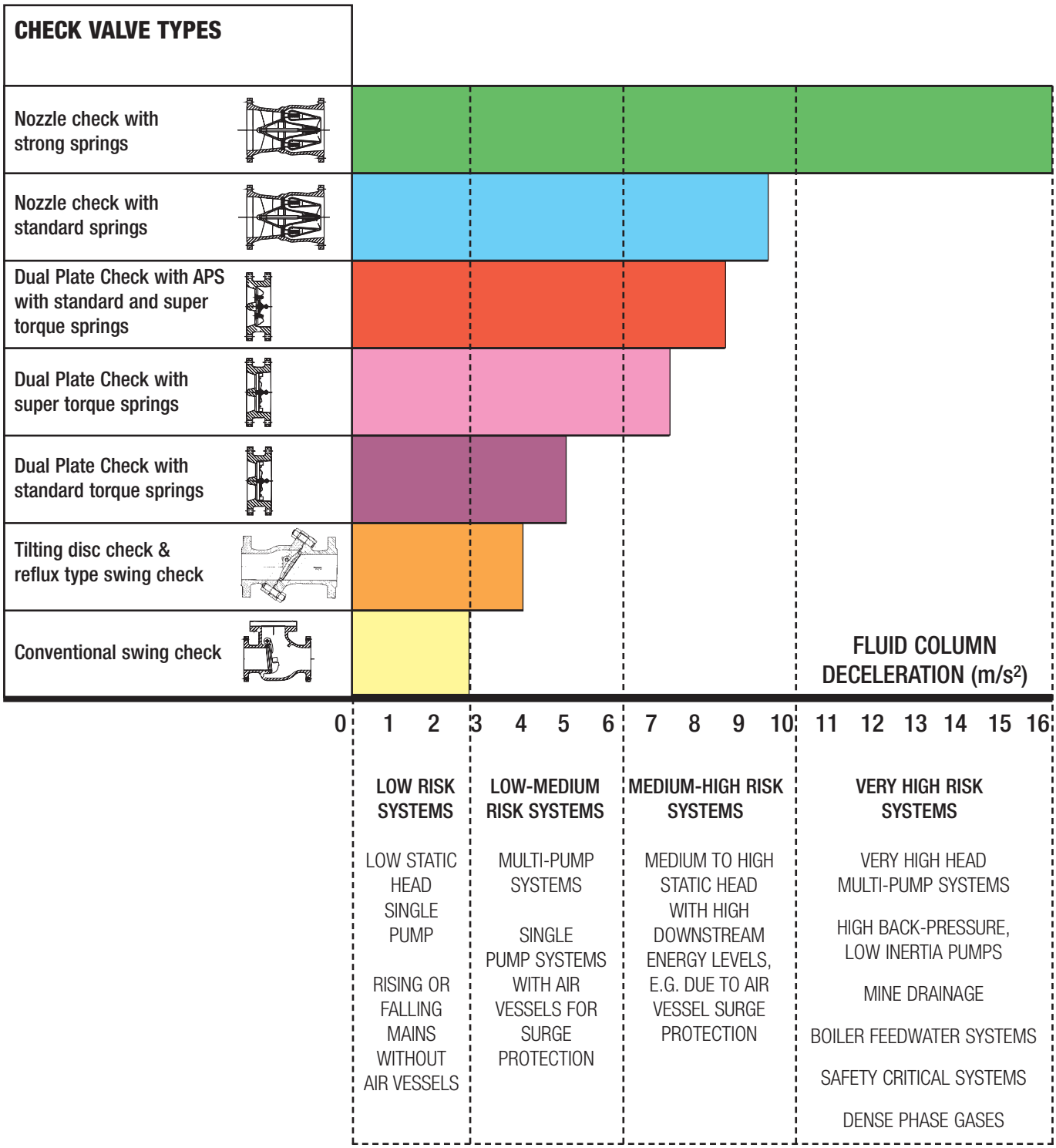Check valve selection based upon system deceleration characteristic