

GRAY*STAR, Inc.
TEST REQUIREMENT SPECIFICATION

TRRS-022

Part: GS-42 Source Tube Assembly Part No. 405, 406	Inspection and Rework procedure for Outer Source Tube Assembly End Caps
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PURPOSE

This procedure provides a means of inspecting the features on the Part No. 413 Outer Fill End, End Cap of the Outer Source Tube Assembly for distortion of the features that affect sealing. It also provides a method for restoring the threads and conical sealing surface resulting from potential distortion due to welding.

DRAWINGS

AAI-405, Sheet 1, Source Tube, Outer, Long, Assembly of
AAI-405, Sheet 2, Source Tube, Outer, Long, Assembly of
AAI-406, Sheet 1, Source Tube, Outer, Short, Assembly of
AAI-406, Sheet 2, Source Tube, Outer, Short, Assembly of
AAI-413, Sheet 1, End Cap, Outer Source Tube, Fill End

PROCEDURE

1.0 General Examination

1.1 Examination of the distortion in the Fill End, End Cap

Using a straight edge and a flashlight, view the following features on the Outer Fill End, End Cap; for evidence of distortion.

- 1.1.1 The end surface of the outer Source Tube Assembly End Cap (fill end) adjacent to the edge of the end cap.
- 1.1.2 The straight portions of the obround profile.
- 1.1.3 Visual inspection of the conical seal surface for scratches and other surface discontinuities.

If there is visible distortion, the Source Tube Assembly will be subject to a dimensional inspection and possible re-work in accordance with the Paragraphs 2.0, 3.0 and 4.0 of this procedure:

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1.2 Examination of the Threads

1.2.1 Check the threads in the fill port using "Go" and "No Go" thread gages for the .875-14 UNF-1B threads. If the "Go" thread gage does not freely engage in the threads, the Source Tube Assembly will be subject to re-work in accordance with Paragraph 3.0 of this procedure. If the "No-Go" gage is capable of engaging in the threads, the Source Tube Assembly is unacceptable.

2.0 Dimensional Inspection

2.1 End Cap Width

Measure the width of the end cap (1.36 dimension on drawings AAI-413) at 3 places near the end of the end cap; at each tangent and at the center of the fill hole. If the difference between any two of these measurements is greater than 0.0040, the conical sealing surface is to be reworked in accordance with Paragraph 4.0 of this procedure. If the difference in any two of these measurements exceeds .0200, the Source Tube Assembly is unacceptable.

2.2 Cylindrical Diameter

Measure the diameter of the cylindrical bore that lies between the conical sealing surface and the beginning of the internal threads. Measurements shall be taken along the lateral and transverse axes. If the difference between these measurements is greater than 0.0040, the conical sealing surface is to be reworked in accordance with Paragraph 4.0 of this procedure. If the difference in these measurements is greater than .0200 the Source Tube Assembly is unacceptable.

3.0 Rework of Thread

The Inner Source Tube Assembly shall have a removable plug installed in its threads to prevent the entry of debris generated during the re-threading of the Outer Source Tube Assembly. The Outer Source Tube Assembly shall be positioned with the fill end down to prevent the entry of machining debris during the rework of the threads. The threads are to be chased with a .875-14 UNF-1B tap. The initial threads near the mouth of the fill opening can be re-threaded by hand using a tap with a standard lead-in. Due to clearance restrictions between the inner and outer source tube assemblies, threads near the throat of the fill opening are to be chased with a bottoming tap. ***The use of organic materials of any kind in this process, including cutting oils, is prohibited!*** The threads and conical sealing surfaces of both the Inner and Outer Source Tube Assemblies are to be cleaned of any loose material produced during the re-threading operation. A post rework measurement of the minor diameter of the threads shall be performed in accordance with Paragraph 1.2 of this procedure.

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4.0 Rework of Conical Sealing Surface

Secure the Outer Source Tube Assembly in a vise or suitable machining fixture and re-surface the inner and outer conical sealing surfaces. Align the cutting tool precisely relative to the minor diameter of the threaded hole prior to performing the resurfacing operation. A removable plug (dirt shield) is to be installed in the threads of the Outer Source Tube Assembly to prevent any chips or other debris from entering the interior of either the inner or outer source tube assemblies. Remove a minimum amount of material during this operation consistent with producing a uniform conical sealing surface. *The use of organic materials of any kind in this process, including cutting oils, is prohibited!* The conical seal surface is to be cleaned of all loose chips and debris prior to the removal of the dirt shield. The surface finish of the conical surface is to be inspected for surface roughness in accordance with drawing No. AAI-413.

REVISIONS

<u>Rev</u>	<u>Date</u>	<u>Comments</u>
00	1-29-99	Original Release

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MEMO TO FILE

Reference – Section 2.1 & 2.2

Justification for the .0200 maximum difference between measurements of the end cap and the cylindrical diameter

The .0200 maximum limit for the difference in the measurements of the cylindrical diameter is based on the following:

A maximum difference in diameters that is equal to 50% of the minimum thread engagement for a .875-14 UNF-1B thread

Where the:

Minimum major diameter of the external thread, - 0.8579

Maximum minor diameter of the internal thread, - .8140

(Ref. – Screw Thread Standards for Federal Services, 1963 Supplement to 1957 Edition, Handbook H-28, U.S. Dept. of Commerce)

$H = (.8579 - .8140) = .0439$ (On diameter)

$.50 \times .0439 = .022$

Rounded down to .020 (On diameter)