CLAIMS

What is claimed is:

1. A hydraulic set packer system, comprising:

an outer sleeve;

a mandrel extending through the outer sleeve;

a setting port extending through a radial wall of the mandrel, the setting port configured to provide fluid communication from a central bore of the mandrel to a setting chamber formed between the outer sleeve and the mandrel;

a piston configured to move axially along the mandrel in response to a setting pressure in the setting chamber, the piston configured to drive at least one radially actuatable component to actuate in a radial direction to engage a wellbore wall;

a pressure isolation assembly disposed in the setting chamber, the pressure isolation assembly configured to move axially with respect to the mandrel from a first position to a second position to seal the setting port; and

a shear member configured to restrain axial movement of the pressure isolation assembly with respect to the mandrel, and wherein the shear member is configured to shear in response to pressure in the setting chamber exceeding a threshold setting pressure.

2. The system of claim 1, wherein the pressure isolation assembly comprises a pressure isolation ring having a radial through-bore, wherein the radial through-bore is axially aligned with the setting port in the first position such that fluid may flow into the setting chamber from the central bore.

3. The system of claim 1, further comprising a biasing mechanism configured to drive the pressure isolation assembly from the first position in a direction toward the second position.

4. The system of claim 2, wherein the biasing mechanism comprises a compression spring disposed between the pressure isolation assembly and a spring block, and wherein the compression spring is compressed in the first position.

5. The system of claim 1, wherein the outer sleeve comprises a pressure release port extending through a radial wall of the outer sleeve, wherein the pressure release port is configured to provide fluid communication between the setting chamber and a wellbore.

6. The system of claim 5, wherein the pressure isolation assembly is configured to seal the pressure release port in the first position and open the pressure release port in the second position.

7. The system of claim 1, further comprising a pressure isolation assembly stop secured to the mandrel, wherein pressure isolation assembly stop is configured contact the pressure isolation assembly to block axial movement of the pressure isolation assembly at the second position.

8. The system of claim 1, wherein the piston is a least partially disposed within the setting chamber to seal a first side of the setting chamber from the wellbore.

9. The system of claim 1, wherein the pressure isolation assembly comprises a pressure isolation ring having an axial through-bore.

10. The system of claim 1, wherein the pressure isolation assembly comprises an isolation piston, wherein the isolation piston configured to move axially into a piston seal assembly aligned with the setting port to seal the setting port.

11. The system of claim 1, wherein the shear member comprises a shear pin.

12. A hydraulic set packer system, comprising:

an outer sleeve;

a mandrel extending through the outer sleeve and secured to the outer sleeve via a first locking feature;

a setting port extending through a radial wall of the mandrel, the setting port configured to provide fluid communication from a central bore of the mandrel to a setting chamber formed between the outer sleeve and the mandrel;

a piston secured to the outer sleeve via a second locking feature that is configured to release the piston to move axially with respect to the outer sleeve in response to a setting

pressure in the setting chamber, the piston configured to drive at least one radially actuatable component to actuate in a radial direction to engage a wellbore wall; and

a pressure isolation ring rigidly coupled to a radially inner surface of the outer sleeve and disposed within the setting chamber, the pressure isolation ring configured to move axially with respect to the mandrel from a first position to a second position to seal the setting port;

wherein the first locking feature comprises a shear member extending into a sleeve recess of the outer sleeve and a mandrel recess in the mandrel to restrain axial movement between the mandrel to the outer sleeve, wherein the first locking feature is configured to shear to release the outer sleeve with respect to the mandrel in response to a sealing pressure in the setting chamber, and wherein the sealing pressure is higher than the setting pressure;

wherein the second locking feature comprises a shear member extending into a first sleeve recess of the outer sleeve and a piston recess in the piston to restrain axial movement between the piston and the outer sleeve, wherein the second locking feature is configured to shear to release the piston to move axially with respect to the outer sleeve in response to the setting pressure in the setting chamber.

13. The system of claim 12, wherein the pressure isolation ring is disposed between the setting port and the piston in the first position, and wherein the pressure isolation ring comprises an axial through-bore such that the piston is in fluid communication with the setting port in the first position.

14. The system of claim 12, wherein the pressure isolation ring is axially aligned with the setting port in the second position, and wherein the pressure isolation ring comprises a first seal and a second seal disposed on opposite axial sides of the setting port to seal the setting chamber from the setting port.