SIGNAL FEEDTHROUGH BOX WELD PROCEDURE

3740.210-EN-123

BY

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Bob Ferry, November 12, 1987

1. Firmly bar clamp the box together in all directions. When all directions have been secured, tack weld each outside seam of the box in 4 or 5 places along it's length. Remove clamps and proceed to weld all outside seams. Care should be taken that the maximum weld cross section does not exceed $1/16"$ x $1/16"$.
2. To help stabilize the metal as it cools, we will install all slot plugs, (MC-223665), and one side cover plate, (MD-223637). Inside welds for this side plate will be made thru the opposite side flange. Weld cross sections should be held to a $1/16"$ maximum depth and width.
3. Weld the inside of the end plates, (MD-224535), using the weld relief as filler material. After the box has cooled, weld the top plate (ME-2244533) to the side flange, (ME-224536) and then to the bottom plate (ME-223534).
4. Repeat this procedure for the opposite side.
5. Helium leak check the welds, inside and out, by plugging the slot pumpout holes and pumping on the pumpout line. Remember that the clearances are very tight in the space that is to be pumped. Allow plenty of time for a good pumpdown and leak check. Leak detection should be on the most sensitive scale on a helium leak detector with a minimum sensitivity of 10⁻⁹ ATM CC/SEC.
6. See 30 psig. pressure test procedure.

Prototype Signal Feedthrough Box #2

Assembly Report

Bob Ferry, November 11, 1987

Upon delivery of the 8 machined plates they were inspected for any deviations from the detail drawings. All measurements made were within the set tolerances and they were submitted for welding.

Welding of the plates falls into two categories, outside fusion welds, and inside fillet welds. Because fillet welds require more heat and longer time spent in any given place, these are the most critical. As in all of our 304 Stainless Steel applications, a 308L filler rod was used.

The box was clamped together to check fit and that all joints mated as expected. A learned group of individuals were then assembled to discuss the technique for best welding results. All concurred that weld reliefs on the inside of the box would be the safest method for reducing the warp due to contraction of the cooling weld area. It was also noted that some of the plates had been drawn with 1/16" chamfers on the edges. We will rework these by building up weld material, then remachining to sharp 90 degree edges. Revised drawings were generated removing the chamfers and adding 1/16" x 1/16" weld reliefs to the end plates.

Reassembly of the box took place on November 9 and welding began that afternoon. Welding was done by the attached weld procedure. During the lead check which followed, three small leaks were detected, all in corners. After all leaks were repaired the box was successfully pressure tested to 30 psig.

Signal Feedthrough Box Pressure Test

3740.210-EN-123

Bob Ferry, November 13, 1987

On November 14, 1987 a pressure test of the prototype II Signal feedthru box was performed. The following is a description of how this test was performed and the results obtained. The people conducting the test were Jim Harder and the author.

1. A completed Signal feedthru box is outfitted with it's standard side plates, drawing number MD-223637. The indium seals are not installed for this test. A full set of slot plugs, drawing MC-223665, are installed into the top plate of the box. During this pressure test the indium and the O ring seals are installed. By doing this now I am able to do a complete leak check of the slot pumpouts and the captured weld area before and after the pressure test.
2. A bottom plate was fabricated using the same drawing as the final assembly flange which is used on the CC cryostat. This drawing number is ME-223235 sheet 3 of 8 view BB. Some obvious exceptions should be noted:
 - a. The C seal groove is omitted.
 - b. The plate was made as a blank and not a flange.
 - c. A 1/4" pressure tap supply port was added.
3. A test area was set up at the RF barn and all access to this was halted. The box was pressurized to 15 psig. and allowed to sit for 10 minutes, at which time the box was snopped and found to be leak free. A second test at 30 psig. was also done in the same manner with no leak present.
4. The box was then measured for flatness and these numbers were within the .002" flatness that was measured after the welding operation.