

**CLASS 285, PIPE JOINTS OR COUPLINGS****SECTION I - CLASS DEFINITION**

Joints between two or more members, such members comprising fluid, wire or cable conducting pipes, tubes or tubular bodies with or without rod-like bodies in end-to-end or side-to-side relation or between such a member and a plate, wall, receptacle or other base.

**SECTION II - REFERENCES TO OTHER CLASSES****SEE OR SEARCH CLASS:**

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| <p>4, Baths, Closets, Sinks, and Spittoons, subclasses 252.1+ for a closet bowl coupling and subclass 696 for a fitting or manifold for a sink or bath.</p> <p>5, Beds, subclasses 279+, especially subclass 282 for joints and connections, and subclasses 288+ for corner fasteners.</p> <p>24, Buckles, Buttons, Clasps, etc., appropriate subclasses, especially subclasses 588+ for head and socket separable fasteners.</p> <p>29, Metal Working, subclasses 890.14+ for methods of making gas and water fittings.</p> <p>48, Gas: Heating and Illuminating, subclasses 190 through 194 for analogous structure in pressure regulators, safety devices and leak preventers specialized to that art.</p> <p>52, Static Structures (e.g., Buildings), subclasses 58+ for an exterior type flashing, e.g., sealing around a chimney, subclass 95 for a conduit or passage means at a roof end structure, subclass 219 for a flue connection with a building structure, and subclasses 220.1+ for a service duct, e.g., an electrical conduit within a barrier structure.</p> <p>55, Gas Separation, subclasses 495+ for separating media positioned in a flow line.</p> <p>72, Metal Deforming, appropriate subclasses, for a method of or means for making a metal article by plastically working a blank, e.g., forging or bending it.</p> <p>73, Measuring and Testing, subclass 201, for joints or couplings combined with fluid meter box structure. (More than a conventional statement).</p> <p>105, Railway Rolling Stock, subclass 40 for a flexible joint between boiler sections in a steam locomotive and subclass 47 for an articulate or flexible pipe connection between relatively movable parts of a steam locomotive.</p> | <p>119, Animal Husbandry, subclasses 14.01+ for manifolds, couplings and claws providing means to connect teat cups with pressure and/or milk lines.</p> <p>122, Liquid Heaters and Vaporizers, subclass 87, for fire tube "U" couplings, 360+, for special water tube closures and couplings, 365 and 511, for specialized tubes and connectors.</p> <p>126, Stoves and Furnaces, subclasses 307 and 312 for connections between stovepipes and stoves.</p> <p>131, Tobacco, subclass 225 for joints in tobacco smoking appliances.</p> <p>137, Fluid Handling, for fluid handling apparatus including coupling and pipe joints in combination with other fluid handling means, see particularly subclasses 231, 355.16+, 580, 614+, and 637.05.</p> <p>156, Adhesive Bonding and Miscellaneous Chemical Manufacture, appropriate subclass for process of making a joint by a laminating operation.</p> <p>165, Heat Exchange, subclasses 173+ for side by side heat exchange tubes connected to a header plate, and subclass 178 for a heat exchange tube with a support or flow connector.</p> <p>166, Wells, subclasses 75.11+ for well heads with some fluid handling or other feature special to wells, especially subclasses 86.1+ for a well head with a sealed or anchored inner member and a valve and subclasses 88.1+ for a well head with a sealed or anchored inner member and a lateral port, subclasses 179+ and the subclasses there noted for packers situated below ground level and sealing the annular space between a prepositioned well conduit and a pipe inserted into the conduit, subclasses 206+ for expanding anchor means situated below ground level holding an inner pipe to a prepositioned well conduit.</p> <p>174, Electricity: Conductors and Insulators, particularly subclasses 17 through 20, 50+, 66, 67, and 71-94 for pipe joints and couplings limited to electrical use.</p> <p>210, Liquid Purification or Separation, subclasses 435+ for a filter element positioned in a flow line or a flow line connected casing and subclasses 459+ for a filter element mounted on a pipe.</p> <p>213, Railway Draft Appliances, subclass 76 for combined car and air train line couplings. See the Notes thereunder.</p> <p>220, Receptacles, subclasses 3.2+, 241 and 242 for receptacles and face plates having means for coupling pipes thereto.</p> |
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- 228, Metal Fusion Bonding, subclasses 122.1+ for a method of bonding a nonmetal to a metal using separate metallic filler and subclass 120 for a method of mechanical joining and bonding a nonmetal to a metal.
- 239, Fluid Sprinkling, Spraying, and Diffusing, subclasses 195+, 225+ and 587.1+ for combined sprayer devices and couplings and for couplings specially designed for rotating or adjusting the sprayer on the flow line.
- 241, Solid Material Comminution of Disintegration, subclasses 46.013+, especially subclass 46.015, for the combination of a sink joint, per se, classifiable in this class (285), and a comminuting means.
- 248, Supports, subclass 188 for leg attaching connections for stands.
- 251, Valves and Valve Actuation, subclass 89.5, 148+, 149+, and 149.9 for fluid handling apparatus including a flow path comprising a coupling having a valve therein.
- 256, Fences, subclasses 47+ for fence wire to post connections, and subclasses 65.01+ for fence rail to post connections.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, appropriate subclasses, for processes within the class definition for molding or shaping plastic materials.
- 277, Seal for a Joint or Juncture, for a seal between two pipes or a pipe and a wall that are at most secured together only by friction between the seal and the pipe or wall, subclasses 602+ for a static contact seal intended for use on a pipe, conduit, or cable.
- 279, Chucks or Sockets, subclasses 9.1+ for a connection between a holder and tool or workpiece having the gripping means or seat on or within the holder. See the Search Notes thereunder.
- 333, Wave Transmission Lines and Networks, subclasses 248+ for wave guide joints or couplings, which claim significant wave propagation characteristics, and subclasses 109+ for such joints or couplings providing a branched circuit.
- 403, Joints and Connections, for joints or connection in general.
- 408, Cutting by Use of Rotating Axially Moving Tool, for the combination of a pipe joint or coupling with means to drill in the manner of that class.
- 439, Electrical Connectors, appropriate subclasses for electrical connectors and see Lines With Other Classes and Within This Class in the

Class Definition of that class (439) for the line between Class 439 and the other classes where joints or couplings can be found.

#### SUBCLASSES

- 1 SAFETY RELEASE:**  
This subclass is indented under the class definition. Subject matter including means responsive to a predetermined force to release the means holding the joint together to prevent injury to the parts.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
33+, for a coupling with means to effect a quick release in addition to a normal release.  
304, for a “breakaway” type coupling comprising a friction detent.
- SEE OR SEARCH CLASS:  
137, Fluid Handling, subclasses 67+ for a destructible or deformable element control of fluid handling means. See the Search Notes thereunder.
- 2 With frangible or deformable element:**  
This subclass is indented under subclass 1. Devices which include a frangible or deformable element; e.g., a shear pin or bolt.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
3, for a frangible element essential to the making or disassembly of the joint.
- SEE OR SEARCH CLASS:  
137, Fluid Handling, subclasses 59+ for freeze condition responsive safety means in fluid handling means.
- 3 FRANGIBLE ELEMENT:**  
This subclass is indented under the class definition. Subject matter which includes a frangible element that is cut or broken prior to assembly or disassembly of the joint.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
2, for a coupling with a safety release including a frangible element.

- SEE OR SEARCH CLASS:  
 137, Fluid Handling, subclasses 67+ for flow control means responsive to frangible means, and subclass 797 for a frangible element in a flow control means.  
 220, Receptacles, subclass 265 for a frangible closure in a metallic receptacle.  
 222, Dispensing, subclasses 541.1+ for dispensers with frangible outlet elements.
- 4 Score line or groove:**  
 This subclass is indented under subclass 3. Subject matter including score lines or grooves whereby the size or angle of a piece may be varied prior to assembly by cutting or breaking along the line or groove.
- 5 IRRIGATION TYPE (GUIDE AND SUPPORT):**  
 This subclass is indented under the class definition. Devices particular to irrigation pipe lines and generally including guide means to facilitate the coupling operation and/or support means for supporting the coupling and the pipe above ground level. The support may be a static support or a transporting means such as a sled or wheel.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
 61+, for the combination of a support and a coupling.
- 6 Released by conduit motion:**  
 This subclass is indented under subclass 5. Subject matter including means wherein a latch can be released by manipulation of the pipe, e.g., by relative rotation.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
 307, for essential catches manipulated by conduit motion.
- 7 VACUUM CLEANER TYPE:**  
 This subclass is indented under the class definition. Subject matter peculiar to couplings in household vacuum cleaners; e.g., between the blower or intake pipe and the dirt receptacle, etc.
- SEE OR SEARCH CLASS:  
 15, Brushing, Scrubbing, and General Cleaning, subclasses 300.1+ for vacuum cleaner combinations.
- 8 FAUCET TYPE (E.G., SLIP-ON):**  
 This subclass is indented under the class definition. Devices comprising a readily detachable coupling member generally of the socket type with means to engage the spigot end of a faucet.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
 243, and 322+, for contractible sockets.  
 374+, for packed sockets.  
 399+, for socket joints.
- 9.1 WITH MAGNETIC ELEMENT:**  
 This subclass is indented under the class definition. Subject matter wherein two or more members are in coupled relation and wherein there is provided a component having magnetic properties configured to aid in holding the members together.
- 9.2 CONTACT ONLY:**  
 This subclass is indented under the class definition. Subject matter wherein two or more members are held in a coupled relation solely by physical contact of portions of the members in the absence of either separate coupling means or of specific coupling structure of the members.
- SEE OR SEARCH CLASS:  
 141, Fluent Material Handling, With Receiver or Receiver Coacting Means, subclasses 383+ for the combination of a receiver, dispenser and joint therebetween.  
 251, Valves and Valve Actuation, subclass 149.7 for a valve flow line section joined to another by a contact only, or friction, joint, where the act of joining operates the valve in opposition to a spring biasing it.
- 10 LIQUID SEAL:**  
 This subclass is indented under the class definition. Devices wherein a liquid seals a joint to prevent escape of the line flow to the exterior of the flow path.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 94, for couplings with lubricating means.  
 95+, for couplings wherein a seal is enhanced by the line pressure.  
 284.1+, for molded joints.
- SEE OR SEARCH CLASS:  
 137, Fluid Handling, subclasses 246+ for liquid sealing at a valve interface; subclass 247 for liquid trap seals, and see the Search Notes thereunder.
- 11 With relative motion:**  
 This subclass is indented under subclass 10. Subject matter wherein the sealing is between juxtaposed surfaces which are relatively movable.
- 12 CONVERTIBLE:**  
 This subclass is indented under the class definition. Devices comprising means whereby the type of joint can be changed by reassembling all or some of its parts in a different relationship or by the addition of a part or parts.
- 13 WITH LEAKAGE OR DRIP DISPOSAL:**  
 This subclass is indented under the class definition. Subject matter in which means are provided to catch or otherwise dispose of material dripping or leaking from the joint. By drip or leakage is meant material which escapes to the exterior of the normal flow path and also includes condensate and water derived from melting ice or frost.
- SEE OR SEARCH CLASS:  
 137, Fluid Handling, subclasses 312+ for leak or drip disposal means in fluid handling devices.  
 222, Dispensing, subclasses 108+ for drip, leakage or waste catching or disposal in dispensers.  
 277, Seal for a Joint or Juncture, for a seal between two pipes or a pipe and a wall that are at most secured together only by friction between the seal and the pipe or wall, subclass 429 for a dynamic close proximity impeller-type seal having a fluid collector or receiver.
- 14 Weep holes:**  
 This subclass is indented under subclass 13. Subject matter wherein one element of the coupling is provided with holes or channels to aid in the disposal.
- SEE OR SEARCH CLASS:  
 210, Liquid Purification or Separation, subclass 165 for a grated inlet surface drain with weep means.
- 15 REPAIR:**  
 This subclass is indented under the class definition. Devices in which the device, or parts of the device, are equipped with means to restore, or aid in restoring the device to its former condition after decay, injury or partial destruction.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 31+, for coupling means insertable between two fixed pipe ends.  
 148.6+, for compound joints, which include an external packing and compressor therefor.  
 337, for external packing means, generally disclosed to stop leakage around an existing joint.
- SEE OR SEARCH CLASS:  
 137, Fluid Handling, subclass 15.09 for a process of cleaning, repairing, or assembling by securing, replacing, or servicing a particular pipe joint, subclasses 242-245.5 with a mechanical cleaning or sterilizing means, or subclasses 315.01-329.4 with repair, tapping, or assembly means.  
 138, Pipes and Tubular Conduits, subclasses 97+ for pipe repair devices, especially subclass 99 for external patches with means for stopping leaks in a pipe or joint but which are not structurally related to the joint.
- 16 Removable wear element:**  
 This subclass is indented under subclass 15. Subject matter including means whereby a coupling part (e.g., a part of the fitting wall or part of a lining) can be readily replaced when worn, etc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

45+, for coupling housings or linings to control heat exchange or to protect the coupling.

**17 Alternate wear parts:**

This subclass is indented under subclass 16. Subject matter including provision of alternate wear parts.

**18 WITH ASSEMBLY MEANS OR FEATURE:**

This subclass is indented under the class definition. Devices with auxiliary means to aid in the assembly or disassembly (other than mere conventional wrench engaging portions) or having a particular relationship of parts solely to facilitate the assembly or disassembly in extremely difficult or impossible places (e.g., inserted section between fixed ends).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

16+, for means to aid in the replacing of wear element.

123.3+, for packed joints with external separable clamps.

148.6+, for compound joints including separable clamps for encircling an existing jointed pipe.

391, for segmental threads to permit coupling of screw means by partial rotation.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclass 15.09 for a process of cleaning, repairing, or assembling by securing, replacing, or servicing a particular pipe joint.

**19 Spaced plates:**

This subclass is indented under subclass 18. Subject matter comprising plural distinct joints, a tubular member and two or more fixed spaced plates with a combination relationship therebetween whereby the tubular member may be coupled to the plates (e.g., a flue between boiler plates).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

31+, for means to insert a section between fixed pipe ends.

154.1+, for pipe to box couplings wherein at least two walls are essential to one joint.

**20 Penetrating:**

This subclass is indented under subclass 19. Subject matter wherein the tubular member extends entirely through at least one of the plates with addition joint means on its free end (e.g., waste pipe and overflow connections).

**21.1 Molded joint facilitator:**

This subclass is indented under subclass 18. Subject matter which is particularly required for either the assembly or the disassembly of the joint elements; e.g., a pouring shroud or a means to cause fusion between joint elements.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

284+, for molded joints in general and also see the associated search notes.

**21.2 Having embedded facilitator:**

This subclass is indented under subclass 21.1. Subject matter wherein a means is encased within at least one joint element to perfect the joint; e.g., a heating element inside at least one joint element which is capable of causing fusion between the joint elements.

SEE OR SEARCH CLASS:

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 273.9, 274.2, and 379.7 for application of electrical energy to fuse joints.

219, Electric Heating, subclass 535 and 544 for heating devices which are used to fuse plastic elements.

**21.3 Having solvent facilitator:**

This subclass is indented under subclass 21.1. Subject matter in which a fluid is used to dissolve portions of adjoining joint element surfaces to cause a chemical fusion bond therebetween.

- SEE OR SEARCH CLASS:  
156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 305 and 308.2 for methods of solvent bonding.
- 22 Spacing means (e.g., lugs):**  
This subclass is indented under subclass 21. Subject matter comprising spacing means to position the pipe ends properly for the joining operation.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
27+, for means to guide the ends into coupling relation and see the Search Notes thereunder.
- 23 With holding means functioning only during transportation assembly or disassembly:**  
This subclass is indented under subclass 18. Subject matter having combined with a part of the device a holding means which is inoperative in the assembled operating device for (1) supporting the device during assembly or disassembly, or (2) for immobilizing a moving part, to permit transportation or safe storage.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
22, for a spacer in a molded joint.  
27+, for guide means to align the parts during assembly or coupling and see the Search Notes thereunder.  
182, for elbows with knock-down nesting features.
- SEE OR SEARCH CLASS:  
137, Fluid Handling, subclass 316 for similar means in fluid handling apparatus and see the Search Notes thereunder.
- 24 Guide and support:**  
This subclass is indented under subclass 18. Subject matter including means to gather and align cooperating portions of a coupling to register the coupling interfaces and supporting means to maintain the cooperating coupling portions in substantial mating position.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
5+, for irrigation type couplings many of which include a guide and support.
- 25 Plural noncommunicating (e.g., train pipe type):**  
This subclass is indented under subclass 24. Subject matter involving couplings for two or more lines which do not unite within the scope of the combination of elements claimed.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
28+, for a coupling plus a guide.  
63, for a coupling plus a support.  
120.1+, for plural noncommunicating lines which do not claim the guide and support.
- SEE OR SEARCH CLASS:  
213, Railway Draft Appliances, subclass 76 for combined car and air train line couplings.
- 26 With latch or lock:**  
This subclass is indented under subclass 25. Subject matter including means to restrain the separation of the coupling elements (e.g., a latch or lock means).
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
29, for the combination of a latch or lock, a guide and coupling means.  
80, for the combination limited to a lock and coupling means.  
81+, for an auxiliary latch and coupling means.
- 27 Guide:**  
This subclass is indented under subclass 18. Subject matter comprising guide means to gather and align the members into coupling position.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
5, for irrigation couplings which include guide means.  
330, for an interlocked or lapped interface.  
332+, for a conically tapered interface.

- 347, for a cylindrical shank which may align the pipe ends.
- 28 Plural noncommunicating:**  
This subclass is indented under subclass 27. Subject matter including coupling means for two or more lines, which do not unite within the scope of the combination of elements claimed.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
25, for this subcombination plus a support.  
120.1, for a mere coupling for plural noncommunicating flow paths.
- 29 With latch or lock:**  
This subclass is indented under subclass 28. Subject matter including means to restrain the separation of the coupling elements (e.g., a latch or lock means).
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
26, for this combination plus a support.  
80, for the combination of a lock and coupling means.  
81+, for means blocking the release of the joint holding means.
- 30 Combined inlet and outlet:**  
This subclass is indented under subclass 18. Devices having spacing means for supporting coupling parts of two distinct pipes in mating position with respect to the mating coupling parts of the inlet and outlet of a receptacle (e.g., water meter case) or of fixed pipe ends.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
120.1+, for pipe connections providing plural noncommunicating paths.
- SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclass 201 for connections between combined volume and rate of flow meters.
- 31 Inserted section:**  
This subclass is indented under subclass 18. Subject matter wherein means are provided for the lateral insertion of a section between the ends of two fixed pipes to complete the line.
- 32 Threaded telescopic:**  
This subclass is indented under subclass 31. Subject matter including telescopic portions which have screw threads therebetween for effecting the adjustment of the length of the insertable section.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
145.1+, for a telescopic joint in combination with a diverse type joint which permits motion between the coupled parts.  
298+, for mere telescopic joints.
- SEE OR SEARCH CLASS:  
403, Joints and Connections, appropriate subclasses for an articulated threaded connection in general, and especially subclass 296 for a threaded inserted section in general.
- 33 Quick release:**  
This subclass is indented under subclass 18. Devices comprising primary means for holding a joint together and means for readily releasing the holding means whereby the joint may be disassembled by two modes of operation.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
1+, for a coupling with a safety release.  
304, for a breakaway type coupling including a friction-type detent.  
345+, for a coupling with a frictionally retained spigot.
- 34 Radially moved segmented threads (e.g., chuck type):**  
This subclass is indented under subclass 33. Subject matter comprising segmental threads mounted to be radially moved out of grasping relationship.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
322, for a contractible socket. See the Search Notes thereunder.  
391, for a screw coupling with interrupted threads.

- SEE OR SEARCH CLASS:  
 89, Ordnance, subclasses 20.2+ for interrupted threads on breech closures.  
 109, Safes, Bank Protection, or a Related Device, subclass 72 for other interrupted threads on wall and panel closures.  
 411, Expanded, Threaded, Driven, Headed Tool-Deformed or Locked-Threaded Fastener subclasses 417+ for screws and bolts provided with circumferentially interrupted threads.
- 35 Pivoted segments:**  
 This subclass is indented under subclass 34. Subject matter wherein the segmental threads are pivotally mounted on the female member.
- 36 Attached thread-jamming preventer:**  
 This subclass is indented under subclass 18. Devices comprising an attached stop means which limits the endwise motion of the members to prevent the jamming of the threads.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 333+, 355+ and 390+, for integral stop shoulders in screw joints.
- 37 With winder for packing or clamp:**  
 This subclass is indented under subclass 18. Subject matter including means for facilitating the winding of a packing in the coupling or a wrapped type holder.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 254, for nonmetal to metal joints having an external holder comprising a wrapped band.
- 38 Handle or handwheel for rotary engagement:**  
 This subclass is indented under subclass 18. Subject matter comprising extraneous means to aid in the connection of a coupling or hand wheel means to assist in the rotation of a part thereof in the making or disassembly of the joint.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 39, for a coupling with a particular tool engaging means or combined with a tool.  
 308+, for a coupling with an essential catch having means to operate the catch.
- 39 Particular tool-engaging means or with tool:**  
 This subclass is indented under subclass 18. Subject matter comprising tool engaging means having a particular arrangement with respect to the joint elements or a joint having specific tool engaging means in combination with the tool.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 38, for a coupling having a hand wheel for rotary engagement.
- SEE OR SEARCH CLASS:  
 81, Tools, subclasses 53+ for a wrench, per se.
- 40 Thread-cutting means:**  
 This subclass is indented under subclass 18. Subject matter including means to form a thread upon assembly of one member into another by relative longitudinal movement.
- 41 WITH HEATING OR COOLING:**  
 This subclass is indented under the class definition. Subject matter combined with means for heating or cooling the joint or a part thereof.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 187, for a temperature responsive coupling.
- SEE OR SEARCH CLASS:  
 137, Fluid Handling, subclasses 334+ for a heating or cooling means combined with fluid handling means. See the Search Notes thereunder.  
 138, Pipes and Tubular Conduits, subclass 32 for means to protect a pipe during thawing and freezing.

**42 ROOF OR FLOOR DRAIN FLASHING TYPE:**

This subclass is indented under the class definition. Subject matter comprising a shield generally including a sheet of ductile material shaped to turn water at the junction of a pipe (e.g. vent stack) with a roof or floor surface.

**SEE OR SEARCH CLASS:**

- 52, Static Structures (e.g., Buildings), subclasses 58+ for an exterior type, e.g., chimney, flashing including building structure.
- 210, Liquid Purification or Separation, subclasses 163+ for a grated inlet surface drain which may have a flashed joint.

**43 Angled:**

This subclass is indented under subclass 42. Subject matter wherein the roof is at an angle to the horizontal.

**44 Adjustable pitch:**

This subclass is indented under subclass 43. Subject matter including means to compensate for variations in the pitch of roofs.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 184, for couplings permitting angular adjustment between connected sections.

**45 WITH CASING, LINING OR PROTECTOR:**

This subclass is indented under the class definition. Devices in which the joint is completely or partially surrounded by a housing to control heat exchange or to act as a protective or ornamental cover, or is provided with a protective liner, or electrical insulation means.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 114+, for strain relief combinations.
- 123.1+, for a coupling for concentric plural noncommunicating pipes.
- 123.3+, for inner to spaced outer tube coupling.
- 222.1+, for sheathed flexible pipe involving more than one distinct connection.

- 287.1, for means for preventing the entrance of roots to a joint.

**SEE OR SEARCH CLASS:**

- 138, Pipes and Tubular Conduits, subclasses 100 through 178 for appropriate pipe structure, per se.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, appropriate subclass for methods of making electrical insulation by a laminating operation.
- 428, Stock Material or Miscellaneous Articles, appropriate subclasses for a stock material product in the form of a single or plural layer web or sheet, and especially subclass 920 (a cross-reference art collection) for a product having a heating insulating feature.

**46 Escutcheon type:**

This subclass is indented under subclass 45. Subject matter in which the joint includes a member which surrounds a pipe or pipes and covers the opening through which the pipe passes through a wall, generally for ornamental appearance and supporting or centering the coupling in an opening.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 61+, for the combination of a support and coupling and see the Search Notes thereunder.
- 189+, for pipe to plate joints, especially subclass 193 wherein a portion of a fixture (e.g. a faucet) passes through a wall.

**SEE OR SEARCH CLASS:**

- 137, Fluid Handling, subclass 359 for escutcheon type supports in fluid handling systems and see the Search Notes thereunder.

**47 Insulated:**

This subclass is indented under subclass 45. Subject matter wherein means are provided to insulate one part of a joint from another part or from a third member.

- SEE OR SEARCH CLASS:  
174, Electricity: Conductors and Insulators, particularly subclasses 17+, 19+, 21+, 64, 65, and 71-94 for conduit and cable joints with structure having an electrical function only.
- 48 Between serially connected parts:**  
This subclass is indented under subclass 47. Subject matter comprising serially connected parts having insulation to prevent heat or vibration transfer, or the flow of electricity therebetween.
- SEE OR SEARCH CLASS:  
174, Electricity: Conductors and Insulators, particularly subclasses 17 through 22, 64, 71-94, and 668 for conduit and cable joints having claimed electrical characteristics.
- 49 Intermediate resilient conduit (noise-dampener):**  
This subclass is indented under subclass 48. Subject matter including a conduit, generally a resilient member, between pipe ends to prevent transmitting noise and vibration from one pipe to another.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
148.13+, for serial diverse couplings comprising diverse materials, one of which is nonmetal. See the Search Notes thereunder.
- SEE OR SEARCH CLASS:  
181, Acoustics, subclasses 212+ for mufflers and sound filters.  
248, Supports, subclasses 560+ for resilient supports.
- 50 By intermediate joint:**  
This subclass is indented under subclass 48. Subject matter wherein the insulation or a portion thereof is within a joint intermediate the joints for connection to means external of the coupling.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
144.1+, for serial relative movable joints.
- 148.1+, for serial diverse joints in a single flow path or line.
- 51 Ball and socket:**  
This subclass is indented under subclass 50. Subject matter wherein the intermediate joint comprises a ball and socket joint.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
261, for a ball and socket joint. See the Search Notes thereunder.
- 52 Screw thimble:**  
This subclass is indented under subclass 50. Subject matter wherein the intermediate joint comprises a flanged nut or internally threaded thimble with an inwardly extending flange or its equivalent.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
354, for a packed screw thimble joint.
- 53 Sleeve:**  
This subclass is indented under subclass 48. Subject matter comprising a sleeve joint.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
369+, for a packed sleeve.
- 54 Socket:**  
This subclass is indented under subclass 48. Subject matter comprising a socket-type joint.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
231+, for a flexible joint having a socketed packing.  
374+, for a packed socket joint.
- 55 Lined:**  
This subclass is indented under subclass 45. Subject matter comprising a protective cover or layer which may be inside the coupling or outside it.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
47+, for insulated couplings.  
222.1+, for a coupling for a plural layer pipe, which provide distinct connections for two or more layers.

## SEE OR SEARCH CLASS:

- 137, Fluid Handling, subclass 375 for similar structure combined with flow control means.
- 138, Pipes and Tubular Conduits, subclasses 124+ for lined or covered flexible fabric pipe; subclass 131 for flexible pipe having a spirally wound liner; subclasses 137+ for other lined or covered flexible pipe; and subclasses 140+ for other lined or covered pipe.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, appropriate subclasses for methods of making heat insulating covers.
- 220, Receptacles, subclass 23.9, 62.21, 495.01+, 574.3, and 908.1+ for receptacle linings.

**56 WATER CLOSET TYPE, FLOOR-SUPPORTED:**

This subclass is indented under the class definition. Subject matter including means to support (e.g., a flange) the toilet on a floor in combination with joint means between the toilet and soil pipe.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 61+, for couplings in combination with supports.
- 136.1+, for a pipe or rod to pipe to plate joint system.
- 189+, for pipe to plate joints, especially subclasses 192+ for scant type.

## SEE OR SEARCH CLASS:

- 4, Baths, Closets, Sinks, and Spittoons, subclasses 252.1+ for floor support and connection means between a flush closet and a soil pipe, and subclass 211 for a closet ventilation fitting limited to that use.

**57 Flexible diaphragm or bellows:**

This subclass is indented under subclass 56. Subject matter including a flexible diaphragm or bellows in the joint means.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 223+, for a flexible joint between rigid members, especially subclass 225 for a diaphragm, and subclass 226 for a bellows.

**58 Intermediate coupling:**

This subclass is indented under subclass 56. Subject matter including an intermediate member between the soil pipe and the toilet requiring a separate joint between each.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 148.1+, for a joint system of serial diverse joints.

**59 Tapered spigot:**

This subclass is indented under subclass 58. Subject matter wherein the toilet includes a tapered spigot outlet to the soil pipe.

**60 Tapered spigot:**

This subclass is indented under subclass 56. Subject matter wherein the toilet includes a tapered spigot outlet to the pipe.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 59, for tapered spigot outlets to an intermediate coupling.

**61 WITH SUPPORT:**

This subclass is indented under the class definition. Devices combined with means for supporting a joint relative to means external of the device.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 5+, for an irrigation type coupling.
- 24+, for the combination of a guide and support with a coupling.
- 42+, for a roof or floor drain flashing type coupling.
- 46+, for an escutcheon type cover which may also support.
- 56+, for a floor supported water-closet coupling.

## SEE OR SEARCH CLASS:

- 52, Static Structures (e.g., Buildings), subclass 110 for antennas and subclass 146 for guyed masts.
- 137, Fluid Handling, subclasses 343+ for a fluid handling and support combination.
- 239, Fluid Sprinkling, Spraying, and Diffusing, subclass 112 for the combination of a coupling, support and nozzle.
- 248, Supports, subclasses 38+ for a staff support and subclasses 49+ for a pipe or cable support.

**62 Vehicle:**

This subclass is indented under subclass 61. Subject matter in which the support is a vehicle, e.g., automobile, wagon, railroad car, etc.

## SEE OR SEARCH CLASS:

- 137, Fluid Handling, subclasses 899+ for this combination combined with flow controllers. See the Search Notes thereunder.
- 280, Land Vehicles, subclass 421 for a draft connection between vehicles combined with a service connection to conduct power fluid therebetween.

**63 Railway:**

This subclass is indented under subclass 62. Subject matter in which the vehicle is a railroad car or locomotive or a part thereof.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 24+, for the combination of a support, guide and coupling.

## SEE OR SEARCH CLASS:

- 137, Fluid Handling, subclasses 345+ and 347+ for this combination combined with valve means. See the Search Notes thereunder.
- 248, Supports, subclass 53, for the support, per se.

**64 Static building construction:**

This subclass is indented under subclass 61. Subject matter in which the support is a structural member of a building immovably joined to the ground.

**65 IDENTICAL HALVES (E.G., TRAIN LINE TYPE):**

This subclass is indented under the class definition. Subject matter in which the members have identical meeting ends and detent means to have identical ends and detent means, which coact with an intermediate means to complete the joint, e.g., railway car hose couplings.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 24+, for similar couplings in combination with a support and guide.
- 27+, for similar couplings in combination with a guide means.
- 62+, for similar couplings in combination with supports.

## SEE OR SEARCH CLASS:

- 137, Fluid Handling, subclass 599.02 for systems dividing into parallel flow lines then recombining having a valved flow line coupling actuated by joining or parting (e.g., quick disconnect hose, etc.).

**66 With intermediate sleeve:**

This subclass is indented under subclass 65. Subject matter comprising an intermediate between identical ends.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 369+, for a packed sleeve joint. See the Search Notes thereunder.

**67 Side slide:**

This subclass is indented under subclass 65. Subject matter including lapping portions which limit the coupling motion to a radial direction.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 103, for side slide couplings with a line pressure responsive seal.
- 325+, for other side slide couplings.

**68 Transverse port:**

This subclass is indented under subclass 65. Subject matter in which the members have ports which are at right angles to the line flow.

- 69 Auxiliary detent:**  
This subclass is indented under subclass 68. Subject matter including supplemental detent means (e.g., latch) to hold the parts in coupled position.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
81+, for auxiliary latches in combination with other types of couplings to positively hold the coupling in coupled relationship.  
305+, for detents which are essential to the making of the joint.
- 70 Longitudinal port:**  
This subclass is indented under subclass 65. Subject matter in which the members have ports which are longitudinal with respect to the flow path.
- 71 Pivoted hook or loop:**  
This subclass is indented under subclass 70. Subject matter provided with a pivoted hook or loop for joining and locking the joint.
- 72 Auxiliary detent:**  
This subclass is indented under subclass 71. Subject matter including supplemental detent means (e.g., latch) to hold the parts in coupled position.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
81+, for auxiliary latches in combination with other types of couplings.  
305+, for detents which are essential to the making of the joint.
- 73 Integral hook:**  
This subclass is indented under subclass 70. Subject matter including means for holding the members in coupled relationship comprising an integral hook.
- 74 Oscillating engagement:**  
This subclass is indented under subclass 73. Subject matter wherein hooks on one side of the port are so related that they are engaged by a rocking or oscillating movement about a transverse axis with respect to the port axis.
- 75 Reciprocating conduit:**  
This subclass is indented under subclass 74. Subject matter wherein the member reciprocates with respect to a coupling head and includes means to force the member toward coupling position.
- 76 Auxiliary detent:**  
This subclass is indented under subclass 74. Subject matter including supplemental means to hold the parts in coupled position.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
81+, for auxiliary latches in combination with other types of coupling.  
305+, for detents which are essential to the making of the joint.
- 77 Reciprocating:**  
This subclass is indented under subclass 76. Subject matter wherein the detent reciprocates to and from locking position.
- 78 Key or wedge:**  
This subclass is indented under subclass 77. Subject matter wherein the detent is a key or wedge means.
- 79 Auxiliary detent:**  
This subclass is indented under subclass 73. Subject matter including supplemental means to hold the parts in coupled position.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
76+, for auxiliary latches in similar couplings limited to oscillating engagement.  
81+, for auxiliary latches in combination with other types of couplings.  
305+, for detents which are essential to the making of the joint.
- 80 WITH LOCK OR SEAL:**  
This subclass is indented under the class definition. Subject matter combined with lock means for preventing unauthorized opening of a joint or seal means for indicating tampering with the joint.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

81+, for a means to block the disassembly of a joint (e.g., auxiliary latch, lock nut, etc.). See the Search Notes thereunder.

305+, for catches essential to the making of a joint.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclasses 383+ for locks or seals in combination with fluid handling means and see the Search Notes thereunder.

**81 WITH MEANS BLOCKING RELEASE OF HOLDING MEANS:**

This subclass is indented under the class definition. Subject matter comprising perfecting means to restrain or retain the means holding the parts together, the holding means being restrained against motion that would uncouple the joint.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

65+, for auxiliary detents in train line couplers.

80, for joints locked or sealed against unauthorized use.

305+, for a coupling comprising an essential catch.

403+, for separable fasteners essential to a socket joint.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclass 614.06 and 637.05 for valved, separable flow path sections wherein the valves or their actuators may serve to block release of the means which joins the sections.

251, Valves and Valve Actuation, subclasses 89+ for means to block or disable a valve actuator and see the Search Notes thereunder, and subclass 149.9 for a valved pipe joint or coupling wherein the valve or its actuator blocks release of the means which makes the joint.

**82 Auxiliary latch:**

This subclass is indented under subclass 81. Subject matter comprising an auxiliary latch.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

305+, for a latch or catch essential to the holding of the joint parts together.

**83 Line pressure-responsive:**

This subclass is indented under subclass 82. Subject matter responsive to the line pressure.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

102, for a line pressure responsive catch combined with a fluid pressure seal.

105, for a packing actuated pipe gripping means wherein the packing is responsive to line pressure.

306, for a line pressure responsive catch essential to the joint.

**84 Reciprocating:**

This subclass is indented under subclass 82. Subject matter wherein the latch reciprocates.

**85 With manipulator:**

This subclass is indented under subclass 84. Subject matter comprising means to operate the latch.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

308+, for an essential catch with a manipulator.

**86 Locking sleeve:**

This subclass is indented under subclass 84. Subject matter wherein the latch is a sleeve.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

362, and 377, for a manipulating ring in a lugged pipe, rotary engagement type joint.

**87 Pivoted:**

This subclass is indented under subclass 82. Subject matter wherein the latch has a pivoted or hinged motion. Leaf springs latches are included.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

319, for a leaf spring essential catch.

320, for a pivoted essential catch.

- 88 With manipulator:**  
This subclass is indented under subclass 87. Subject matter comprising means to operate the latch.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
308+, for a manipulator for an essential catch.
- 89 Lock nut or washer:**  
This subclass is indented under subclass 81. Subject matter comprising a lock nut or lock washer.
- 90 Set screw:**  
This subclass is indented under subclass 81. Subject matter comprising a set screw.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
404, for a socket joint including a set screw as a fastening means.
- 91 Key or pin:**  
This subclass is indented under subclass 81. Subject matter comprising a key way and key or pin; a cotter pin is included.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
403+, for a socket joint including a separable fastener.
- 92 Thread lock:**  
This subclass is indented under subclass 81. Subject matter comprising a thread lock.
- SEE OR SEARCH CLASS:  
411, Expanded, Threaded, Driven, Headed, Tool-Deformed, or Locked-Threaded Fastener subclasses 259+ for a threaded bolt and nut and means for coupling them against rotation relative to one another and wherein the means comprises a thread lock; and see the search notes of that subclass (259) in regard to other subclasses of that class which include a thread lock.
- 93 WITH INDICATOR, ALARM OR INSPECTION MEANS:**  
This subclass is indented under the class definition. Devices combined with (1) an indicator or alarm responsive to a condition or position of a part of the coupling or (2) with means which permits inspection of hidden parts or of the material inside the coupling.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
135.1+, for a detachable return bend.  
179.1, for a coupling with an access opening.
- 94 WITH LUBRICATION:**  
This subclass is indented under the class definition. Devices including means to lubricate a joint or coupling.
- SEE OR SEARCH CLASS:  
184, Lubrication, subclasses 14+ for lubricators.
- 95 WITH FLUID PRESSURE SEAL:**  
This subclass is indented under the class definition. Subject matter comprising sealing means responsive to the line pressure or means to test the seal by utilization of the line pressure. Fluid pressure balancing means are found here.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
306, for a coupling including a line pressure responsive essential catch.
- SEE OR SEARCH CLASS:  
137, Fluid Handling, subclasses 217+ for anti-siphon devices, and subclasses 525+ for resilient material valve.  
279, Chucks or Sockets, subclass 20 for a fluid-conduit drill holding socket.
- 96 With external pressure supply:**  
This subclass is indented under subclass 95. Devices in which the fluid exerting the sealing pressure is supplied to the sealing means (gasket) through a separate conduit external of the conduits being sealed.
- SEE OR SEARCH CLASS:  
138, Pipes and Tubular Conduits, subclass 93 for an inflatable plug or closure.

- 97 Inflated member:**  
This subclass is indented under subclass 96. Devices in which the sealing member (gasket) is capable of containing (or retaining) an inflating fluid, e.g., inner tube type.
- SEE OR SEARCH CLASS:  
277, Seal for a Joint or Juncture, for a seal between two pipes or a pipe and a wall that are at most secured together only by friction between the seal and the pipe or wall, subclass 605 for a static contact seal or an associated member that is hollow, fluid-filled, or inflatable and intended for use on a pipe, conduit or cable.
- 98 Swivel with flange in socket:**  
This subclass is indented under subclass 95. Subject matter comprising a flanged pipe positioned in a socket, said flange being locked axially.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
278+, for similar structure without fluid pressure seal.
- 99 Coacting opposing duplicate:**  
This subclass is indented under subclass 95. Devices in which two sealing members, individually dispensable by fluid pressure, are adjacently positioned to expand and seal against each other.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
65+, for coupling comprising identical halves having duplicate gasket means.  
336, for cooperating, opposed packing grooves.  
352, for duplicate, coacting gasket means between the free ends of the coupled members.
- 100 With expansible chamber means:**  
This subclass is indented under subclass 95. Devices in which the seal is made by expanding a member axially to press its end into sealing relation with a contacting surface.
- 101 Piston-type reactor:**  
This subclass is indented under subclass 100. Devices in which a piston with a restricted orifice is slidably mounted in the flow path and is forced by the line flow against a gasket to make or enhance the seal.
- 102 With line pressure-responsive catch:**  
This subclass is indented under subclass 101. Subject matter including a catch actuated by the line pressure.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
83, for a coupling with line pressure responsive means blocking the release of the holding means.  
306, for a coupling with a line pressure responsive essential catch.
- 103 Side slide:**  
This subclass is indented under subclass 101. Subject matter comprising means providing a slot or channel on one member having a traverse opening for a stud-like element on the other member whereby the members are coupled by lateral movement.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
325+, for residual side slide couplings.
- 104 With separate, encased pipe-gripping means:**  
This subclass is indented under subclass 95. Devices comprising a pipe and socket with distinct pipe grasping means, e.g., wedge rings, intermediate the longitudinal wall of the pipe and socket.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
339+, for wedge rings which are contracted into gripping relation with a pipe by mechanical means. See the Search Notes thereunder.
- 105 Packing-actuated:**  
This subclass is indented under subclass 104. Devices in which grasping of the pipe by the grasping means is intensified by the pressure exerted on the gripping means through a sealing member.

- 106 Independent supply passage:**  
This subclass is indented under subclass 95. Devices in which a passage is provided, in the pipe wall or gasket by which the fluid has access to the sealing member.
- 107 Expansible shank:**  
This subclass is indented under subclass 95. Devices in which a pipe end is made of or provided with a flexible material portion which expands into sealing with a surrounding pipe surface under action of fluid line flow.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
338, for a radially expansible packing, which is carried by the spigot. See the Search Notes thereunder.
- 108 Separate retainer or positioner:**  
This subclass is indented under subclass 95. Devices in which means, e.g., a ring or sleeve, is provided to hold a sealing means in position for fluid actuation.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
379+, for a gasket retainer in a packed joint.
- 109 Expansible internal sleeve-type gasket:**  
This subclass is indented under subclass 95. Devices in which the sealing member comprises a flexible sleeve inserted into the two conduit ends that are joined.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
49, for a coupling with a noise dampener comprising an intermediate resilient conduit.  
235+, for a flexible joint between rigid members comprising a resilient sleeve.  
370+, for internal sleeves of general application.
- 110 Flexible lip:**  
This subclass is indented under subclass 95. Devices comprising a sealing means having a thin lip-like edge, which is forced by line pressure into sealing contact with a pipe wall.
- 111 C-shaped section:**  
This subclass is indented under subclass 110. Devices in which the sealing means is C-section in shape, e.g., the gasket has a middle or cylindrical web portion with a sealing lip at each end at right angles to the web.
- 112 Longitudinal web:**  
This subclass is indented under subclass 111. Devices in which the web portion, in section view, of the sealing member lies parallel to the conduit axis.
- 113 Wedged gasket:**  
This subclass is indented under subclass 95. Devices in which the sealing member is wedge shape or triangular in section or is one that is forced by the fluid pressure into a wedge shaped chamber.
- 114 WITH STRAIN RELIEF:**  
This subclass is indented under the class definition. Devices comprising a means in addition to an otherwise complete coupling to (1) either assume all externally, originally applied stress tending to separate the joint or (2) to prevent rupture of a flexible member due to bending or twisting about its axis where the same joins a rigid member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
45+, for a protective cover.  
301, for means to allow members a limited movement under application of original external stress.
- SEE OR SEARCH CLASS:  
138, Pipes and Tubular Conduits, subclass 110 for means to prevent pipe rupture.
- 115 Extension of socket or sleeve:**  
This subclass is indented under subclass 114. Subject matter wherein a sleeve or socket is provided with an extended part to encase the pipe at a point or area spaced from the interface, said part to relieve the interface of lateral strain.
- 116 Separable:**  
This subclass is indented under subclass 115. Subject matter wherein the extended part itself is separable or the said part coacts with an

intermediate separable element which is between the said part and the pipe.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

148.6+, for compound joints of the leak gland type.

**117 WITH BROKEN PARTS RETAINER:**

This subclass is indented under the class definition. Subject matter comprising means to prevent scattering of parts in case a joint breaks loose, e.g., a tether.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclass 540.11 for a broken valve parts retainer in a spring biased check valve.

**118 KNUCKLE JOINT WITH ACTUATING MEANS:**

This subclass is indented under the class definition. Subject matter comprising members hinged for angular motion with motor means (e.g., fluid motor) to move the members to change the angle therebetween, e.g., a knuckle joint for a fishing tool.

SEE OR SEARCH CLASS:

623, Prosthesis (i.e., Artificial Body Members), Parts Thereof, or Aids and Accessories Therefor, subclasses 26+ for other fluid actuated joints.

**119 COMBINED:**

This subclass is indented under the class definition. Devices which comprise devices or parts in addition to or combined with a coupling and (1) having functions other than joining or (2) which serve to perfect a coupling for its intended purpose.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

187, for a coupling with means responsive to temperature changes for maintaining a seal.  
 284.1, for a joint system comprising an access opening.  
 287.1, for a molded joint including means to inhibit the growth of roots therein.  
 293.1, for a lining molded to a pipe end.  
 306, for a line pressure responsive essential catch.

335+, for a packed coupling, especially subclasses 379+ for gasket retainers. See the Search Notes thereunder.

SEE OR SEARCH CLASS:

4, Baths, Closets, Sinks, and Spittoons, appropriate subclasses, especially subclass 288 for a combined strainer and a pipe coupling of that class.  
 138, Pipes and Tubular Conduits, subclasses 37+ for fittings having means therein for directing the flow or fluid therein.  
 210, Liquid Purification or Separation, appropriate subclass, particularly subclasses 435+ for a joint and strainer or filter combination of general utility.  
 254, Implements or Apparatus for Applying Pushing and Pulling Force, subclass 134.3 for means for wire or strand placing including guide means for same in a fitting.

**120.1 HAVING PLURAL INDEPENDENT PATHS:**

This subclass is indented under the class definition. Subject matter comprising a coupling, for two or more lines (e.g., conduits, pipes, tubes, hoses, etc.) having flow paths which do not unite within the scope of the combination of elements claimed.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

25+, for the combination of a guide support and plural noncommunicating-type coupler.  
 28+, for the combination of a guide and a plural noncommunicating-type coupler.  
 65+, for duplicate end couplings (e.g., trainline type).  
 149.1+, for a pipe or cable and box joint with plural disclosures.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclasses 594+ for plural noncommunicating flow paths in a fluid handling distribution system. See the Search Notes thereunder.  
 138, Pipes and Tubular Conduits, subclasses 111+ for plural duct pipe structure.

**121.1 Allowing relative motion of pipes:**

This subclass is indented under subclass 120.1. Subject matter wherein the coupling accommodates positional adjustment of one or more pipes to compensate for connection, disconnection, linear expansion, etc.

**121.2 Revolvable and telescoping:**

This subclass is indented under subclass 121.1. Subject matter comprising a coupling for a rotatable (by at least 360 degrees), sectional conduit of which said sections are interfitted for relative axial movement.

**121.3 Revolvable:**

This subclass is indented under subclass 121.1. Subject matter comprising a coupling for two or more elements, one or more of said elements being rotatable by at least 360 degrees.

**121.4 Having spring biasing for maintaining a leak-proof seal:**

This subclass is indented under subclass 121.3. Subject matter wherein a resilient means provides pressure to maintain a leak-proof seal at the coupling.

**121.5 Having specific bearing structure:**

This subclass is indented under subclass 121.3. Subject matter including a means that supports, guides, and reduces friction between a fixed element and a moving element.

**121.6 Swiveling:**

This subclass is indented under subclass 121.1. Subject matter comprising a coupling which has a pivotal arc of less than 360 degrees, or accommodates precessional motion.

**121.7 Ball and socket type:**

This subclass is indented under subclass 121.6. Subject matter comprising a joint having a spherical component and a hollow fitting for receiving the spherical component.

**122.1 And at least one path having branched flow:**

This subclass is indented under subclass 120.1. Subject matter wherein at least one of the flow paths is divided into a plurality of flow paths or a plurality of flow paths are combined into a single flow path or in which a single flow path is divided and then recombined (e.g., noncommunicating hot and cold water lines with cou-

pling means providing plural hot outlets or plural cold outlets, or both).

**123.1 For concentric tubes or pipes (e.g., well casing or wellhead type):**

This subclass is indented under subclass 120.1. Subject matter comprising means mounting an inner tube in spaced relation to an outer tube.

SEE OR SEARCH THIS CLASS, SUBCLASS:

222.1+, for distinct joints to a third member for at least two layers of plural layer pipe (e.g., sheathed).

298+, for adjustable length couplings, especially subclass 302 for a telescopic joint.

SEE OR SEARCH CLASS:

138, Pipes and Tubular Conduits, subclass 90 for test plugs; and subclasses 111+ for plural duct pipe structure.

166, Wells, subclass 75.15, for well heads with fluid handling or other features special to wells, especially subclasses 86.1+, for a well head with an inner member sealed or anchored with respect thereto in combination with a valve and subclasses 88.1+ for a well head with an inner member sealed or anchored with respect thereto in combination with a lateral port in the head, subclasses 179+ for packers situated below ground for sealing between a pre-positioned well conduit and an inserted pipe, and subclasses 206+ for expanding anchor means situated below ground between a pre-positioned well conduit and an inserted pipe.

251, Valves and Valve Actuation, subclasses 1.1+ for valve type blowout preventers.

**123.11 Having slip means actuator:**

This subclass is indented under subclass 123.5. Subject matter including means for moving the member into and out of engagement with the wall.

**123.12 Including a seal:**

This subclass is indented under subclass 123.3. Subject matter including a packer or pack-off type device that prevents or minimizes the flow of a fluid.

**123.13 Held by a means applied radially (e.g., set screw):**

This subclass is indented under subclass 123.12. Subject matter including a packing about the inner tube which is fixed by a mechanical fastener along a line defined by the radius of the inner pipe.

**123.14 Compressed by tightening a bolt coaxial to tubing:**

This subclass is indented under subclass 123.12. Subject matter in which the packer or pack-off device is squeezed by an assembly including a headed, threaded fastener.

**123.15 Double-walled or duplex joint:**

This subclass is indented under subclass 123.1. Subject matter comprising an inner pipe concentric with and attached to an outer pipe, forming one unit.

**123.16 Wall configured as mating complementary type (e.g., hot air ducts):**

This subclass is indented under subclass 123.15. Subject matter wherein the joints are interlocking components (e.g., having male and female configurations).

**123.17 Joint fabricated from material to compensate for movement:**

This subclass is indented under subclass 123.1. Subject matter wherein the joint comprises a resilient material (e.g., plastic joint for containment pipes).

**123.2 Having plural parallel suspended inner tubes:**

This subclass is indented under subclass 123.1. Subject matter comprising a plurality of collateral tubes hung within the outer tube.

- (1) Note. This subclass typically provides for connectors, hangers or similar support devices for vertically supporting or suspending a pair of flow lines of a dual flow passage well.

**123.3 Having single suspended inner tube:**

This subclass is indented under subclass 123.1. Subject matter in which the tubes are in a substantially vertical position and comprising means to hang the inner within the outer tube (e.g., well caps or headers).

**SEE OR SEARCH CLASS:**

- 188, Brakes, particularly subclass 67 for a brake mechanically connected to a relatively stationary structure and which holds a pipe or rod at various locations along the pipe's or rod's length for short, quick linear assembly or disassembly during a work or manufacturing operation, or preparatory to a working operation, done by the pipe, rod, or a pipe supported tool.
- 294, Handling: Hand and Hoist-Line Implements, subclass 5.5 for rod-type supports and hangers.

**123.4 Split ring type suspension means:**

This subclass is indented under subclass 123.3. Subject matter wherein the inner pipe is hung on the outer pipe by means of a member that is in at least two pieces attached along a plane defined by the radius of the pipe.

**123.5 Having inner tube anchored by slip means:**

This subclass is indented under subclass 123.3. Subject matter in which a member having a high degree of friction (e.g., an internally serrated member) grips the outside wall of the pipe to be held.

**123.6 Including packing means:**

This subclass is indented under subclass 123.5. Subject matter incorporating a sealing device (e.g., packer, pack-off, gasket).

**123.7 Having means engaging slip means and compressing packing means:**

This subclass is indented under subclass 123.6. Subject matter in which the member and sealing device are held together by an assembly that forces the member into contact with the pipe wall plus squeezes the sealing device.

**123.8 By bolt directly connecting slip means to packing means:**

This subclass is indented under subclass 123.7. Subject matter in which the member and the sealing device are held together by a headed, threaded fastener.

**123.9 Having radially applied orienting means:**

This subclass is indented under subclass 123.6. Subject matter including a rod-like threaded device (e.g., plunger, hold-down screw, locking or lock-down bolt, latch, dog, retaining pin, etc.) designed to contact the member or inner tube for positioning purposes.

**124.1 Parallel paths:**

This subclass is indented under subclass 120.1. Subject matter wherein two lines are equally distant at all points from each other along a significant portion of their length.

**124.2 Having spacer means for pipes or tubes:**

This subclass is indented under subclass 124.1. Subject matter including means for maintaining a particular spatial relationship between the lines (e.g., aligning or positioning means).

**124.3 Apertured plate type:**

This subclass is indented under subclass 124.2. Subject matter wherein the spacer is configured with openings (e.g., slots, holes, etc.) to accommodate the lines.

**124.4 Including a fitting, boss, or nipple means:**

This subclass is indented under subclass 124.2. Subject matter wherein the coupling comprises a fitted detachable protuberance.

**124.5 Located within block type connector for ducts:**

This subclass is indented under subclass 124.1. Subject matter including a junction box or cylinder in which the parallel lines are joined to their respective segments.

**125.1 FOR BRANCHED PATH:**

This subclass is indented under the class definition. Subject matter wherein the flow path is divided into a plurality of flow paths or a plurality of flow paths are combined into a single flow path or in which a single flow path is divided and then recombined with means for providing couplings for the several flow paths.

SEE OR SEARCH THIS CLASS, SUBCLASS:

122.1, for branched flow couplers in plural noncommunicating flow paths.

SEE OR SEARCH CLASS:

220, Receptacles, subclasses 3.2+ for analogous structures constituting receptacles of the outlet or junction box type.  
403, Joints and Connections, subclasses 167+ for branched connections in general.

**126.1 Having an access opening and removable cover:**

This subclass is indented under subclass 125.1. Subject matter including an opening with a closure or having one or more separable parts, which permit access to the interior thereof without disassembly of the joint.

SEE OR SEARCH THIS CLASS, SUBCLASS:

62+, for an access opening to permit insertion or removal of a wear element.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclasses 583+ for a fluid handling system with an access opening.  
138, Pipes and Tubular Conduits, subclasses 89+ for pipe closures.  
220, Receptacles, subclasses 200+ for analogous closures for receptacles and of general utility.

**127.1 Including a swivel joint:**

This subclass is indented under subclass 125.1. Subject matter comprising a coupling which has a pivotal arc of less than 360 degrees, or accommodates precessional motion.

SEE OR SEARCH THIS CLASS, SUBCLASS:

274, for yoke-type swivels.

**127.2 Double Y-type:**

This subclass is indented under subclass 127.1. Subject matter wherein two lines form Y's and unite at right angles to each other.

**128.1 Allowing for movement parallel to path (e.g., expansion joint):**

This subclass is indented under subclass 125.1. Subject matter wherein the coupling accommodates positional adjustment along the longitudinal axis of one or more pipes to compensate for connection, disconnection, linear expansion, etc.

**129.1 And having additional, integral fitting, branch, or coupling for a means such as a vent:**

This subclass is indented under subclass 125.1. Subject matter including one or more openings which function to admit or expel gases from a system.

**SEE OR SEARCH CLASS:**

- 4, Baths, Closets, Sinks, and Spittoons, subclasses 209+ for ventilation of that art.
- 48, Gas: Heating and Illuminating, subclass 108 for couplings combined with structure to provide gas mixing.
- 137, Fluid Handling, subclass 176 for a liquid seal trap with an air-port, subclass 215 for anti-siphon devices to fluid handling systems, and subclasses 583+ for vent openings in fluid distribution systems. See the search notes thereunder.
- 261, Gas and Liquid Contact Apparatus, subclasses 76+ for injector type contact devices.
- 417, Pumps, subclasses 151+ for jet pumps.

**129.2 Plus a bend, flange, pocket, or chamber for antisiphon:**

This subclass is indented under subclass 129.1. Subject matter including means, generally a particular air chamber or arrangement of vent openings, for preventing the siphoning of trap liquids-seals upstream of the claimed coupling.

**130.1 Intersecting paths (e.g., X- or cross-type):**

This subclass is indented under subclass 125.1. Subject matter wherein two lines intersect to form a cross or "X" configuration.

**131.1 Y-type, (symmetrical along the centerline):**

This subclass is indented under subclass 125.1. Subject matter wherein two lines form the legs of a "Y" configuration, said legs being symmetrically angled from a single line.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

127.2, for a double Y-type providing relative motion.

**132.1 (Y-type) having a straight portion and an angled leg:**

This subclass is indented under subclass 125.1. Subject matter wherein one line intersects another line obliquely, thereby forming a "Y" configuration having one angled leg.

**133.11 T-type:**

This subclass is indented under subclass 125.1. Subject matter wherein one line intersects another line orthogonally, thereby forming a "T" configuration.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

189+, for a joint between a pipe end and a pipe side.

**133.21 Having a seal, gasket, O-ring, or packing:**

This subclass is indented under subclass 132.1. Subject matter including a means which prevents or minimizes the flow of a fluid.

**133.3 Having a pipe-receiving bell, socket, or mouth:**

This subclass is indented under subclass 132.1. Subject matter wherein the inside diameter of a portion of a fitting is larger than the outside diameter of the pipe that is to be received into the fitting.

**133.4 Having threaded portions:**

This subclass is indented under subclass 132.1. Subject matter including mating helical or spiral ridges which act as the interconnecting mechanism.

**133.5 Having reinforcement:**

This subclass is indented under subclass 132.1. Subject matter including structure for strengthening or stiffening (e.g., a fiber mesh, concrete re-bar, filament wrap, etc.).

**133.6 For thin-walled material (e.g., sheet metal):**

This subclass is indented under subclass 132.1. Subject matter wherein the cross-sectional dimension from the inside diameter to the outside diameter of the cylinder forming the line is very small (e.g., HVAC ductwork, etc.).

**134.1 U-TYPE (E.G., RETURN BEND):**

This subclass is indented under the class definition. Subject matter comprising a pipe coupling having parallel leg portions which are connected by a bight or "U" shaped section.

SEE OR SEARCH CLASS:

138, Pipes and Tubular Conduits, subclass 95 for pipe closures of the return bend type.

**135.1 Detachable:**

This subclass is indented under subclass 134.1. Subject matter wherein the bight or "U" section is easily removable or replaceable.

**135.2 Having yoke-type clamp:**

This subclass is indented under subclass 135.1. Subject matter including a saddle-like element which maintains the joint between the bight and the parallel leg portions of the structure.

**135.3 Having a removable bushing:**

This subclass is indented under subclass 135.2. Subject matter including a replaceable element which serves to line or constrain the coupling.

**135.4 Having coupling sleeve:**

This subclass is indented under subclass 135.1. Subject matter including an encircling element (e.g., a threaded nut) which secures the bight to the parallel leg portions.

**135.5 Secured by bolt:**

This subclass is indented under subclass 135.4. Subject matter wherein the sleeve, itself, is secured by at least one element having a threaded stem.

**136.1 PIPE TO DISCREET NIPPLE OR SLEEVE TO PLATE (I.E., THREE SUCCESSIVE PIECES):**

This subclass is indented under the class definition. Subject matter comprising an intermediate tubular means between a pipe or rod and a plate or pipe side.

(1) Note. The nipple being a tubular connection means which is generally six inches or shorter in length.

SEE OR SEARCH THIS CLASS, SUBCLASS:

189+, for a joint between the end of a pipe and a plate or pipe side.

SEE OR SEARCH CLASS:

403, Joints and Connections, subclasses 187+ for a rod connected to a plate or side through an intermediate member.

**137.11 Pipe to nipple connection dependent on nipple to plate connection:**

This subclass is indented under subclass 136.1. Subject matter wherein the pipe-to-rod or pipe joint is essential to the existence of the joint with the plate.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclass 801 for a nozzle or spout having claimed flow characteristics.

241, Solid Material Comminution or Disintegration, subclasses 46.013+ for garbage disposal mountings.

**138.1 Ball and socket:**

This subclass is indented under subclass 136.1. Subject matter wherein the pipe to plate joint comprises a spheroidal knoblike portion fitted into a mating depression.

SEE OR SEARCH THIS CLASS, SUBCLASS:

261, for a ball and socket joint between pipe ends.

SEE OR SEARCH CLASS:

362, Illumination, subclass 421 for this type of joint in a head lamp and bulkhead combination.

411, Expanded, Threaded, Driven, Headed, Tool-Deformed, or Locked-Threaded Fastener, subclass 370 for a threaded fastener and nut provided with a stay bolt bearing washer.

**139.1 Plate clamped between flanged nipple and separate fastener:**

This subclass is indented under subclass 136.1. Subject matter wherein the plate or pipe side is clamped between a nut internal thereof and a shoulder or flange on the nipple.

SEE OR SEARCH THIS CLASS, SUBCLASS:

154.2+, for this type of connection for sheathing of a flexible cable (e.g., electrical wiring, etc.).

**139.2 Nipple includes seal:**

This subclass is indented under subclass 139.1. Subject matter including a pliable annular means (e.g., seal, gasket, O-ring, packing, etc.) which is intended to function as a leakage preventer.

**139.3 Nipple includes securing means:**

This subclass is indented under subclass 139.1. Subject matter including an anchoring component (e.g., wedge, cam, beveled edge, etc.).

**140.1 Expandable detent engages plate to hold nipple:**

This subclass is indented under subclass 136.1. Subject matter including a resilient member (e.g., finger, lug, etc.) which allows the plate and nipple components to be snap-fitted together.

SEE OR SEARCH THIS CLASS, SUBCLASS:

196, for a pipe-to-plate joint comprising an expansible packing on a spigot. See the Search Notes thereunder.

**141.1 Nipple sealed to plate:**

This subclass is indented under subclass 136.1. Subject matter wherein the components are joined by a leakproof means (e.g., gasket, weld, etc.).

**142.1 Nipple bolted to plate:**

This subclass is indented under subclass 136.1. Subject matter wherein the components are fastened by a headed, threaded member.

**143.1 Nipple threaded to plate:**

This subclass is indented under subclass 136.1. Subject matter wherein the components have mating helical threads and are joined by being screwed together.

**144.1 SERIAL, RELATIVELY MOVABLE PORTIONS:**

This subclass is indented under the class definition. Subject matter comprising a joint having components which are movable with respect to each other (e.g., a universal swivel allowing both pivotal and rotational motion about intersecting axes, etc.).

SEE OR SEARCH THIS CLASS, SUBCLASS:

121.2, 121.3+ and 121.6+, for couplings with plural noncommunicating paths permitting relative motion between the coupled elements.

181, for serially connected adjustable elbows.

184, for adjustable angle joints.

223+, for a flexible joint, per se.

261+, for a ball and socket joint, per se.

272+, for a swivel joint, per se.

302+, for a telescopic joint, per se.

**145.1 Having telescoping portion:**

This subclass is indented under subclass 144.1. Subject matter including a slidable member, thereby making the unit extensible or compressible.

SEE OR SEARCH THIS CLASS, SUBCLASS:

148.27, for serial diverse joints having eccentric means providing lateral adjustment.

**145.2 Pivot or swivel:**

This subclass is indented under subclass 145.1. Subject matter including a connection which accommodates arcuate or precessional motion of a member.

**145.3 Ball connector:**

This subclass is indented under subclass 145.1. Subject matter including a spheroidal joint which connects to a corresponding mating surface (e.g., socket).

- 145.4 Sleeve:**  
This subclass is indented under subclass 145.1. Subject matter including an encasement of the portion of the unit wherein two members are joined.
- 145.5 Bellows-type:**  
This subclass is indented under subclass 145.4. Subject matter wherein the sleeve is resiliently deformable.
- 146.1 Linked ball and socket portions:**  
This subclass is indented under subclass 144.1. Subject matter wherein a set of members are joined by at least partially spheroidal sections fitted to mating depressions, thereby forming a flexible unit.
- 146.2 Having multiplex socket:**  
This subclass is indented under subclass 146.1. Subject matter wherein a single socket member is configured to accept registry with two or more sections having ball joint ends.
- 146.3 Having ball between opposed sockets:**  
This subclass is indented under subclass 146.1. Subject matter comprising two articulated opposed concave sockets coacting with convex surfaces on a spheroidal intermediate member.
- 147.1 Plural swivels:**  
This subclass is indented under subclass 144.1. Subject matter comprising two or more joints which accommodate both pivotal and rotational motion about intersecting axes.
- 147.2 Having spring:**  
This subclass is indented under subclass 147.1. Subject matter including a resilient member that regains its original configuration after being distorted.
- 147.3 Having nozzle:**  
This subclass is indented under subclass 147.1. Subject matter including a projecting member which has a discharge opening.
- 148.1 Serial diverse single flow path or line:**  
This subclass is indented under subclass 144.1. Subject matter comprising a plurality of diverse couplings arranged in serial relationship along a single line.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:**  
50+, for an intermediate joint with insulation.  
58+, for an intermediate coupling in a floor supported water closet joint.  
136.1+, for serially arranged joints comprising pipe or rod-to-pipe-to-plate.  
181, for an adjustable elbow.  
390, and 405, for a joint including as an element thereof a detachable flange.
- 148.11 Diverse materials:**  
This subclass is indented under subclass 148.1. Subject matter including means to unite tubes made of distinctly different substances (e.g., copper to aluminum).
- SEE OR SEARCH THIS CLASS, SUB-CLASS:**  
329, for a particular joint interface of diverse materials.
- 148.12 Having bonded component:**  
This subclass is indented under subclass 148.11. Subject matter wherein a part of the joint is secured by such means as (e.g., welding, soldering, brazing, leading, etc.).
- 148.13 Nonmetal to metal:**  
This subclass is indented under subclass 148.11. Subject matter in which one of the united tubes is made of a substance other than metal (e.g., rubber, elastomer, etc.).
- SEE OR SEARCH THIS CLASS, SUB-CLASS:**  
8, for a coupling between a faucet and a hose.  
49, for a noise dampener comprising an intermediate resilient conduit.  
223+, for a flexible joint between rigid members, especially subclasses 235+ for a resilient sleeve.  
238+, for a nonmetal-to-metal coupling, especially subclasses 240+ for a flexible tip type.
- SEE OR SEARCH CLASS:**  
228, Metal Fusion Bonding, subclass 101 for the process of joining metal to nonmetal by surface bonding.

**148.14 Quick connect or release:**

This subclass is indented under subclass 148.13. Subject matter which can be joined or disconnected with a simple movement (e.g., twist, push, pull, etc.).

**148.15 Having swivel:**

This subclass is indented under subclass 148.13. Subject matter which accommodates both pivotal and rotational motion about intersecting axes.

**148.16 Having serrated nipple:**

This subclass is indented under subclass 148.13. Subject matter including a short member of the structure which has toothlike projections on it for gripping purposes

**148.17 Having clamp:**

This subclass is indented under subclass 148.13. Subject matter including a gripping means on the periphery of the joint.

**148.18 Reducer:**

This subclass is indented under subclass 148.13. Subject matter wherein the coupling provides for a difference in cross-sectional areas of the lines which are joined.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

123.1+, for an inner to spaced outer tube coupling.

324, for a reducing bushing in a contractible socket type joint.

SEE OR SEARCH CLASS:

138, Pipes and Tubular Conduits, subclasses 40+ for flow restrictors.

**148.19 Diverse coupling interfaces:**

This subclass is indented under subclass 148.1. Subject matter wherein the boundary surface of one of the couplings differs from that of the other coupling.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

148.6+, for plural means each of which is capable of making the joint.

328, for a particular interface in a single joint.

**148.2 Quick connect or release:**

This subclass is indented under subclass 148.1. Subject matter which can be joined or disconnected with a simple movement (e.g., twist, push, pull, etc.).

**148.21 Quick connect or release:**

This subclass is indented under subclass 148.19. Subject matter which can be joined or disconnected with a simple movement (e.g., twist, push, pull, etc.).

**148.22 Diverse size or shape:**

This subclass is indented under subclass 148.1. Subject matter wherein the couplings provide for a change in size or a difference in shape of the members to be joined.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

12+, for a convertible coupling.

**148.23 Reducer:**

This subclass is indented under subclass 148.22. Subject matter wherein the coupling provides for a difference in the cross-sectional areas of the lines that are being joined.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

123.1+, for an inner to spaced outer tube coupling.

324, for a reducing bushing in a contractible socket type joint.

SEE OR SEARCH CLASS:

138, Pipes and Tubular Conduits, subclasses 40+ for flow restrictors.

**148.24 Sheet-metal (e.g., stove duct, etc.):**

This subclass is indented under subclass 148.23. Subject matter wherein the lines are very thin-walled.

**148.25 Having bolted flange:**

This subclass is indented under subclass 148.23. Subject matter including a protruding collar held by a headed, threaded device.

**148.26 Having clamp:**

This subclass is indented under subclass 148.23. Subject matter including a gripping device which is intended to hold the assembly together.

**148.27 Eccentric:**

This subclass is indented under subclass 148.22. Subject matter wherein the coupling provides for an off-center relationship which may be adjustable with respect to the joined members.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

145.1+, for serial diverse relatively movable joints which provide for longitudinal and lateral adjustment.

**148.28 Having bolted or screwed flange or clamp:**

This subclass is indented under subclass 148.1. Subject matter including a gripping device or protruding rim used in conjunction with a threaded means to secure the joint.

**148.3 Flexible:**

This subclass is indented under subclass 148.1. Subject matter which is capable of withstanding a bending movement.

**148.4 Having swivel:**

This subclass is indented under subclass 148.1. Subject matter which accommodates both pivotal and rotational motion about intersecting axes.

**148.5 Intermediate joint with expansible spigots:**

This subclass is indented under subclass 148.1. Subject matter comprising a fitting having expansible ends for insertion into and between pipe ends with means intermediate the ends of the fitting providing a readily separable coupling.

(1) Note.Means for forming a continuous line of pipe for feeding the pipe through apparatus in a continuous process (e.g., coating) are placed in this subclass.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

338, for a coupling comprising a spigot carried, expansible packing. See the Search Notes thereunder.

**148.6 Compound coupling (e.g., leak-gland type):**

This subclass is indented under subclass 148.1. Subject matter including at least two means, each of which is capable of making a single joint for effecting the connection and perfecting the seal between the free ends of two members (e.g., an internally threaded socket having external threads cooperating with a screw thimble to press a packing at the lap of the socket and spigot).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

15+, for repair devices and see the Search Notes thereunder.

115+, for a strain relief comprising socket or sleeve extension.

337, for external packing at a lapped joint.

364+, for flanged-packed joints having clamping means.

**148.7 Having molded or bonded joint:**

This subclass is indented under subclass 148.6. Subject matter wherein one of the means includes a plastic or melted material in the joint or wherein the ends of the members are united by fusion or by welding pressure.

**148.8 Having bolted or screwed flange or clamp:**

This subclass is indented under subclass 148.7. Subject matter including a gripping device or protruding rim used in conjunction with a threaded means to secure the joint.

**148.9 Having bonded component:**

This subclass is indented under subclass 148.1. Subject matter wherein a part of the joint is secured by such means as (e.g., welding, soldering, brazing, leading, etc.).

**149.1 CONNECTOR FOR CONDUIT HOUSING ELECTROMAGNETIC LINE:**

This subclass is indented under the class definition. Subject matter for the duct type structure surrounding a cable or wire-like means which is used to transmit electromagnetic energy.

- 150.1 Underground:**  
This subclass is indented under subclass 149.1. Subject matter wherein the conduit is intended to be buried subterraneanly.
- 151.1 Watertight:**  
This subclass is indented under subclass 149.1. Subject matter wherein the electromagnetic cable is sealed and impervious to liquid.
- 152.1 Multiple passage:**  
This subclass is indented under subclass 149.1. Subject matter wherein the conduit has two or more cells for carrying the electromagnetic cable.
- 153.1 Including swivel:**  
This subclass is indented under subclass 149.1. Subject matter which accommodates both pivotal and rotational motion about intersecting axes.
- 153.2 Having plural swivels:**  
This subclass is indented under subclass 153.1. Subject matter having more than one swivel.
- 153.3 Having swivel and spring:**  
This subclass is indented under subclass 153.1. Subject matter including a resilient device which is intended to hold the swivel in a certain position.
- 154.1 Having box and connector:**  
This subclass is indented under subclass 149.1. Subject matter including means for coupling a conduit or cable to a box structure requiring at least two walls of the box.
- 154.2 Including flexible armored sheath:**  
This subclass is indented under subclass 154.1. Subject matter in which the cable is encased in a spiraled metallic cover.
- 154.3 Including screw operated clamp:**  
This subclass is indented under subclass 154.2. Subject matter which is secured by a gripping device which is tightened by turning a screw.
- 154.4 Including screw operated clamp:**  
This subclass is indented under subclass 154.1. Subject matter in which the connector is secured by a gripping device which is tightened by turning a screw.
- 179 ELBOW:**  
This subclass is indented under the class definition. Subject matter comprising a fitting having only two openings with the axis of the openings intersecting at an angle.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
131.1+, for Y-type fittings.  
133.1+, for T-type fittings.  
134.1+, for U-type fittings.  
184+, for a coupling including means to vary the angle between the connected members about an axis transverse to the members.  
189+, for a joint between the end of one pipe and the side of another.
- 179.1 With access opening:**  
This subclass is indented under subclass 179. Subject matter having an opening with a closure or having one or more separable parts, which permit access to the interior thereof without disassembly of the joint.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
62+, for an access opening to permit insertion or removal of a wear element.
- SEE OR SEARCH CLASS:  
137, Fluid Handling, subclasses 583+ for a fluid handling system with an access opening.  
138, Pipes and Tubular Conduits, subclasses 89+ for pipe closures.  
220, Receptacles, subclasses 200+ for analogous closures for receptacles and of general utility.
- 179.2 Sheet-metal:**  
This subclass is indented under subclass 179.1. Subject matter wherein the conduit comprises very thin-walled material (e.g., heating duct, etc.).
- 180 Cooperating saddle clamp:**  
This subclass is indented under subclass 179. Subject matter comprising clamping means including a U-shaped member astride the fitting with means to force one end of the fitting and a pipe end together.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
197+, for an end-to-side or plate coupling including a saddle-type clamp.
- 181 Serially connected, adjustable:**  
This subclass is indented under subclass 179. Subject matter including adjustable means serially connecting two elbows or two parts which form an elbow.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
144.1+, for plural movable joints.  
184+, for an adjustable angle coupling.  
223+, for a flexible joint between rigid members.  
261+, for a ball and socket joint.  
272+, for a swivel joint.  
283, for a detachable hinge coupling.
- 182 Nesting parts:**  
This subclass is indented under subclass 179. Subject matter made of separable parts so shaped that they may be stacked in nested relation, generally for storage convenience.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
23, for couplings with holding means used only during transportation.
- SEE OR SEARCH CLASS:  
220, Receptacles, subclasses 6+ and 8 for sectional receptacles for folding and nesting receptacle parts, respectively. See the Search Notes thereunder.
- 183 Sheet metal:**  
This subclass is indented under subclass 179. Devices in which the material is originally in sheet form.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
424, for other sheet material couplings.
- 184 ADJUSTABLE ANGLE:**  
This subclass is indented under the class definition. Subject matter wherein the angle between the two connected members may be varied about an axis transverse to the members and held in adjusted position.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
44, for adjustable angle roof flashing type joints.  
181+, for serially connected adjustable angle elbows.  
261+, for ball and socket joints.  
272+, for swivel joints which allow free axial, relative movement.  
283, for a detachable hinge coupling.
- SEE OR SEARCH CLASS:  
403, Joints and Connections, subclasses 209+ for adjustable angle joints in general.
- 185 With center bolt:**  
This subclass is indented under subclass 184. Devices wherein the pipes are held in adjusted relationship by a bolt extending across the joint through the flow line.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
191, for a pipe-to-plate coupling including a center bolt.  
272.1, for a hollow center bolt in a swivel joint having an access opening.
- 187 TEMPERATURE-RESPONSIVE:**  
This subclass is indented under the class definition. Subject matter comprising means responsive to temperature changes to maintain a good seal upon expansion or contraction of the coupled members.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
41, for a coupling with heating or cooling means.  
95+, for a coupling with a fluid pressure responsive seal.  
288.3, for means to relieve heat of welding.  
335+, for a packed coupling. See the Search Notes thereunder.
- SEE OR SEARCH CLASS:  
403, Joints and Connections, subclass 32 for joints in general provided with ambient condition responsive control means.

**188 SIDE TO PIPE SIDE:**

This subclass is indented under the class definition. Subject matter in which the joint is between pipe sides involving transverse openings therein.

SEE OR SEARCH THIS CLASS, SUBCLASS:

68+, for duplicate end couplings having transverse ports.

**189 END TO SIDE OR PLATE (E.G., REINFORCEMENT):**

This subclass is indented under the class definition. Subject matter comprising means for joining a pipe to a plate or a pipe end to a pipe side.

SEE OR SEARCH THIS CLASS, SUBCLASS:

124.1+, for a joint system comprising means to join parallel noncommunicating pipes to a plate (e.g., a header).

125.1+, especially subclass 352 for branch-type couplings including a joint at the free end of at least one branch.

136.1+, for a pipe or rod-to-pipe to plate series.

414+, for a detachable flange.

416, for a welded flange.

SEE OR SEARCH CLASS:

122, Liquid Heaters and Vaporizers, subclasses 511+ and 512+ for tube and tube sheet connections for heaters and vaporizers.

126, Stoves and Furnaces, subclass 318 for sheet metal stove pipe to plate in conjunction with stoves and furnaces.

165, Heat Exchange, subclasses 173+ for side by side tubes connected to a header plate of a heat exchanger.

222, Dispensing, subclasses 89+ and 566+ for joints between receptacles and their nozzles, spouts or pouring devices.

241, Solid Material Comminution or Disintegration, subclasses 46.03+ for a sink mounted garbage disposal.

248, Supports, subclasses 56+ for a support for a pipe or cable in a plate.

403, Joints and Connections, subclasses 230+ for a joint between a rod end and a plate or side.

**190 Swivel with lateral port to annular sleeve:**

This subclass is indented under subclass 189. Subject matter comprising a swivel having a lateral port in communication with an annular opening in a surrounding sleeve.

SEE OR SEARCH THIS CLASS, SUBCLASS:

272+, for a swivel with longitudinal ports.

SEE OR SEARCH CLASS:

279, Chucks or Sockets, subclass 20 for a socket type fluid-conduit drill holding means.

**191 Bolt or hook in flow (e.g., center bolt):**

This subclass is indented under subclass 189. Subject matter wherein a bolt or hook passes into the interior of a pipe, generally centrally thereof, sometimes completely through a wall, to secure the elements together.

SEE OR SEARCH THIS CLASS, SUBCLASS:

185, for an adjustable angle type coupling including a center bolt.

SEE OR SEARCH CLASS:

222, Dispensing, subclass 90 for nozzle and container in which the nozzle is attached to the container wall by an extending member, and 569 for connection of nozzle and container by nozzle engaging interior and exterior walls of the receptacle.

**192 Penetrating (e.g., secant):**

This subclass is indented under subclass 189. Subject matter wherein the pipe penetrates or pierces the plate or side and extends there-through a distance significantly greater than that necessary to effect the joint.

SEE OR SEARCH THIS CLASS, SUBCLASS:

20, for a joint between spaced plates and pipe extending through at least one of the plates including an assembly means or feature.

- 42+, for a roof or floor drain flashing connection.
- 56+, for a floor supported water closet type joint.
- 154.1+, for a pipe to box joint requiring two walls of the box.
- 193 Fixture:**  
This subclass is indented under subclass 192. Subject matter wherein the penetrating member is a portion of a fixture (e.g., a faucet shank).
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 46, for escutcheon shields combined with a joint.
- 56+, for a floor supported water closet joint.
- 137.1, for a dependent coupling comprising a pipe or rod-to-pipe-to-plate system of joints (e.g., china spouts to tub). See the Search Notes thereunder.
- 194 Hole edge clamp:**  
This subclass is indented under subclass 192. Subject matter in which the pipe is anchored in place by being wedged or forced against an edge of the hole in the plate.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 154.1+, for a pipe or cable and box coupling wherein two or more walls of a box are essential to the coupling.
- 420, for miscellaneous joints including clamps. See the Search Notes thereunder.
- 195 Transverse screw:**  
This subclass is indented under subclass 194. Subject matter comprising a screw, the axis of which is transverse to the pipe, which applies the anchoring force thereto.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 218, for an expansible thimble with a transverse clamping screw.
- 196 Expansible packing on spigot:**  
This subclass is indented under subclass 189. Subject matter comprising a packing carried by the pipe with means to expand the packing into holding relation with the plate.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 107, for a coupling with a fluid pressure seal comprising an expansible shank.
- 109, for a coupling with a fluid pressure seal comprising an expansible internal sleeve-type gasket.
- 140.1, for pipe or rod-to-pipe-to-plate joints including an expanding spigot.
- 338, for a socket joint with a spigot carried, radially expansible packing. See the Search Notes thereunder.
- SEE OR SEARCH CLASS:
- 411, Expanded, Threaded, Driven, Headed, Tool-Deformed, or Locked-Threaded Fastener subclass 370 for a threaded fastener and nut with a stay bolt bearing washing.
- 197 Saddle-type clamp:**  
This subclass is indented under subclass 189. Subject matter including a clamp comprising a saddle shaped member transverse and astride one pipe with means to force a pipe end to a pipe side.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 180, for an elbow coupling including a saddle clamp.
- 309+, for a coupling comprising an essential catch having a manipulator with means to increase the contact pressure.
- SEE OR SEARCH CLASS:
- 251, Valves and Valve Actuation, subclasses 146+ for similar means for mounting a valve to a pipe side.
- 198 Yoke with radial screw at bight:**  
This subclass is indented under subclass 197. Subject matter wherein the saddle is a yoke and the forcing means is a radial screw at the bight.
- 199 Yoke with thread on free ends:**  
This subclass is indented under subclass 197. Subject matter wherein the saddle is a yoke with threaded free ends which are essential to the forcing means.

**200 Flexible or yielding plate:**

This subclass is indented under subclass 189. Subject matter comprising means for connecting a pipe to a flexible plate.

SEE OR SEARCH THIS CLASS, SUBCLASS:

43, for tent-type roof flashing.

SEE OR SEARCH CLASS:

152, Resilient Tires and Wheels, subclasses 415+ for inflating devices for resilient tires, especially subclasses 429+.

**201 Sput:**

This subclass is indented under subclass 189. Subject matter comprising a short conduit connector secured to the plate for the purpose of reinforcing the plate wall as well as providing means for pipe connection.

- (1) Note. This subclass deals with the specific joint between the plate and the connector; when the joint between connector and the pipe is claimed search subclasses 158+ except when the joints are so related that making or breaking of one of the joints breaks the other, e.g., see subclass 207.

**202 Interlocked:**

This subclass is indented under subclass 201. Subject matter in which the sput connector and the plate wall are integrally secured, e.g., a flange portion on the sput connector and the plate edge are rolled and pressed together.

- (1) Note. The sputs under subclasses 202+ are generally of one piece and deformation of material is the means of fastening.

SEE OR SEARCH THIS CLASS, SUBCLASS:

330, for a coupling having a particular interface comprising interlocked portions. See the Search Notes thereunder.

382, for a joint involving deformation of the material thereof. See the Search Notes thereunder.

**203 Plate edge locks sput:**

This subclass is indented under subclass 202. Subject matter in which the sput connector portion, e.g., the sput flange, is locked to the plate edge by portions of the plate enclosing the sput portion.

**204 Packed:**

This subclass is indented under subclass 202. Subject matter wherein a packing is provided in the joint between the plate edge and the sput connector.

**205 Clamped plate:**

This subclass is indented under subclass 201. Subject matter comprising a short tube (nipple) flanged on one end and having means, e.g., a nut, wedging ring etc., coacting therewith to clamp the wall between them.

- (1) Note. Sputs under subclasses 205+ generally comprise more than one piece and coaction, as by thread, between the pieces produces clamping.

**206 Screw clamp:**

This subclass is indented under subclass 205. Devices in which the sput pieces are threaded together so as to clamp the plate between them.

**207 With conduit clamping means:**

This subclass is indented under subclass 206. Devices in which means are included whereby a conduit introduced in the sput is clamped simultaneously with threading the sput pieces together to clamp the plate.

**208 Attachable from one side of plate:**

This subclass is indented under subclass 206. Devices in which the sput flange or plate aperture is constructed to permit fastening the sput from one side of the plate.

SEE OR SEARCH THIS CLASS, SUBCLASS:

18+, for assembly means or features.

**209 Lugged nipple:**

This subclass is indented under subclass 208. Devices in which the short tube (nipple) has a portion of its flange cut away to provide lug means, whereby insertion into the plate is facilitated.

- 210 Movable lug:**  
This subclass is indented under subclass 209. Devices in which the lug means on the nipple is movably attached to the nipple.
- SEE OR SEARCH CLASS:  
411, Expanded, Threaded, Driven, Headed, Tool-Deformed, or Locked-Threaded Fastener subclasses 337+ for miscellaneous bolts or bolts having pivoted end locks.
- 211 Countersunk packed:**  
This subclass is indented under subclass 189. Subject matter in which the wall to which the pipe end is to be attached has a counter bore containing packing material.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
231+, for a flexible joint between rigid members comprising a socketed packing.
- 212 Screw-compressed:**  
This subclass is indented under subclass 211. Subject matter in which a threaded means, e.g., a gland, compresses the packing material.
- (1) Note. Generally the counter bore has the thread with coacts with the threaded compressing member.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
356+, for a packed joint with a gland type compressor.
- 213 Gland:**  
This subclass is indented under subclass 189. Subject matter comprising a short tube concentric with a plate aperture wall and a pipe or conduit being connected, e.g., where a thimble is a wedge ring forced between the members being connected.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
222, and 382, for a joint involving deformation of one or more of the members.
- 214 Internal with expanding means:**  
This subclass is indented under subclass 213. Subject matter in which the thimble is inside the conduit being connected to the plate wall and has means for increasing its external diameter, e.g., a wedge pin driven between the ends of a split thimble.
- 215 External of conduit:**  
This subclass is indented under subclass 213. Subject matter in which the thimble is located between the plate wall aperture and the conduit.
- 216 Expansibile:**  
This subclass is indented under subclass 215. Subject matter including means to increase the external diameter of the thimble.
- 217 With conduit clamping means:**  
This subclass is indented under subclass 216. Subject matter including clamping means for gripping the conduit being connected which is actuated by the expansion of the thimble.
- 218 Transverse screw:**  
This subclass is indented under subclass 217. Subject matter comprising a transverse screw threaded in the thimble to engage the conduit.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
404, for a socket joint with fastening means comprising set screws.
- 219 Screw:**  
This subclass is indented under subclass 189. Subject matter in which a pipe end is threaded into a plate aperture.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
355, for a packed screw joint.  
390+, for a screw coupling. See the Search Notes thereunder.
- 220 With packing:**  
This subclass is indented under subclass 219. Subject matter including sealing material.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
148.6+, for leak-gland type couplings.

**221 Necked plate:**

This subclass is indented under subclass 219. Subject matter in which a transverse annular projection integral with the plate is threaded for connection with a pipe end.

**222 Expanded or swaged pipe:**

This subclass is indented under subclass 189. Subject matter wherein the pipe is expanded (e.g., by metal working) into contact with the wall portion defining an opening.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 196, for a joint comprising a pipe end carried, expansible packing means and a plate.
- 213+, for a pipe-to-plate joint comprising a thimble type wedge, especially subclass 214 for means expanding the pipe end.
- 382, for other pipe joints involving material deformation essential to joining.

SEE OR SEARCH CLASS:

- 29, Metal Working, subclass 523 for a method of expanding an internal tube.
- 72, Metal Deforming, appropriate subclasses 67+ and 316+ and subclass 393 for an apparatus for expanding or flanging the end of a pipe.
- 228, Metal Fusion Bonding, appropriate subclasses for making a joint by metallurgically securing one meeting face to another.
- 249, Static Molds, subclass 89 for molding apparatus for joining pipe sections with a fluent material.

**222.1 FOR PLURAL COMPONENT LINE (E.G., FLEXIBLE TYPE):**

This subclass is indented under the class definition. Subject matter wherein the line comprises layered annuli (e.g., supple tubing having a pliant covering, etc.).

**222.2 Metal, elastomeric (e.g., rubber), and fabric layers:**

This subclass is indented under subclass 222.1. Subject matter comprising a tri-layered cover including a metallic layer, an elastomeric or rubber-like layer and a layer of cloth-like material.

**222.3 Elastomeric and fabric layers:**

This subclass is indented under subclass 222.1. Subject matter comprising a dual-layered cover including a rubber-like layer and a layer of cloth-like material.

**222.4 Metal and elastomeric layers:**

This subclass is indented under subclass 222.1. Subject matter comprising a dual-layered cover including a metallic layer and a rubber-like layer.

**222.5 Distinct metal layers (e.g., wire cloth, etc.):**

This subclass is indented under subclass 222.1. Subject matter wherein each layer includes metal of some form.

**223 FLEXIBLE JOINT, RIGID MEMBERS:**

This subclass is indented under the class definition. Subject matter including a flexible material member that permits unrestrained motion between two rigid members.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 49, for noise dampener means including and intermediate resilient conduit.
- 57, for a flexible member in a floor supported water closet type joint.
- 144.1+, for serial relatively movable joints.
- 298+, for a variable length coupling means.

SEE OR SEARCH CLASS:

- 105, Railway Rolling Stock, subclass 40 for a flexible connection between boiler sections of a steam locomotive and subclass 47 for an articulated or flexible pipe connection between relatively movable parts of a locomotive.
- 165, Heat Exchange, subclasses 82+ for a heat exchanger having a connector between two members allowing for expansion and contraction.
- 403, Joints and Connections, subclasses 220+ for flexibly connected rigid members in general.

**224 Radial and longitudinal expansion compensators:**

This subclass is indented under subclass 223. Subject matter comprising means which compensates for expansion of conduit parts in radial as well as axial direction.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
187, for temperature responsive sealing means.
- 225 Diaphragm:**  
This subclass is indented under subclass 223. Devices wherein the flexible joint comprises a plate-like member or diaphragm.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
57, for a flexible diaphragm in a floor supported, water closet type joint.
- SEE OR SEARCH CLASS:  
92, Expansible Chamber Devices, subclasses 96+ for a diaphragm type expansible chamber device.
- 226 Bellows:**  
This subclass is indented under subclass 223. Devices comprising a corrugated tube section of flexible material for joining two conduit ends which permits unrestricted motion of the conduits.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
57, for a flexible bellows in a floor supported, water-closet type joint.  
299+, for expansion joints limited to reciprocating motion, which include bellows.
- SEE OR SEARCH CLASS:  
92, Expansible Chamber Devices, subclasses 34+ for a bellows type expansible chamber device.
- 227 Multiple:**  
This subclass is indented under subclass 226. Devices having two or more distinct bellows for joining the two conduit ends.
- 228 Balanced:**  
This subclass is indented under subclass 227. Devices in which the fluid pressure in one bellows member tends to neutralize the movement of the other bellows member.
- 229 Single fold type:**  
This subclass is indented under subclass 226. Devices in which the bellows comprises a single annular fold or ridge with side walls.
- 230 Concrete, clay, or masonry pipe:**  
This subclass is indented under subclass 223. Devices specifically adapted to clay, concrete or masonry pipe.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
231, for other socketed packing type joints.
- 231 Socketed packing type:**  
This subclass is indented under subclass 223. Devices in which a packing placed between the inner surface of an outer member and the spaced out surface of an inner member of two telescoped members provides relative lateral flexibility between the members.
- 232 With conduit gripping means (e.g., wedge ring):**  
This subclass is indented under subclass 231. Devices in which a grasping element, e.g., a wedge ring, is provided for holding the inner tube member (spigot) in the socket.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
339+, for packed joints including wedge rings which are contracted into grasping relation with a pipe member. See the Search Notes thereunder.
- 233 Beaded conduit:**  
This subclass is indented under subclass 231. Devices in which the inner tube member (spigot) has an annular ridge formed on its outer surface adapted for retaining it in the socket.
- 234 Flared conduit:**  
This subclass is indented under subclass 231. Devices in which the end of the inner tube is expanded to form a slanted flange adapted for retaining it within the packed socket.
- 235 Resilient sleeve type:**  
This subclass is indented under subclass 223. Devices comprising an intermediate short tube of flexible material.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 49, for an intermediate resilient conduit as a noise dampener.  
 109, for a coupling with a fluid pressure seal comprising an internal flexible sleeve.  
 148.13+, for serial diverse joints at least one of which is a nonmetal-to-metal joint.  
 238+, for a nonmetal-to-metal joint.  
 369+, for a packed sleeve joint.  
 397+, for an internal sleeve joint.  
 417+, for a sleeve joint.
- 236 Clamped:**  
 This subclass is indented under subclass 235. Devices in which a fastening ring or clamp secures the sleeve ends to the conduit ends.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 242+, for an external clamp or holder in a nonmetal-to-metal joint.
- 237 With spigot and socket ends:**  
 This subclass is indented under subclass 235. Devices in which the sleeve member has a spigot at one end for insertion into a conduit end and a bell or socket at its other end to receive a conduit end.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 148.1+, for serial diverse joints in a single line. See the Search Notes thereunder.
- 238 NONMETAL TO METAL:**  
 This subclass is indented under the class definition. Subject matter wherein the joint is peculiar to the union between a nonmetal member and a metal member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 148.13+, for serial diverse nonmetal-to-metal couplings. See the Search Notes thereunder.  
 222.1+, for a coupling for a plural layer pipe.
- 239 Internal member (e.g., sleeve or nipple):**  
 This subclass is indented under subclass 238. Subject matter comprising a supporting means (e.g., sleeve or nipple) inserted into the non-metal member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 370+, for an internal sleeve with packing.  
 397+, for an internal sleeve.
- 240 Flexible tip pipe:**  
 This subclass is indented under subclass 239. Subject matter comprising a supplemental flexible tipped end on the flexible pipe into which the supporting means is inserted.
- 241 External clamp:**  
 This subclass is indented under subclass 240. Subject matter including means to externally clamp the tipped end to the supporting means.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 242+, for other nonmetal-to-metal couplings with external clamps.
- 242 External clamp or holder:**  
 This subclass is indented under subclass 239. Subject matter comprising an external member (e.g., a hose clamp) which confines the wall of the nonmetal member between it and the internal member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 420+, for miscellaneous couplings comprising clamp means.
- 243 Movable jaw:**  
 This subclass is indented under subclass 242. Subject matter comprising a socket with one or more slits which is contracted about the wall of the nonmetal member by the external clamp.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 322+, for movable jaw sockets in metal to metal joints.

- 244 Spring:**  
This subclass is indented under subclass 242. Subject matter comprising a contractible spring that clamps the nonmetal member to the internal member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
318, for a coupling with a coil spring type essential catch.  
321, for a coupling with a resilient expanding locking ring.
- 245 Screw-compressed:**  
This subclass is indented under subclass 242. Subject matter comprising screw means longitudinal to the axis of the coupled members which wedges the nonmetal member to the internal member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
253, for bolted hose clamps.
- SEE OR SEARCH CLASS:  
24, Buckles, Buttons, Clasps, etc., subclasses 19+ for hose clamps, per se and See the Search Notes thereunder.
- 246 Thimble gland:**  
This subclass is indented under subclass 245. Subject matter comprising a thimble-gland.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
353, for a packed screw thimble joint.  
384, for a screw thimble joint.
- 247 Thimble:**  
This subclass is indented under subclass 245. Subject matter comprising a screw thimble.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
354, for a packed screw thimble joint.  
386+, for a screw thimble joint.
- 248 Separable means between hose and clamp:**  
This subclass is indented under subclass 247. Subject matter including a separable means between the nonmetal member and the external clamp or holder.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
348, for a coupling comprising a separable packing follower.
- 249 Wedge ring:**  
This subclass is indented under subclass 248. Subject matter wherein the separable means is a wedge ring.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
339+, for a packed joint comprising wedge means. See the Search Notes thereunder.
- 250 Gland:**  
This subclass is indented under subclass 245. Subject matter comprising a screw gland.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
356+, for a packed screw gland joint.  
393+, for a screw gland joint.
- 251 Screw-fed hose:**  
This subclass is indented under subclass 245. Subject matter comprising threads on the internal member or on the holder or on both whereby the nonmetal member is forced fed and wedged therebetween.
- 252 Band clamp with tightener:**  
This subclass is indented under subclass 242. Subject matter comprising a band type clamp with means to contract the band about the nonmetal member.
- SEE OR SEARCH CLASS:  
24, Buckles, Buttons, Clasps, etc., subclasses 19+ for hose clamps, per se; and see the Search Notes thereunder.
- 253 Bolted:**  
This subclass is indented under subclass 252. Subject matter wherein the tightener comprises a bolt.
- 254 Wrapped band:**  
This subclass is indented under subclass 242. Subject matter wherein the external clamp comprises a wrapping of wire, string, etc.

- 255 Wedge:**  
This subclass is indented under subclass 242. Subject matter including a wedge means in the clamp.
- 256 Deformation:**  
This subclass is indented under subclass 242. Subject matter wherein the diameter of the external member is reduced as by metal working or deforming or the internal member is expanded, whereby the nonmetal member is held.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
382, for other deformed material joints.
- SEE OR SEARCH CLASS:  
29, Metal Working, subclasses 505+ for a process of joining by deforming.
- 257 Bendable spur fingers:**  
This subclass is indented under subclass 256. Subject matter wherein the external clamp includes bendable spur fingers which are contracted into grasping relation with the nonmetal member upon joining.
- 258 Expanding internal member:**  
This subclass is indented under subclass 256. Subject matter wherein the internal member is expanded.
- SEE OR SEARCH CLASS:  
29, Metal Working, subclass 523 for a method of expanding an internal tube.  
72, Metal Deforming, appropriate subclasses 67+, 316+ and subclass 393, for an apparatus for expanding or flanging the end of a pipe.
- 259 Particular surface:**  
This subclass is indented under subclass 242. Subject matter wherein the internal surface of the external clamp or holder or the external surface of the internal member, or both have a particular surface or surfaces for increasing the gripping friction.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
328+, for a coupling comprising a particular joint interface.
- 260 Composite ball:**  
This subclass is indented under the class definition. Subject matter wherein each member is of flexible nonmetallic material, and the flexible characteristic is essential to the making of the joint (e.g., canvas tubing used in mine ventilation).
- 261 BALL AND SOCKET:**  
This subclass is indented under the class definition. Devices which comprise pipe and socket members having mating spherical or curved surfaces therebetween, said pipe constituting a ball or equivalent, to permit relative free movement between the parts or angular adjustment.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
51, for an insulated ball and socket joint.  
121.7, for ball and socket joints in concentric pipe systems.  
138.1, for a ball and socket joint in a pipe or rod to pipe-to-plate system.  
146.1+, for a plural serial ball and socket system.
- 262 With internal tie means:**  
This subclass is indented under subclass 261. Devices including means, e.g., a link or rod, within the ball and socket members adapted to hold them in coupled relation.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
114, for a coupling with a strain relief.
- SEE OR SEARCH CLASS:  
403, Joints and Connections, subclasses 122+ for other ball and socket joints.
- 263 Radially spaced spherical surfaces:**  
This subclass is indented under subclass 261. Devices comprising a plurality of spaced spherical or curved surfaces on one part coacting with a plurality of spaced surfaces on the other part, or comprising an intermediate movable spherical bearing within the socket part.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
146.3, for a sphere intermediate two sockets providing plural joints.

- 264 Oscillative:**  
This subclass is indented under subclass 261. Devices including means, e.g., trunnions on the ball member or axial slots in the socket, etc., which restricts angular motion (oscillation) between the ball and the socket member to definite axes.
- 265 With gimbal ring:**  
This subclass is indented under subclass 264. Devices in which a ring is connected to the ball and the socket members by means of pivot pins adapted to permit pivoting of conduit members on an axis that is a diameter of the ring.
- 266 Composite ball:**  
This subclass is indented under subclass 261. Devices in which the ball member comprises several assembled parts.
- 267 Spring-biased packing:**  
This subclass is indented under subclass 261. Devices including a packing which is urged into sealing contact by resilient means.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
348, for a separable follower in a packed joint.  
375, for internal reciprocating packers in socket joints.
- 268 Spring-biased ball:**  
This subclass is indented under subclass 261. Devices which include a resilient member, e.g., a coiled spring, which urges the ball member into contact with the socket.
- 269 Socketed spring:**  
This subclass is indented under subclass 268. Devices wherein the spring element is positioned within the socket member.
- 270 With separate packing actuator:**  
This subclass is indented under subclass 261. Devices including means additional to the coupling means, e.g., take up bolts in the flange of a screw thimble coupler, for transmitting sealing force to the packing.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
348, for a separable packing follower in a packed joint.
- 271 With removable ball seat:**  
This subclass is indented under subclass 261. Devices including separable elements which bear the ball member within the socket.
- 272 SWIVEL:**  
This subclass is indented under the class definition. Devices comprising compensating means to unite the members so that one member may turn or rotate freely relative to the other at all times, whereby the strain imposed therebetween due to motion is relieved.
- (1) Note. Couplings requiring loosening of a means that normally tightens the joint before strain incurred by relative movement of the members is relieved are classified according to their structural features.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
98, for a swivel with a fluid pressure seal.  
121.3+, for a swivel in a plural concentric pipe system.  
147.1+, for plural serial swivels.  
184+, for an adjustable angle coupling.  
272.1, for a swivel with an access opening.  
283, for a coupling including a detachable hinge.
- SEE OR SEARCH CLASS:  
137, Fluid Handling, subclass 580 for a running joint between movable parts of a distribution system.  
403, Joints and Connections, subclasses 164+ for other swivel joints.
- 272.1 With access opening:**  
This subclass is indented under subclass 272. Subject matter including an opening with a closure or having one or more separable parts which permit access to the interior thereof without disassembly of the joint.

- 273 Transverse cylinder in socket:**  
This subclass is indented under subclass 272. Devices wherein a transverse cylinder rotates upon its axis in a socket and in which a pipe section attached to the cylinder extends through a slot in the socket.
- 274 With yoke:**  
This subclass is indented under subclass 272. Devices wherein an extending arm on one pipe section holds the other section in swivelling relationship.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
127.1+, for swivel joints in which arms of a yoke constitute branch flow paths.
- 275 Pipe in socket type:**  
This subclass is indented under subclass 272. Devices in which the end of one pipe is received in the end of another pipe and held in swivelling relationship.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
374+, for a packed socket. See the Search Notes thereunder.
- 276 With ball, ring or pin detent:**  
This subclass is indented under subclass 275. Devices in which a retaining fastener comprising ball, ring, or pin detent means engages a groove in one of the pipe sections to maintain the other pipe section in rotatable engagement.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
305+, for a coupling comprising a catch means essential to holding the joined members in coupled relation. See the Search Notes thereunder.  
415, for a joint including a split ring as a detachable flange.
- 277 With manipulator:**  
This subclass is indented under subclass 276. Subject matter including means for moving the fastener to latched and/or unlatched position.
- 278 With flange in socket:**  
This subclass is indented under subclass 275. Devices in which the pipe section received has a flange thereon.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
98, for similar structure having a fluid pressure actuated seal.  
354, for a packed screw-thimble type coupling including a flanged spigot. See the Search Notes thereunder.
- 279 Spring-pressed flange:**  
This subclass is indented under subclass 278. Devices in which a spring exerts a force against the flanged pipe to hold it in seated position.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
375, for a packed socket coupling having an internal reciprocating packer.
- 280 Flange locked axially:**  
This subclass is indented under subclass 278. Devices in which the flanged pipe section is held within the socket against longitudinal movement.
- 281 Packed:**  
This subclass is indented under subclass 280. Devices which include packing material.
- 282 With rotation limits:**  
This subclass is indented under subclass 272. Subject matter including means to limit the extent of rotation.
- 283 DETACHABLE HINGE:**  
This subclass is indented under the class definition. Subject matter comprising a detachable hinge means on one side of the pipes, whereby the pipes are pivotally connected together with or without means for holding the pipes in line flow position, generally a latch or lock means on the opposite side of the pipe.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
308+, for a coupling with means essential to holding the members together, said means comprising a catch with a manipulator.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

80, for lock or latch means which are not essential to the making of the joint, but serve to prevent the disassembly of the joint.

**284.1 WITH ACCESS OPENING:**

This subclass is indented under the class definition. Subject matter including an opening with a closure or having one or more separable parts which permit access to the interior thereof without disassembly of the joint.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

62+, for an access opening to permit insertion or removal of a wear element.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclasses 583+ for a fluid handling system with an access opening.

138, Pipes and Tubular Conduits, subclasses 89+ for pipe closures.

220, Receptacles, subclasses 200+ for analogous closures for receptacles and of general utility.

**285.1 MOLDED JOINT:**

This subclass is indented under the class definition. Subject matter wherein a plastic or melted material is used in the joint or wherein the ends of the members are united by fusion or by welding pressure.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

148.7, for a molded joint in a compound coupling.

SEE OR SEARCH CLASS:

228, Metal Fusion Bonding, appropriate subclasses for making a joint by metallurgically securing one meeting face to another.

249, Static Molds, subclass 89 for molding apparatus for joining pipe sections with a fluent material.

**286.1 Interlocked:**

This subclass is indented under subclass 285.1. Subject matter including connecting means such as hooking, dovetailing, meshing, etc.

**286.2 Deformed or having additional holding means:**

This subclass is indented under subclass 286.1. Subject matter including an additional holding means, such as distortion of the shape of one of the members after being joined.

**287.1 With root repellent:**

This subclass is indented under subclass 285.1. Subject matter including means to inhibit or resist the growth of vegetative roots between the members.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

45+, for a coupling with a casing, lining or protector.

SEE OR SEARCH CLASS:

138, Pipes and Tubular Conduits, subclass 90, for similar structure in test plug combinations.

215, Bottles and Jars, subclasses 52+ for expandible stopper type closures.

220, Receptacles, subclass 233, for an expandible plug closure.

**288.1 Weld:**

This subclass is indented under subclass 285.1. Subject matter wherein the pipes are united by the application of extreme heat, sometimes with pressure.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

189+, for a welded joint between a pipe and plate, especially subclasses 201+, for a welded sput and plate connection.

416, for a flange welded to a pipe.

**288.2 Axially spaced:**

This subclass is indented under subclass 288.1. Subject matter wherein the weld is placed in locations around the joint.

- 288.3 Cold weld:**  
This subclass is indented under subclass 288.1. Subject matter wherein the weld is effected by the use of high pressure or vacuum without using heat.
- 288.4 Flash weld:**  
This subclass is indented under subclass 288.1. Subject matter wherein the welding is done in discrete spots rather than a continuous bead.
- 288.5 Having additional holding means:**  
This subclass is indented under subclass 288.1. Subject matter including another holding means such as a clamp, bolt, etc. to further secure the joint.
- 288.6 Interlocked:**  
This subclass is indented under subclass 288.5. Subject matter including connecting means such as hooking, dovetailing, meshing, etc.
- 288.7 Having disassembly feature:**  
This subclass is indented under subclass 288.1. Subject matter including the characteristic of being easily taken apart.
- 288.8 Having crack arresting feature:**  
This subclass is indented under subclass 288.1. Subject matter including the characteristic of relieving the strain produced by a crack.
- 288.9 Reinforced:**  
This subclass is indented under subclass 288.1. Subject matter including a reinforcement such as a sleeve welded over the joint weld.
- 288.11 Having pre-formed weld ring:**  
This subclass is indented under subclass 288.1. Subject matter including placement of a pre-shaped ring along which a welding bead is laid.
- 289.1 Solder:**  
This subclass is indented under subclass 285.1. Subject matter wherein the members are bonded by a melted metal (usually a tin alloy) cement.
- 289.2 Having additional holding means:**  
This subclass is indented under subclass 289.1. Subject matter including another type of holding means such as a clamp, bolt, etc. in order to strengthen the joint.
- 289.3 Interlocked:**  
This subclass is indented under subclass 289.2. Subject matter including connecting means such as hooking, dovetailing, meshing, etc.
- 289.4 Having disassembly feature:**  
This subclass is indented under subclass 289.1. Subject matter including the characteristic of being easily taken apart.
- 289.5 Having pre-placed solder:**  
This subclass is indented under subclass 289.1. Subject matter wherein the method of "tinning" is used by pre-placing the solder so that the application of heat is all that is needed to effect the bond of the joint.
- 290.1 Composite pipe (ends):**  
This subclass is indented under subclass 285.1. Subject matter in which at least the ends of the members to be joined are of a composite material, such as cement, asphalt, concrete, or glass combined with other materials such as reinforcement.
- SEE OR SEARCH CLASS:  
138, Pipes and Tubular Conduits, sub-classes 140+ for pipe structure, per se.
- 290.2 Locked reinforcement:**  
This subclass is indented under subclass 290.1. Subject matter wherein the structure is strengthened by imbedding hooked stay rods, which are joined together, into the conduit.
- 290.3 Interlocked with pipe end:**  
This subclass is indented under subclass 290.1. Subject matter wherein a reinforcing rod in one section of the conduit is hooked into the end of another section of conduit.
- 290.4 Having additional holding means:**  
This subclass is indented under subclass 290.3. Subject matter wherein the joint is held further by a means such as a bolt or clamp, etc.
- 290.5 Expansion/contraction:**  
This subclass is indented under subclass 290.1. Subject matter wherein the joint is water-tight and constructed to provide for inordinate expansion or contraction and remain water-tight.

**291.1 Having screw interlock:**

This subclass is indented under subclass 285.1. Subject matter wherein the ends of the members are additionally held together by means having a helical thread.

**291.2 Having interrupted thread:**

This subclass is indented under subclass 291.1. Subject matter wherein the thread is broken (non-continuous) thereby being a locking thread.

**292.1 With lug and slot interlock:**

This subclass is indented under subclass 285.1. Subject matter wherein the members are also connected by a projection and dependent opening or groove (e.g., a bayonet joint).

SEE OR SEARCH THIS CLASS, SUBCLASS:

401, for a socket joint, comprising lug and slot means. See the Search Notes thereunder.

**293.1 Lining or cover molded to pipe end:**

This subclass is indented under subclass 285.1. Subject matter wherein a plastic or melted material is shaped to the end of a pipe as an interior or exterior cover.

**294.1 Sleeve:**

This subclass is indented under subclass 285.1. Subject matter which includes a short tube-like encasement.

**294.2 Wrapped:**

This subclass is indented under subclass 294.1. Subject matter wherein the sleeve is a tape-like or wound material.

**294.3 Sprue:**

This subclass is indented under subclass 294.1. Subject matter wherein the sleeve has an aperture for pouring the molded material.

**294.4 Having additional holding means:**

This subclass is indented under subclass 294.3. Subject matter including another securing means such as a bolt, clamp, etc.

**295.1 With packing filler:**

This subclass is indented under subclass 285.1. Subject matter wherein filler material (e.g., oakum) in addition to the molding or caulking material is utilized to save on the amount of molding material used.

SEE OR SEARCH THIS CLASS, SUBCLASS:

374+, for a coupling comprising a packed socket. See the Search Notes thereunder.

**295.2 Wedge ring type:**

This subclass is indented under subclass 295.1. Subject matter wherein the filler is in the form of a ring having a tapered or triangular surface.

SEE OR SEARCH THIS CLASS, SUBCLASS:

339+, for a packed joint comprising wedge means.

**295.3 Elastomeric:**

This subclass is indented under subclass 295.1. Subject matter wherein the filler is a polymeric or rubber-like material.

**296.1 Sprue:**

This subclass is indented under subclass 285.1. Subject matter including an aperture or sprue for pouring the molding material into the joint.

**298 VARIABLE LENGTH:**

This subclass is indented under the class definition. Subject matter wherein one member is connected to the other by an intermediate element capable of significant contraction and expansion or wherein one member projects into or telescopes with the other member and provides relative movement therebetween.

SEE OR SEARCH THIS CLASS, SUBCLASS:

32, for a threaded telescopic insertable section.

145.1+, for a joint system comprising serial relative movable diverse joints, one of which is telescopic.

- SEE OR SEARCH CLASS:  
 220, Receptacles, subclass 8 for receptacles having telescopic sections. See the Search Notes thereunder.  
 248, Supports, subclasses 333+ for adjustable length suspension supports, and subclass 161 for adjustable length standards for stands.  
 403, Joints and Connections, subclasses 52+ for articulated members in general.
- 299 With bellows seal:**  
 This subclass is indented under subclass 298. Devices comprising a sealing means which is bellows in form.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
 226+, for a flexible joint between rigid members comprising bellows means.
- 300 Internal sleeve:**  
 This subclass is indented under subclass 299. Subject matter including a sleeve within the bellows.
- 301 With limit means:**  
 This subclass is indented under subclass 299. Devices in which a stop element, e.g., a tie rod, restricts the extent of the bellows movement in contraction and/or expansion or both.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
 114+, for a strain relief combined with a coupling. See the Notes thereunder.
- 302 Telescopic with relative motion:**  
 This subclass is indented under subclass 298. Subject matter adapted for reciprocation of one member in the other while maintaining a seal.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
 145.1+, for a telescopic joint combined with another joint.  
 154.1+, for beer barrel tappers which have a telescopic member.  
 224, for a flexible joint with means compensating for radial and longitudinal expansion.
- SEE OR SEARCH CLASS:  
 248, Supports, subclasses 354.1+ for adjustable props or braces.
- 303 Step adjustment:**  
 This subclass is indented under subclass 298. Subject matter comprising means providing for step adjustment.
- 304 FRICTION DETENT (E.G., BREAKAWAY TYPE):**  
 This subclass is indented under the class definition. Subject matter comprising means to hold the two members in coupled relationship under normal operating forces but which will release upon application of excessive forces, e.g., a spring pressed ball in one member coacting with a groove in the other.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
 1, for safety release couplings having means to release a holding means on the application of excessive force.  
 345+, for a packing, which frictionally retains a member with insertion.
- SEE OR SEARCH CLASS:  
 251, Valves and Valve Actuation, subclass 149.7 for a valved flow line section joined to another by a contact only, or friction, joint, where the act of joining operates the valve in opposition to a spring biasing it.
- 305 ESSENTIAL CATCH:**  
 This subclass is indented under the class definition. Subject matter comprising catch means essential to detachably holding the two members in coupled relation.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
 80, for a locked or sealed coupling.  
 81+, for auxiliary catches or latches which are not essential to the holding together of the two members, but serve to detain, block or disable the holding means.  
 276, for a swivel coupling with detent means.  
 340, for toggle ring-type wedge means in packed joints.

362, and 377, for manipulating rings for lugged pipes with rotary engagement.  
403+, for socket type couplings having separable fasteners.

**SEE OR SEARCH CLASS:**

24, Buckles, Buttons, Clasps, etc., subclasses 123+ for a Chinese-finger-type clasp.  
279, Chucks or Sockets, appropriate subclasses for detents in a tool or work holder.  
292, Closure Fasteners, appropriate subclasses for catches in a closure fastener combination.  
403, Joints and Connections, subclasses 326+ for joints in general comprising a biased catch or latch.

**306 Line pressure-responsive:**

This subclass is indented under subclass 305. Subject matter including catch means responsive to the line pressure.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

83, for line pressure responsive auxiliary latch means.  
102, and 104+, for similar means combined with a fluid pressure seal.

**SEE OR SEARCH CLASS:**

166, Wells, subclasses 55.4+ for devices which perforate or split well tubing by explosive means, and subclass 212 for a fluid pressure actuated expansible anchor.  
251, Valves and Valve Actuation, subclass 94 for fluid pressure biased latches in valve actuator combinations.  
294, Handling: Hand and Hoist-Line Implements, subclasses 86.24+ for expanding grapples adapted for use in a well bore, and subclasses 93+ for expanding grapples of general utility.

**307 Operated by conduit motion:**

This subclass is indented under subclass 305. Subject matter including means to release the catch by conduit motion.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

6, for similar structure in irrigation-type joints.

**SEE OR SEARCH CLASS:**

137, Fluid Handling, subclasses 614+ for valved, separable, flow line sections wherein the joining is usually effected by relative motion between the sections.  
251, Valves and Valve Actuation, subclass 89.5 and 149+ for separable flow line sections, one of which is valved, the joining usually being effected by relative motion between the sections.

**308 With manipulator:**

This subclass is indented under subclass 305. Subject matter including means to operate the catch.

**SEE OR SEARCH CLASS:**

403, Joints and Connections, subclasses 321+ for other joints involving a manipulatable latch.

**309 With means to increase contact pressure (e.g., tightener):**

This subclass is indented under subclass 308. Subject matter comprising means to draw the ends of the coupled members toward each other.

**310 Separate actuator:**

This subclass is indented under subclass 309. Subject matter requiring separate actuation of an independent tightening means or the movement of the latch manipulator other than that required for the operation of the latch.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

123.11, for slip actuators for slips used to anchor an inner tubular member within an outer tubular member.

**311 Dead center lever systems (self-locking):**

This subclass is indented under subclass 309. Subject matter comprising a lever system that is self-locking in that a pivotal connection passes dead center.

- SEE OR SEARCH CLASS:  
24, Buckles, Buttons, Clasps, etc., subclasses 270+ for self-locking tighteners in hose clamps.
- 312 Cam lever:**  
This subclass is indented under subclass 309. Subject matter comprising a cam-lever.
- 313 Restrainer for manipulator:**  
This subclass is indented under subclass 308. Subject matter including means to releasably hold the catch manipulator in selected position.
- 314 Cam sleeve:**  
This subclass is indented under subclass 308. Subject matter comprising sleeve means with cam surfaces which manipulate the catch.
- 315 Reciprocating sleeve:**  
This subclass is indented under subclass 314. Subject matter wherein the sleeve reciprocates.
- 316 Spring-biased sleeve:**  
This subclass is indented under subclass 315. Subject matter including spring means to bias the sleeve.
- 317 Spring-biased catch:**  
This subclass is indented under subclass 308. Subject matter wherein the catch is spring biased.
- 318 Coil spring:**  
This subclass is indented under subclass 305. Subject matter comprising a contractible coil in a sleeve or socket that grip a spigot therein.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
244, for a spring hose clamp.
- 319 Leaf spring:**  
This subclass is indented under subclass 305. Subject matter wherein the catch means comprises a leaf spring.
- 320 Pivoted:**  
This subclass is indented under subclass 305. Subject matter wherein the catch means is mounted to pivot to and from engaging position.
- SEE OR SEARCH CLASS:  
248, Supports, subclasses 354.1+ for a pivoted locking plate in an adjustable prop or brace.  
279, Chucks or Sockets, subclass 77 for pivoted or rotary detent in chucks.  
403, Joints or Connections, subclasses 52+ for a pivoted locking plate in an adjustable length type rod joint.
- 321 Resilient ring:**  
This subclass is indented under subclass 305. Subject matter comprising an annular spring means carried by one member, said means coacting with a projection or groove on the other member upon change in shape or diameter.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
276, for a swiveled pipe in socket joint including a resilient retainer ring.  
340, for a packed coupling with a toggle ring-type wedge means.
- 322 MOVABLE JAW (E.G., CONTRACTIBLE SOCKET):**  
This subclass is indented under the class definition. Subject matter wherein the joint comprises a movable jaw member (e.g., a split socket or spigot) which is contracted or expanded by an external clamp or screw thimble, etc., to fasten the members together.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
34, for a quick release joint comprising radially moved segmented threads.  
243, for a movable jaw in a nonmetal-to-metal joint.  
382, for a joint obtained by deforming material of one or both members and see the Search Notes thereunder.
- SEE OR SEARCH CLASS:  
24, Buckles, Buttons, Clasps, etc., subclasses 588+ for head and socket separable fasteners.  
279, Chucks or Sockets, subclass 42, 43, and 43.1+ for split sockets, and subclasses 46.1+ for spring jaws.

- 323 Wedge bushing:**  
This subclass is indented under subclass 322. Subject matter including a bushing with a wedge shaped cross-section whereby the jaw portion is moved.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
339+, for a packed joint with wedge means.  
421, for a joint having clamp means comprising wedge means.
- 324 Reducing bushing:**  
This subclass is indented under subclass 322. Subject matter comprising an intermediate member or members in the socket to adapt the socket to a smaller pipe.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
148.23+, for a reducing coupler, comprising serial diverse joints.
- 325 SIDE SLIDE:**  
This subclass is indented under the class definition. Subject matter comprising means whereby the members can be coupled only by lateral movement, e.g., socket with an inwardly extending flange at its outer end provided with a transverse opening in the socket large enough to take a spigot with an outwardly extending flange, which flange is too large to enter endwise in the socket.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
67, for duplicate end side slide couplings.  
103, for fluid pressure sealed joints with piston type reactors and side slide connecting means.
- 326 Clamping lever:**  
This subclass is indented under subclass 325. Subject matter comprising lever means for tightening the joint or holding the parts in position.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
270, for a ball and socket joint with a separate packing actuator.  
309+, for an essential catch with a tightener.
- 327 Screw-thimble tightener:**  
This subclass is indented under subclass 325. Subject matter comprising a screw thimble tightener. See the Search Notes under subclass 326.
- 328 PARTICULAR INTERFACE:**  
This subclass is indented under the class definition. Subject matter wherein the free ends of the members, which constitute the joint interface, are so constructed that the particular configuration of one requires a particular configuration in the other and/or the particular interfaces cooperate to produce some unexpected result.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
65+, for a duplicate end coupling (e.g., train line type).  
148.19+, for diverse interfaces in serial diverse joints.  
259, for a nonmetal-to-metal coupling having a particular surface means for increasing friction between the members.
- 329 Diverse metal:**  
This subclass is indented under subclass 328. Devices wherein the free ends, which constitute the joint interface, are of different material, as in the provision of a brass or other metal seat on one of two iron tubes to be joined in order to prevent corrosion.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
47+, for an insulated joint.  
148.11+, for serial diverse joints with diverse materials.  
238+, for a coupling between a nonmetal and metal member.  
378, for a diverse metal gasket-seat.  
422+, for a coupling distinguished by the material thereof.
- 330 Interlocked or overlapped:**  
This subclass is indented under subclass 328. Devices wherein the free ends are provided with interengaging elements (e.g., tongue and groove, etc.) or are keyed together to prevent relative rotation therebetween.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

148.5, for an intermediate joint with expansible spigots in a serial diverse joint system.

202+, for an interlocked sput and plate joint.

291.1, for molded joint with screw interlock.

**331 Annular socket:**

This subclass is indented under subclass 328. Subject matter wherein the joint interface of one member comprises an annular socket or recess means for the reception of a distinct intermediate annular projection on the other member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

336, for supplemental packing sockets for joints with an annular socket in each member with cooperating gasket therebetween.

SEE OR SEARCH CLASS:

403, Joints and Connections, subclass 332 for other joints involving an annular recess.

**332 Tapered:**

This subclass is indented under subclass 328. Subject matter wherein the interface includes a conically or conoidally tapered free end portion on one of the members.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

238+, for nonmetal to metal connections with a conical taper at an interface.

331, for devices wherein a projection on one member extends into an annular socket in the other member and wherein the contact between said projection and socket may be on a conical taper.

SEE OR SEARCH CLASS:

403, Joints and Connections, subclasses 334+ for other joints involving a tapered interface.

**332.1 Conoidal:**

This subclass is indented under subclass 332. Devices wherein the interface is composed of mating curved surfaces on each member generated by a curve having the same loci and length of the radii thereof and rotating about its sine as an axis.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

261+, for joints wherein the interface is a ball and socket.

**332.2 Packed:**

This subclass is indented under subclass 332. Devices wherein a sealing means is located on the interface of one of the members or is located at an axial end of the taper of either of the members for direct engagement by the other member. The sealing means may be a separate element or means formed by deformation of a member during coupling.

**332.3 Interface:**

This subclass is indented under subclass 332.2. Devices having the sealing means between the members and intermediate the ends of the taper.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

334.3, for devices wherein an elastomeric member forms a seat for reception of the other member.

**332.4 Discontinuous interface surface:**

This subclass is indented under subclass 332. Devices wherein the surface of the interface of at least one member is interrupted to cause an irregularity therein.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

332.2+, for devices having a packing carried by a groove in an interface.

**333 Threaded (e.g., drill pipe type):**

This subclass is indented under subclass 332.4. Subject matter comprising a threaded portion generally on the tapered surfaces, e.g., pin and box drill pipe couplings.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
36, for pin and box drill couplings with attached thread jamming preventers.
- 334 Flat crest:**  
This subclass is indented under subclass 333. Subject matter wherein the threads are flat crested, e.g., square or acme.
- 334.1 Adapter seat:**  
This subclass is indented under subclass 332. Devices including a separate element, other than a mere packing, shaped to form the interface between the members which are held in coupled relation by other means.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
332.2+, for a joint having a packed tapered interface.
- 334.2 Double-tapered internal sleeve:**  
This subclass is indented under subclass 334.1. Devices wherein the separate element is a short nipple which has each end tapered to mate with a taper in each of the members.
- 334.3 Elastomeric:**  
This subclass is indented under subclass 334.1. Devices wherein the separate member is composed of a rubber or rubber-like substance, or a substance having substantially the physical properties of rubber.
- 334.4 Dissimilar:**  
This subclass is indented under subclass 332. Devices wherein the tapers of each of the interfitting members are of a different angle, or a nontapered member engages a tapered member, or the members each terminate in convexly curved surfaces.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
148.19+, for serial diverse joints having diverse coupling interfaces.
- 334.5 Flared:**  
This subclass is indented under subclass 332. Devices wherein the end of one of the members has thereon a deformation occasioned by movement of its wall either inwardly or outwardly of its axis.
- 335 PACKED:**  
This subclass is indented under the class definition. Subject matter including packing means to prevent leakage.
- (1) Note. Search the appropriate special joint subclass for a joint having a packing limited in use thereto; e.g., see the search notes below for a ball and socket.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
10+, for a joint with a liquid seal.  
95+, for a joint comprising sealing means responsive to line pressure.  
187+, for a joint with means responsive to temperature change to maintain the seal.  
261, for a ball and socket.
- SEE OR SEARCH CLASS:  
277, Seal for a Joint or Juncture, for a seal between two pipes or a pipe and a wall that are at most secured together only by friction between the seal and the pipe or wall, subclasses 602+ for a static contact seal intended for use on a pipe, conduit, or cable.  
403, Joints and Connections, subclasses 288+, for other packed joints.
- 336 With cooperating opposed packing grooves:**  
This subclass is indented under subclass 335. Subject matter wherein each of the adjacent faces of the members to be joined is provided with an annular, equi-radial groove for the mutual reception of a packing element.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
349+, for a supplemental packing socket in a socket joint.
- 337 Externally with clamp:**  
This subclass is indented under subclass 335. Subject matter wherein an overlapped portion of a joint is covered by packing entirely external of the joined members and a clamp or collar compresses the external packing.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 148.6+, for compound joints which may include an externally packed joint.
- 364+, for packed flange joints with clamping means.
- 413, for clamping rings, per se, for pipe joints.

**338 Radially expandible, spigot-carried:**

This subclass is indented under subclass 335. Subject matter including a spigot carried packing with means to expand the packing into sealing relationship with a surrounding member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 95+, for fluid pressure expanded packings.
- 140.1, for an expanding spigot in a pipe-to-pipe-to-plate joint system.
- 148.5, for an intermediate joint with expandible spigots.
- 196, for an expandible spigot carried packing in an end to side or plate joint.
- 322, for a coupling including a movable jaw portion on the spigot or bell.
- 339+, for couplings with wedge controlled packings.
- 346, for packing expanding means in a coupling providing frictional retention with insertion.
- 348, for couplings including a separable follower between the tightener and packing.
- 356+, for a packed coupling with a screw gland.

SEE OR SEARCH CLASS:

- 138, Pipes and Tubular Conduits, subclass 90 for similar structure in test plug combination.
- 215, Bottles and Jars, subclasses 358+ for expandible stopper type closures.
- 220, Receptacles, subclass 233 for an expandible plug closure.

**339 Wedge:**

This subclass is indented under subclass 335. Subject matter comprising wedge means to control the positioning or shape of the packing or which itself prevents leakage.

- (1) Note. These are mostly wedge rings which are contracted into gripping relation (by pushing, compressing, etc) with a pipe member to thereby provide a flange equivalent.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 3, for a coupling including a wedge having a frangible connection to the compressor (e.g., screw thimble).
- 104+, for pipe grasping wedge rings in a coupling with a fluid pressure sealing means.
- 232, for conduit grasping means in a flexible joint between rigid members.
- 249, for a wedge ring in nonmetal to metal couplings.
- 295.2, for a wedge ring-type packing filler in a molded joint.
- 323, for a wedge bushing in a movable jaw coupling.

**340 Toggle ring type:**

This subclass is indented under subclass 339. Subject matter comprising one or more annular wedge members of relatively thin material with the edge of the central bore offset laterally with respect to the outer edge, whereby a force applied parallel to the axis of the bore will cause reduction of the effective diameter of the central bore.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 321, for a coupling having a resilient ring type essential catch.

**341 Double wedge surfaces:**

This subclass is indented under subclass 339. Subject matter including two or more pairs of coacting wedge surfaces so disposed that the planes thereof will intersect upon extension thereof, whereby mating engagement is obtained when one wedge surface is pushed toward the other.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 342, for a single set of wedge surfaces which mate when pushed together.

- 342 Pushed:**  
This subclass is indented under subclass 339. Subject matter wherein the wedge means is pushed by an external pressure means into mating engagement with a cooperating wedge surface.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
341, for double wedge surfaces.
- 343 Compressed:**  
This subclass is indented under subclass 339. Subject matter including a pressure means having a flared wedging surface surrounding a stationary wedge whereby the wedge is compressed radially inward.
- 344 "Rolled-in" gasket:**  
This subclass is indented under subclass 335. Subject matter comprising a ring shaped gasket substantially circular in cross section which is rolled into and deformed in the gasket recess by endwise movement of the male and female members.
- 345 Frictional retention upon insertion:**  
This subclass is indented under subclass 335. Subject matter in which a packing element fixed in a female member grips the male member to connect the members, as where the aperture in the packing is of smaller diameter than external diameter of the male member and the resilience of the packing holds the male after its insertion.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
8, for faucet type couplings, many of which are of the slip on kind.  
304, for a coupling with a friction type detent.
- 346 With packing-expanding means:**  
This subclass is indented under subclass 345. Subject matter including means for compressing the packing and further reducing the aperture diameter to better grip the male.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
338, for a coupling with a spigot carried, radially expansible packing. See the Search Notes thereunder.
- 347 Carried on cylindrical shank:**  
This subclass is indented under subclass 335. Devices wherein one of the members has a cylindrical portion or shank extending axially beyond a shouldered portion and means to retain the packing on the shank.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
302, for a telescopic spigot which carries a gasket.  
332, for tapered interface type spigot carrying a tapered gasket as part thereof.  
338, for a radially expansible packing carried on a spigot. See the Search Notes thereunder.
- 348 With separable follower:**  
This subclass is indented under subclass 335. Devices wherein the sealing means is provided with a separable follower means which transmits pressure from the tightening means to the sealing means.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
270, for a separate packing actuator in a ball and socket joint.  
338, for a spigot carried radially expansible packing.
- 349 Supplemental packing socket:**  
This subclass is indented under subclass 335. Subject matter wherein the packing means is carried in a recess or auxiliary socket in a socket member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
331, for an annular socket-type coupling interface.  
336, for cooperating opposed packing grooves.  
374+, for a packed socket-type joint.

- 350 Extrusion recess:**  
This subclass is indented under subclass 349. Subject matter wherein the packing socket includes an auxiliary recess into which the gasket may cold-flow upon tightening of the joint.
- 351 Plural seals:**  
This subclass is indented under subclass 335. Subject matter comprising two or more means to seal a single joint.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
95+, for a fluid pressure responsive seal in combination with other sealing means.  
148.6+, for compound joints.
- 352 Coacting opposed duplicates:**  
This subclass is indented under subclass 351. Subject matter comprising duplicate gasket means between the free ends of the coupled members in coacting opposed relation.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
65+, for couplings comprising identical halves.  
99, for fluid pressure seals of this type.  
328+, for a particular interface between the coacting free ends of the coupled members.  
336, for cooperating, opposed packing grooves.
- 353 Screw thimble-gland:**  
This subclass is indented under subclass 335. Structure comprising means to hold the members together including a separate gland portion threaded into a separate thimble portion, both the gland and thimble being separate from either member to be joined.
- 354 Screw thimble:**  
This subclass is indented under subclass 335. Devices including means to hold the members together, said means comprising an external sleeve having an internally threaded portion on one end to engage threads on one of the members and an inwardly extending flange or equivalent at the other end for sliding engagement with a flange or equivalent on the second member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
52, for an insulated screw-thimble coupling.  
386+, for an unpacked screw-thimble coupling.
- 355 Screw:**  
This subclass is indented under subclass 335. Subject matter comprising screw threads at the coupling interface.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
148.19+, for differential screw threads.  
328+, for a particular interface, especially subclasses 333+ for a threaded conically tapered interface.  
390+, for unpacked screw couplings.
- 356 Gland:**  
This subclass is indented under subclass 335. Devices wherein the packing is compressed or forced into sealing position by a gland. A gland is limited here to a follower combined (e.g., integral) with a force transmitting means (e.g., threads) or a part thereof.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
212, for a screw compressed countersunk packing in a pipe-to-plate joint.  
231, for a socketed packing-type flexible joint between rigid members.  
339+, for packings compressed by wedging action.
- 357 Threaded:**  
This subclass is indented under subclass 356. Subject matter comprising internally and externally threaded force transmitting means.
- 358 Cam:**  
This subclass is indented under subclass 335. Subject matter comprising a rotatable element having a groove or surface for imparting reciprocatory or oscillatory motion to a follower to draw the members together to force the packing into sealing position.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
394+, for an unpacked coupling with a tightener comprising cam means.
- 359 Thimble:**  
This subclass is indented under subclass 358. Subject matter comprising an external sleeve having an inwardly extending flange or equivalent on one end for sliding engagement with a flange or equivalent on one member and an internally extending cam means on the other end to engage a follower portion on the other member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
354+, for a packed screw thimble coupling.  
386+, for an unpacked screw thimble coupling.  
395, for an unpacked cam thimble coupling.
- 360 Lugged pipe, rotary engagement:**  
This subclass is indented under subclass 358. Subject matter wherein one member has a lateral projection adapted to engage a projection or recess in the other member when rotated on its axis to hold the members in coupled relation.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
73, for duplicate end couplings having rotary engagement.  
307, for a coupling with an essential catch operated by conduit motion.  
376+, and 401+, for similar structure except for the cam surfaces.  
391+, for interrupted thread-type couplings.
- 361 Bayonet slot:**  
This subclass is indented under subclass 360. Subject matter comprising a slot with longitudinal and circumferential components and providing a cam track for the cooperating lug to draw the members together.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
396, for an unpacked joint including a bayonet type cam means.
- 402, for a bayonet slot and means lugged pipe in a socket joint.
- 362 With manipulating ring:**  
This subclass is indented under subclass 360. Subject matter wherein one of the members has a rotatable ring mounted thereon, the ring carrying the projection or recess, whereby the coupling is effected by rotation of the ring.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
377, for similar structure except for cam means.
- 363 Flanged pipe:**  
This subclass is indented under subclass 335. Devices wherein at least the free end of one of the members has a transverse shoulder, flange, or flange portion utilized in making the joint.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
405+, for a flanged joint, per se. See the Search Notes thereunder.
- SEE OR SEARCH CLASS:  
137, Fluid Handling, subclass 15.09 for a process of cleaning, repairing, or assembling by securing, replacing, or servicing a particular pipe joint.
- 364 Clamped:**  
This subclass is indented under subclass 363. Devices comprising bands, straps, clips, etc., which grip the flanges externally to hold or to hold and draw the pipe ends together.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
148.6+, for a compound joint, which may include an external packing and a compressor of this type.  
337, for an external packing with a clamp type compressor.  
400, for a flange joint comprising at least one separable ring mounted on one member of a socket joint.  
406+, for clamped flange joint, per se. See the Search Notes thereunder.
- SEE OR SEARCH CLASS:  
215, Bottles and Jars, subclasses 280+ for a clamp which secures a closure to a

receptacle of the type there provided for.

**365 Band type:**

This subclass is indented under subclass 364. Devices comprising a band or ring which circumferentially grips the flanges to bring the pipe ends together.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

407+, for a band clamped flange joint, per se and see the search notes thereunder.

**366 Screw:**

This subclass is indented under subclass 365. Devices in which a bolt or screw is used to tighten the clamping band.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

410+, for similar devices without packing.

**367 Tangential:**

This subclass is indented under subclass 366. Devices in which the screw or bolt lies at a tangent to the clamping band circumference.

**368 Axially bolted:**

This subclass is indented under subclass 364. Devices in which the clamping means comprises at least one separable plate-like pipe receiving ring coacting with a flange and having bolts lying parallel to its axis for producing axial forces to draw the flanges together.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

412, for a similar unpacked joint.

413, for the clamping ring, per se.

**369 Sleeve:**

This subclass is indented under subclass 335. Subject matter comprising a short tubular section extending between and each end thereof providing an overlapping portion with engaging pipe ends.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

53, for an insulated sleeve joint.

66, for an intermediate sleeve in a duplicate end coupling.

294.1+, for a molded joint including a sleeve.

383, for distinct spaced serial joints.

407+, for a flanged joint with a band type clamp. See the Search Notes thereunder.

417+, for a sleeve joint, per se.

**370 Internal:**

This subclass is indented under subclass 369. Devices in which the tubular section is inserted into the ends of the pipe ends.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

397, for an unpacked sleeve. See the Search Notes thereunder.

**371 With external:**

This subclass is indented under subclass 370. Subject matter also including an external tubular section overlapping the engaging pipe ends.

**372 Dependent:**

This subclass is indented under subclass 369. Subject matter including a common means in the means holding the pipe ends in the sleeve ends, whereby both pipe ends are released upon removal or release of the common means.

SEE OR SEARCH CLASS:

174, Electricity: Conductors and Insulators, subclass 92 for conduit, cable or conductor joints including longitudinally divided joint casings.

**373 Longitudinally divided:**

This subclass is indented under subclass 372. Subject matter comprising a sleeve split lengthwise.

**374 Socket:**

This subclass is indented under subclass 335. Subject matter comprising a hollow part or cavity involving an internal wall structure of one member which receives a male portion (e.g., spigot) of the other member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

54, for an insulated socket.

56+, for a floor supported water closet type joint including a socket.

121.7, for plural, concentric ball and socket joints.

- 138.1, for a ball and socket joint in a pipe or rod-to-pipe-to-plate joint system.
- 146.1+, for plural serial ball and sockets.
- 231+, for a socketed packing type flexible joint between rigid members.
- 239+, for nonmetal-to-metal joints including an internal member.
- 260, for a socket joint between pliable-nonmetal members.
- 261+, for ball and socket joints.
- 275+, for a pipe in socket swivel joint.
- 285.1+, for a molded joint including a socket.
- 295.1+, for a socketed packing filler in a molded joint.
- 302, for a telescopic socket joint.
- 322+, for a contractible socket.
- 331, for an annular socket and spigot interface.
- 336, for opposed, mating packing grooves.
- 349+, for a socket joint with a supplemental packing recess.
- 399+, for an unpacked socket joint. See the Search Notes thereunder.

**375 Internal reciprocating packer:**

This subclass is indented under subclass 374. Subject matter including internal reciprocating means coating with the sealing means to perfect the seal.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 101+, for line fluid actuated reciprocating packers.
- 267, for a resiliently urged packing means in a ball and socket joint.
- 279, for a spring biased flange in a socket type swivel coupling.

**376 Lugged pipe, rotary engagement:**

This subclass is indented under subclass 374. Subject matter wherein one member has a lateral projection adapted to engage a projection or recess in the other member when rotated to hold the members in coupled relation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 401+, for similar structure without packing, and see the Search Notes thereunder.

**377 With manipulating ring:**

This subclass is indented under subclass 376. Subject matter wherein one of the members has a rotatable ring mounted thereon, the ring carrying the projection or recess, whereby the coupling is effected by rotation of the ring.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 362, for similar structure including a cam means for drawing the members together.
- 387+, for a removable screw thimble.

**378 Diverse metal seat:**

This subclass is indented under subclass 335. Subject matter including a bushing or washer of a material diverse from the material of the head and upon which the gasket seats, generally to prevent rusting of the seat with resultant loss of sealing.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 329, for a particular interface of diverse metal.

**379 Gasket retainer:**

This subclass is indented under subclass 335. Subject matter comprising means to hold the gasket in a part of the joint when the joint is unassembled.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 108, for retaining means for fluid pressure seals.

**380 Resilient stud:**

This subclass is indented under subclass 379. Subject matter wherein the means comprises a resilient stud which engages a socket type recess in the coupling.

SEE OR SEARCH CLASS:

- 24, Buckles, Buttons, Clasps, etc., subclasses 614+ for a resilient head in a head and socket separable fastener.

**381.1 TEMPERATURE RESPONSIVE JOINT ELEMENT; E.G., SHRUNK FIT:**

This subclass is indented under the class definition. Subject matter in which at least one of the joint elements is capable of changing configuration as a result of temperature modification.

- (1) Note. Temperature modification includes either raising or lowering the temperature of the joint elements from their local ambient temperature either prior to or after assembly of the joint elements. The change in temperature is accompanied by a change in one or more joint elements to its 'remembered' shape. After the change in shape, the joint is usually permitted (but is not required) to return to ambient temperature.

SEE OR SEARCH CLASS:

- 29, Metal Working, subclass 447 for assembly or joining by shrink-fit means.  
403, Joints and Connectors, subclass 273 for shrink-fit connectors.

**381.2 Memory metal element:**

This subclass is indented under subclass 381.1. Subject matter in which there is at least one joint element capable of changing configuration as a result of temperature modification is comprised of a metallic alloy which is able to change from one configuration to another that is far in excess of mere thermal expansion or contraction due to the applied temperature modification.

SEE OR SEARCH CLASS:

- 148, Metal Treatment, subclass 402, 563, 675, and Digest 109 for materials with mechanical memory.  
604, Surgery, subclass 281 for shape retaining memory elements.  
606, Surgery, subclass 78 for shape memory alloys which are bio-compatible.

**381.3 Having intermediate member:**

This subclass is indented under subclass 381.2. Subject matter in which there is at least one additional element inserted between a memory metal element and the remaining joint structure.

- (1) Note. The intermediate member normally functions in a manner to enhance the strength of the joint.

**381.4 Memory plastic element:**

This subclass is indented under subclass 381.1. Subject matter having at least one joint element formed from one of several materials commonly referred to as a plastic which demonstrates the capability to change from one configuration to another that is far in excess of mere thermal expansion or contraction due to the applied temperature modification.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 423, for joint elements formed from non-metallic material.

SEE OR SEARCH CLASS:

- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 86 for methods of shrinking a lamina around a cylindrical object.  
174, Electricity, Conductors and Insulators, Digest 8 for heat shrinkable tubes.  
264, Plastic and Nonmetallic Article Shaping or Treating Processes, subclass 230 for methods of shaping by release of elastic memory and subclass 342 for treating articles to have a retained memory configuration.  
428, Stock Material or Miscellaneous Articles, subclass 34.9 and 913 for memory materials which are responsive to heat or light.

**381.5 Having intermediate member:**

This subclass is indented under subclass 381.4. Subject matter in which there is at least one additional element inserted between a memory plastic element and the remaining joint structure.

- (1) Note. The intermediate member normally functions in a manner to enhance the strength of the joint.

**382 DEFORMED:**

This subclass is indented under the class definition. Subject matter wherein the joint is obtained by deforming the material of one or both members.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 40, for devices which deform one member into thread means.
- 202+, for sput and plate portions interlocked by deformation.
- 214, for means expanding a thimble in a pipe-to-plate joint.
- 222, for a pipe-to-plate joint united by an expanded or swaged pipe.
- 256+, for a nonmetal-to-metal joint with an external clamp and involving deformation of one of the elements of the joint.

SEE OR SEARCH CLASS:

- 29, Metal Working, subclasses 505+ for the process of joining by deforming and see the Search Notes thereunder.
- 403, Joints and Connections, subclasses 274+ for joints in general formed by deforming members in situ.

**382.1 Both members:**

This subclass is indented under subclass 382. Subject matter wherein both members forming the joint are deformed.

**382.2 Simultaneous:**

This subclass is indented under subclass 382.1. Subject matter wherein both members are deformed at the same time to make a joint.

**382.4 Outwardly expanded:**

This subclass is indented under subclass 382. Subject matter wherein one of the members has both its inner and outer wall periphery enlarged.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 334.5, for couplings having a conical taper interface wherein one of the members has an outwardly or inwardly projecting flare formed on an end thereof.

**382.5 Bulged:**

This subclass is indented under subclass 382.4. Subject matter wherein a radially outwardly projecting reentrant curve is formed in the wall of one of the members, without material change in the wall thickness thereof.

**382.7 By separate deformable element:**

This subclass is indented under subclass 382. Subject matter wherein an element distinct from the members of the coupling is deformed to cause deformation of one of the members.

**383 DISTINCT SPACED SERIAL:**

This subclass is indented under the class definition. Subject matter comprising a short intermediate coupling piece providing a flow portion and distinct independent socket elements at each end.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 148.1+, for serial diverse joints.
- 369+, for packed sleeve joints.
- 374+, for packed socket joints.
- 399+, for socket joints and see the note thereunder.

SEE OR SEARCH CLASS:

- 403, Joints and Connections, subclasses 300+ for two members joined by a distinct coupler.

**384 SCREW THIMBLE-GLAND:**

This subclass is indented under the class definition. Devices comprising means to hold the members together including a gland portion threaded into a thimble portion.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 353, for a packed screw thimble gland coupling.

**385 Wedge:**

This subclass is indented under subclass 384. Subject matter including wedge means, generally a tapered ring, forced between the members being joined.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 389, for a coupling comprising a screw thimble and wedge.

**386 SCREW THIMBLE:**

This subclass is indented under the class definition. Devices including means to hold the members together, said means comprising an external sleeve having an internally threaded

portion on one end to engage threads on one of the members and an inwardly extending flange or equivalent at the other end for sliding engagement with a flange or equivalent on the second member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 354, for a packed joint with screw thimble means.  
395, for a cam thimble type joint.

SEE OR SEARCH CLASS:

- 251, Valves and Valve Actuation, subclass 149.4 for a valved pipe joint of the screw thimble type.  
403, Joints and Connections, subclasses 342+ for a rod joint involving a screw thimble.

**387 Removable:**

This subclass is indented under subclass 386. Devices having means (e.g., cooperating flange segments) or structure which permits the removal of the thimble portion over the flanged portion of the second member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 401+, for a pipe and socket joint having cooperating flange segments to hold the members together. See the Search Notes thereunder.

**388 Detachable flange:**

This subclass is indented under subclass 387. Devices in which the flange on the member or on the thimble is a separable part.

**389 Wedge:**

This subclass is indented under subclass 386. Subject matter including wedge means, generally ring type, forced between the members being joined by the screw thimble.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 339+, for a coupling comprising wedged packing.  
385, for wedges in a screw thimble gland joint.

**390 SCREW:**

This subclass is indented under the class definition. Subject matter comprising screw threads at the coupling interface.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 33+, for a threaded joint with means to provide quick release.  
40, for a joint with combined thread cutting means.  
148.19+, for differential threads.  
291.1+, for a screw interlock in a molded joint.  
333, for a threaded conical interface.  
355, for a packed screw-type joint.

SEE OR SEARCH CLASS:

- 279, Chucks or Sockets, subclass 99 for analogous threaded connection between a chuck and tool.  
403, Joints and Connections, subclass 343 for an analogous connection between rods.

**391 Interrupted thread:**

This subclass is indented under subclass 390. Devices in which only circumferentially spaced segments of the connecting members are threaded thereby allowing all the threads to be engaged simultaneously and tightened by less than a full turn of a member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 34, for a quick release coupling having radially moved segmented threads (e.g., chuck type).  
396, for a coupling with bayonet type cams.

**392 Attached thread bushing:**

This subclass is indented under subclass 390. Subject matter comprising an intermediate member on each pipe end, generally internally and externally screw threaded, with which the coupling means, e.g., sleeve, coacts.

**393 Gland:**

This subclass is indented under subclass 390. Subject matter comprising an externally threaded sleeve engaging an internally threaded socket on one member with a relation-

ship therebetween that the sleeve is contracted to or a separate grasping member is contracted upon tightening the threaded joint to cause the grasping of the spigot of the other member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

322+, for a contractible socket and see the Search Notes thereunder.

353, for a packed joint with screw thimble-gland.

356+, for a packed gland joint.

384, for a screw thimble-gland joint, per se.

SEE OR SEARCH CLASS:

277, Seal for a Joint or Juncture, for a seal between two pipes or a pipe and a wall that are at most secured together only by friction between the seal and the pipe or wall, subclass 622 for a static contact seal intended for use on a pipe, conduit, or cable having a threaded, axially acting, clamping gland to mount or retain the seal.

279, Chucks or Sockets, subclass 32 and 49 for analogous screw threaded sockets.

### 394 CAM:

This subclass is indented under the class definition. Subject matter comprising a rotatable element having a groove or surface for imparting reciprocatory or oscillatory motion to a follower to draw the members together.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

358, for a packed coupling with a tightener comprising cam means.

SEE OR SEARCH CLASS:

403, Joints and Connections, subclass 343 for analogous structure in a rod joint.

### 395 Thimble:

This subclass is indented under subclass 394. Subject matter comprising an external sleeve having an inwardly extending flange or equivalent on one end for sliding engagement with a flange or equivalent on one member and an internally extending cam means on the other end to engage a follower portion on the other member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

359, for a packed cam thimble joint.

406, for a flanged joint with a clamp including a wedge thimble.

SEE OR SEARCH CLASS:

403, Joints and Connections, subclass 342 for similar structure in a rod joint.

### 396 Bayonet type:

This subclass is indented under subclass 394. Subject matter including a slot or groove providing a cam track on one member and a cooperating lug or equivalent on the other member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

361, for packed joints of the bayonet type.

### 397 INTERNAL SLEEVE:

This subclass is indented under the class definition. Subject matter united by a short tubular section inside the ends of the coupled members.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

53, for insulated sleeve joints.

300, for an internal sleeve within a flexible bellows seal of a variable length joint.

370+, for packed joints including an internal sleeve.

SEE OR SEARCH CLASS:

403, Joints and Connections, subclasses 292+ for two members joined by an inserted section.

### 398 With external:

This subclass is indented under subclass 397. Subject matter also including an external tubular section overlapping the ends of the members joined.

### 399 SOCKET:

This subclass is indented under the class definition. Subject matter comprising a hollow part or cavity involving an internal wall structure of one member which receives a male portion (e.g., spigot) of the other member.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
374+, for packed socket-typed couplings and see the Search Notes thereunder.
- SEE OR SEARCH CLASS:  
24, Buckles, Buttons, Clasps, etc., subclasses 588+ for a head and socket separable fastener.  
279, Chucks or Sockets, appropriate subclasses.  
403, Joints and Connections, subclass 361 for similar structure in a rod joint.
- 400 Detachable ring:**  
This subclass is indented under subclass 399. Devices in which at least one of the members carries a separable ring externally thereof, said ring coacting with means (e.g., bolts), for drawing the members together.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
364+, for a packed clamped flanged joint. See the Search Notes thereunder.
- 401 Lugged pipe, rotary engagement:**  
This subclass is indented under subclass 399. Subject matter wherein one member has a lateral projection adapted to engage a projection or recess in the other member when rotated to hold the members in coupled relation.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
73, for duplicate end couplings having rotary engagement.  
292.1, for a molded joint with lug and slot interlock.  
307, for a coupling with an essential catch operated by conduit motion.  
360+, for similar structure with cam surfaces.  
376+, for similar structure with packing.  
391+, for interrupted-thread type couplings.
- 402 Bayonet slot:**  
This subclass is indented under subclass 401. Subject matter comprising a slot with longitudinal and circumferential components for the cooperating lug.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
361, for packed bayonet slot couplings including cam means.  
396, for unpacked bayonet slot couplings with cam means.
- 403 With separable fastener:**  
This subclass is indented under subclass 399. Subject matter comprising a separable means whereby the spigot is held in the socket.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
81+, for means blocking the release of the joint holding means.  
305+, for an essential catch or latch whereby the members are held together.
- 404 Set screw or pin:**  
This subclass is indented under subclass 403. Subject matter comprising a set-screw or pin.
- 405 FLANGE:**  
This subclass is indented under the class definition. Subject matter wherein at least the free end of one of the members has a transverse shoulder, flange or flange portion utilized in making the joint.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
233, for a beaded spigot in a flexible joint.  
234, for a flared conduit end as a flange equivalent in a flexible joint.  
339+, for packed couplings including wedge means which are flange equivalents.  
363+, for packed flanged joints.  
384+, for a flanged joint with a screw-thimble-gland fastening means.
- SEE OR SEARCH CLASS:  
403, Joints and Connections, subclasses 335+ for flanged joints in general.
- 406 Clamped:**  
This subclass is indented under subclass 405. Devices comprising bands, straps, clips, etc., which grip the flanges externally to hold and draw the pipe ends together.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
364+, for packed flange joints. See the Search Notes thereunder.
- 407 Band type:**  
This subclass is indented under subclass 406. Devices comprising a band having a particular cross-section (e.g., V-shaped) which circumferentially grips the flanges to draw and hold the pipe ends together.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
365+, for a similar packed joint.  
420, for the clamp, per se.
- SEE OR SEARCH CLASS:  
24, Buckles, Buttons, Clasps, etc., subclasses 19+ for ring clamps wherein the band is recited broadly. See the Search Notes thereunder.  
215, Bottles and Jars, subclasses 280+ for closure fasteners for bottles, including a clamp.  
220, Receptacles, subclasses 315+ for fastening devices for receptacle closures.  
292, Closure Fasteners, subclasses 256.6+ for a band clamp and closure combination.
- 408 With intermediate flange engaging member:**  
This subclass is indented under subclass 407. Devices which include an additional element between the clamping band and the external surfaces of the flanges.
- 409 Lever:**  
This subclass is indented under subclass 407. Devices in which the ring is tightened about the flanges by a lever means.
- 410 Screw:**  
This subclass is indented under subclass 407. Devices in which a bolt or screw is utilized to apply tightening force to the clamping band.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
366, for a packed joint of this type.
- 411 Segmented ring:**  
This subclass is indented under subclass 410. Devices in which the clamping ring is made of several parts some of which may be pivotally connected.
- 412 Axially bolted:**  
This subclass is indented under subclass 406. Subject matter in which the clamping means comprises at least one separable plate-like pipe receiving ring coaxing with a flange and having bolts lying parallel to its axis for producing axial forces to draw the flanges together.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
368, for an unpacked bolted flange ring joint.  
400, for a socket joint with a bolted flange ring clamping means.  
413, for a clamping ring, per se.
- 413 Rings:**  
This subclass is indented under subclass 406. Subject matter comprising an annular plate-like body having an aperture and a clamping or jaw portion for transmitting axial forces produced in drawing the ends of the members together; such rings, per se, have been collected here.
- 414 Detachable:**  
This subclass is indented under subclass 405. Subject matter wherein the flange is removably attached to the end of a member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
388, for removable thimble combinations including a detachable flange.
- 415 Split ring:**  
This subclass is indented under subclass 414. Subject matter the flange comprising a split annular member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
276, for a ring detent in a socket type swivel.

- 416 Fused:**  
This subclass is indented under subclass 405. Devices wherein a weld is used to attach the flange to the pipe.  
  
SEE OR SEARCH THIS CLASS, SUB-CLASS:  
288.1+, for a welded coupling.  
289.1+, for a soldered joint.
- 417 SLEEVE:**  
This subclass is indented under the class definition. Subject matter comprising a short tubular section extending between and each end thereof providing an overlapping portion with engaging pipe ends.  
  
SEE OR SEARCH THIS CLASS, SUB-CLASS:  
369+, for a packed sleeve joint. See the Search Notes thereunder.  
383, for distinct spaced serial joints.
- 418 Dependent:**  
This subclass is indented under subclass 417. Subject matter comprising a common means in the means holding the free ends of the members to be joined in the sleeve ends, wherein both ends are released upon removal or release of the common means.  
  
SEE OR SEARCH THIS CLASS, SUB-CLASS:  
398, for a packed internal-external sleeve joint.
- 419 Longitudinally divided:**  
This subclass is indented under subclass 418. Subject matter comprising a sleeve split lengthwise.  
  
SEE OR SEARCH THIS CLASS, SUB-CLASS:  
322+, for a split socket providing a movable jaw portion with means to contract the socket.  
373, for a packed longitudinally divided sleeve.
- 420 CLAMP:**  
This subclass is indented under the class definition. Subject matter comprising miscellaneous joints including clamps not otherwise provided for.  
  
SEE OR SEARCH THIS CLASS, SUB-CLASS:  
194, for pipe to plate joints with hole edge clamps.  
236, for a clamped resilient sleeve type flexible joint between rigid members.  
242+, for an external clamp in a nonmetal to metal coupling.  
322, for a contractible socket type coupling.  
337, for joints with external packing and clamping means.  
364+, for flanged pipes including packing and clamping means.  
373+, for packed longitudinally split sleeves.  
406+, for flanged pipes including clamping means.  
407+, for a clamped flanged joint.  
419, for longitudinally split sleeves.
- 421 Wedge:**  
This subclass is indented under subclass 420. Devices wherein the clamp comprises wedge means.  
  
SEE OR SEARCH THIS CLASS, SUB-CLASS:  
255, for means coupling nonmetal-to-metal members comprising wedge clamp means.  
339+, for a coupling comprising wedged packing. See the Search Notes thereunder.
- 422 MATERIALS:**  
This subclass is indented under the class definition. Subject matter relating to the materials of which the coupling is made.  
  
SEE OR SEARCH THIS CLASS, SUB-CLASS:  
43, for tent-type roof flashing.  
148.12, for serial diverse joints comprising diverse materials.  
238, for nonmetal to metal.

- 329, for a joint having a particular interface comprising diverse materials.
- 378, for a joint having a diverse material, metallic seat for a gasket.

## SEE OR SEARCH CLASS:

- 75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder, Compositions and Loose Metal Particulate Mixtures, subclasses 228+ for a composition having a continuous phase of free metal made by consolidating metal particles.
- 428, Stock Material or Miscellaneous Articles, appropriate subclasses for a stock material product in the form of a single or plural layer web or sheet, especially subclass 416, 418, 432+, 444, 450, and 457+ for a nonstructural composite web or sheet including a layer of metal.

**423 Nonmetallic:**

This subclass is indented under subclass 422. Subject matter which includes a synthetic resin or other nonmetallic material.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

238+, for nonmetal to metal joints.

**424 Sheet:**

This subclass is indented under subclass 422. Subject matter which includes material originally in sheet form.

## SEE OR SEARCH CLASS:

- 428, Stock Material or Miscellaneous Articles, subclass 578 for an intermediate sheet-metal article or blank which is of nonrectangular shape.

**425 MISCELLANEOUS:**

This subclass is indented under the class definition. Subject matter not elsewhere classified.

## CROSS-REFERENCE ART COLLECTIONS

The following subclasses provide for concepts illogical to the preceding schedule but which contain frequently searched subject matter. As these subclasses contain only discretionary cross references they are of limited

search value such that the searcher should refer to preceding subclasses for a complete search.

**900 BALANCED PRESSURE:**

This subclass is indented under the class definition. Art collection drawn to balanced pressure.

**901 CAP CLOSURES:**

This subclass is indented under the class definition. Art collection drawn to cap closures.

**902 CANTED RING:**

This subclass is indented under the class definition. Art collection drawn to a canted ring.

**903 CORRUGATED:**

This subclass is indented under the class definition. Art collection drawn to corrugated structure.

**904 CRYOGENIC:**

This subclass is indented under the class definition. Art collection drawn to cryogenics.

**905 DIFFERENT COEFFICIENTS OF EXPANSION:**

This subclass is indented under the class definition. Art collection drawn to different coefficients of expansion.

**906 EQUIVALENTS:**

This subclass is indented under the class definition. Art collection drawn to equivalents concepts.

**907 ELECTRICAL FIXTURES:**

This subclass is indented under the class definition. Art collection drawn to electrical fixtures.

**908 EXTRUSION HOLES:**

This subclass is indented under the class definition. Art collection drawn to extrusion holes.

**909 FLUOROCARBONS AND MEMORY PLASTICS:**

This subclass is indented under the class definition. Art collection drawn to fluorocarbons and memory plastics.

**910 GASKETS:**

This subclass is indented under the class definition. Art collection drawn to gaskets.

- 911 GLASS:**  
This subclass is indented under the class definition. Art collection drawn to glass.
- 912 GEAR:**  
This subclass is indented under the class definition. Art collection drawn to a gear.
- 913 INTERDIGITATING:**  
This subclass is indented under the class definition. Art collection drawn to interdigitating.
- 914 IRREVERSIBLE:**  
This subclass is indented under the class definition. Art collection drawn to irreversible concepts.
- 915 MASTIC:**  
This subclass is indented under the class definition. Art collection drawn to mastic.
- 916 MOLECULAR CHANGE:**  
This subclass is indented under the class definition. Art collection drawn to molecular change concepts.
- 917 METALLIC SEALS:**  
This subclass is indented under the class definition. Art collection drawn to metallic seals.
- 918 O-RING:**  
This subclass is indented under the class definition. Art collection drawn to O-ring.
- 919 RESINOUS:**  
This subclass is indented under the class definition. Art collection drawn to resinous concepts.
- 920 REMOTELY CONTROLLED:**  
This subclass is indented under the class definition. Art collection drawn to remotely controlled concepts.
- 921 SNAP-FIT:**  
This subclass is indented under the class definition. Art collection drawn to snap-fit concepts.
- 922 SAFETY AND QUICK RELEASE FOR DRILL PIPES:**  
This subclass is indented under the class definition. Art collection drawn to safety and quick release for drill pipe concepts.

- 923 SPECIFIC MATERIAL:**  
This subclass is indented under the class definition. Art collection drawn to specific materials.
- 924 VENTED:**  
This subclass is indented under the class definition. Art collection drawn to vented concepts.
- 925 SWELLS WHEN WET:**  
This subclass is indented under the class definition. Art collection drawn to a swelling when wet concept.

#### FOREIGN ART COLLECTIONS

The definitions for FOR 100-FOR 174 below correspond to the definitions of the abolished subclasses under Class 285 from which these collections were formed. See the Foreign Art Collection schedule for specific correspondences. [Note: The titles and definitions for *indented* art collections include all the details of the one(s) that are hierarchically superior.]

#### **FOR 100 SYSTEMS (285/120):**

Foreign art collection of (1) at least two joints of diverse type, or (2) two or more joints with a combination relationship therebetween (e.g., plural swivels permitting universal motion), or (3) combinations of one or more joints and two or more portions of a material confining means (e.g., box) having a combination relationship therebetween, or (4) fittings having an opening with a closure therefor or having one or more separable parts which permit access to the interior thereof without disassembly of the joint. Mere duplications of the same joint in a single line are classified on the joint, per se.

#### **FOR 101 With access opening (285/121):**

Foreign art collection having an opening with a closure or having one or more separable parts, which permit access to the interior thereof without disassembly of the joint.

#### **FOR 102 Swivel (285/122):**

Foreign art collection comprising a swivel type joint.

#### **FOR 103 With hollow center bolt (285/123):**

Foreign art collection wherein the swivel includes a hollow bolt extending along the axis of swiveling.

**FOR 104 Detachable return band (285/124):**

Foreign art collection in which the closure comprises a removable bight portion of a U-type coupling and mounting means therefor.

**FOR 105 With yoke clamp (285/125):**

Foreign art collection wherein the mounting means comprises a yoke-type clamp (i.e., a U-shaped member having force transmitting means mounted in the legs thereof to force the coupler parts together).

**FOR 106 Removable bushing (285/126):**

Foreign art collection including removable bushings between the yoke means and the pipe ends.

**FOR 107 Elbow (285/127):**

Foreign art collection comprising an elbow fitting.

**FOR 108 Pipe or cable and box (285/128):**

Foreign art collection comprising means for coupling a pipe or cable to a box structure requiring at least two walls of the box.

**FOR 109 With attached closure flange (285/129):**

Foreign art collection wherein the coupling means comprises a clamping portion which has a flange portion closing that portion of the aperture in the box wall not filled by the pipe or cable.

**FOR 110 Receptacle inlet and outlet in unitary mounting (285/130):**

Foreign art collection comprising a unitary means for connecting a plurality of flow lines to a receptacle (e.g., barrel) including a sleeve or thimble lining for the opening within which the pipes make a fluid tight joint.

**FOR 111 Plural noncommunicating paths (285/131)**

Foreign art collection comprising a coupling for two or more lines or flow paths which do not unite within the scope of the combination of elements claimed (e.g., means connecting plural lines to a milking machine receptacle).

**FOR 112 With branched flow (285/132):**

Foreign art collection wherein at least one of the flow paths is divided into a plurality of flow paths or a plurality of flow paths are combined into a single flow path or in which a single flow path is divided and then recombined, e.g., noncommunicating hot and cold water lines with coupling means providing plural hot outlets or plural cold outlets, or both.

**FOR 113 Concentric:**

Foreign art collection wherein the lines are concentric.

**FOR 114 Having suspension means (e.g., oil well head type, etc.):**

Foreign art collection wherein a flow line is provided with means to hang or support another flow line in a substantially vertical position.

**FOR 115 With relative motion (e.g., drier drum type) (285/134):**

Foreign art collection wherein the coupling means provides for relative motion (e.g., swiveling, telescoping, etc.) between the coupled parts. Drier drum couplings are here.

**FOR 116 Ball and socket (285/135):**

Foreign art collection wherein the relative motion is obtained at least in part by ball and socket means.

**FOR 117 With relative motion (285/136):**

Foreign art collection wherein the coupling means provides for relative motion (e.g., swiveling, telescoping, etc.) between the coupled parts.

**FOR 118 Parallel:**

Foreign art collection wherein the lines have a parallel relationship.

**FOR 119 Having suspension means (e.g., oil well head type, etc.):**

Foreign art collection wherein the flow lines are provided with means to hang or support the lines in a substantially vertical position.

**FOR 120 Inner to spaced outer tube coupling (285/138):**

Foreign art collection comprising means mounting an inner tube in spaced relation to an outer tube with inlet or outlet means claimed for the inner tube only.

- FOR 121 Radially compressed packing (285/139):**  
Foreign art collection including a packing about the inner tube which is compressed by radially acting means, e.g., set screws.
- FOR 122 Suspended (e.g., oil well casing type) (285/140):**  
Foreign art collection in which the tubes are in a substantially vertical position and comprising means to hang the inner within the outer tube, e.g., well caps or headers.
- FOR 123 Radially movable support ring (split ring type) (285/141):**  
Foreign art collection wherein the inner tube is supported on the outer tube by means of a radially expansible member, e.g., a split ring.
- FOR 124 Inner tube coupling with integral support (285/142):**  
Foreign art collection wherein the hanging means comprises a coupling member having an integral support means (e.g., a shoulder) between two axially aligned inner tube sections.
- FOR 125 With intermediate member (285/143):**  
Foreign art collection wherein the inner tube coupling member is supported on a member intermediate the inner and outer tubes.
- FOR 126 Slip anchored inner tube (285/144):**  
Foreign art collection in which a slip or internally serrated member grips the inner tube to provide it with a supporting shoulder.
- FOR 127 With slip actuator (285/145):**  
Foreign art collection in which there are means for actuating slips into and out of engagement with the tube.
- FOR 128 With unitary slip and packing assembly (285/146):**  
Foreign art collection wherein the slips and seal around the inner tube are one unitary assembly.
- FOR 129 With slip-compressed packing (285/147):**

Foreign art collection in which a packing around the inner tube is compressed by the slips supporting the inner tube weight.

- FOR 130 With packing seat on slip (285/148):**  
Foreign art collection wherein a packing about the inner tube is seated on the slip members.
- FOR 131 Plural layer pipe (285/149):**  
Foreign art collection wherein a pipe comprising several layers is joined to a connector member and at least two of the layers are separately connected to or independently gripped by the connector member.
- FOR 132 Branched (285/150):**  
Foreign art collection in which a single line is divided into a plurality of lines or a plurality of lines are combined into a single line or in which a single line is divided and then recombined having means for providing couplings for the several lines.
- FOR 133 With relative motion (285/151):**  
Foreign art collection wherein at least one joint provides for relative motion between coupled parts.
- FOR 134 Double Y-type (285/152):**  
Foreign art collection wherein two lines form Y's and unite at right angles to one another.
- FOR 135 With vent (285/153):**  
Foreign art collection having one or more openings which function to vent gases to or from a system.
- FOR 136 Antisiphon (285/154):**  
Foreign art collection including means, generally a particular air chamber or arrangement of vent openings, for preventing the "blow-out" of trap liquids-seals upstream of the claimed coupling.
- FOR 137 Y-type (285/155):**  
Foreign art collection comprising a coupling for a line and branches in the shape of the letter Y.
- FOR 138 T-type (285/156):**

- Foreign art collection requiring at least one of the joints at the free end portions of a T-shaped coupling.
- FOR 139 U-type (285/157):**  
Foreign art collection comprising a pipe coupling with parallel leg portions which are connected by a bight or U-shaped portion.
- FOR 140 Pipe or rod-to-pipe-to-plate (285/158):**  
Foreign art collection comprising an intermediate tubular means between a pipe or rod and a plate or pipe side.
- FOR 141 Dependent coupling (285/159):**  
Foreign art collection wherein the pipe-to-rod or pipe joint is essential to the existence of the joint with the plate.
- FOR 142 Ball and socket (285/160):**  
Foreign art collection wherein the pipe to plate joint is of the ball and socket type.
- FOR 143 Plate clamped between internal nut and shoulder or flange (285/161):**  
Foreign art collection wherein the plate or pipe side is clamped between a nut internal thereof and a shoulder or flange on the end of the tubular means.
- FOR 144 Expanding spigot engages plate (285/162):**  
Foreign art collection the end of the tubular means comprises expanding spigot means which engages the walls of a plate aperture.
- FOR 145 Serial relatively movable joints (285/163):**  
Foreign art collection having a plural of joints in a single line, at least two of which provide for relative motion with respect to the coupled elements.
- FOR 146 Diverse (285/164):**  
Foreign art collection wherein the movable joints are of diverse kinds, e.g., telescopic and ball and socket. Many patents here disclose joints in exhaust lines for internal-combustion engines, especially aircraft type.
- FOR 147 With telescopic type (285/165):**  
Foreign art collection including at least one telescopic joint.
- FOR 148 Plural ball and socket (285/166):**  
Foreign art collection including at least two distinct ball and socket joints.
- FOR 149 With sphere intermediate two sockets (285/167):**  
Foreign art collection comprising two articulated opposed concave spherical sockets coacting with convex ends on an intermediate member having the general form of a sphere.
- FOR 150 Plural swivel (285/168):**  
Foreign art collection including at least two distinct swivel joints.
- FOR 151 Serial diverse single flow or line (285/169):**  
Foreign art collection comprising a plurality of diverse couplings arranged in serial relationship along a single line.
- FOR 152 Intermediate joint with expansible spigots (285/170):**  
Foreign art collection comprising a fitting having expansible ends for insertion into and between pipe ends with means intermediate the ends of the fitting providing a readily separable coupling. Means for forming a continuous line of pipe for feeding the pipe through apparatus in a continuous process (e.g., coating) are here.
- FOR 153 Compound (e.g., leak-gland type) (285/171):**  
Foreign art collection including at least two means, each of which is capable of making a single joint for effecting the connection and perfecting the seal between the free ends of two members, e.g., an internally threaded socket having external threads cooperating with a screw thimble to press a packing at the lap of the socket and spigot.
- FOR 154 With molded joint (285/172):**  
Foreign art collection wherein one of the means is a molded, welded or soldered joint.
- FOR 155 Diverse materials (285/173):**  
Foreign art collection comprising means to unite tubes made of diverse materials (e.g., copper to aluminum).
- FOR 156 Nonmetal to metal (285/174):**

Foreign art collection wherein the materials comprise nonmetal and metal.

**FOR 157 Diverse coupling interfaces (285/175):**

Foreign art collection wherein the coupling interface of one of the couplings is different from the coupling interface of the other.

**FOR 158 Diverse size or shape (285/176):**

Foreign art collection wherein the couplings provide for a change in size or a difference in shape of the members to be joined.

**FOR 159 Reducer (285/177):**

Foreign art collection wherein the coupling provides for a change in size.

**FOR 160 Eccentric (285/178):**

Foreign art collection wherein the coupling provides for an off-center relationship which may be adjustable with respect to the joined members.

**FOR 161 MOLDED JOINT (285/284):**

Foreign art collection wherein a plastic or melted material is used in the joint or wherein the ends of the members are united by fusion or by welding pressure.

**FOR 162 With root repellent (285/285):**

Foreign art collection including means to inhibit or repeal the growth of roots between the members.

**FOR 163 Weld (285/286):**

Foreign art collection wherein the pipes are united by a weld.

**FOR 164 Solder (285/287):**

Foreign art collection wherein the members are bonded by soldering.

**FOR 165 Composite pipe (ends) (285/288):**

Foreign art collection in which at least the ends of the members to be joined are of composite material, such as cement, asphalt, concrete, or glass combined with other materials reinforcement.

**FOR 166 With screw interlock (285/289):**

Foreign art collection in which the ends of the members are additionally held together by means of threads.

**FOR 167 With lug and slot interlock (285/290):**

Foreign art collection in which the members are also connected by a lug and slot means, e.g., a bayonet joint.

**FOR 168 Lining molded to pipe end (285/291):**

Foreign art collection wherein a member is molded to the end of a pipe.

**FOR 169 Sleeve (285/292):**

Foreign art collection which include a short sleeve or tube.

**FOR 170 Wrapped (285/293):**

Foreign art collection in which the sleeve is a wrapping or taping material.

**FOR 171 Sprue (285/294):**

Foreign art collection in which the sleeve has an aperture, or spruce, for pouring the molding material.

**FOR 172 With packing filler (285/295):**

Foreign art collection in which filler material in addition to the molding or caulking material is utilized to save on the amount of molding material used, etc.

**FOR 173 Wedge ring type (285/296):**

Foreign art collection in which filler is in the form of rings having wedging surfaces.

**FOR 174 Sprue (285/297):**

Foreign art collection having an aperture or sprue for pouring the molding material into the joint.

END