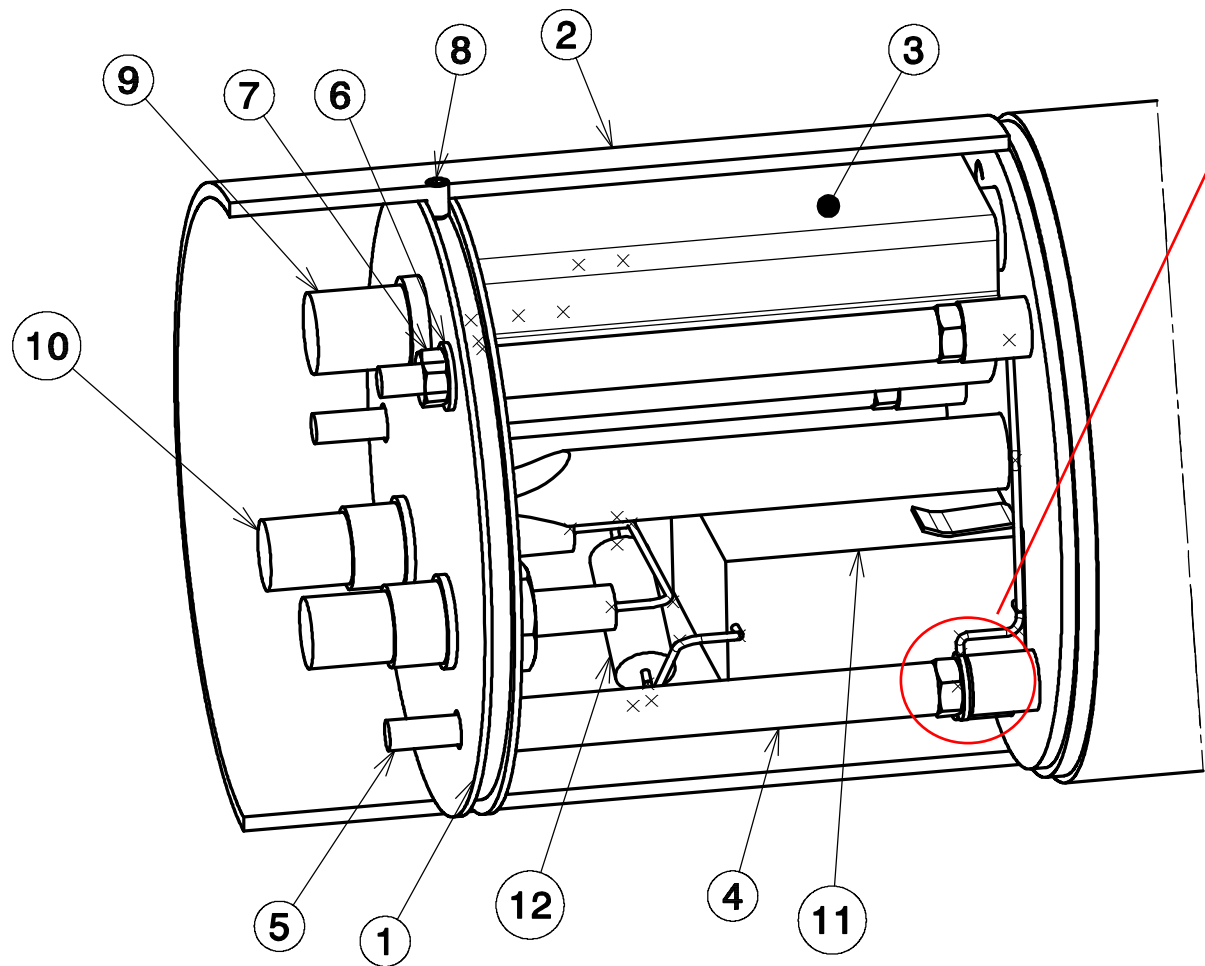
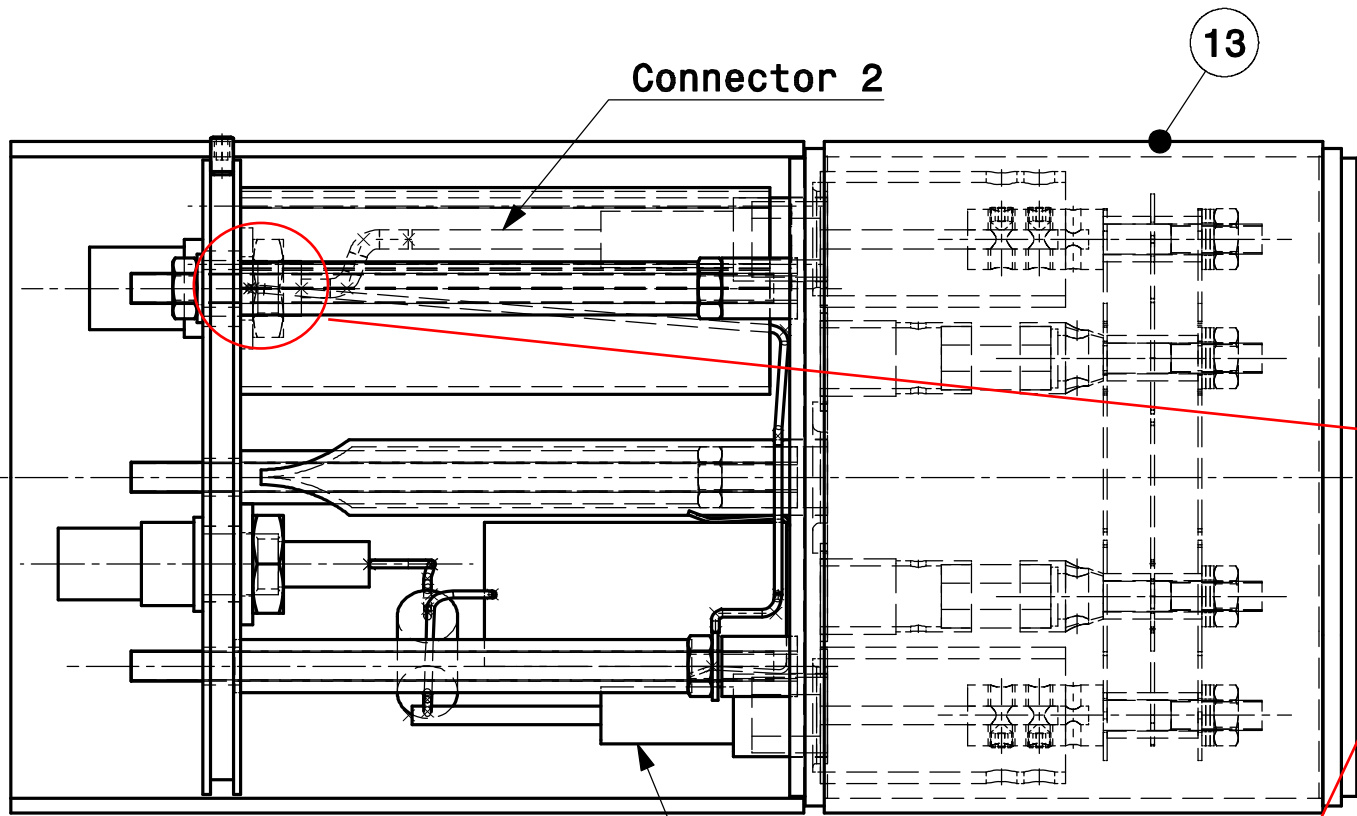


DESSIN, RUGOSITE, TOLERANCES  
SELON NORMES ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARDS

PROJECTION

ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE RESEARCH  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE

Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite  
This drawing may not be used for commercial purposes without written authorisation



For connections use 1mm<sup>2</sup> copper wire

1 BRASS SOLDER.CAB.T. BNC 50 OHM

09.46.11.520.6

1 TERM.CAB.S.SINGLE D 4,2X23,5mm

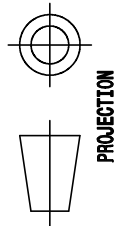
04.76.26.448.1

| QNA | DESCRIPTION   | POS | MAT.            | OBSERVATIONS                 | REF. CERN         |
|-----|---|-----|-----------------|------------------------------|-------------------|
| 1   | LIC ASSEMBLY - ALUMINIUM ELECTRODES                             | 13  |                 | LHCBLM__0084                 |                   |
| 1   | Resistor  | 12  |                 | EBG SOX 20-10MOhm/15kV       |                   |
| 1   | Capacitor   | 11  |                 | WIMA MKP 10-0.47microF/2000V |                   |
| 2   | CEN.CHASS.PLUG POLYPE.SHV 5KV<br>PRISE CHASS.CEN.POLYPE.SHV 5KV | 10  |                 | BNC HT Polypenco SVH 5KV     | 09.41.25<br>160.9 |
| 1   | CABLE PLUG /CENTR BNC 50 OHM<br>PRISE CHASS./CENTR BNC 50 OHM   | 9   |                 | BNC 50 Ohm, TEFLON           | 09.46.11<br>360.4 |
| 1   | Hex hd point screw M3x5   | 8   | Stainl.steel A2 |                              |                   |
| 6   | Nut M4  | 7   | Stainl.steel A2 |                              |                   |
| 3   | Washer M4   | 6   | Stainl.steel A2 |                              |                   |
| 3   | Threaded rod M4x85  | 5   | Stainl.steel A2 |                              |                   |
| 3   | Round tube dia. 7/4   | 4   | AW6082          | L=60.5 (0;-0.2)              |                   |
| 1   | SCREEN FOR SEM COVER -  | 3   |                 | LHCBLM__0056                 |                   |
| 1   | ELECTRICAL CONNECTION - EXTERNAL TUBE                           | 2   |                 | LHCBLM__0038 typeD           |                   |
| 1   | ELECTRICAL CONNECTION - EXTERNAL PLATE                          | 1   |                 | LHCBLM__0037                 |                   |

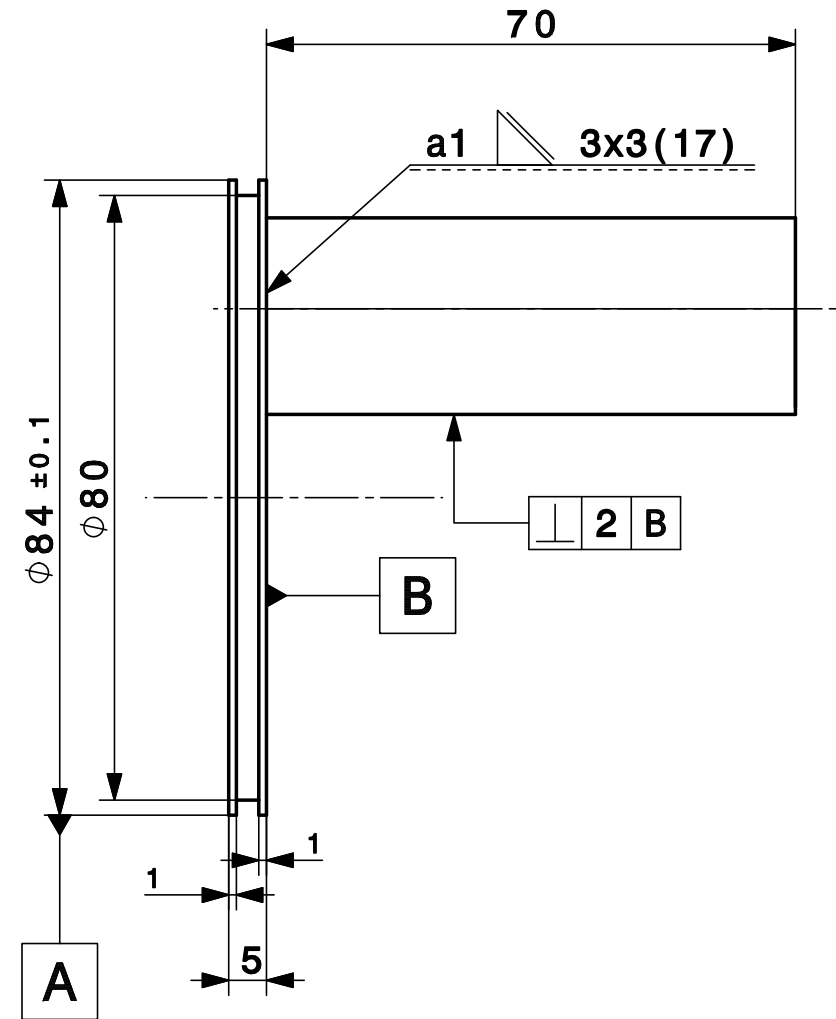
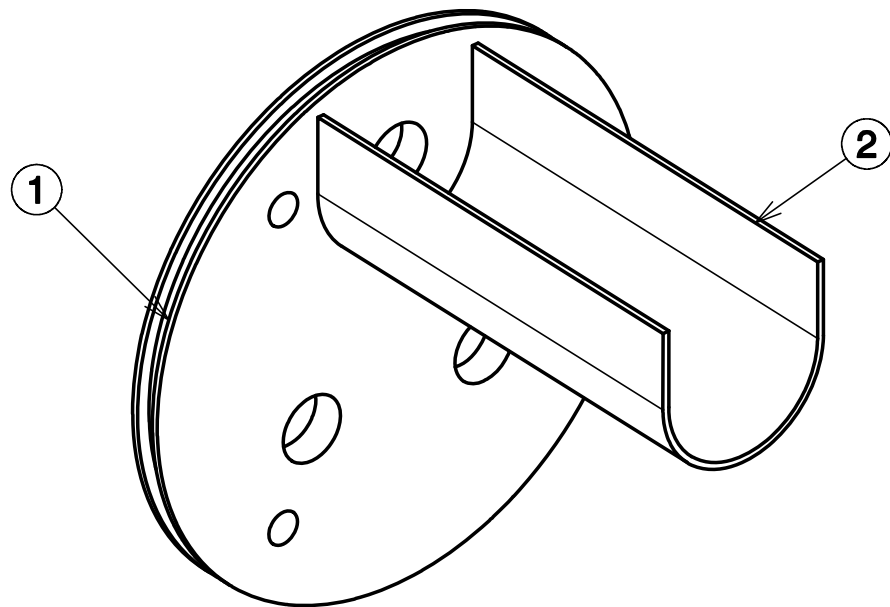
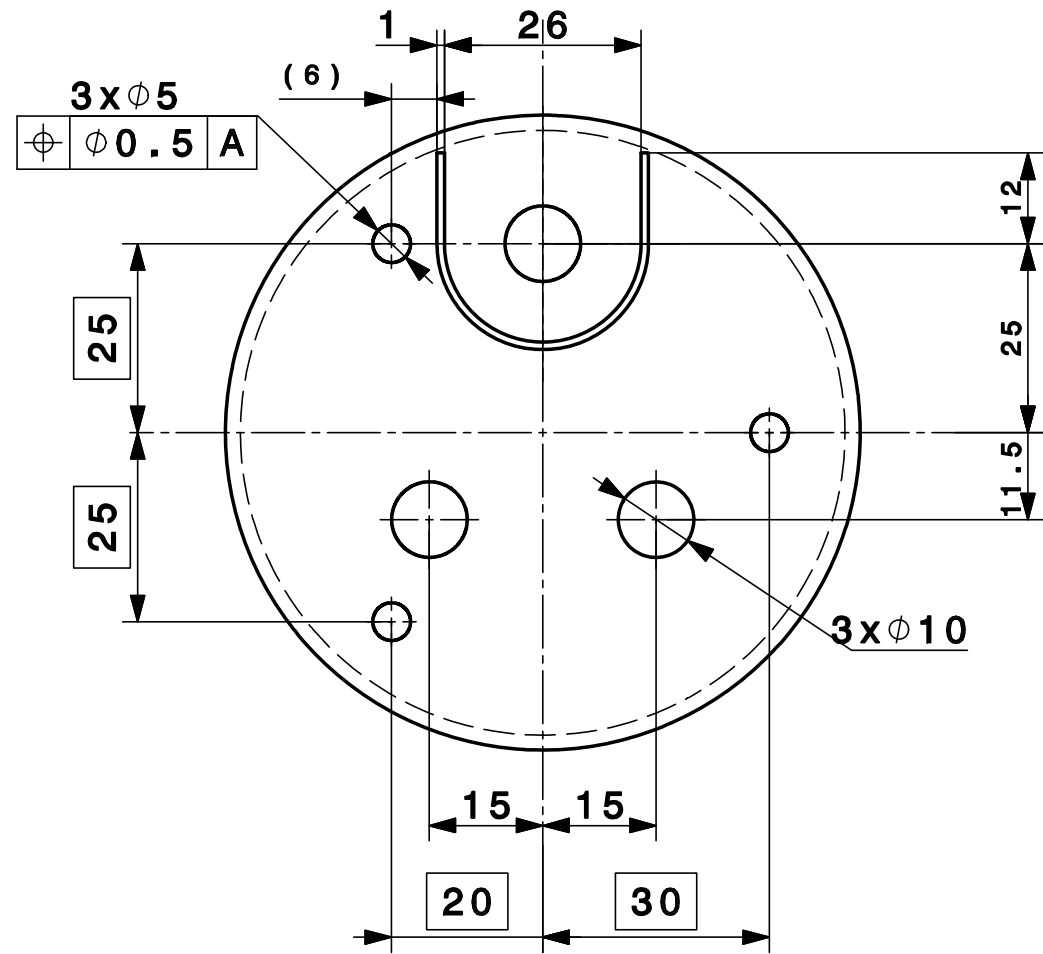
|   |  |                                  |                                  |
|---|--|----------------------------------|----------------------------------|
| ENS/ASS                                       |  | S.ENS/S.ASS                      |                                  |
| <b>Beam Loss Monitor</b>                      |  |                                  |                                  |
| <b>ELECTRICAL CONNECTORS<br/>LIC ASSEMBLY</b> |  | SCALE                            | DES/DRA. G.FOFFANO 2010-11-10    |
|   |  | 1:1                              | CONTROLLED T.RENAGLIA 2010-11-10 |
|   |  |                                  | RELEASED E.HOLZER 2010-11-12     |
|   |  |                                  | APPROVED                         |
|   |  | CAD Document Number ST0313010_02 |                                  |
|   |  | REPLACES                         |                                  |
| RELEASED BY PROJECT ENGINEER                  |  | FOR INFORMATION                  | QAC -                            |
| <b>LHCBLM__0087</b>                           |  | SIZE 3                           | IND.                             |



DESSIN, RUGOSITE, TOLERANCES  
SELON NORMES ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARDS



PROJECTION



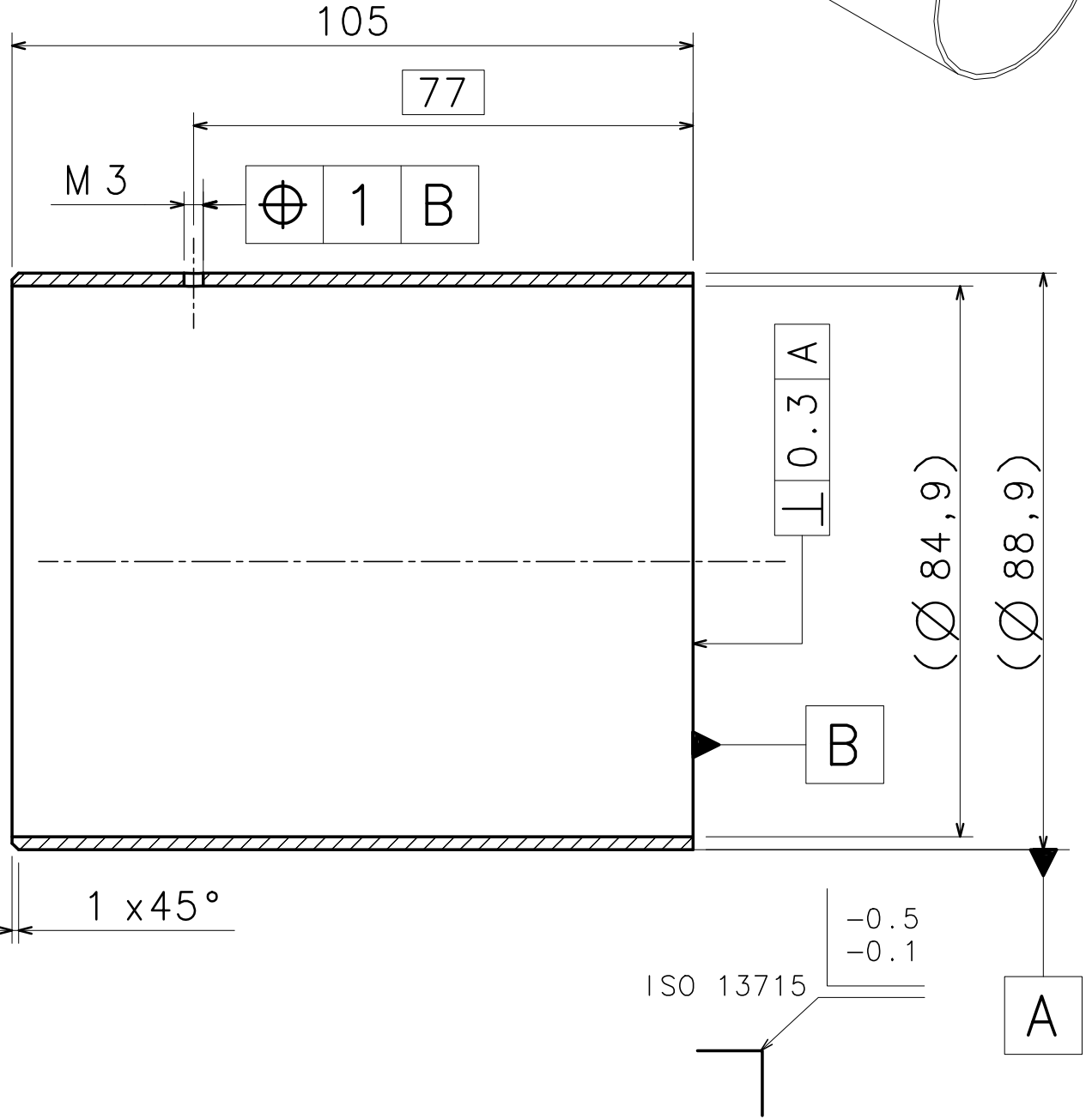
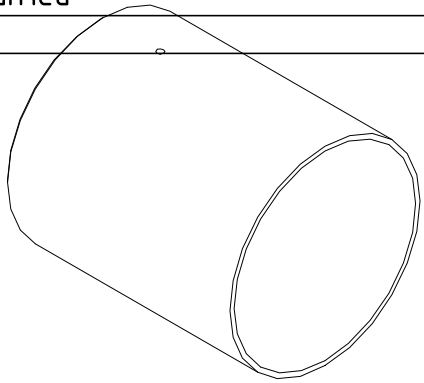
ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
RESEARCH  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE

Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite  
This drawing may not be used for commercial purposes without written authorisation

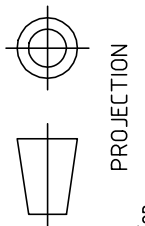
| IND. | DATE       | NOM/NAME   | ZONE | MODIFICATION                             |
|------|------------|------------|------|--|
| C    | 2010-09-30 | G. FOFFANO |      | UPDATED                                  |
| B    | 2005-07-12 | G. FOFFANO |      | Tolerances on DIA. D modified-thk part 1 |
| A    | 2005-03-23 | G. FOFFANO |      | UPDATED                                  |

| SHEET TH.1                              | 2           | AISI304L           |      | 44.59.32   |                        |
|---|-------------|--------------------|------|--|------------------------|
| TOLE EP.1                               |             |                    |      | 010.8  |                        |
|   | 1           | Stainless Steel    |      |  |                        |
| QUA                                     | DESCRIPTION | POS                | MAT. | OBSERVATIONS   | REF. CERN              |
| ENS/ASS                                 |             | S. ENS/S. ASS      |      |  |                        |
| ISO 2768-mK                             |             | √ Ra 3.2           |      | ISO 13715 $\begin{matrix} -0.3 \\ +0.3 \end{matrix}$ |                        |
| Beam Loss Monitor                       |             |                    |      | DES/DRA.   | G. FOFFANO 2004-05-07  |
| ELECTRICAL CONNECTION<br>EXTERNAL PLATE |             |                    |      | CONTROLLED   | T. RENAGLIA 2010-10-22 |
|   |             |                    |      | RELEASED   | E. HOLZER 2010-10-27   |
|   |             |                    |      | APPROVED   |                        |
|   |             |                    |      | CAD Document Number ST0312972_02                     |                        |
|   |             |                    |      | REPLACES   |                        |
| RELEASSED BY<br>PROJECT ENGINEER        |             | FOR<br>INFORMATION |      | GAC<br>-   | LHCBLM__0037           |
|   |             |                    |      | SIZE   | IND.                   |
|   |             |                    |      | 3  | C                      |

| IND. | DATE       | NOM/NAME   | MODIFICATION                       |
|------|------------|------------|------------------------------------|
| A    | 2005-03-22 | G. FOFFANO | LENGTH +30 mm/ Tolerances modified |
| B    | 2005-11-22 | G. FOFFANO | updated                            |



DESSIN, RUGOSITE, TOLERANCES  
SELON NORME ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARD



PROJECTION

ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE

Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite.  
This drawing may not be used for commercial purposes without written authorisation.

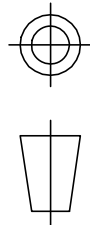
| QUANT | DESCRIPTION                   | POS | MAT.         | OBSERVATIONS | REF.CERN |
|-------|-------------------------------|-----|--------------|--------------|----------|
|       | ROUND TU. 304L WELD. 88,9x2,0 | 1   |              |              | 39.39.05 |
|       | TUBE ROND 304L SOUDE 88,9X2,0 |     |              |              | 088.2    |
|       | ENS./ASS.                     |     | S.ENS/S.ASS. |              |          |

|  |  |  |                         |                                       |            |            |
|--|--|--|-------------------------|---------------------------------------|------------|------------|
| Beam Loss Monitor                      |  |  | ECHELLE<br>SCALE<br>1:1 | DES/DRA.                              | G. FOFFANO | 2004-05-07 |
| ELECTRICAL CONNECTION<br>EXTERNAL TUBE |  |  |                         | CONTROLLED                            | R. PERRET  | 2005-12-06 |
|  |  |  |                         | RELEASED                              | E. HOLZER  | 2005-12-06 |
|  |  |  |                         | APPROVED                              | -          | -          |
|  |  |  |                         | LHCB,BLM...BEAMLOS000,B007,B0072131PL |            |            |
| REPLACE/REPLACES                       |  |  |                         |                                       |            |            |

|      |                  |           |     |              |      |      |
|------|------------------|-----------|-----|--------------|------|------|
| CERN | RELEASED BY      | FOR       | QAC | LHCBLM__0038 | SIZE | IND. |
|      | PROJECT ENGINEER | EXECUTION | -   |              |      |      |



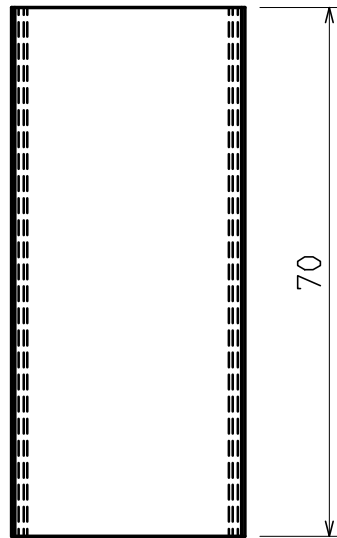
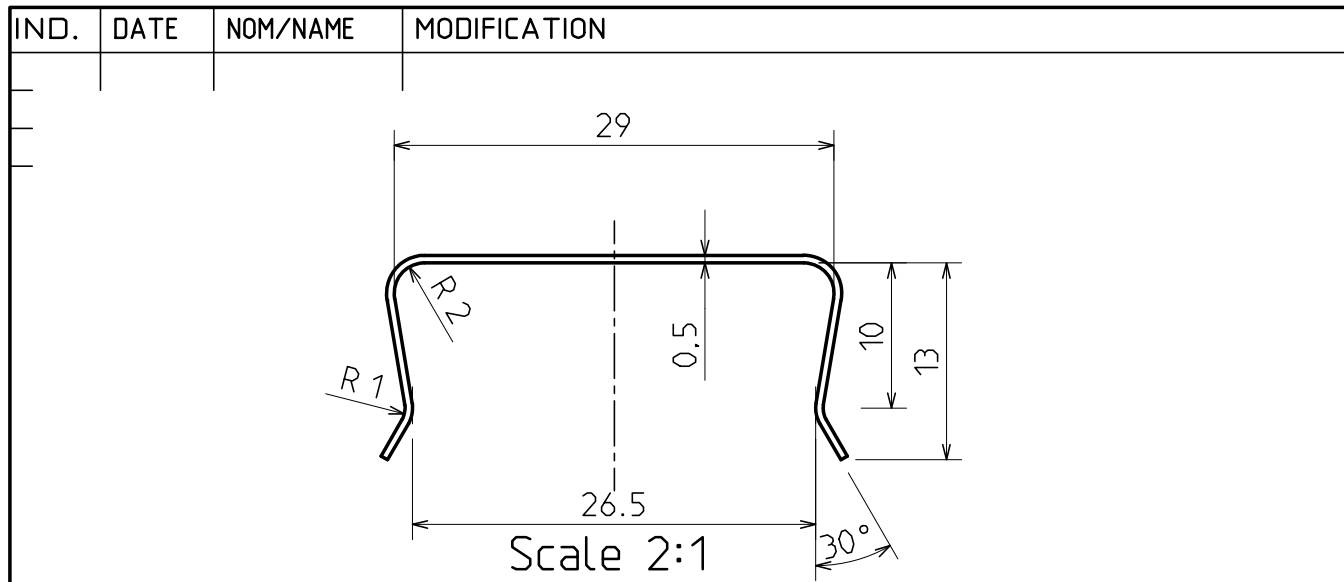
ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE



PROJECTION

DESSIN, RUGOSITE, TOLERANCES  
SELON **NORME ISO**  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO **ISO STANDARD**

Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite.  
This drawing may not be used for commercial purposes without written authorisation.

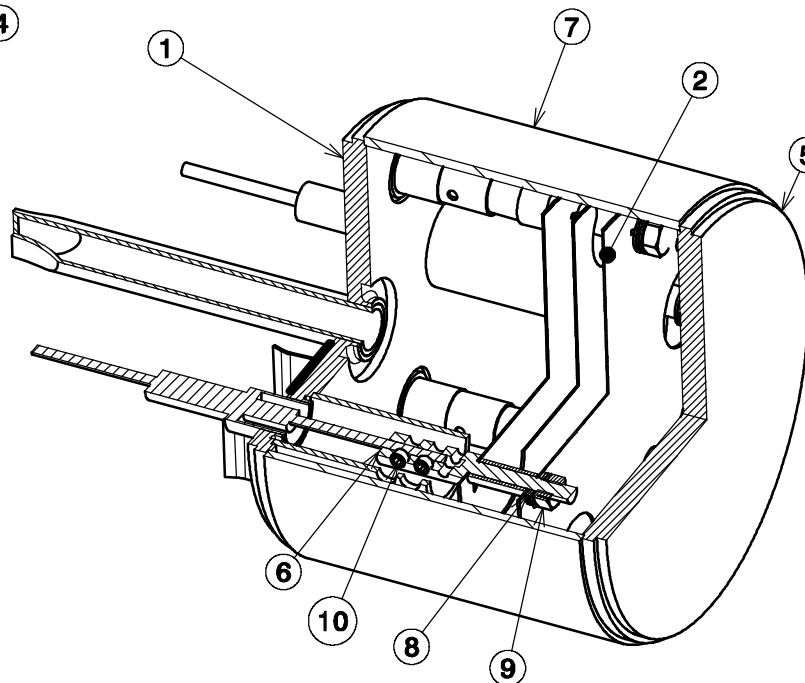
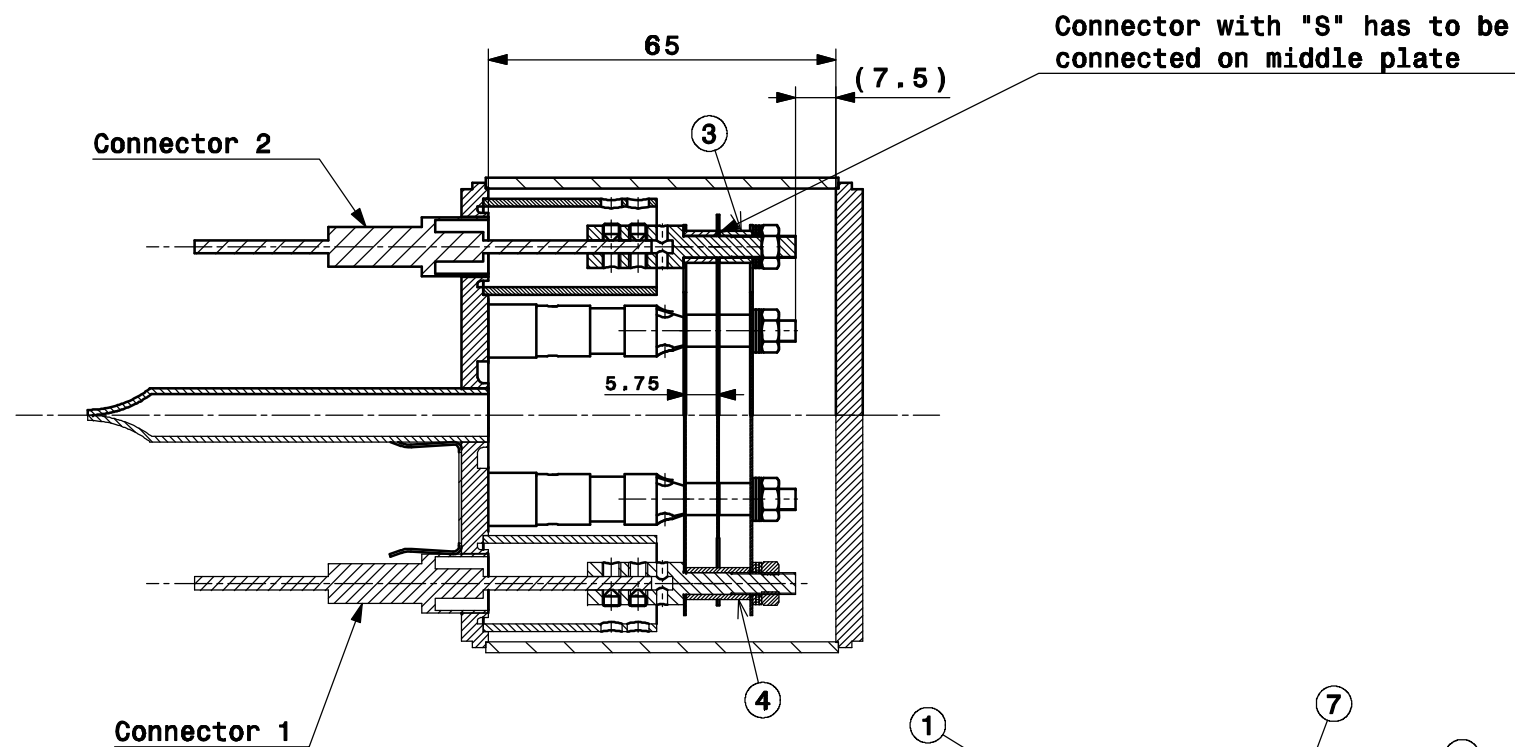
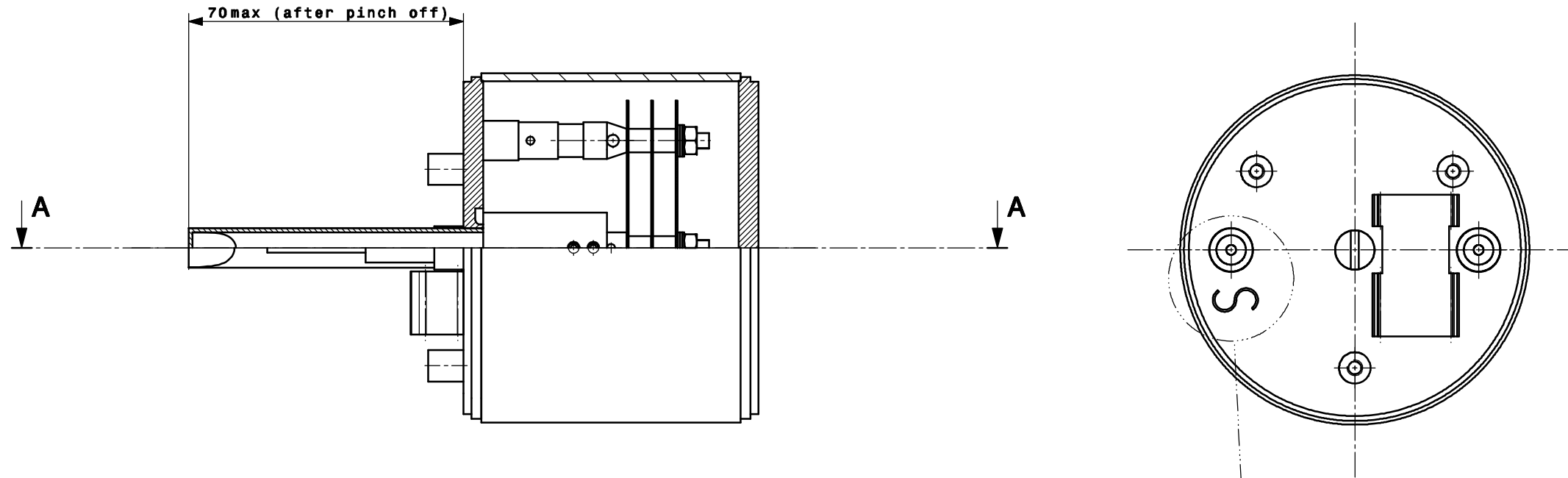


| QUANT                                  | DESCRIPTION | POS                     | MAT.             | OBSERVATIONS                          | REF.CERN            |            |
|--|-------------|-------------------------|------------------|---------------------------------------|---------------------|------------|
|  |             | 1                       | AISI304L         |                                       |                     |            |
| ENS./ASS.                              |             | S.ENS./S.ASS.           |                  |                                       |                     |            |
| Beam Loss Monitor                      |             |                         | ECHELLE<br>SCALE | DES/DRA.                              | G.FOFFANO           |            |
| SCREEN FOR SEM COVER                   |             |                         | 1:1<br>2:1       | 2007-03-14                            |                     |            |
|  |             |                         |                  | CONTROLLED                            | C.MENOT             | 2007-03-20 |
|  |             |                         |                  | RELEASED                              | E.HOLZER            | 2007-03-20 |
|  |             |                         |                  | APPROVED                              | -                   | -          |
|  |             |                         |                  | LHCB,BLM...BEAMLOS000,B007,B0072162PL |                     |            |
|  |             |                         |                  | REPLACE/REPLACES                      |                     |            |
| RELEASED BY<br><b>PROJECT ENGINEER</b> |             | FOR<br><b>EXECUTION</b> |                  | QAC<br>-                              | <b>LHCBLM__0056</b> |            |
|  |             |                         |                  | SIZE<br>4                             | IND.                |            |

DESIGN, RUGOSITE, TOLERANCES  
SELON NORMES ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARDS



ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR  
NUCLEAR RESEARCH  
This drawing is part of a project which is the property of CERN and is loaned to the user for commercial purposes without authorization.  
This drawing may not be used for commercial purposes without authorization.



| QUA | DESCRIPTION                                     | POS | MAT.   | OBSERVATIONS       | REF. CERN |
|-----|---|-----|--------|--------------------|-----------|
| 4   | Hdless screw M3x3                               | 10  | A4     | Bossard BN618      |           |
| 6   | Nut M4  | 9   | A4     |                    |           |
| 18  | Washer dia. 8/4.2 thk 0.2                       | 8   | 1.4310 | Bossard BN838      |           |
| 1   | MULTIPLE ELECTRODE BLM - EXTERNAL TUBE          | 7   |        | LHCBLM_0040 TYPE D |           |
| 2   | SEM-TITANIUM ELECTRODES - ELECTRICAL CONNECTION | 6   |        | LHCBLM_0052        |           |
| 1   | LIC ELECTRODES - BOTTOM COVER                   | 5   |        | LHCBLM_0081        |           |
| 3   | MULTIPLE ELECTRODE BLM - ELECTRODE SPACERS      | 4   |        | LHCBLM_0007 TYPE A |           |
| 6   | MULTIPLE ELECTRODE BLM - ELECTRODE SPACERS      | 3   |        | LHCBLM_0007 TYPE E |           |
| 3   | MULTIPLE ELECTRODE BLM - ELECTRODE              | 2   |        | LHCBLM_0004 TYPE 1 |           |
| 1   | LIC ALUMINIUM ELECTRODES - COVER ASSEMBLY       | 1   |        | LHCBLM_0086        |           |

| ENS/ASS                     |  |  | S.ENS/S.ASS |                                  |                                  |
|-----------------------------|--|--|-------------|----------------------------------|----------------------------------|
| <b>Beam Loss Monitor</b>    |  |  |             |                                  |                                  |
| <b>LIC ASSEMBLY</b>         |  |  |             | SCALE<br>1:1                     | DES/DRA. G.FOFFANO 2010-10-01    |
| <b>ALUMINIUM ELECTRODES</b> |  |  |             |                                  | CONTROLLED T.PENAGLIA 2010-11-10 |
|                             |  |  |             | RELEASED E.HOLZER 2010-11-12     |                                  |
|                             |  |  |             | APPROVED                         |                                  |
|                             |  |  |             | CAD Document Number ST0312909_02 |                                  |
|                             |  |  |             | REPLACES                         |                                  |

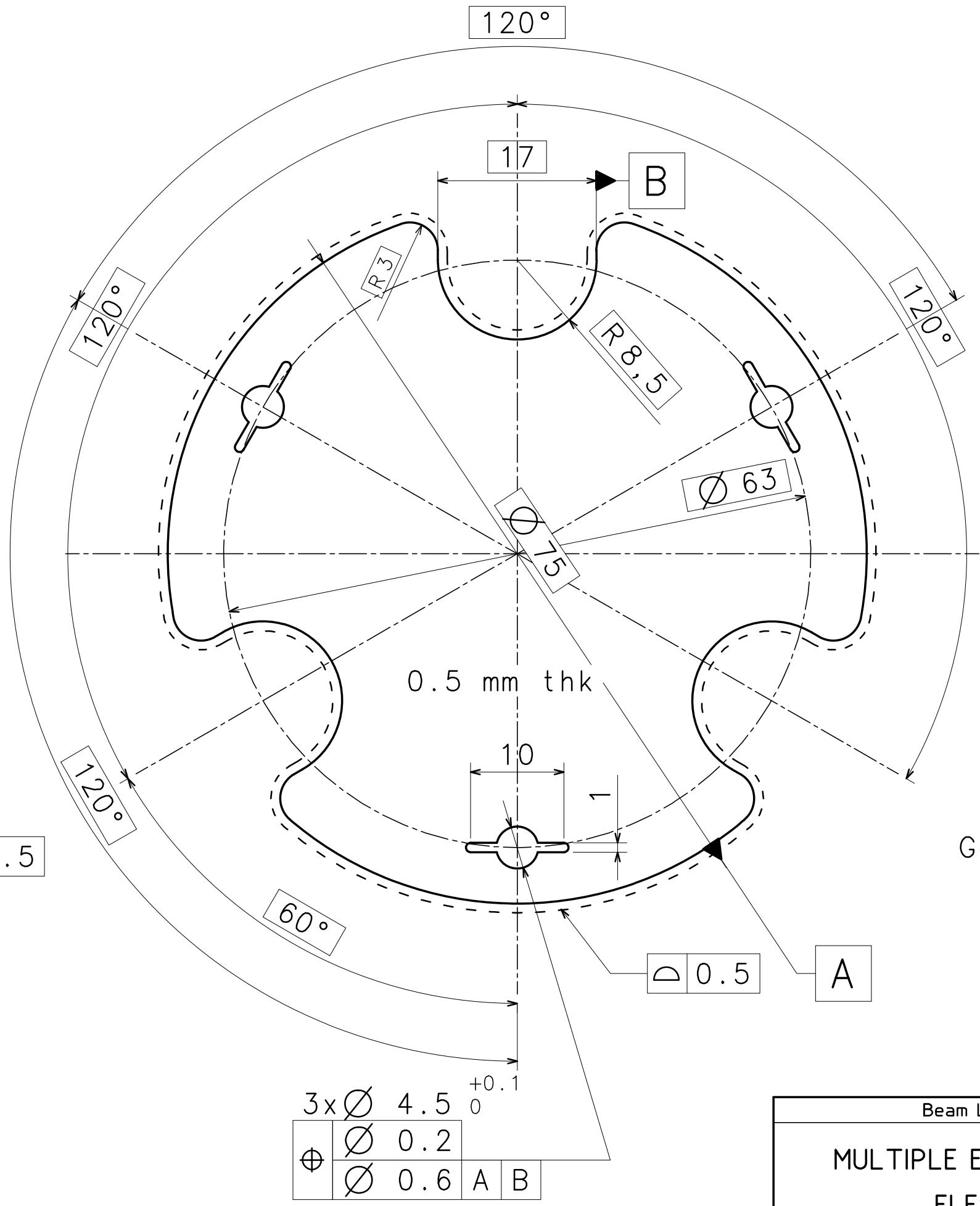
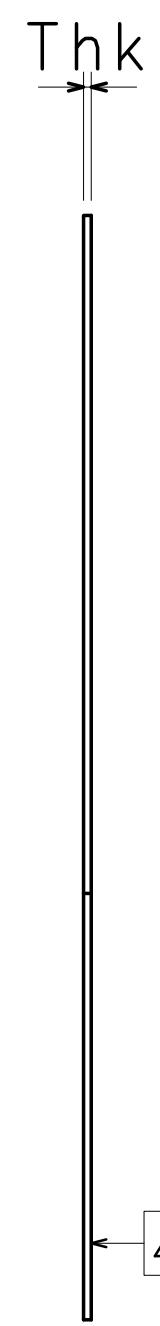
| RELEASED BY      | FOR         | GAC | SIZE        | IND. |
|------------------|-------------|-----|-------------|------|
| PROJECT ENGINEER | INFORMATION | -   | LHCBLM_0084 | 2    |

DESSIN, RUGOSITE, TOLERANCES  
SELON NORME ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARD

PROJECTION

ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE

Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite.  
This drawing may not be used for commercial purposes without written authorisation.



| TYPE | MATERIAL | thk  |
|------|----------|------|
| 1    | AlMgSi1  | 0.5  |
| 2    | Ti 99,6% | 0.5  |
| 3    | Ti 99,6% | 0.25 |

ISO 13715  $\begin{matrix} -0.2 \\ -0.1 \end{matrix}$

$\nabla$  Ra3.2  
on machined surfaces

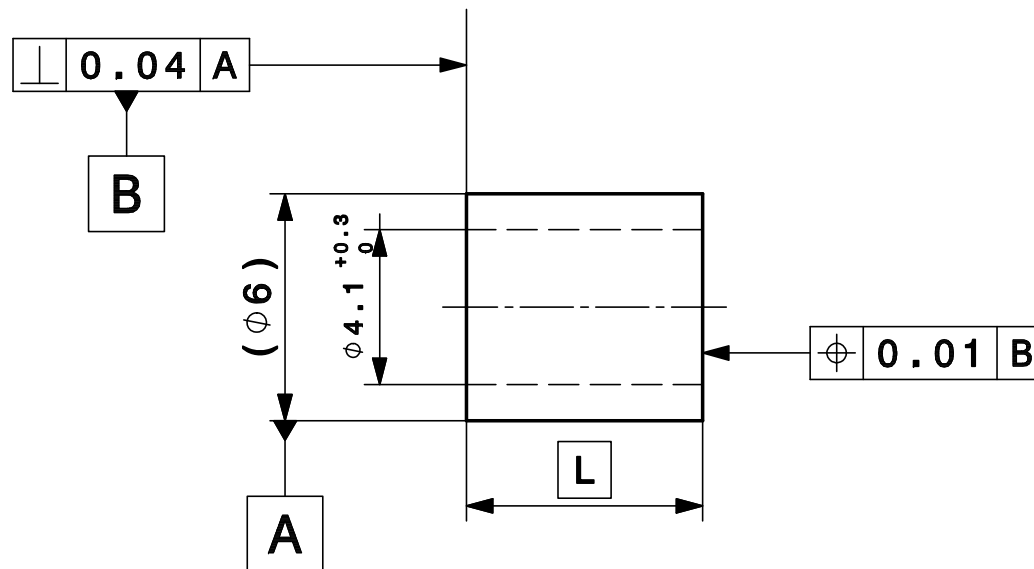
General tolerances: ISO 2768-m

|                            |           |   |   |
|----------------------------|-----------|---|---|
| $3 \times \varnothing 4.5$ | $^{+0.1}$ |   |   |
| $\varnothing 0.2$          |           |   |   |
| $\varnothing 0.6$          |           | A | B |

|                                     |                  |  |            |             |            |      |
|-------------------------------------|------------------|--|------------|-------------|------------|------|
| Beam Loss Monitor                   |                  | ECHELLE<br>SCALE<br>2:1                | DES/DRA.   | G.FOFFANO   | 2004-05-05 |      |
| MULTIPLE ELECTRODE BLM<br>ELECTRODE |                  |  | CONTROLLED | C.MENOT     | 2007-03-19 |      |
|                                     |                  | RELEASED                               | E.HOLZER   | 2007-03-20  |            |      |
|                                     |                  | APPROVED                               | -          | -           |            |      |
|                                     |                  | LHCB,BLM_...BEAMLOS000,B007,B0072008PL |            |             |            |      |
|                                     |                  | REPLACE/REPLACES                       |            |             |            |      |
| CERN                                | RELEASED BY      | FOR                                    | QAC        | LHCBLM_0004 | SIZE       | IND. |
|                                     | PROJECT ENGINEER | INFORMATION                            | -          |             | 3          | B    |

| IND. | DATE       | NOM/NAME   | ZONE | MODIFICATION                            |
|------|------------|------------|------|---|
| B    | 2006-10-16 | G. FOFFANO |      | type Al&Ti become type 1&2-added type 3 |
| A    | 2005-03-23 | G. FOFFANO |      |   |

| IND. | DATE       | NOM/NAME   | MODIFICATION |
|------|------------|------------|--------------|
| C    | 2006-10-16 | G. FOFFANO | ADDED TYPE D |
| D    | 2010-09-28 | G. FOFFANO | ADDED TYPE E |



| TYPE | L     | Mass (g) |
|------|-------|----------|
| A    | 12    | 1.4      |
| B    | 18.25 | 2.1      |
| C    | 5.75  | 0.7      |
| D    | 6.125 | 0.7      |
| E    | 6.25  | 0.7      |

DESSIN, RUGOSITE, TOLERANCES  
SELON NORMES ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARDS



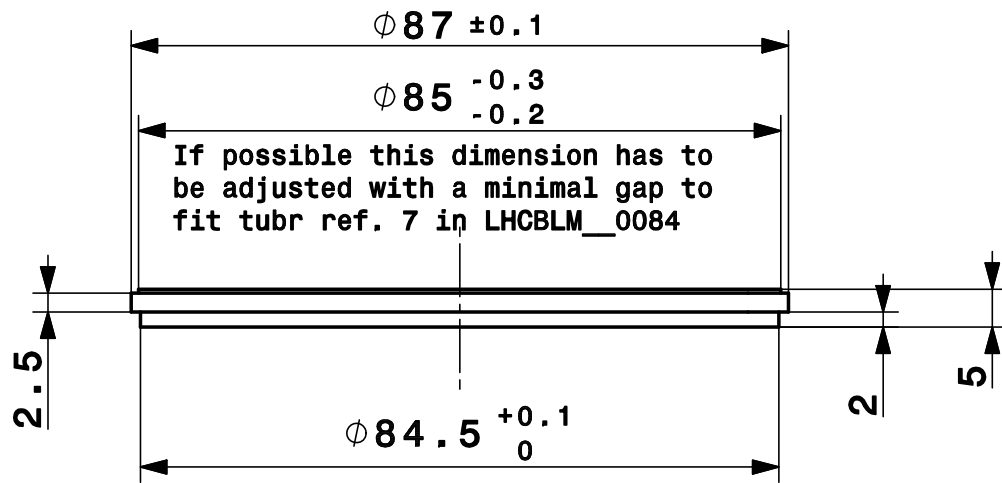
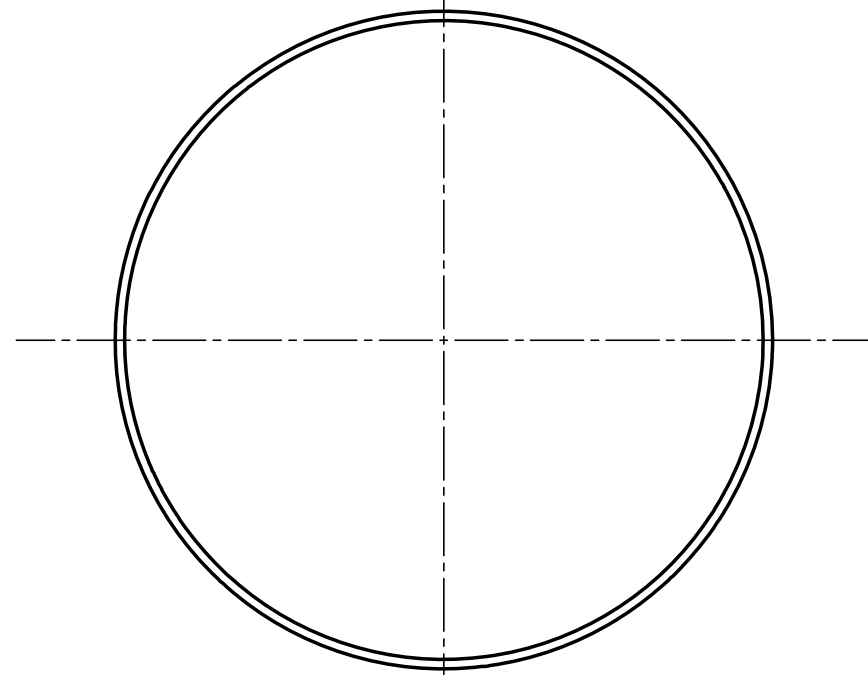
ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE

Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite.  
This drawing may not be used for commercial purposes without written authorisation.

|   |                      | 1  | AISI316L        |                                  |                        |
|---|----------------------|--|-----------------|----------------------------------|------------------------|
| QUA   | DESCRIPTION          | POS  | MAT.            | OBSERVATIONS                     | REF. CERN              |
| ENS / ASS                                   |                      |  | S. ENS / S. ASS |                                  |                        |
| ISO 2768-fH-E                               | $\sqrt{Ra\ 1.6}$ (✓) | ISO 13715 $\begin{matrix} \swarrow -0.3 \\ \searrow -0.3 \end{matrix}$ |                 |                                  |                        |
| Beam Loss Monitor                           |                      |  |                 | DES/DRA.                         | G. FOFFANO 2004-05-05  |
| MULTIPLE ELECTRODE BLM<br>ELECTRODE SPACERS |                      |  |                 | CONTROLLED                       | T. RENAGLIA 2010-10-22 |
|   |                      |  |                 | RELEASED                         | E. HOLZER 2010-10-27   |
|   |                      |  |                 | APPROVED                         |                        |
|   |                      |  |                 | CAD Document Number ST0312616_02 |                        |
|   |                      |  |                 | REPLACES                         |                        |
| RELEASED BY<br>PROJECT ENGINEER             |                      | FOR<br>INFORMATION   |                 | GAC<br>-                         | LHCBLM__0007           |
|   |                      |  |                 | SIZE                             | IND.                   |
|   |                      |  |                 | 4                                | D                      |

DESSIN, RUGOSITE, TOLERANCES  
SELON NORMES ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARDS

PROJECTION



ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE

Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite  
This drawing may not be used for commercial purposes without written authorisation

|                                 |                    |   |                                  |                        |
|---------------------------------|--------------------|---|----------------------------------|------------------------|
| Sheet 5mm thk                   | 1                  | AISI316L  | VACUUM USE                       |                        |
| DESCRIPTION                     | POS                | MAT.  | OBSERVATIONS                     | REF. CERN              |
| ENS / ASS                       | S. ENS / S. ASS    |   |                                  |                        |
| ISO 2768-fH-E                   | $\sqrt{Ra 1.6}$    | ISO 13715 $\begin{matrix} -0.3 \\ +0.05 \end{matrix}$ |                                  |                        |
| Beam Loss Monitor               |                    |   | DES/DRA.                         | G. FOFFANO 2010-09-30  |
| LIC ELECTRODES<br>BOTTOM COVER  |                    |   | CONTROLLED                       | T. RENAGLIA 2010-10-22 |
|                                 |                    |   | RELEASED                         | E. HOLZER 2010-10-27   |
| SCALE<br>1:1                    |                    |   | APPROVED                         |                        |
|                                 |                    |   | CAD Document Number ST0312640_02 |                        |
| REPLACES                        |                    |   |                                  |                        |
| RELEASED BY<br>PROJECT ENGINEER | FOR<br>INFORMATION | GAC<br>-  | LHCBLM_0081                      | SIZE<br>4              |
|                                 |                    |   | IND.                             |                        |

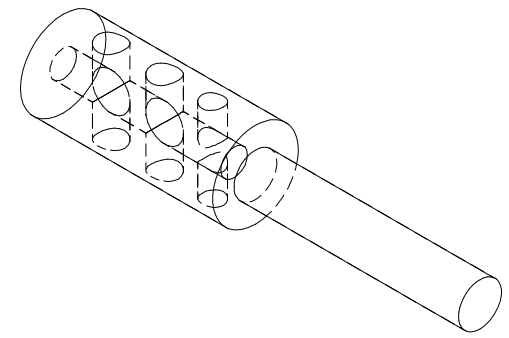
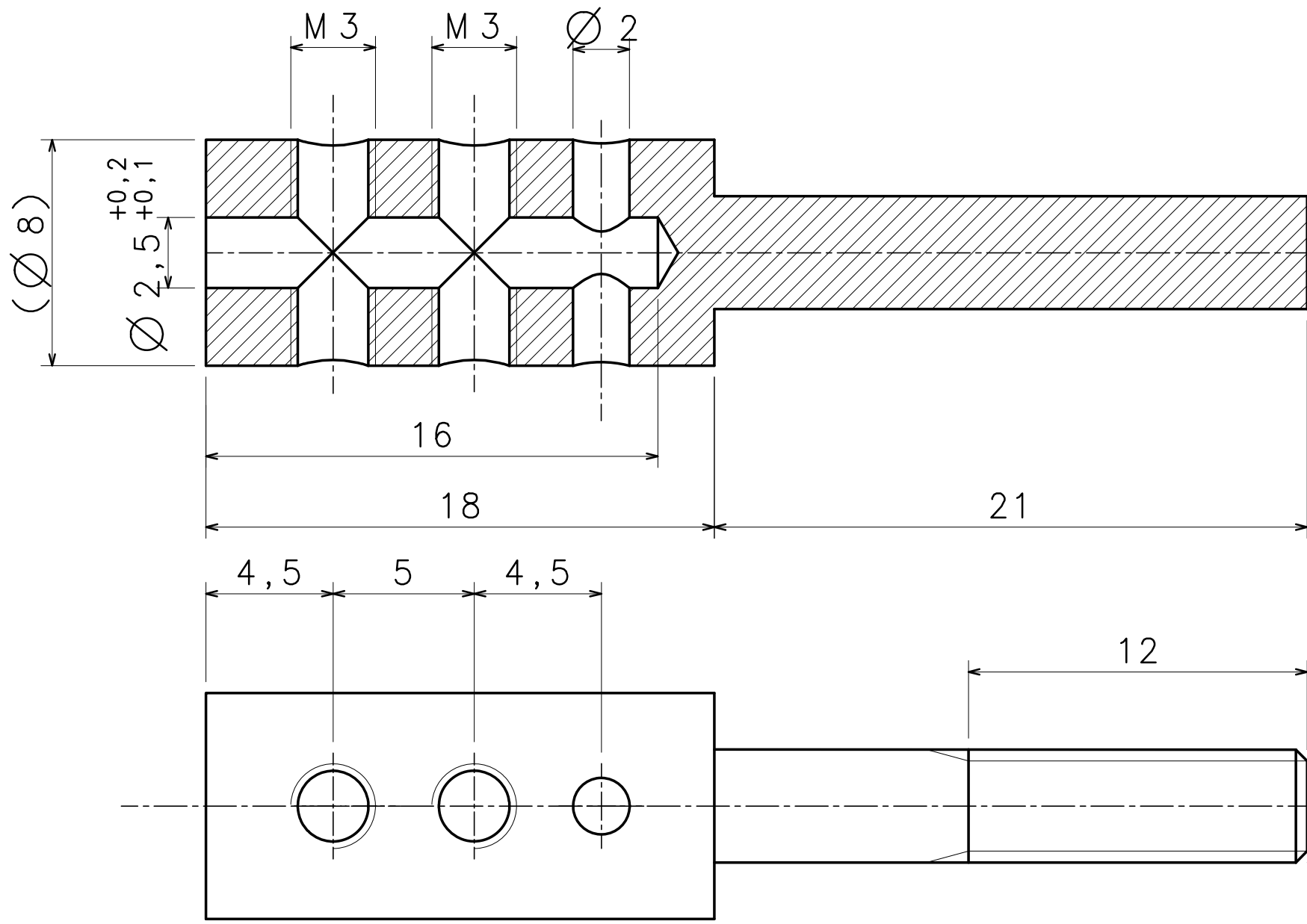


DESSIN, RUGOSITE, TOLERANCES  
SELON NORME ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARD

PROJECTION

ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE

Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite.  
This drawing may not be used for commercial purposes without written authorisation.



$\sqrt{Ra1.6}$

ISO 13715  

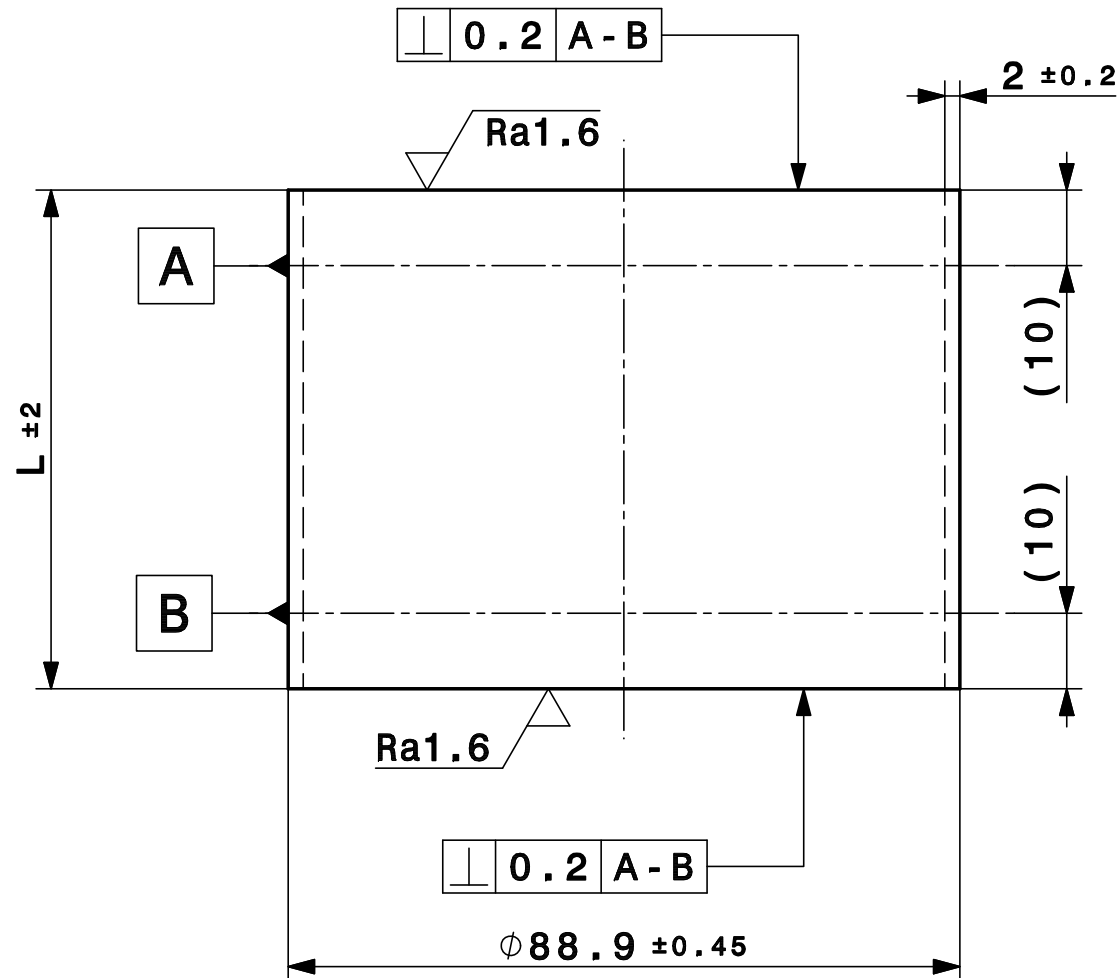
|      |      |
|------|------|
| -0.5 | +0.5 |
| -0.1 | +0.1 |

General tolerances: ISO 2768-m  
 Mass = 8 g

|  |                                |                  |          |  |                               |
|--|--------------------------------|------------------|----------|--|-------------------------------|
|  | ROUND BAR Ø 8mm                | 1                | AISI316L | VACUUM USE                             |                               |
| QUANT  | DESCRIPTION                    | POS              | MAT.     | OBSERVATIONS                           | REF.CERN                      |
|  | ENS./ASS.                      |                  |          | S.ENS/S.ASS.                           |                               |
| Beam Loss Monitor                                |                                |                  |          | ECHELLE<br>SCALE<br>5:1                | DES/DRA. G.FOFFANO 2006-10-16 |
| SEM-TITANIUM ELECTRODES<br>ELECTRICAL CONNECTION |                                |                  |          | CONTROLLED                             | C.MENOT 2007-03-19            |
|  |                                |                  |          | RELEASED                               | E.HOLZER 2007-03-20           |
|  |                                |                  |          | APPROVED                               | -                             |
|  |                                |                  |          | LHCB,BLM_...BEAMLOS000,B007,B0072152PL |                               |
|  |                                |                  |          | REPLACE/REPLACES                       |                               |
|  | RELEASÉ BY<br>PROJECT ENGINEER | FOR<br>EXECUTION | QAC<br>- | LHCBLM_0052                            | SIZE 3 IND.                   |

|      |      |          |      |              |
|------|------|----------|------|--------------|
| IND. | DATE | NOM/NAME | ZONE | MODIFICATION |
|      |      |          |      |              |

| IND. | DATE       | NOM/NAME   | MODIFICATION                |
|------|------------|------------|-----------------------------|
| A    | 2006-10-16 | G. FOFFANO | ADDE TYPE C                 |
| B    | 2010-09-29 | G. FOFFANO | ADDED TYPE D//FROM A3 TO A4 |



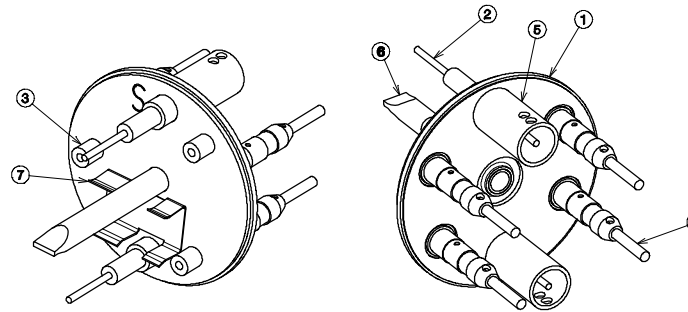
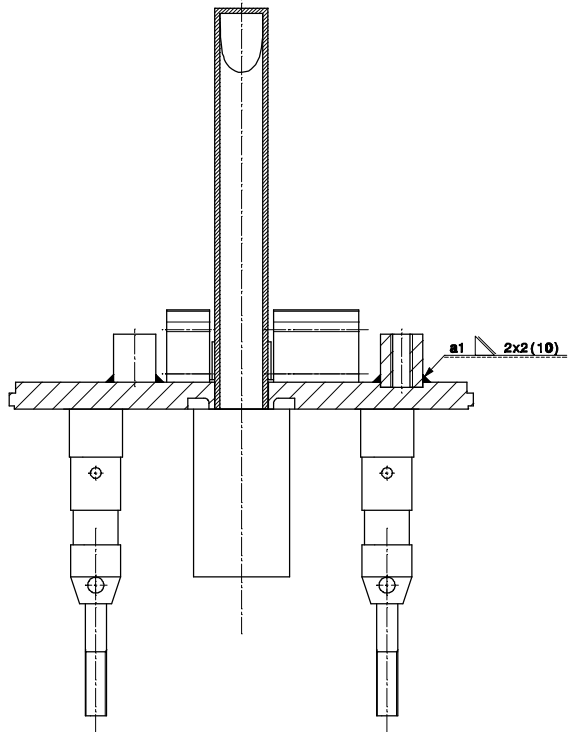
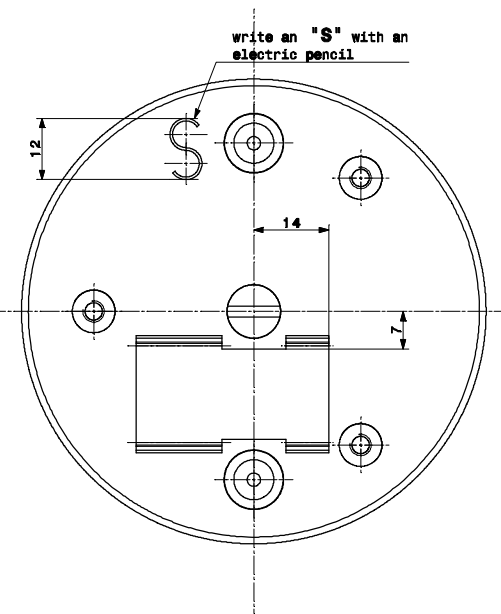
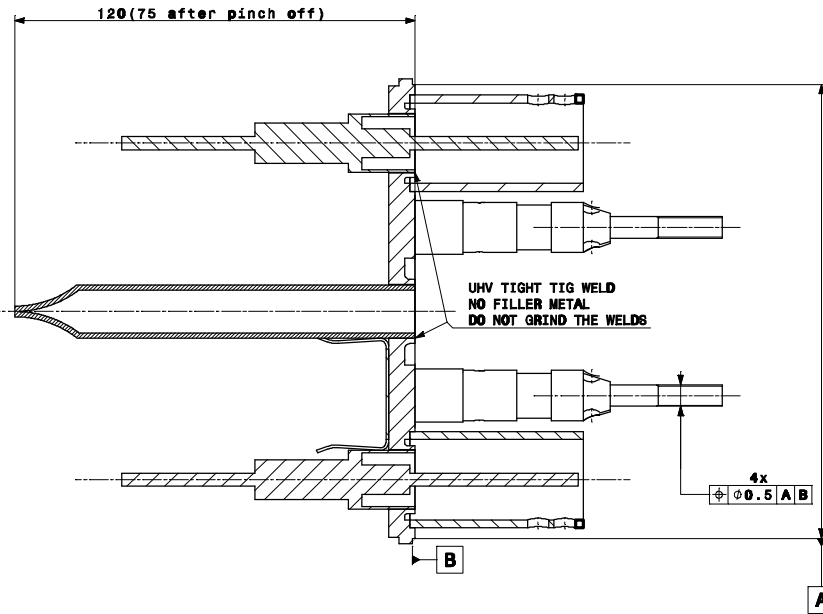
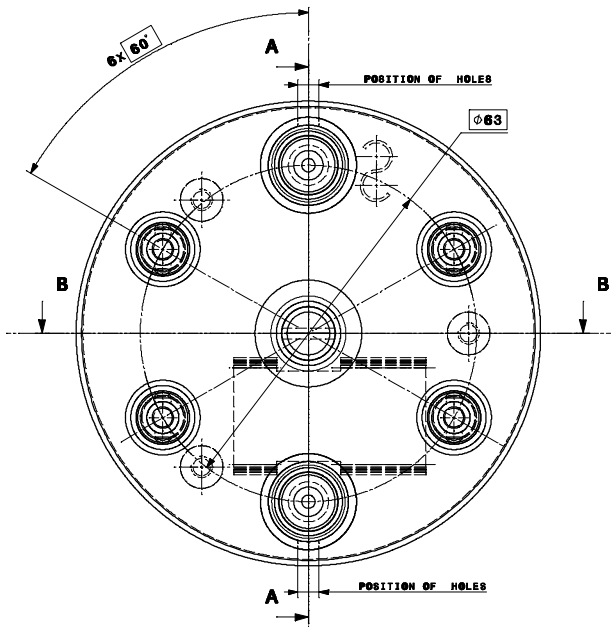
DESSIN, RUGOSITE, TOLERANCES  
SELON NORMES ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARDS



| TYPE | A   | B   | C   | D  |
|------|-----|-----|-----|----|
| L    | 483 | 109 | 105 | 66 |

|   |                                 |                    |                 |                          |                        |
|---|---------------------------------|--------------------|-----------------|--------------------------|------------------------|
| Round tube dia. 88.9x2                  |                                 | 1                  | AISI304L        | TOLERANCES D4 T3 ISO1127 |                        |
| QUA                                     | DESCRIPTION                     | POS                | MAT.            | OBSERVATIONS             | REF. CERN              |
| ENS / ASS                               |                                 |                    | S. ENS / S. ASS |                          |                        |
| ISO 2768-mK                             | $\sqrt{Ra 1.6}$ (✓)             | ISO 13715 $-0.3$ ? |                 |                          |                        |
| Beam Loss Monitor                       |                                 |                    |                 | DES/DRA.                 | G. FOFFANO 2005-03-18  |
| MULTIPLE ELECTRODE BLM<br>EXTERNAL TUBE |                                 |                    |                 | CONTROLLED               | T. RENAGLIA 2010-10-22 |
|   |                                 |                    |                 | RELEASED                 | E. HOLZER 2010-10-27   |
| SCALE<br>1:1                            |                                 |                    |                 | APPROVED                 |                        |
|   |                                 |                    |                 | CAD Document Number      |                        |
| REPLACES                                |                                 |                    |                 |                          |                        |
| CERN                                    | RELEASED BY<br>PROJECT ENGINEER | FOR<br>INFORMATION | GAC<br>-        | LHCBLM__0040             | SIZE IND.<br>4 B       |

ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE  
Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite  
This drawing may not be used for commercial purposes without written authorisation



This drawing represents a part (or a component) of the vacuum system for LHC which will operate at 10-10 Pa (10-12 Torr). All welds must be made using the specified technics with 100% penetration. Welds and all other surfaces must not be finished by grinding or any other mechanical abrasion. Any part (or component) of the vacuum system showing a room temperature leak rate (localized or global), when measured with a calibrated UHV leak detector, in excess of 1x10-11 Pa m3 s-1 (7.5x10-11 Torr ls-1) will be considered as unacceptable.

|   |  |                 |                      |   |
|---|--|-----------------|----------------------|---|
| 1                                       | HOLDER ON COVER -                      | 7               | LHCBLM_0085          |   |
| -                                       | ROUND TUBE DIA. 10 x 8mm               | 8               | COPPER - OFE L=120mm | 30.71.20                                |
| 1                                       | TUBE DIA. 10 x 8mm                     | 8               | CUIVRE - OFE         | 008.0                                   |
| -                                       | ELECTRICAL INSULATOR - FIB FERRIT/ROHM | 6               | LHCBLM_0083          |   |
| 2                                       | SEM - ALUMINA INSULATOR (BOT)          | 4               | LHCBLM_0086          |   |
| -                                       | WELDED SPACER -                        | 3               | LHCBLM_0035          |   |
| 2                                       | FEEDTHROUGH                            | 2               | CERAMAREAL 3007-12-W |   |
| 1                                       | LIO ELECTRODES - COVER                 | 1               | LHCBLM_0082          |   |
| -                                       |  |                 |                      |   |
| QTY                                     | DESCRIPTION                            | POS             | MAT.                 | OBSERVATIONS                            |
| REV/ISS                                 | G. ENG/S. ASS                          |                 |                      |   |
| Beam Loss Monitor                       |  |                 |                      | DES/DRA. G. FEFANO 2010-10-20           |
| LIC ALUMINIUM ELECTRODES COVER ASSEMBLY |  |                 |                      | SCALE: CONTROLLED T. FENGLIA 2010-11-10 |
| 2:1                                     |  |                 |                      | RELEASED E. HOLZER 2010-11-12           |
| APPROVED                                |  |                 |                      | QMS Document Number: 010312872_02       |
| REPLACES                                |  |                 |                      |   |
| RELEASED BY                             | PROJECT ENGINEER                       | FOR INFORMATION | QAC                  | LHCBLM_0086                             |
| 1                                       | 2                                      | 1               | 1                    | 1 A                                     |

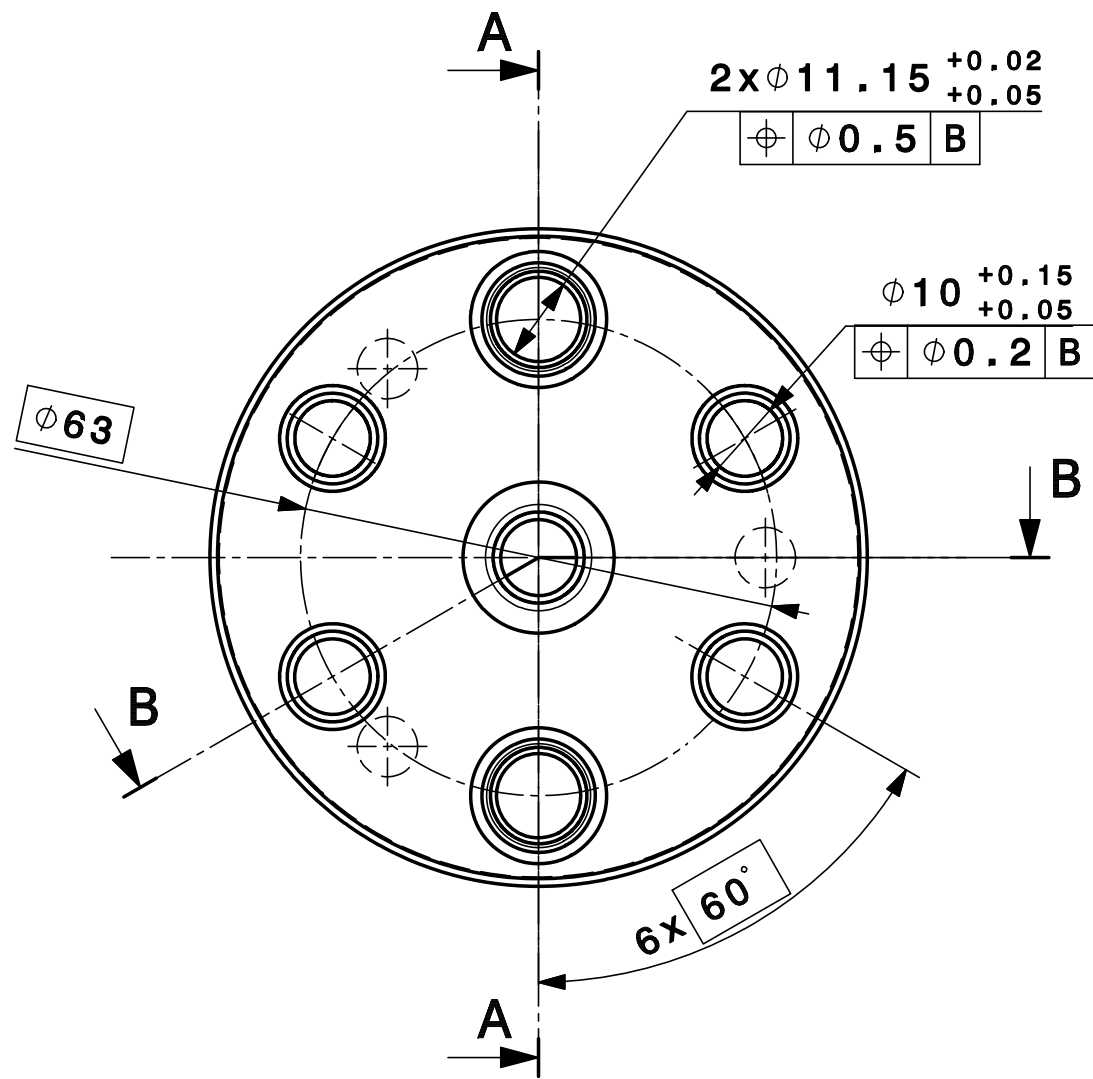
APPROVED BY: [Signature] DATE: [Date]  
 PROJECT ENGINEER: [Signature] DATE: [Date]  
 CONTROLLED BY: [Signature] DATE: [Date]

|      |            |           |                                     |
|------|------------|-----------|-------------------------------------|
| IND. | DATE       | REV/ISS   | DESCRIPTION                         |
| A    | 2010-11-10 | G. FEFANO | addition of a connet on "B" writing |

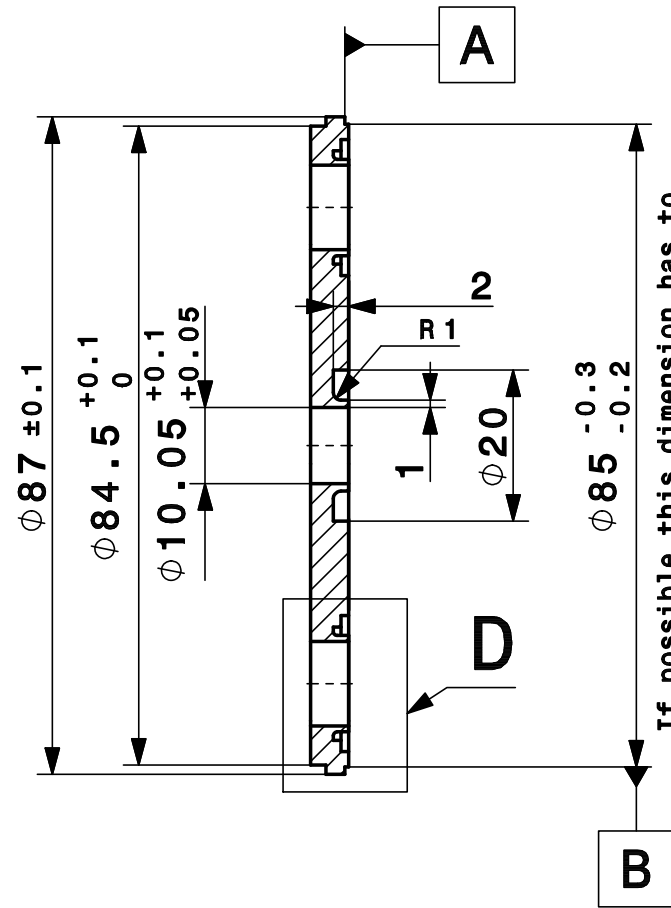
DESSIN, RUGOSITE, TOLERANCES  
SELON NORMES ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARDS



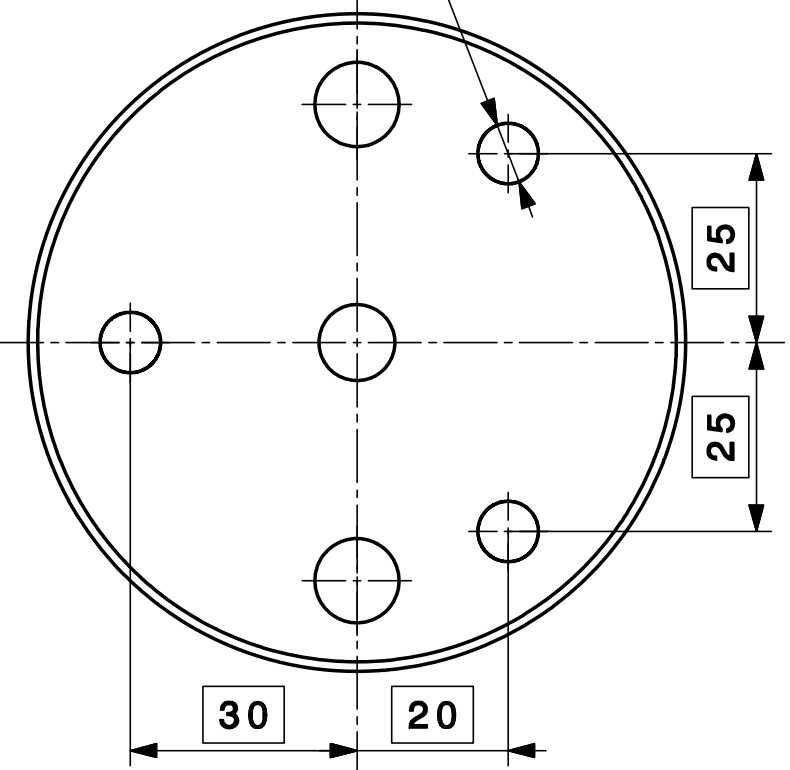
ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE RESEARCH  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE  
Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite  
This drawing may not be used for commercial purposes without written authorisation



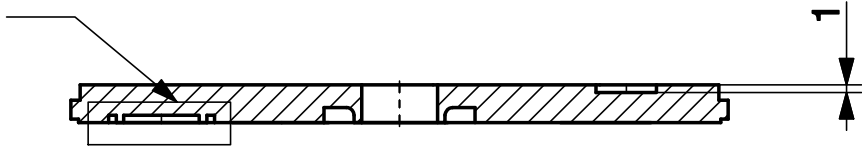
Section view A-A



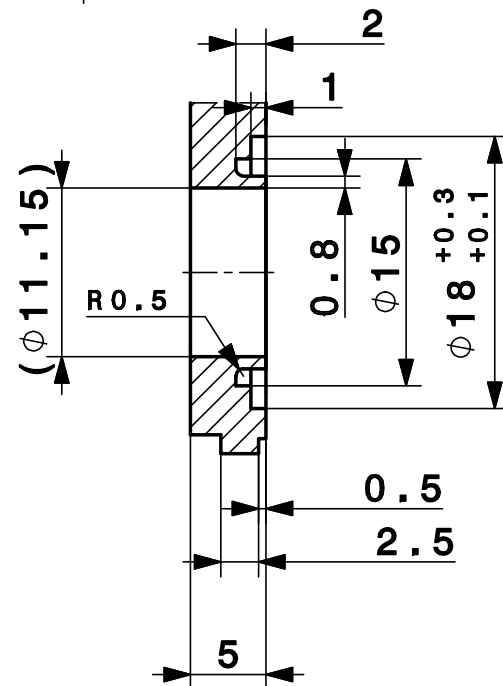
3x  $\phi 8^{+0.2}_0$   
 $\phi 0.5$  B



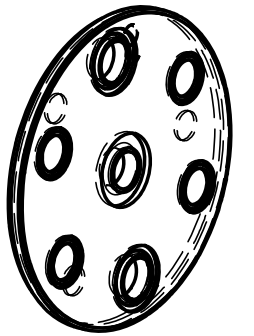
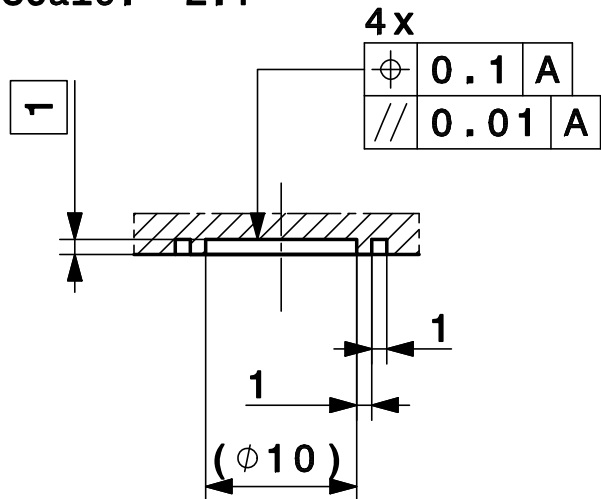
Section view B-B



Detail D  
Scale: 2:1

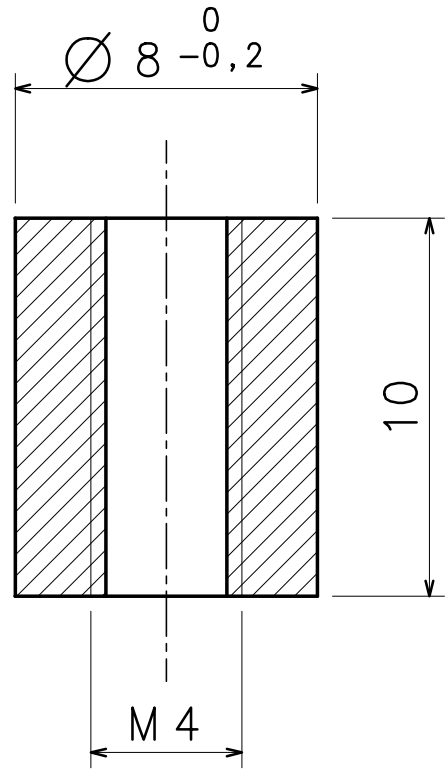


Detail E  
Scale: 2:1

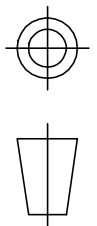


|                      |                                 |                    |                     |              |                |
|----------------------|---------------------------------|--------------------|---------------------|--------------|----------------|
| Sheet 5mm thk.       | 1                               | Stainless Steel    | Vacuum use          |              |                |
| QUA                  | DESCRIPTION                     | POS                | MAT.                | OBSERVATIONS | REF. CERN      |
| ENS/ASS              | S. ENS/S. ASS                   |                    |                     |              |                |
| ISO 2768-mH          | $\sqrt{Ra 3.2}$                 | ISO 13715          | -0.3                | +0.3         |                |
| Beam Loss Monitor    |                                 |                    | DES/DRA.            | G. FOFFANO   | 2010-09-30     |
| LIC ELECTRODES COVER |                                 |                    | CONTROLLED          | T. RENAGLIA  | 2010-10-22     |
|                      |                                 |                    | RELEASED            | E. HOLZER    | 2010-10-27     |
| SCALE<br>1:1         |                                 |                    | APPROVED            |              |                |
|                      |                                 |                    | CAD Document Number |              |                |
| REPLACES             |                                 |                    |                     |              |                |
| CERN                 | RELEASED BY<br>PROJECT ENGINEER | FOR<br>INFORMATION | GAC<br>-            | LHCBLM_0082  | SIZE IND.<br>3 |

| IND. | DATE       | NOM/NAME   | MODIFICATION   |
|------|------------|------------|----------------|
| A    | 2006-10-18 | G. FOFFANO | MOD TOLERANCES |



DESSIN, RUGOSITE, TOLERANCES  
SELON **NORME ISO**  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO **ISO STANDARD**



PROJECTION

ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE

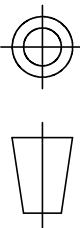
Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite.  
This drawing may not be used for commercial purposes without written authorisation.

|       |                           |     |      |              |          |          |
|-------|---------------------------|-----|------|--------------|----------|----------|
| QUANT | INOX RND.S.304L USAGE C.D | 8   | 1    |              |          | 44.57.10 |
|       | ROND INOX 304L USAGE C.D  | 8   |      |              |          | 408.0    |
|       | DESCRIPTION               | POS | MAT. | OBSERVATIONS | REF.CERN |          |
|       | ENS./ASS.                 |     |      | S.ENS/S.ASS. |          |          |

|                   |  |  |                                       |            |            |                  |
|-------------------|--|--|---------------------------------------|------------|------------|------------------|
| Beam Loss Monitor |  |  | EHELLE<br>SCALE<br>5:1                | DES/DRA.   | G. FOFFANO | 2004-05-07       |
| WELDED SPACER     |  |  |                                       | CONTROLLED | C. MENOT   | 2007-03-19       |
|                   |  |  | RELEASED                              | E. HOLZER  | 2007-03-20 |                  |
|                   |  |  | APPROVED                              | -          | -          |                  |
|                   |  |  | LHCB,BLM...BEAMLOS000,B007,B0072125PL |            |            | REPLACE/REPLACES |

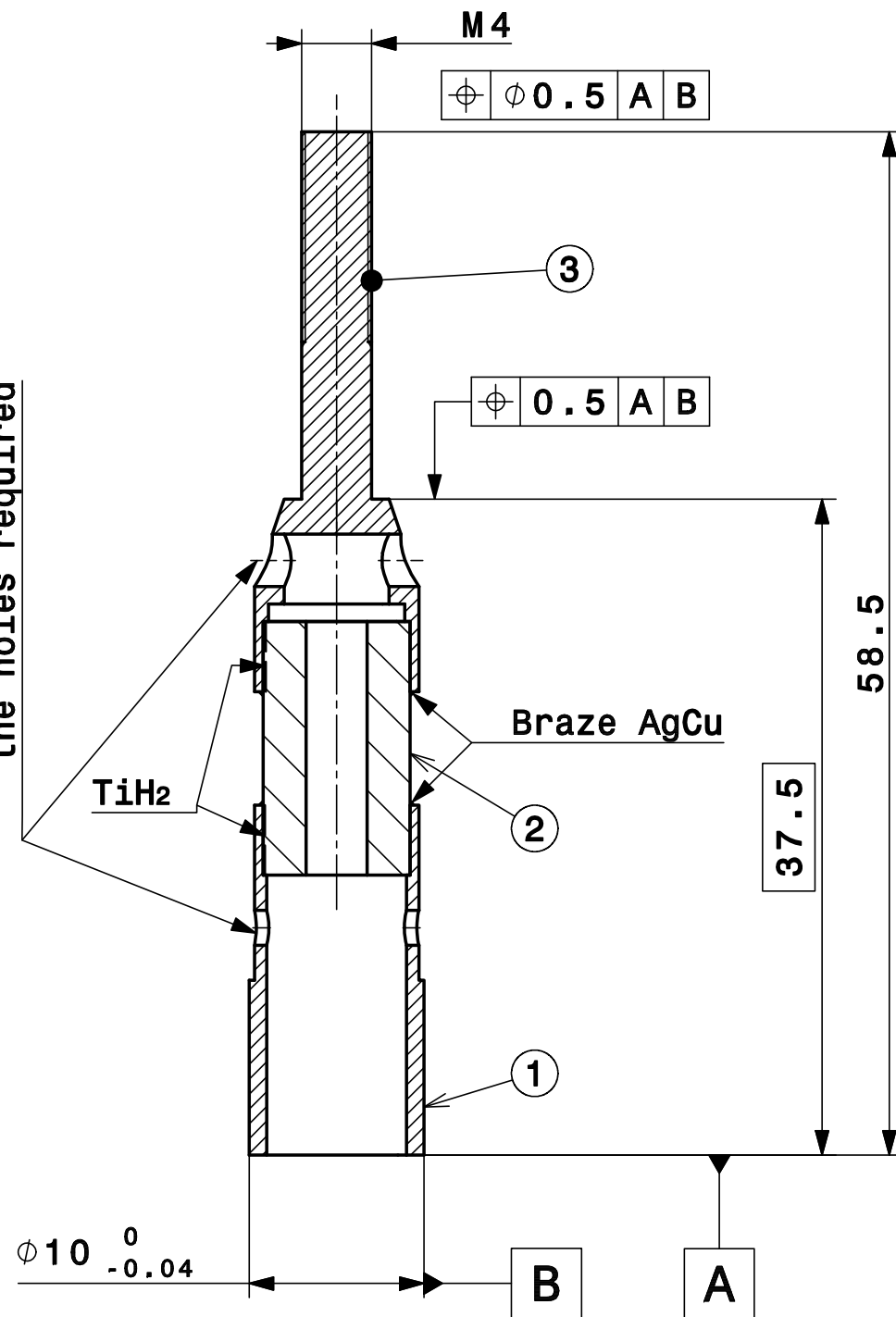
|      |                  |           |     |              |      |      |
|------|------------------|-----------|-----|--------------|------|------|
| CERN | RELEASED BY      | FOR       | QAC | LHCBLM__0035 | SIZE | IND. |
|      | PROJECT ENGINEER | EXECUTION | -   |              | 4    | A    |

DESSIN, RUGOSITE, TOLERANCES  
SELON NORMES ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARDS



PROJECTION

No orientation of  
the holes required



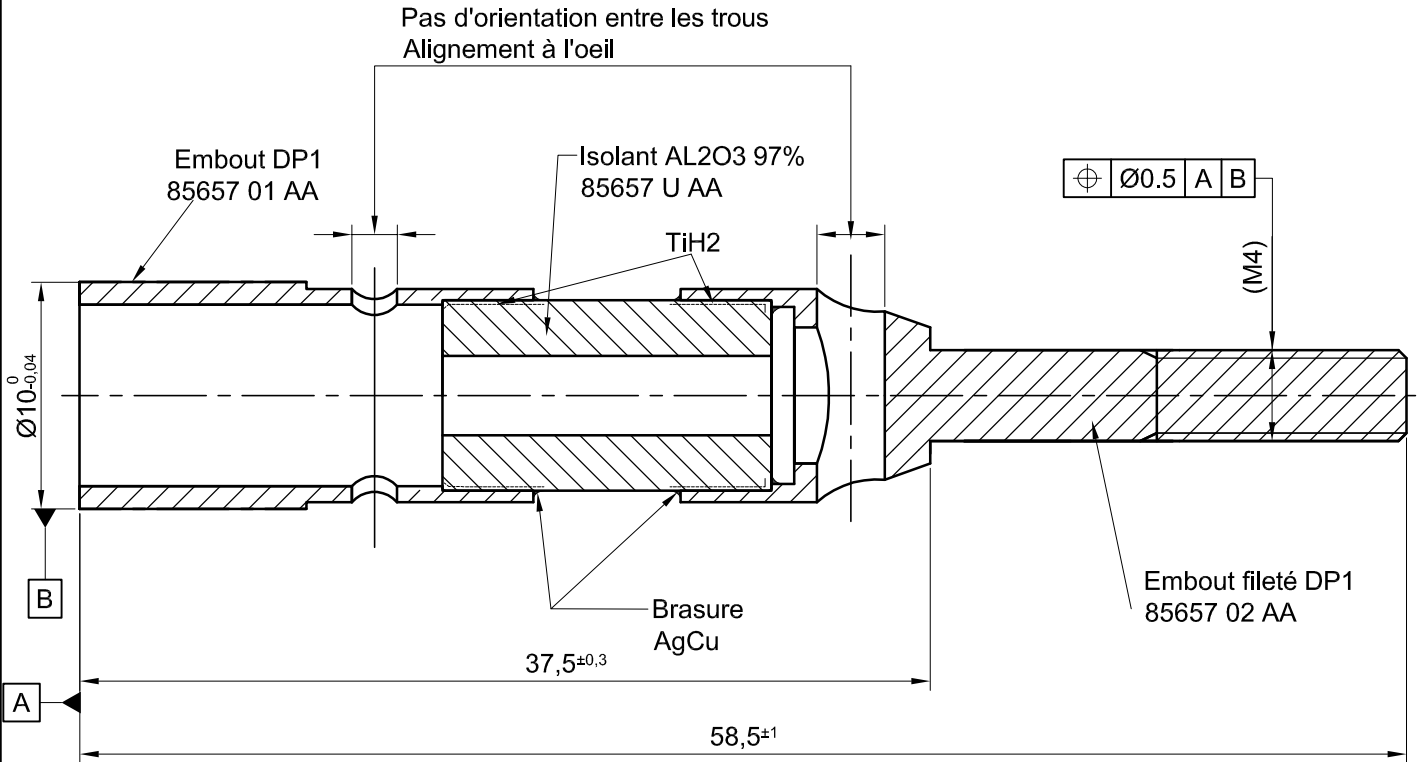
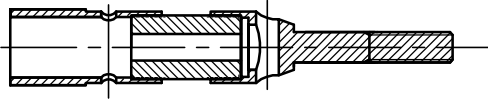
| 1                               | EMBOUT FILETE | 3                  |             | 85657 02 AA                      |                        |
|---------------------------------|---------------|--------------------|-------------|----------------------------------|------------------------|
| 1                               | CERAMIQUE     | 2                  | AL203 97%   |                                  |                        |
| 1                               | EMBOUT        | 1                  |             | DP1 85657 01 AA                  |                        |
| QUA                             | DESCRIPTION   | POS                | MAT.        | OBSERVATIONS                     | REF. CERN              |
| ENS/ASS                         |               |                    | S.ENS/S.ASS |                                  |                        |
| Beam Loss Monitor               |               |                    |             | DES/DRA.                         | G. FOFFANO 2010-10-04  |
| MANCHON ISOLANT                 |               |                    |             | CONTROLLED                       | T. RENAGLIA 2010-10-22 |
|                                 |               |                    |             | RELEASED                         | E. HOLZER 2010-10-27   |
|                                 |               |                    |             | APPROVED                         |                        |
|                                 |               |                    |             | CAD Document Number ST0312690_02 |                        |
|                                 |               |                    |             | REPLACES                         |                        |
| RELEASED BY<br>PROJECT ENGINEER |               | FOR<br>INFORMATION |             | GAC<br>-                         | LHCBLM__0088           |
|                                 |               |                    |             | SIZE<br>4                        | IND.                   |

ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE

Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite.  
This drawing may not be used for commercial purposes without written authorisation.



Echelle: 1:1



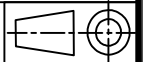
Nota: R0.2 maxi pour ferrures

| Rep    | Nbre          | Désignation | Matière     | Traitement | Observations |
|--------|---------------|-------------|-------------|------------|--------------|
|        |               |             |             |            |              |
|        |               |             |             |            |              |
|        |               |             |             |            |              |
| Indice | Modifications |             | Dessinateur | Date       | Visa         |
| 0      | Création      |             | Gayat J-P   | 15/02/07   |              |

- Propriété exclusive de S.C.T. -  
Reproduction et exploitation même partielle de ce document interdites. Modifications réservées.

Echelle:4/1

Tolérance générale:ISO2768 c-L(après brasage)



Folio:1/1

Etat de surface général: Ra3.2 (après brasage)



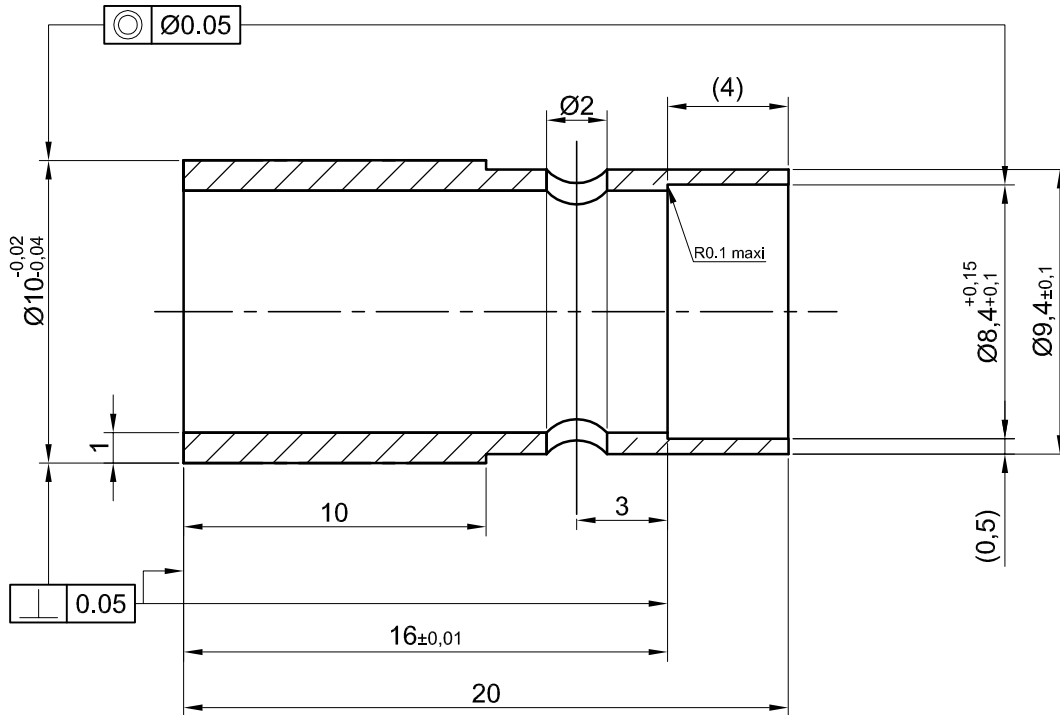
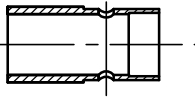
Société des Céramiques Techniques  
BP 9 65460 BAZET (France)  
Tél: 05.62.38.97.97 Fax: 05.62.33.41.81

**Désignation: Manchon isolant**


**N° 85657 QB AA**

Secteur concerné :Laboratoire Prototypes

Echelle: 1:1

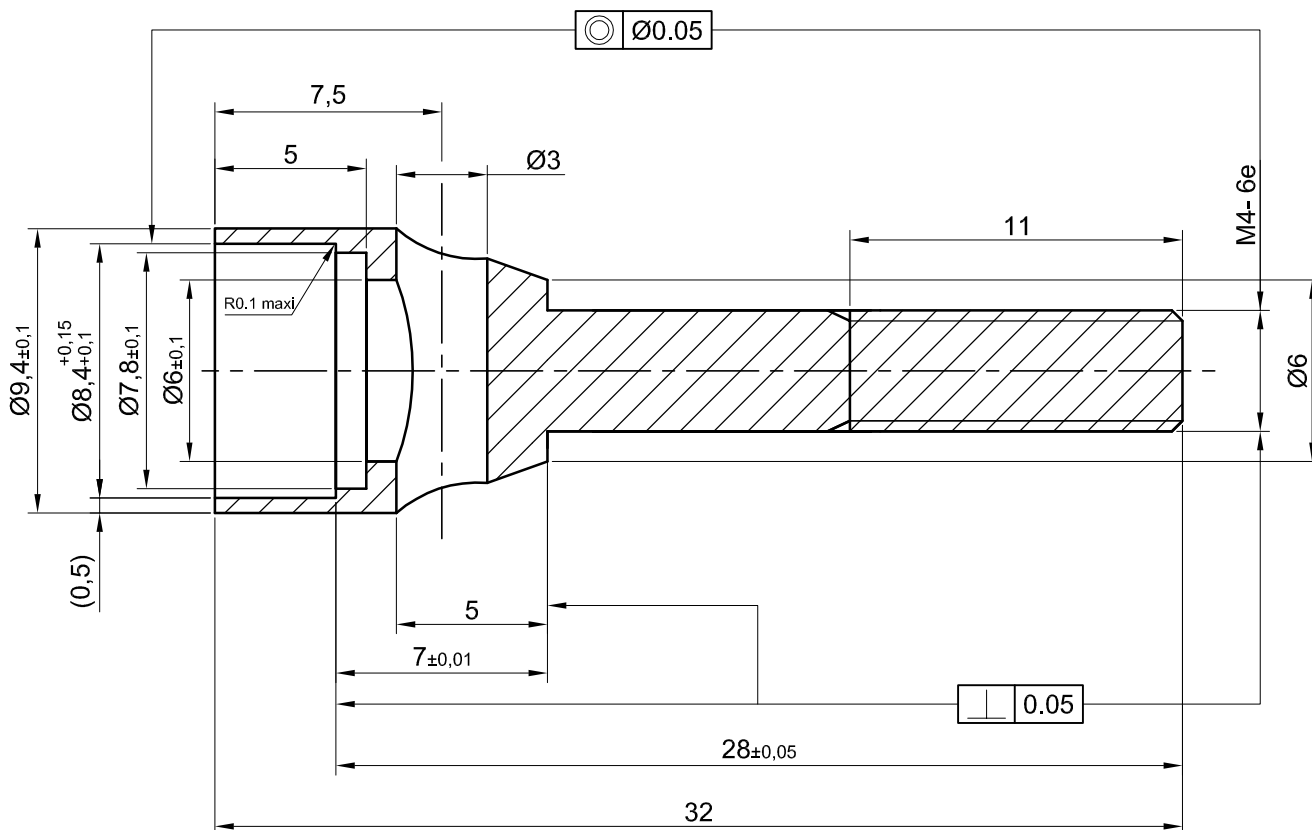
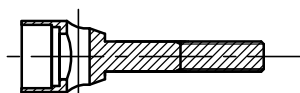


Nota: R0.2 maxi pour ferrures


| Rep   | Nbre          | Désignation | Matière   | Traitement                      | Observations |
|---|---------------|-------------|---|---------------------------------|--------------|
|   |               |             | DP1   |                                 |              |
|   |               |             |   |                                 |              |
|   |               |             |   |                                 |              |
| Indice  | Modifications |             | Dessinateur   | Date                            | Visa         |
| 0   | Création      |             | Gayat J-P   | 15/02/07                        |              |
| - Propriété exclusive de S.C.T. -<br>Reproduction et exploitation même partielle de ce document interdites. Modifications réservées.  |               |             | Echelle: 4:1  | Tolérance générale: ISO2768 m-K |              |
|  Société des Céramiques Techniques<br>BP 9 65460 BAZET (France)<br>Tél: 05.62.38.97.97 Fax: 05.62.33.41.81 |               |             | Folio: 1/1  | Etat de surface général: Ra 1.6 |              |
| Secteur concerné : Laboratoire Prototypes   |               |             | <b>Désignation: Embout</b><br><b>N° 85657 01 AA</b> |                                 |              |



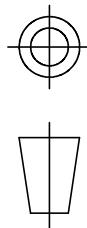
Echelle: 1:1



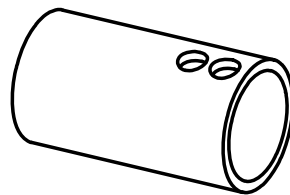
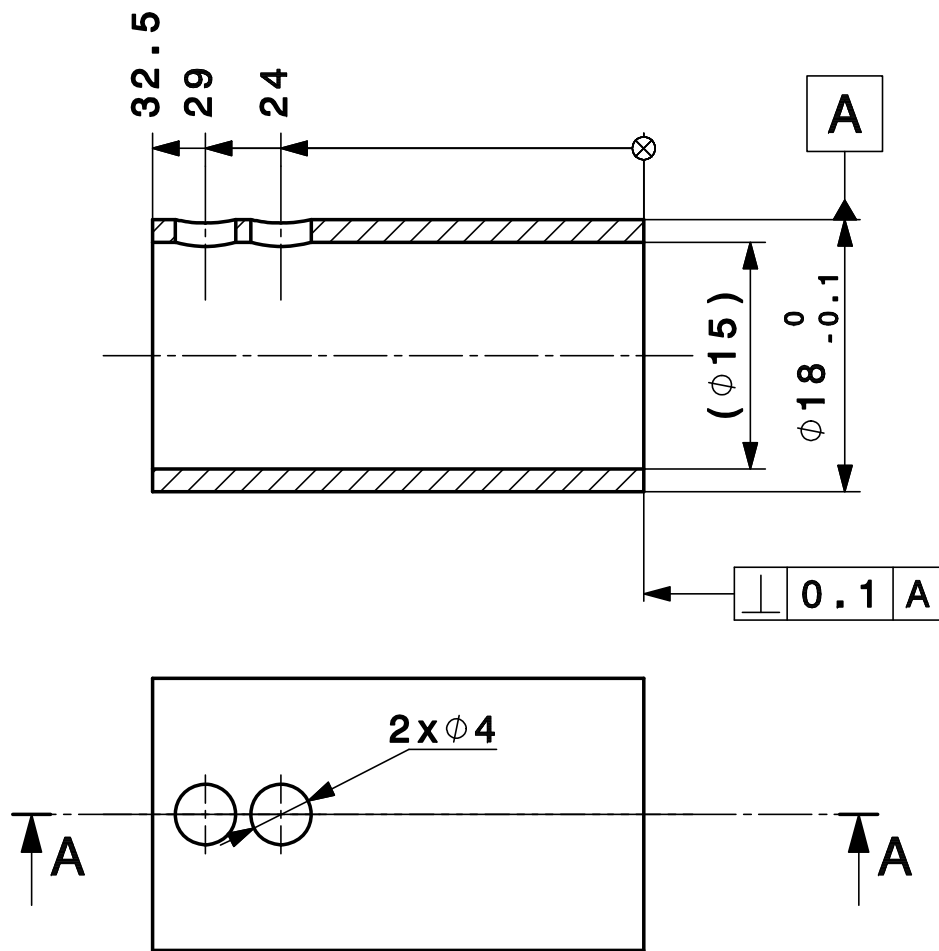
Nota: R0.2 maxi pour ferrures

| Rep   | Nbre          | Désignation | DP1  | Matière                        | Traitement | Observations |
|---|---------------|-------------|--|--------------------------------|------------|--------------|
|   |               |             |  |                                |            |              |
|   |               |             |  |                                |            |              |
|   |               |             |  |                                |            |              |
| Indice  | Modifications |             | Dessinateur  | Date                           | Visa       |              |
| 0   | Création      |             | Gayat J-P  | 15/02/07                       |            |              |
| - Propriété exclusive de S.C.T. -<br>Reproduction et exploitation même partielle de ce document interdites. Modifications réservées.  |               |             | Echelle:4:1  | Tolérance générale:ISO2768 m-K |            |              |
|  Société des Céramiques Techniques<br>BP 9 65460 BAZET (France)<br>Tél: 05.62.38.97.97 Fax: 05.62.33.41.81 |               |             | Folio:1/1  | Etat de surface général: Ra1.6 |            |              |
| Secteur concerné :Laboratoire Prototypes  |               |             | <b>Désignation: Embout fileté</b><br><b>N° 85657 02 AA</b> |                                |            |              |

DESSIN, RUGOSITE, TOLERANCES  
SELON NORMES ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARDS



PROJECTION

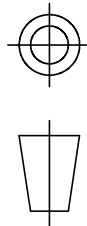


ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE

Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite.  
This drawing may not be used for commercial purposes without written authorisation.

|   |                          |                    |                 |                                  |                        |
|---|--------------------------|--------------------|-----------------|----------------------------------|------------------------|
|   | ROUND TUBE D. 18 x 1.5mm | 1                  | AISI316L        | Tolerance ISO 1127 D4 T3         | 39.36.05               |
|   |                          |                    |                 |                                  | 490.4                  |
| QUA                                     | DESCRIPTION              | POS                | MAT.            | OBSERVATIONS                     | REF. CERN              |
| ENS / ASS                               |                          |                    | S. ENS / S. ASS |                                  |                        |
| ISO 2768-mH                             |                          | Ra 1.6             |                 | ISO 13715 -0.3                   |                        |
| Beam Loss Monitor                       |                          |                    |                 | DES/DRA.                         | G. FOFFANO 2010-10-12  |
| ELECTRICAL SHIELDING<br>FOR FEEDTHROUGH |                          |                    |                 | CONTROLLED                       | T. RENAGLIA 2010-10-22 |
|   |                          |                    |                 | RELEASED                         | E. HOLZER 2010-10-27   |
|   |                          |                    |                 | APPROVED                         |                        |
|   |                          |                    |                 | CAD Document Number ST0312931_02 |                        |
|   |                          |                    |                 | REPLACES                         |                        |
| RELEASED BY<br>PROJECT ENGINEER         |                          | FOR<br>INFORMATION |                 | GAC<br>-                         | LHCBLM__0083           |
|   |                          |                    |                 | SIZE<br>4                        | IND.                   |

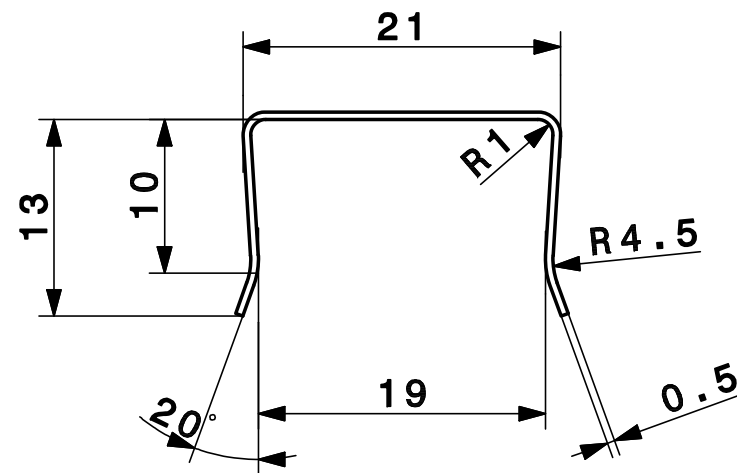
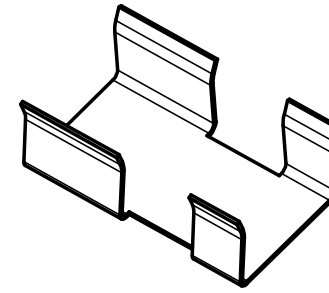
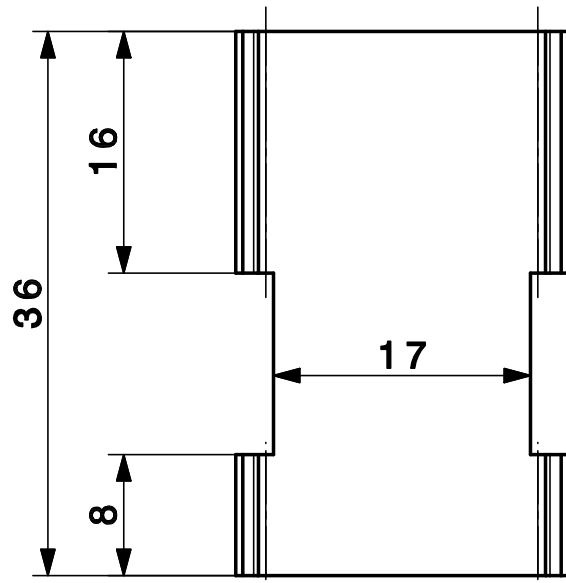
DESSIN, RUGOSITE, TOLERANCES  
SELON NORMES ISO  
DRAWING, RUGOSITY, TOLERANCES  
ACCORDING TO ISO STANDARDS



ORGANISATION EUROPEENNE POUR  
LA RECHERCHE NUCLEAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH  
GENEVE



Ce dessin ne peut être utilisé à des fins commerciales sans autorisation écrite  
This drawing may not be used for commercial purposes without written authorisation



|                                 |             | 1                  | Stainless steel |                                  |                        |
|---------------------------------|-------------|--------------------|-----------------|----------------------------------|------------------------|
| QUA                             | DESCRIPTION | POS                | MAT.            | OBSERVATIONS                     | REF. CERN              |
| ENS/ASS                         |             |                    | S.ENS/S.ASS     |                                  |                        |
| Beam Loss Monitor               |             |                    |                 | DES/DRA.                         | G. FOFFANO 2010-10-01  |
| HOLDER ON COVER                 |             |                    |                 | CONTROLLED                       | T. RENAGLIA 2010-10-22 |
|                                 |             |                    |                 | RELEASED                         | E. HOLZER 2010-10-27   |
|                                 |             |                    |                 | APPROVED                         |                        |
|                                 |             |                    |                 | CAD Document Number ST0312961_02 |                        |
|                                 |             |                    |                 | REPLACES                         |                        |
| RELEASED BY<br>PROJECT ENGINEER |             | FOR<br>INFORMATION |                 | GAC<br>-                         | LHCBLM__0085           |
|                                 |             |                    |                 | SIZE<br>4                        | IND.                   |