CLAIMS

1. A portable pack, comprising:

a portable pack body including first and second components for holding a substrate therebetween, the substrate carrying a microelectronic circuit and having a plurality of substrate terminals connected to a microelectronic circuit;

a plurality of portable pack contacts on the first component, the portable pack contacts matching the substrate terminals for making contact to the substrate terminals;

a securing system that includes:

a first securing assembly having:

a first part that engages with the first component;

a second part that engages with the second component;

a connecting part having opposing ends secured to the first and second parts respectively to form a locking arrangement;

an engaging mechanism connected to the locking arrangement and operable to move the locking arrangement between a locking position wherein the locking arrangement maintains the first and second components locked in a closed position and an unlocked position wherein the locking arrangement permits movement of the first and second components from the closed relationship into a spaced relationship,

wherein the engaging mechanism causes the second part to move between the locking position and the unlocked position,

wherein the second part rotates about an axis normal to the substrate when the locking arrangement moves between the locking position and the unlocked position; and

a first electrical interface, on the portable pack body and connected to the portable

pack contacts, for connection to a second electrical interface on a frame when the portable pack body is removably held by the frame.

2. The portable pack of claim 1, wherein the first part rotates about an axis normal to the substrate when the locking arrangement moves between the locking position and the unlocked position.

3. The portable pack of claim 1, wherein the connecting part rotates about an axis normal to the substrate when the locking arrangement moves between the locking position and the unlocked position.

4. The portable pack of claim 1, wherein the engaging mechanism rotates about an axis normal to the substrate when the locking arrangement moves between the locking position and the unlocked position.

5. The portable pack of claim 1, wherein the locking arrangement includes a surface on the first part that forms a seat for contacting with a surface on a tool, the tool being rotatable to rotate the first part and the first part rotating the second part through the connecting part to move between the locking position and the unlocked position.

6. The portable pack of claim 5, wherein the surface on the first part that forms the seat is an external surface of the first part.

7. The portable pack of claim 6, wherein the first part has a tool opening therein for aligning the tool with the first part.

8. The portable pack of claim 1, wherein the locking arrangement is capable of maintaining a force between the portable pack contacts and the respective ones of the substrate terminals.

9. The portable pack of claim 1, wherein a contacting device is connectable to the portable pack body, the device being operable to move the first and second components relatively toward one another to cause each one of the portable pack contacts to create a force against a respective one of the substrate terminals, and the engaging mechanism, after the contacting device has moved the first and second components relatively toward one another, moves the locking arrangement between the locking position and the unlocked position.

10. The portable pack of claim 1, wherein the securing system includes:

a second securing assembly, wherein each respective securing assembly has:

a first part that engages with the first component;

a second part that engages with the second component;

a connecting part having opposing ends secured to the first and second parts respectively to form a locking arrangement; and

an engaging mechanism connected to the locking arrangement and operable to move the locking arrangement between a locking position wherein the locking arrangement

maintains the first and second components locked in a closed position and an unlocked position wherein the locking arrangement permits movement of the first and second components from the closed relationship into a spaced relationship,

wherein the engaging mechanism causes the second component to move between the locking position and the unlocked position,

wherein the second part rotates about an axis normal to the substrate when the locking arrangement moves between the locking position and the unlocked position.

11. The portable pack of claim 10, wherein the first and second securing assemblies have respective second parts that are on a same side of the second component.

12. The portable pack of claim 1, further comprising:

a pressure differential cavity seal between the first and second components, the pressure differential cavity seal between the first and second components forming an enclosed pressure differential cavity.

13. The portable pack of claim 12, further comprising:

a passage for connecting a gas interface on a frame to the pressure differential cavity when the portable pack body is held by the frame.

14. The portable pack of claim 12, further comprising:

at least a first valve between the pressure differential cavity and air outside the pressure differential cavity surrounding the portable pack.

15. A tester apparatus, comprising:

a portable pack that includes:

a portable pack body including first and second components for holding a substrate therebetween, the substrate carrying a microelectronic circuit and having a plurality of substrate terminals connected to a microelectronic circuit;

a plurality of portable pack contacts on the first component, the portable pack contacts matching the substrate terminals for making contact to the substrate terminals;

a securing system that includes:

a first securing assembly having:

a first part that engages with the first component;

a second part that engages with the second component;

a connecting part having opposing ends secured to the first and second parts respectively to form a locking arrangement;

an engaging mechanism connected to the locking arrangement and operable to move the locking arrangement between a locking position wherein the locking arrangement maintains the first and second components locked in a closed position and an unlocked position wherein the locking arrangement permits movement of the first and second components from the closed relationship into a spaced relationship,

wherein the engaging mechanism causes the second part to move between the locking position and the unlocked position,

wherein the second part rotates about an axis normal to the substrate when the locking arrangement moves between the locking position and the unlocked position; and

a first electrical interface on the portable pack body and connected to the portable pack contacts;

a frame, the portable pack body being receivable to be held by the frame and being removable from the frame;

a second electrical interface on the frame, the second electrical interface being connected to the first electrical interface when the portable pack is held by the frame, and being disconnected from the first electrical interface when the portable pack body is removed from the frame; and

an electrical tester connected through the second electrical interface, the first electrical interface, and the portable pack contacts to the substrate terminals so that signals are transmitted between the electrical tester and the microelectronic circuit to test the microelectronic circuit.

16. The tester apparatus of claim 15, wherein the locking arrangement is capable of maintaining a force between the portable pack contacts and the respective ones of the substrate terminals.

17. The tester apparatus of claim 15, further comprising:

a contacting device, wherein the contacting device is connectable to the portable pack body, the device being operable to move the first and second components relatively toward one another to cause each one of the portable pack contacts to create a force against a respective one of the substrate terminals, and the engaging mechanism, after the contacting

device has moved the first and second components relatively toward one another, moves the locking arrangement between the locking position and the unlocked position.

18. The tester apparatus of claim 15, wherein the contacting device is a pump connected to the pressure differential cavity.

19. A method of testing a microelectronic circuit held by a substrate, comprising:

holding a substrate between first and second components of a portable pack body forming part of a portable pack, the first component having portable pack contacts against substrate terminals of the substrate connected to a microelectronic circuit;

operating an engaging mechanism to move a locking arrangement between a locking position wherein the locking arrangement maintains the first and second components locked in a closed position and an unlocked position wherein the locking arrangement permits movement of the first and second components from the closed relationship into a spaced relationship, the locking arrangement including:

a first part that engages with the first component;

a second part that engages with the second component;

a connecting part having opposing ends secured to the first and second parts respectively,

wherein the engaging mechanism causes the second part to move between the locking position and the unlocked position,

wherein the second part rotates about an axis normal to the substrate when the locking arrangement moves between the locking position and the unlocked position;

receiving the portable pack by a frame with a first electrical interface on the portable pack body connected to a second electrical interface on the frame;

transmitting signals between an electrical tester and the microelectronic circuit through the substrate terminals, portable pack contacts, and first and second electrical interfaces to test the microelectronic circuit; and

removing the portable pack from the frame with the first electrical interface on the portable pack body disconnected from the second electrical interface on the frame.

20. The method of claim 19, wherein the first part rotates about an axis normal to the substrate when the locking arrangement moves between the locking position and the unlocked position.

21. The method of claim 19, wherein the connecting part rotates about an axis normal to the substrate when the locking arrangement moves between the locking position and the unlocked position.

22. The method of claim 19, wherein the engaging mechanism rotates about an axis normal to the substrate when the locking arrangement moves between the locking position and the unlocked position.

23. The method of claim 19, wherein the locking arrangement includes a surface on the first part that forms a seat for contacting with a surface on a jaw of a tool, the jaw of the tool

being rotatable to rotate the first part and the first part rotating the second part through the connecting part to move between the locking position and the unlocked position.

24. The method of claim 23, wherein the surface on the first part that forms the seat is an external surface of the first part.

25. The method of claim 24, wherein the first part has a tool opening therein for aligning the tool with the first part.

26. The method of claim 19, wherein the securing system includes:

a second securing assembly, wherein each respective securing assembly having:

a first part that engages with the first component;

a second part that engages with the second component;

a connecting part having opposing ends secured to the first and second parts respectively to form a locking arrangement; and

an engaging mechanism connected to the locking arrangement and operable to move the locking arrangement between a locking position wherein the locking arrangement maintains the first and second components locked in the closed position and an unlocked position wherein the locking arrangement permits movement of the first and second components from the closed relationship into the spaced relationship,

wherein the engaging mechanism causes the second component to move between the locking position and the unlocked position,

wherein the second part rotates about an axis normal to the substrate when the

locking arrangement moves between the locking position and the unlocked position.

27. The method of claim 26, wherein the first and second securing assemblies have respective second parts that are on a same side of the second component.

28. The method of claim 19, further comprising:

locating a pressure differential cavity seal between the first and second components, the pressure differential cavity seal between the first and second components forming an enclosed pressure differential cavity.

29. The method of claim 28, further comprising:

connecting a gas interface secured to a frame through a passage to the pressure differential cavity such that the gas interface is connected to the pressure differential cavity when the portable pack body is held by the frame.

30. The method of claim 28, further comprising:

operating at least a first valve wherein the first valve, when closed, is between the pressure differential cavity and air outside the pressure differential cavity surrounding the portable pack.

31. The method of claim 19, wherein the locking arrangement is capable of maintaining a force between the portable pack contacts and the respective ones of the substrate terminals.

32. The method of claim 19, further comprising:

operating a contacting device to move the first and second components relatively toward one another to cause each one of the portable pack contacts to create a force against a respective one of the substrate terminals, and the engaging mechanism, after the contacting device has moved the first and second components relatively toward one another, moves the locking arrangement between the locking position and the unlocked position.