

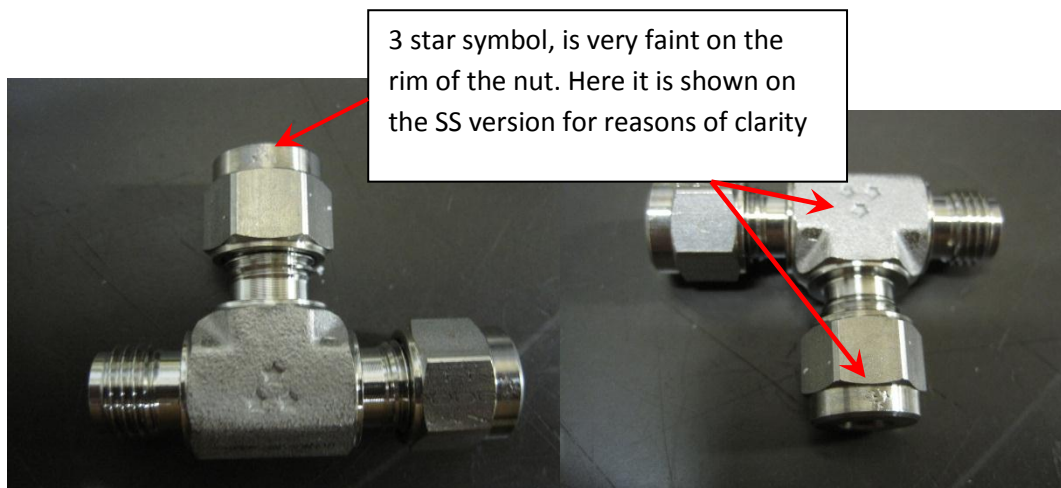
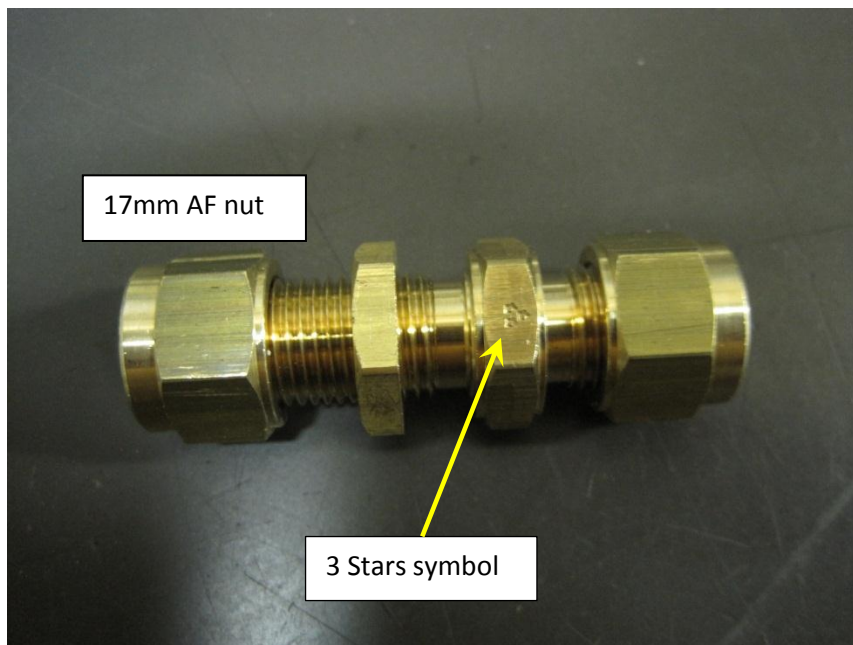
Cooling component identification;

Pipe ID

The diameter of the pipe is most important as the inch equivalent is 7.9375mm as opposed to the metric 8.00mm with a tolerance of XXXmm. This difference must be identified with a caliper of 10 micron resolution. Measurements must be done at 10 positions along the pipe in different azimuthal positions

Sagana (now called Rotarex)

Sagana identification

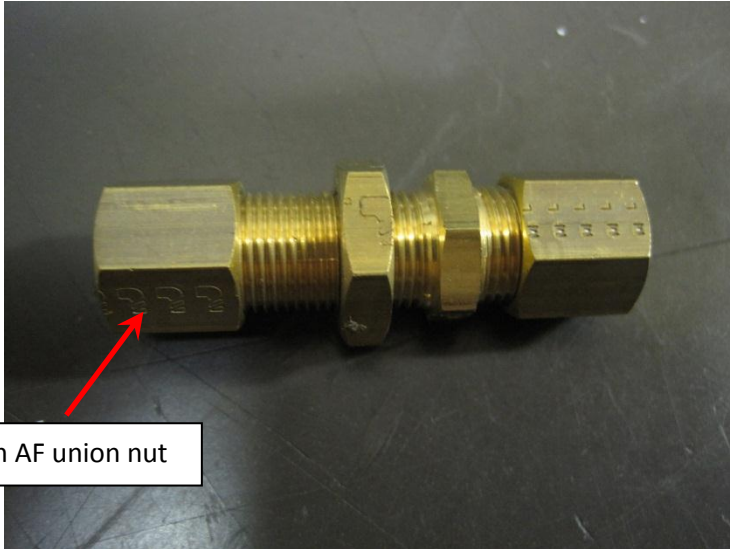


Sagana as a name no longer appears on the unions as the company is now called Rotarex.

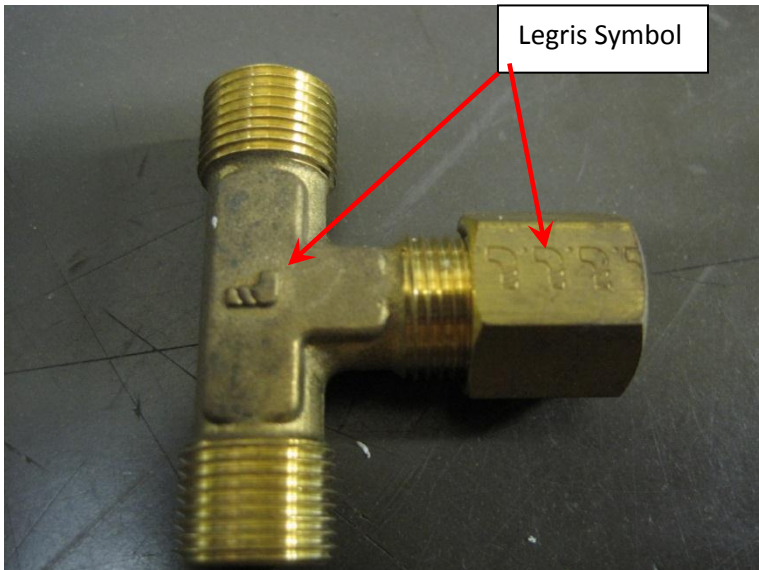
Legris unions (8mm)

These unions were used on the fabrication of the cooling system for RE1,2 & 3. They are now used for the gas, as before, in 6mm dia. They ARE NOT used for RE4

Below are examples of "old" style legris unions



14mm AF union nut



Legris Symbol

New Version of Legris union in CERN stores is by Normydro, it is otherwise identical in its dimensions.

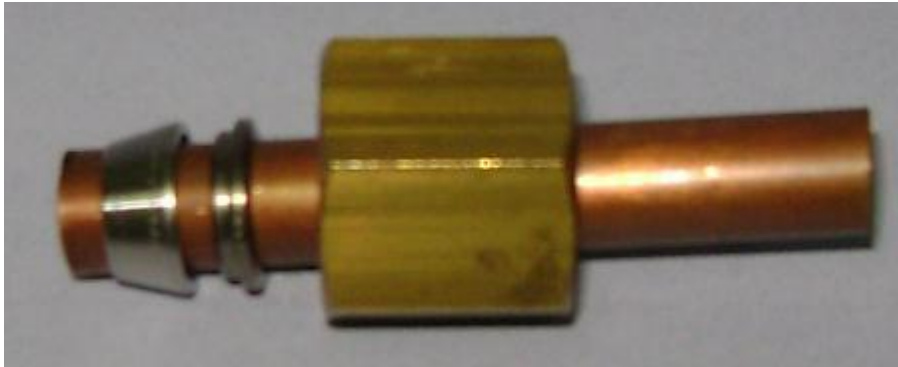


Gyrolok, yet another manufacturer;



Conclusion;

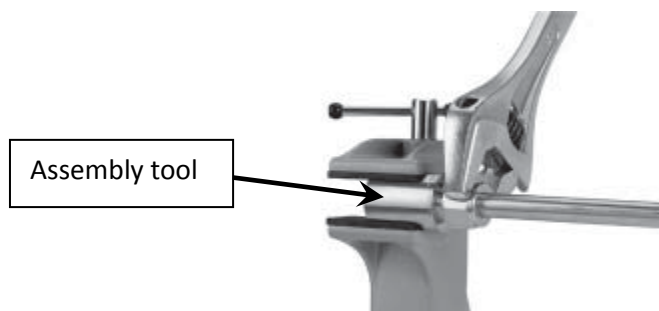
I have attempted to assemble the parts shown in the photos of Lalit's presentation on the 23 Oct 2012 during our Upscope meeting.



The pipe diameter I assumed was 8mm. I was not able, with finger force, to put the olives/ferrules into the nut shown and so no coupling was made. This is not surprising as the nut is an old fashioned Legris and the SS ferrules are perhaps Sagana/Rotarex. The correct components **MUST** be used.

The correct components are shown below;

The assembly can be done dry, with no lubricant (including teflon tape) as the tightening specification is not a torque but rather a number of turns with geometrical identification, the shim shown below.



The above tool was included in the box to Lalit and is illustrated on page 74 of the Sagana Catalogue,

This may be used for assembly as it increases the life time of the union. See refs;

The instructions are on page 75.



The shim shown above (5/16 CCS 8) is to verify that the 5 elements have been put in the correct orientation ready for assembly. The 5 elements are the pipe(8mm dia) the 2 ferrules, the union and the nut.

The translation of what is written is;

Serrage a la main = hand tight (thickness 4.84mm)

Serrage cle 1 ¼ TURNS = tighten 1.25 turns (3.63mm)

Tighten the assembly with the correct tools, as shown for a maximum of 1.25 turns, checking with the shim that it enters. There is some empirical verification to be done, normally called experience.

A quite considerable torque is required >25Nm on the initial tightening. This procedure is for the unions on the cooling system that will not be undone.

For the unions that will be mated to the entry/exit of the cooling system for the purpose of pressure testing only 1 turn is required (approx 25Nm), leaving the extra ¼ turn for the installation in P5.

Ian Crotty

25 Oct 2012

References;

<https://indico.cern.ch/getFile.py/access?contribId=3&resId=3&materialId=slides&confId=213911>

<http://rpc-cms-re4-upscope.web.cern.ch/rpc-cms-re4-upscope/RPC/Chamber%20production/Components/Mechanics/Cooling/Procedure/Sagana%20-%20Raccordi%20a%20compressione%20doppia%20ogiva%20.pdf>