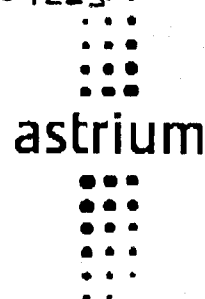


Telefax/Telecopy



Datum/Date: 28.03.2002

Herschel

An/To: +33 4 92 92 30 10
Alcatel Space, Cannes, F
 Mr. J. J. Juillet
 Mr. J. -M. Reix
 Mr. G. Lund
 Mr.P. Rideau

Kopie an/ +31 71 565 52 44
 Copy to: **ESTEC, Noordwijk, NL**
 Mr. T. Passvogel
 Mr. C. Jewell
 Mr. J. Bruston

+44 123 544 6667
RAL Chilton, GB
 Mr. J. Delderfield

+39 0117180637
Alenia Spazio, Torino, I
 Mr. C. Cattalano
 Mr. M. Cesa
 Mr. G. Bottaro

Abs./Sender: J.Lang
 Abt./Dep.: ED 37/Herschel
 Tel./Phone: +49 75 45 8-3323
 Fax/Fax: +49 75 45 8-42 43
 E-Mail: Juergen.Lang@astrium-space.com
 Ref.: HP-ASED-0197/02

Seite/Page: 1 von/of 5 Seiten/Pages

Betreff/Subj.: SPIRE Cryo-SIH Diameter calculations

Ref. 1: SPIRE-RAL-PRJ-00608 issue: 0.9 Ref. 2: Telecon with Alenia on 22.03.02

Dear Sirs

The latest SPIRE harness definition ref. 1 has been reviewed to calculate the Cryo-harness branch diameters and to support the Alenia SVM internal SPIRE warm unit lay-out design. During ref. 2, Alenia asked for these data to provide a new lay-out to the next instrument interface meeting to be held on 03.04.02.

New Cable types, currently under manufacturing evaluation cycle at Gore, we calculate in relation to the known data as defined in the ISO-K-101 cable specification and advanced data provided by Gore upon number of shield-cores. The diameters have to be calculated again, after we received the new cable configuration drawings from Gore.

We calculated the harness length upon our latest data taken from the CATIA 3D model harness routing design and an associated wire and cable mass figure is provided too.

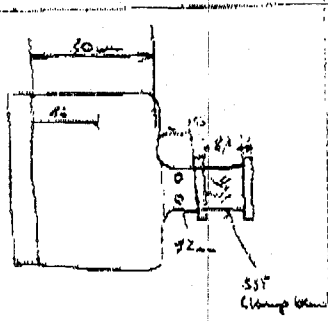
The cable bend-radius shall be calculated with 10 times OD of the thickest cable within the harness bundles, Mr.Wahl, Gore told me this morning.

The connector back-shells for the Cryo-harness solid-wire contacts are under design investigation at Glenair. The back-shells we need shall have an internal hight of about 30 mm and the total hight will be about 45 mm. The back-shell 557-263 (see annex 1) have to be adapted to the special needs defined in the schematic below.

Glenair will provide data for a 90° version too, but the shoulder hight have to stay as defined in the schematic w.r.t. the solid wire interconnection back-shell internal.

Astrium GmbH - Earth Observation & Science Division - 88039 Friedrichshafen - Deutschland/Germany
 Telefon +49 (0)7545 8-01 - Telefax +49 (0)7545 8-4411
 Amtsgericht München, HRB-Nr. 107 647 - Ust. Ident. Nr. / VAT reg. no DE 167015356
 Bayerische Hypo- und Vereinsbank AG Lindau - BLZ 600 202 90 - Konto-Nr. 1 285 599
 Deutsche Bank AG, Friedrichshafen - BLZ 650 700 84 - Konto-Nr. 3 550 100

A split back-shell type similar to 557-317 is under investigation for the MDM-connectors at Glenair.

| Reference | Results | Remarks |
|-----------|---|---------|
| |  <p>Minimum dimensions as specified above.</p> | |

We expect to fix the harness overshield by use of the small size of SST clamp-bands from Glenair.

Cryo-Harness overshield:

The overshield materials are current under detailed design and production investigations.

The following alternative braided shields are under investigation at Astrium:

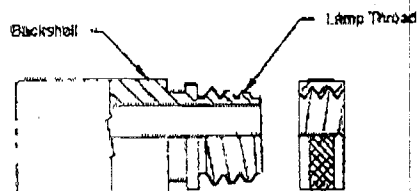
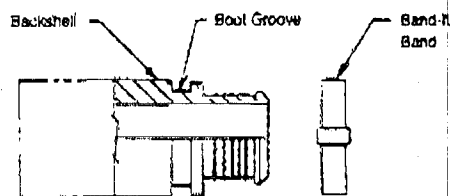
- on the harness branches between the Cryo-Warm units and the SVM I/F-CB, thin silver plated copper braids or SST AWG 44 braids
- on harness branches between SVM-I/F-CB and CVV & unit external plug-connectors, SST AWG 44 braids,
- on harness branch between CVV vacuum feed-through and optical bench => No harness overshield according Alcatel instruction.
- In case that one or the other harness branch have to be overshielded, the CVV back-shells have to be exchanged.
- From a mechanical and integration point of view , we need back-shells on the CVV feed-through connectors. Detailed design investigations are currently ongoing between Glenair and Astrium.

SVM Interface connector-bracket:

On the SVM I/F-Connector bracket, MIL-C-38999 series 2 / SCC 3401/044 connectors with electroless nickel finish will be used.

The plug-type: MS 27484T18/22/24F35SN mounted on the SVM Cryo warm harness and the Receptacle-connector MS 27497T18/22/24PN mounted on the CVV external harness.

The plug- and receptacle connectors will be assembled with straight overshield back-shells without strain-relief clamps. The two version of overshield backshell ends , see below, are currently under investigation at Astrium.



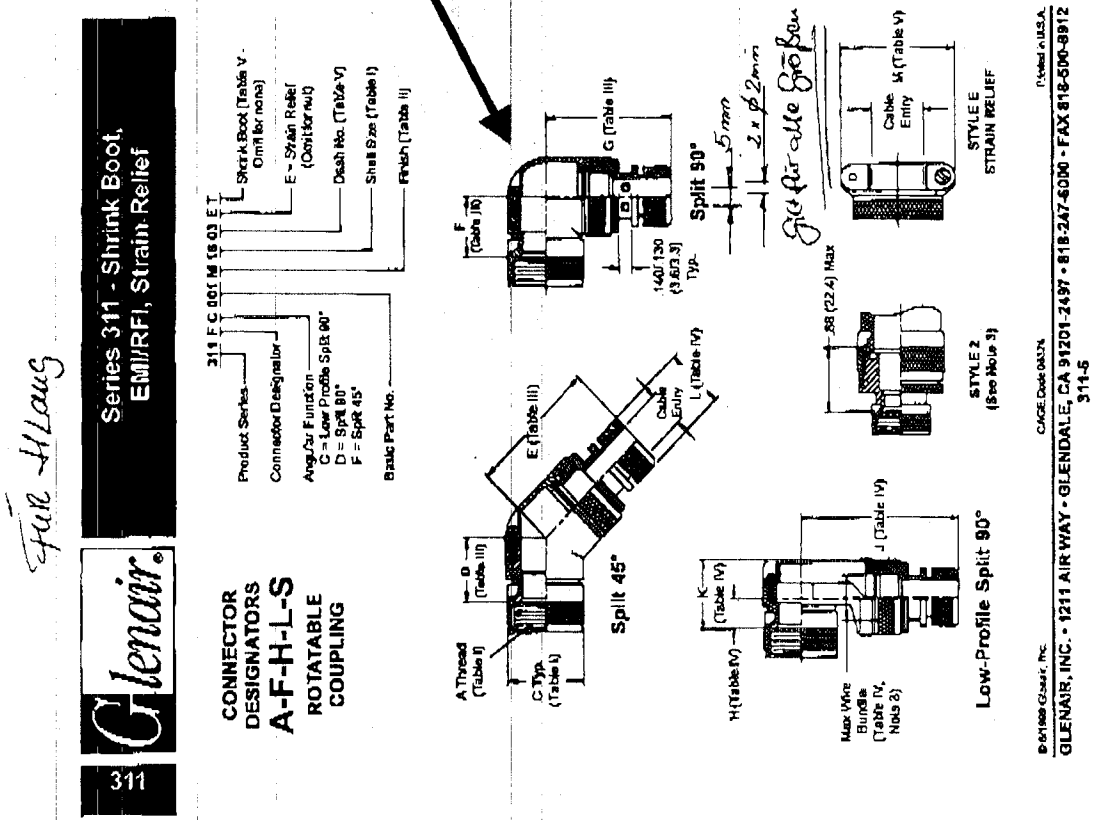
The back-shells have to be modified for internal harness branch fixations, because no strain-relief clamps can be used.

For back-shell overall dimensions in relations to that we are investigating with Glenair, the series 440 FS070 with an overall length of 50 to 60 mm can be used for the SVM harness lay-out design investigation at Alenia.

We try utmost to investigate split back-shells, for a better & reliable harness manufacturing, repair and PA control, but this works in the frame of mass reduction, better on 90° types than on straight one.



On the CVV external plug connectors modified 90° split elbow back-shells have been design. The final drawings are in preparation at Glenair.



The SPIRE Cryo warm harness branch bend radius calculations, we will send by mail. In addition we will hand You the advanced harness wire and cable mass calculations without any margins.

The connector mass data are defined in ESA SCC specifications and a summary is provided in the EPLM and Cryo Harness ICD ref. HP-2-ASED-ICD-0001, which will be distributed for information in cw14/02.

In the document ref. HP-2-ASED-TN-0010 Issue:1 the expected Cryo-harness lengths are defined. The harness length within the SVM have to be adapted on the new instrument unit lay-out design, which we would like to receive as updated model from Alenia after the instrument interface meeting in cw 14/02.

Kind regards

Astrium GmbH

Alvito
 i. V. W. Rühle

J. Krocber für
 i. A. R. Hohn

Astrium GmbH - Earth Observation & Science Division - 88039 Friedrichshafen - Deutschland/Germany
 Telefon +49 (0)7545 8-01 - Telefax +49 (0)7545 8-4411
 Amtsgericht München, HRB-Nr. 107 647 - Ust. Ident. Nr. / VAT reg. no DE 167015356
 Bayerische Hypo- und Vereinsbank AG Lindau - BLZ 600 202 90 - Konto-Nr. 1 285 599
 Deutsche Bank AG, Friedrichshafen - BLZ 650 700 84 - Konto-Nr. 3 550 100

557-263

REVISIONS

| REV | DESCRIPTION | DATE | APPROVED |
|-----|-------------|------|----------|
| 1 | | | |

TABLE II

| ENTRY | D | B | AMPLITUDE |
|-------|------|------|-----------|
| 01 | .125 | .285 | 1-5 |
| 02 | .181 | .287 | 1-5 |
| 03 | .250 | .333 | 1-5 |
| 04 | .312 | .387 | 1-5 |
| 05 | .375 | .435 | 1-5 |
| 06 | .437 | .511 | 1-5 |
| 07 | .500 | .580 | 1-5 |
| 08 | .562 | .649 | 1-5 |

TABLE I

| SHELL | A | B | C | MAX |
|-------|------|------|------|-------|
| 1 | .125 | .285 | .074 | 02-07 |
| 2 | .181 | .287 | .101 | 02-07 |
| 3 | .250 | .333 | .133 | 02-07 |
| 4 | .312 | .387 | .170 | 02-07 |
| 5 | .375 | .435 | .210 | 02-07 |
| 6 | .437 | .511 | .255 | 02-07 |
| 7 | .500 | .580 | .305 | 02-07 |

TABLE III

FINISH DESCRIPTION

A: FINISH PLATE/COVER DOOR

B: ELECTROLESS NICKEL

C: CHROMIUM PLATE/COLOR BARS

D: OVER PICKLED PLATE

E: CAD/0.0. OVER ELECTROLESS NICKEL

F: CAD FOUR HOUR SALT SPIN

G: CAD PLATE, BRIGHT OVER ELECTROLESS

H: NICKEL 1500 HR CORROSION RESISTANCE

PART NUMBER DEVELOPMENT

EXAMPLE: 557-263 H 2-03

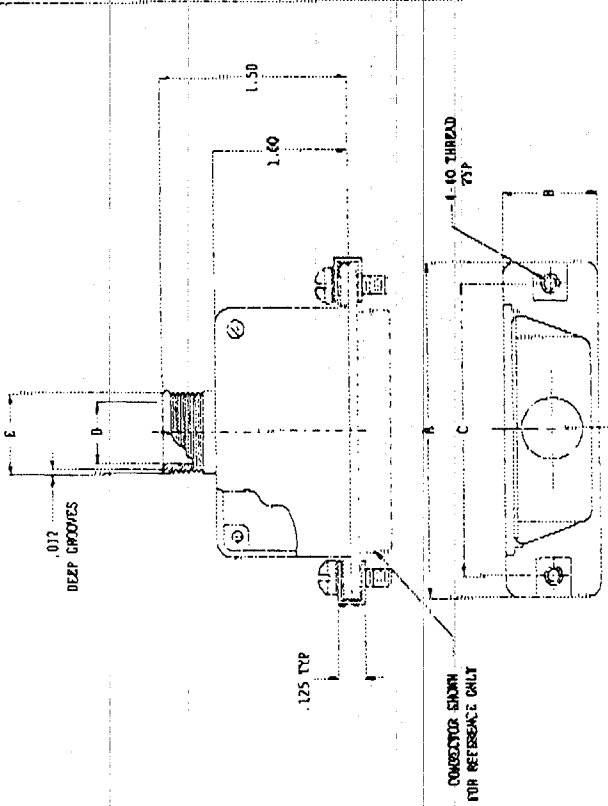
PRODUCT SUFFIX

BASIC NO

FINISH STL, TABLE III

SHELL STIC, TABLE I

ENTRY STIC, TABLE II



UNIVERSITY OF TORONTO

DATE: 04/15/99

SCALE: 1:1

06324

557-263

01

FOR ORIGINAL OPERATING TOP

SCALE: 1:1

06324

557-263

01

FOR ORIGINAL OPERATING TOP

NOTES:

- ASSEMBLY IDENTIFIED WITH MANUFACTURER'S MARK AND P/N. SPACES FORMATTING.
- MATERIAL/FINISH: BACKSHELL COVER - AL ALLOY/SEE TABLE III RESTRAINER CRYSTALS, BARWARE - CRUS/PASSTURNED

GLENNAIR, INC.

BACKSHELL, BARWARE

FOR HEL-C-24308 CONNECTORS