CLAIMS

1. A ring-shaped gasket for sealingly joining opposed fluid conduit ports, the gasket comprising:

a gasket body having a radial outer surface, a first axial end surface, and a second axial end surface, the gasket body being pierced through by a hole creating a fluid pathway and defining a radial inner surface, at least one of the first and second axial end surfaces having a stress concentration feature, the stress concentration feature being formed in the gasket body to define a lip on the at least one of the first and second axial end surfaces, the lip projecting axially outward beyond the at least one of the first and second axial end surfaces and including a sealing surface adjacent a protective ridge, the lip having a radial undercut formed by the stress concentration feature, a bottom portion of the radial undercut extending radially and axially inward of at least a portion of the lip, and the lip being constructed and arranged to plastically deform in response to the sealing surface contacting a face surface of a corresponding fluid conduit port.

2. The gasket of claim 1, wherein the stress concentration feature is exterior to the fluid pathway.

3. The gasket of claim 2, wherein the stress concentration feature comprises a groove formed in the at least one of the first and second axial end surfaces.

4. The gasket of claim 2, wherein the stress concentration feature comprises a groove formed in the at least one of the first and second axial end surfaces, wherein a wall of the groove closest the radial inner surface forms an acute angle with a plane of the at least one of the first and second axial end surfaces to form the radial undercut.

5. The gasket of claim 2, wherein the stress concentration feature comprises a U-shaped groove formed in the at least one of the first and second axial end surfaces, wherein substantially parallel walls of the groove form an acute angle with a plane of the at least one of the first and second axial end surfaces to form the radial undercut.

6. The gasket of claim 2, wherein the stress concentration feature comprises a groove formed in the at least one of the first and second axial end surfaces, wherein a wall of the groove closest the radial inner surface forms an acute angle with a plane of the at least one of the first and second axial end surfaces to form the radial undercut, and wherein an outer periphery of the groove is surrounded by a portion of the at least one of the first and second axial end surfaces, the portion extending axially outward to a lesser extent than the lip prior to installation of the gasket.

7. The gasket of claim 2, wherein the stress concentration feature comprises a regular arrangement of cavities projecting into the at least one of the first and second axial end surfaces.

8. The gasket of claim 2, wherein the stress concentration feature comprises a plurality of cavities projecting into the at least one of the first and second axial end surfaces, the plurality of cavities having individual volumetric axes each forming an acute angle with a plane of the at least one of the first and second axial end surfaces to form a plurality of radial undercuts.

9. The gasket of claim 2, wherein the stress concentration feature comprises a plurality of cavities projecting into the at least one of the first and second axial end surfaces, the plurality of cavities having individual volumetric axes each forming an acute angle with a plane of the at least one of the first and second gasket axial end surfaces to form a plurality of radial undercuts, and wherein a circumferential portion of the at least one of the first and second axial end surfaces radially adjacent the radial outer surface extends axially outward to a lesser extent than the gasket sealing region prior to installation of the gasket.

10. A ring-shaped gasket for sealingly joining opposed fluid conduit ports, the gasket comprising:

a gasket body having a radial outer surface, a first axial end surface, and a second axial end surface, the gasket body being pierced through by a hole creating a fluid pathway and defining a radial inner surface;

wherein the first axial end surface has a first stress concentration feature exterior to the fluid pathway, the first stress concentration feature being formed in the gasket body to define a first lip on the first axial end surface radially adjacent to the first stress concentration feature, the first lip projecting axially outward beyond the first axial end surface and including a first sealing surface adjacent a first protective ridge, the first lip having a first radial undercut formed by the stress concentration feature, a bottom portion of the first radial undercut extending radially and axially inward of at least a portion of the first lip, and the first lip being constructed and arranged to plastically deform in response to the first sealing surface contacting a face surface of a first fluid conduit port; and

wherein the second axial end surface has a second stress concentration feature exterior to the fluid pathway, the second stress concentration feature being formed in the gasket body to define a second lip on the second axial end surface radially adjacent to the second stress concentration feature, the second lip projecting axially outward beyond the second axial end surface and including a second sealing surface adjacent a second protective ridge, the second lip having a second radial undercut formed by the stress concentration feature, a bottom portion of the second radial undercut extending radially and axially inward of at least a portion of the second lip, and the second lip being constructed and arranged to plastically deform in response to the second sealing surface contacting a face surface of a second fluid conduit port.

11. The gasket of claim 10, wherein the first stress concentration feature is substantially identical to the second stress concentration feature.

12. The gasket of claim 10, wherein the first stress concentration feature is substantially different than the second stress concentration feature.

13. The gasket of claim 10, wherein the first stress concentration feature is one of a groove and a plurality of cavities formed in the first axial end surface, and wherein the second stress concentration feature is the other of a groove and a plurality of cavities formed in the second axial end surface.

14. The gasket of claim 10, wherein the first stress concentration feature comprises a first plurality of cavities formed in the first axial end surface, each cavity of the first plurality of cavities having a volumetric axis forming an acute angle with a plane of the first axial end surface to form a first plurality of radial undercuts of the first gasket sealing region, and wherein the second stress concentration feature comprises a second plurality of cavities formed in the second axial end surface, each cavity of the second plurality of cavities having a volumetric axis forming an acute angle with a plane of the second axial end surface to form a second plurality of radial undercuts of the second gasket sealing region

15. The gasket of claim 14, wherein the volumetric axis of each respective cavity of the first plurality of cavities is disposed in an anti-phase relationship with the volumetric axis of a corresponding cavity of the second plurality of cavities.

16. The gasket of claim 10, wherein the first stress concentration feature comprises a first groove formed in the first axial end surface, a wall of the first groove closest the radial inner surface forming an acute angle with a plane of the first axial end surface to form the first radial undercut, and wherein the second stress concentration feature comprises a second groove formed in the second axial end surface, a wall of the second groove closest the radial inner surface forming an acute angle with a plane of the second axial end surface to form the second radial undercut.

17. The gasket of claim 10, wherein the first stress concentration feature comprises a first U-shaped groove formed in the first axial end surface, substantially parallel walls of the first groove forming an acute angle with a plane of the first axial end surface to form the first radial undercut, and wherein the second stress concentration feature comprises a second U-shaped groove formed in the second axial end surface, substantially parallel walls of the second groove forming an acute angle with a plane of the second axial end surface to form the second radial undercut.

18. The gasket of claim 17, wherein a circumferential portion of the first axial end surface radially adjacent the radial outer surface extends axially outward to a lesser extent

than the first lip prior to installation of the gasket, and wherein a circumferential portion of the second axial end surface radially adjacent the radial outer surface extends axially outward to a lesser extent than the second lip prior to installation of the gasket.

19. The gasket of claim 18, wherein the first sealing surface and the second surface each has a greater radial extent of contact with the face surface of the first fluid conduit port and the second fluid conduit port, respectively, than can be achieved by plastic deformation of a seal having reduced contact areas to encourage plastic deformation.