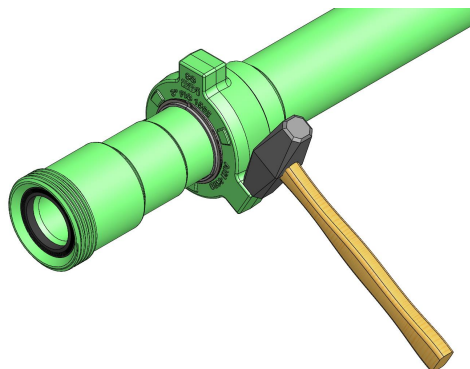
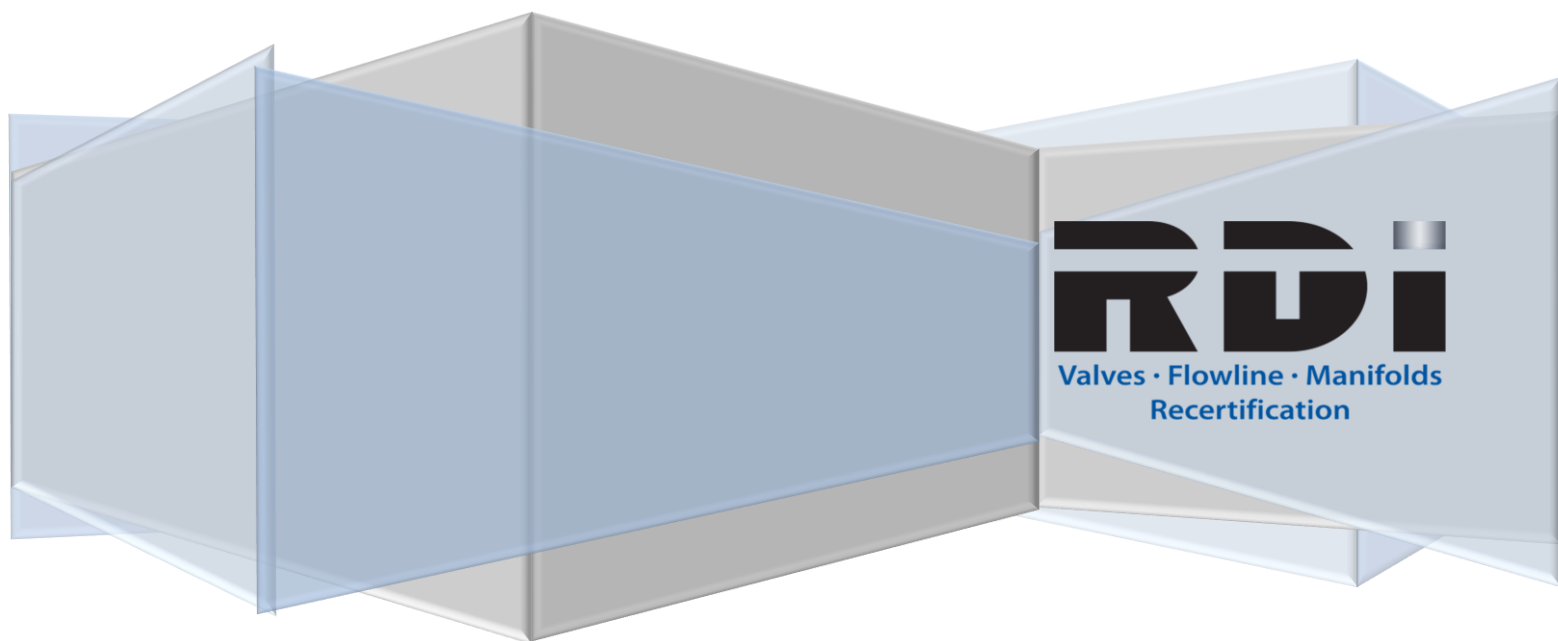


Red Deer Ironworks

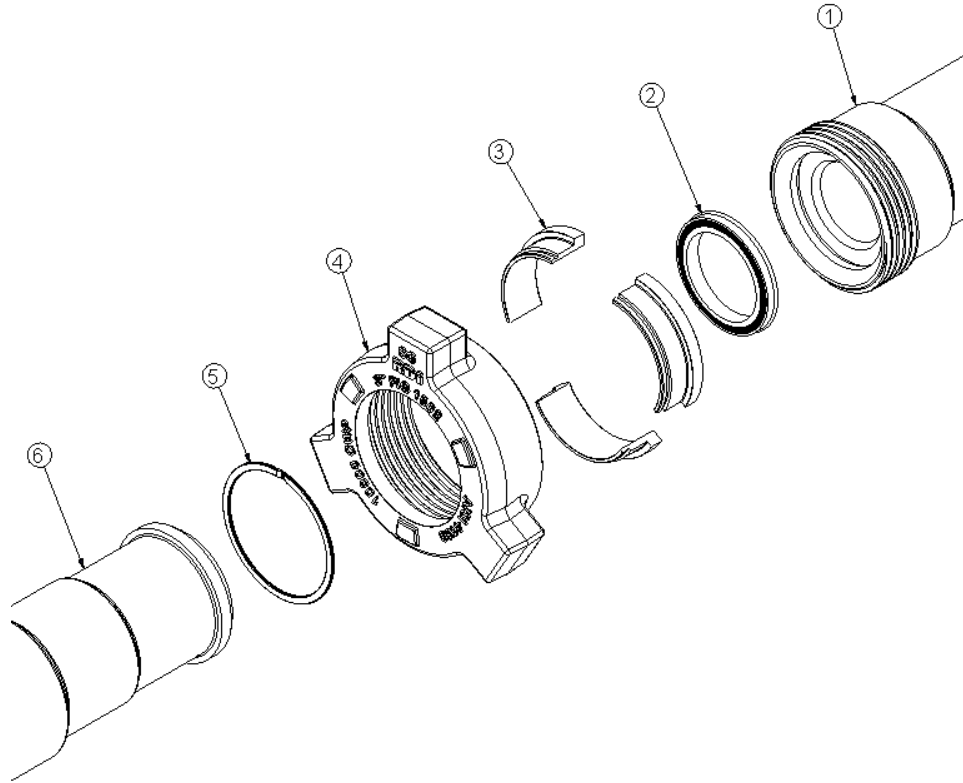


Hammer Union Connection Operation Manual



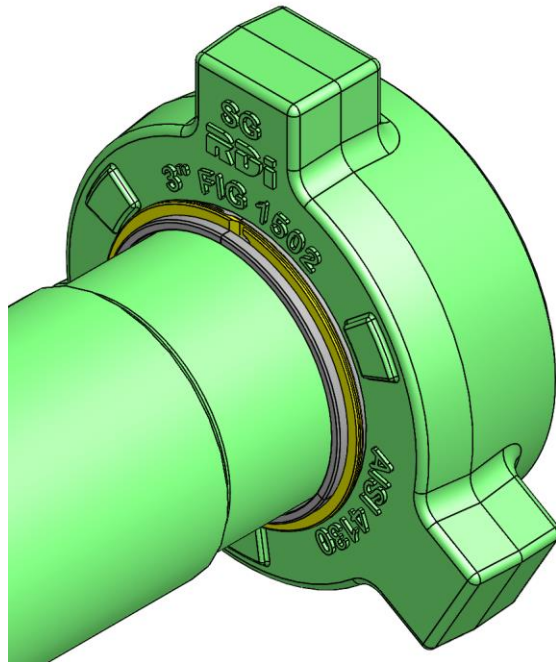
Hammer unions have been used since the 1930's. In the 1950's FMC acquired Weco, the original company that manufactured these connections. All the current hammer unions are based on the original Weco design. In 2009 discussion on development of a technical specification (API 7HU2) for hammer unions started and in 2013 RDI joined the committee for API 7HU2.

There are 6 components that make up a detachable hammer union connection. The female thread (1), union seal (2), three-piece segment set (3), wingnut (4), snap ring (5) and the male end (6).

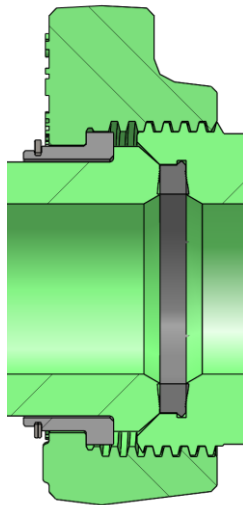


Typical Hammer Union Connection Components

To assemble a hammer union connection the union seal (2) must be inserted into the female thread (1). The snap ring (5) is then installed onto the male end (6). The wingnut (4) is then slid over the male end and pushed back far enough to allow installation of the segment set (3) onto the male end. The segments are what keep the wingnut from sliding off the male end. The wingnut is then pulled forward over the segments and the snap ring is installed into the groove on the back of the segments. The snap ring keeps the wingnut from sliding back over the segments and the segments from falling out.



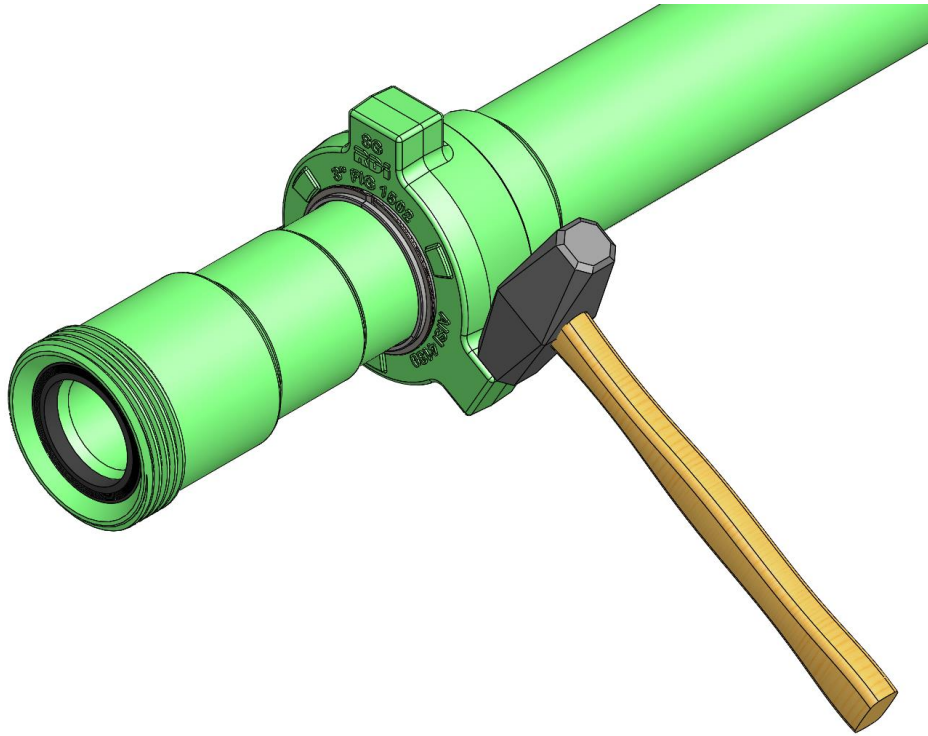
Wingnut, segments and snap ring installed on male end



Hammer union connection made up

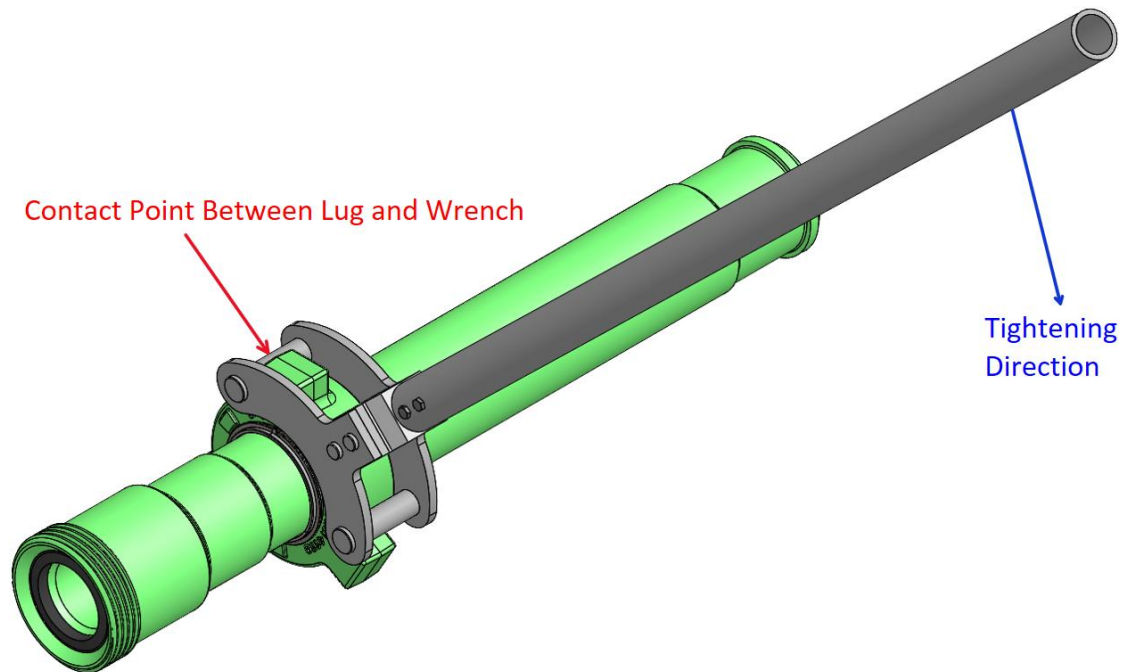
To make up a hammer union connection first apply anti-seize compound to the threads, then insert the tip of the male end into the female end against the union seal. The wingnut is then threaded onto the female thread until hand tight.

A hammer or a hammer union wrench can be used to tighten a wingnut to create a seal.

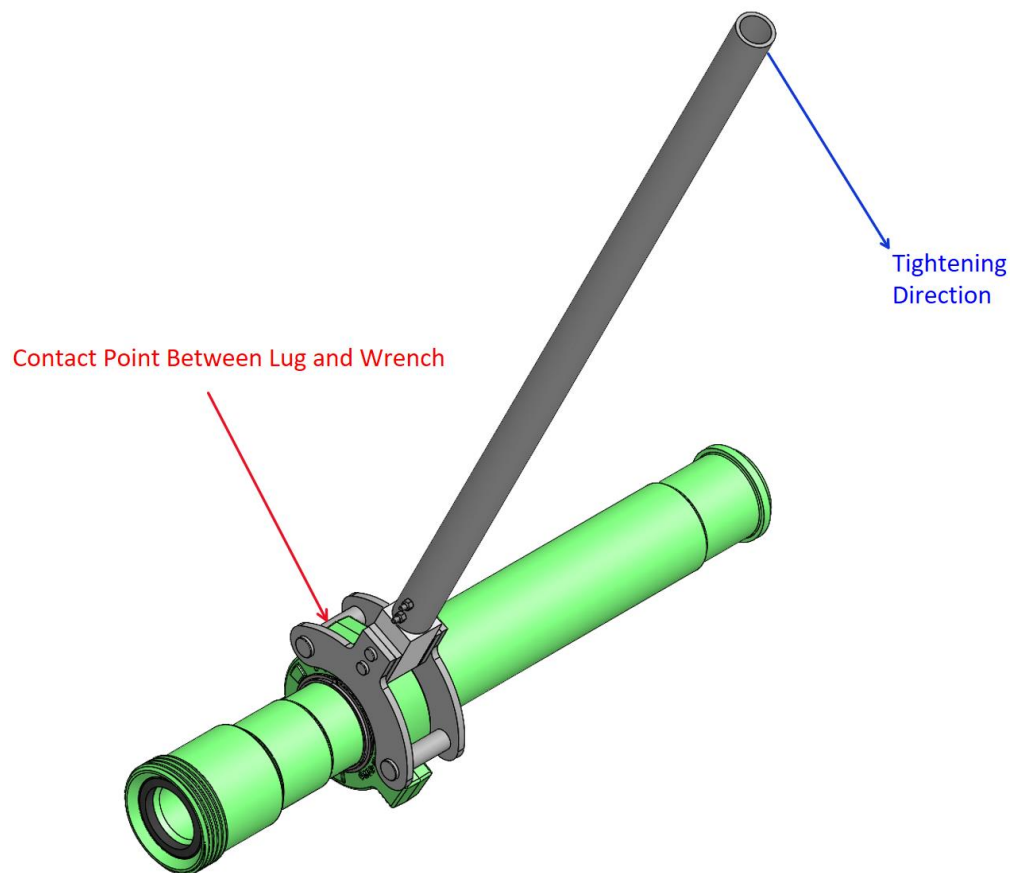


Hammer tightening wingnut

A hammer is used to hit the lugs on the wingnut to tighten it up until the cone of the male end contacts the taper in the female end (metal to metal contact). At this point the union seal is compressed between the male and female ends creating the seal.



Hammer union wrench tightening wingnut – Long side of wrench head engaging lug



Hammer union wrench tightening wingnut – Short side of wrench head engaging lug

The hammer union wrench is comprised of a curved head and a detachable handle which bolts into the head of the wrench. The curved head is made of 2 curved plates that are on opposite sides of the handle, and these curved plates are joined by 2 bars on opposite end of the plates. The wrench head has 2 ends – the short side which is closest to the handle, and the long side which is furthest from the handle.

Before tightening a wingnut, make sure that all components of the wrench are in good working order and the handle is firmly secured to the head of the wrench. To tighten the wingnut, the wrench is placed around the wingnut, with one of the bars contacting a lug, and the wingnut body sitting inside the left and right plates of the wrench head. Ensure the wrench is aligned parallel to the body of the wingnut. To get a proper connection, one of the bars needs to be contacting a lug so that when the wrench is turned, the bar of the wrench pushes the lug it is contacting in the direction of tightening. The wrench can be used to tighten a wingnut using either the short or long side to engage the wingnut lug, as shown above. Turn the wrench like a standard wrench to tighten the wingnut until the cone of the male end contacts the taper in the female end (metal to metal contact). At this point the union seal is compressed between the male and female ends creating the seal. Note: If unsure if the connection is tightened enough, a hammer can be used after using the wrench to further tighten the wingnut.

To loosen the hammer union, reverse the direction used to tighten the wingnut, while ensuring the wrench is parallel to the wingnut, the wingnut body is sitting inside the plates of the wrench, and that one of the wrench head bars is contacting a wingnut lug. Note: If the wingnut is not loosening using the wrench, a hammer can be used to loosen the connection.

Non-Detachable wingnuts are similar except that the wingnut is not removable, i.e. was installed before the male end was welded onto the rest of the part. As such they do not have segments or a snap ring to hold the segments, however, they connection is hammered tight in the same manner.

CAUTION: Always wear appropriate PPE (safety glasses, gloves, steel toed boots, etc.) to prevent injury.

CAUTION: Always confirm the size and Figure of the connections. Mixing different size and figure components may result in catastrophic failure which may lead injury or death.

Contact your local repair shop for guidance on when to replace worn wingnuts.

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