



Please sign off all procedures immediately after completion

Manufacturing Routing

Contract No. 6499152 Customer Lawrence Berkeley National Laboratory 7500 A DFLX 2.0 Pirelli Cables Ltd, UK LHC-DFLX-CA-0001 21 / 01 / 2003						
Current Lead ID						
Description	Procedure No.	Iss.	Operator	Signature	Date	Comments
Assemble Resistive Assy	LBNL-Sub A	1	BRIAN JAMES	B James	06-01-03	
Assemble HTS Board Assy	LBNL-Sub H1	1	MICHAEL NAVID	M Navin	20/1/03	
Assemble HTS Assy	LBNL-Sub H2	2	MICHAEL NAVID	M Navin	20/1/03	0205 DM10B
Solder Resistive Assy - Station 2	LBNL-Sub B	1	BRIAN JAMES	B James	06-01-03	
Solder Termination Assy - LBNL-Sub B	LBNL-Sub C	1	BEL LIGHTFOOT	E Lightfoot	07-01-03	
Insert Lead Through Assembly	LBNL-Sub C1	1	BEL LIGHTFOOT	E Lightfoot	08-01-03	
Instrumentation Wiring (Resistive Assembly)	LBNL-Sub C2	1	DAVID AMERTON	D Amerton	9/1/03	
Wrap Resistive Assy with Fibreglass	LBNL-Sub C3	1	MICHAEL NAVID	M Navin	9/1/03	
Instrumentation Wiring	LBNL-Sub C4	1	DAVID AMERTON	D Amerton	9/1/03	
RTD's	LBNL-Sub C4	1	DAVID AMERTON	D Amerton	9/1/03	
Insert / wire Termination Heater	LBNL-Sub C5	1				



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Manufacturing Routing

Contract No. 6499152 Customer Lawrence Berkeley National Laboratory 7500 A DFLX 2.0 Pirelli Cables Ltd, UK LHC-DFLX-CA-0007 21 / 01 / 2003						
Current Lead ID						
Description	Procedure No.	Iss.	Operator	Signature	Date	Comments
Solder Rutherford Cables to Station 1	LBNL-Sub D	1	MICHAEL R. QUINN	M. Quinn	20/1/03	
Solder LBNL-Sub D to HTS Assy (LBNL-Sub H1)	LBNL-Sub D1	1	MICHAEL R. QUINN	M. Quinn	20/1/03	
Assemble LIA Insulator	LBNL-SubCE1	1	ANTHONY WILLIAMS	A. Williams	09/11/02	
Attach Cryogenic Envelope to LBNL-Sub C5	LBNL-Sub E	1	NEU BREW	N. Brew	16-1-03	
Solder LBNL-Sub D1 to LBNL-Sub E	LBNL-Sub E1	1	R.N. EATON	R.N. Eaton	18.1.03	
Instrumentation Wiring (HTS Assembly)	LBNL-Sub E2	1	DAVID ADHERSON	D. Adheron	18/1/03	
Insert Top Hat	LBNL-Sub F	1	R.N. EATON	R.N. Eaton	21/1/03	
Pressure Test / He Leak Test	LBNL-Test S Draft-1	1	Gavin Anderson	Gavin Anderson	17/1/03	NO 20 Flange N25
Voltage Test	LBNL-Test T Draft-1	1	Gavin Anderson	Gavin Anderson	17/1/03	



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Manufacturing Routing

Contract No. 6499152 Customer Lawrence Berkeley National Laboratory					
7500 A DFLX 2.0 Pirelli Cables Ltd, UK LHC-DFLX-CA-0001 21 / 01 / 2003					
Current Lead ID	Procedure No.	Iss.	Operator	Signature	Date
Instrumentation Check	LBNL-Test U Draft-1	1	D. SPILLER	<i>[Signature]</i>	21/01/2003
					Comments



Please sign off all procedures immediately after completion

Testing Schedule

Specification No.	Item	Spec.	Measured (if applicable)	Signature	Date	Comments
#M923B	Dimensional Conformity to Engineering Drawings					
	Top Flange to LBNL seal	560-562mm	R.N.E ✓	R.N.E	21/1/03	
	Seal Flange OD	130 mm	✓	R.N.E	21/1/03	
	HTS to LBNL Seal	445-446 mm	✓	R.N.E	21/1/03	
#M923B (3.9)	Pressure test with N ₂ gas using LBNL supplied chamber		✓	GA	17/1/03	
#M923B (3.9)	Leak Check with He gas	< 1 x 10 ⁻⁸ (Torr.l.s ⁻¹)	✓	GA	17/1/03	
#M923B (3.3)	Voltage test using LBNL supplied chamber	< 50µA	< 2.3A	GA	17/1/03	
#M923B (3.15)	Instrumentation Check		✓	RMS	21/01/2003	
	Voltage taps (1)		✓	"	"	
	Voltage Taps (2)		✓	"	"	
	Temperature sensors		✓	"	"	
	LTS Cable	LBNL	✓	"	"	



Data sheet for high- T_c superconducting tape

NST registration number	:	0205DM10B (10m to 471m)				
Type	:	ZEROME Hercules				
Superconductor	:	Bi(Pb)-2223				
Matrix	:	Silver Alloy				
Coating	:	None				
Main properties:						
		Average	St.dev.	Min	Max.	
Length		461				[m]
Width		3.94	± 0.02	3.89	3.98	[mm]
Thickness		226	± 2	221	234	[μ m]
Critical current @ 77K, self field	25cm rolling average	58.0	± 1.62	53.8	62.6	[A]
	30m rolling average	58.0	± 0.61	56.7	59.5	[A]

**NORDIC
SUPERCONDUCTOR
TECHNOLOGIES A/S**

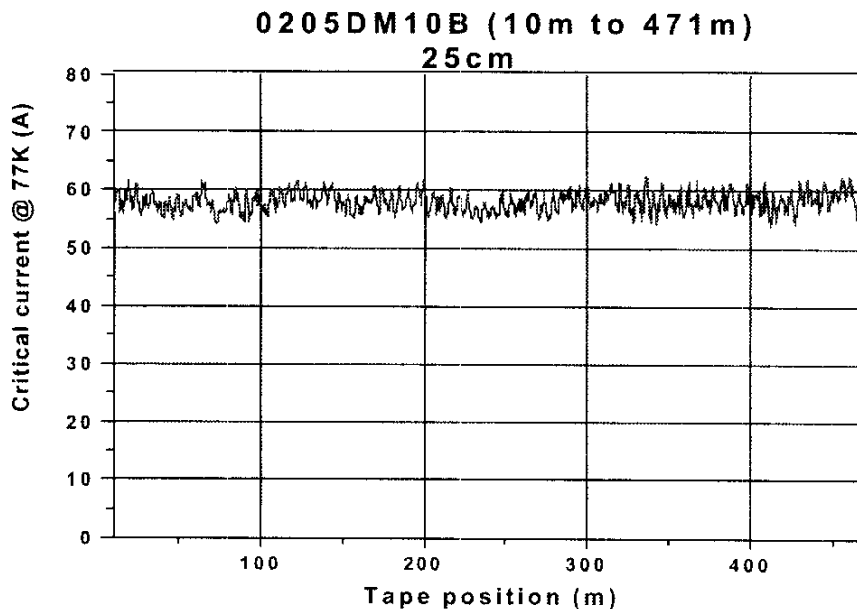
Blokken 84
DK-3460 Birkerød
Denmark
Phone +45 43 48 25 00
Fax +45 43 48 25 01
E-mail nst@nst.com
<http://www.nst.com/>
Reg. no. 224.707

A company
in the NKT Group

Detailed properties:

I_c is determined by measuring the remnant field set up by the tape when exposed to an external ac magnetic field (10 Hz). I_c , width and thickness are measured at 25cm resolution.

Graph I_c at 25cm



Vacweld

Vacweld Ltd
Folgate House, Folgate Road,
North Walsham, Norfolk, NR28 0AJ, England.
Tel: (01692) 500000 Fax: (01692) 500188
Email: sales@vacweld.co.uk
Web Site: www.vacweld.co.uk

CERTIFICATION OF CONFORMITY

This is to certify the components listed below have been manufactured to their relevant drawing numbers, unless otherwise agreed. The components have been welded, cleaned and leak checked to UHV standards.

ORDER NO: 4500137085

ADVICE NOTE NO: 678

QTY: 5 CONCESSIONS: -

PART/DRAWING NO: ULBNL12 ISSUE: -

DESCRIPTION: CRYOGENIC ENVELOPE

SERIAL NO: -

CERTIFIED BY: Mr. D HARBOUR

POSITION: DIRECTOR DATE: 20th DECEMBER 2002

PRINT NAME: D HARBOUR

SIGNED:



Specialist welding and instrument-making for science and industry

----- Visual CMES Inspection Report -----

Operator - Vince Parry
 Part number - 1BNL37
 Part description - Rectangular Flange
 Serial number - 5

Feature - 5.512 +/- .008

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS X	.0000	.0000	.0000	.1000	-.1000	---*---	
AXIS Y	.0000	.0000	.0000	.1000	-.1000	---*---	
DIAMETER	5.5128	5.5120	.0008	.0080	-.0080	---*---	

Feature - 5.620 +/- .008

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS X	.0001	.0000	.0001	.0080	-.0080	---*---	
AXIS Y	-.0002	.0000	-.0002	.0080	-.0080	---*---	
DIAMETER	5.6190	5.6200	-.0010	.0080	-.0080	---*---	

Feature - 5.748 +/- .008

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS X	.0002	.0000	.0002	.0080	-.0080	---*---	
AXIS Y	-.0002	.0000	-.0002	.0080	-.0080	---*---	
DIAMETER	5.7469	5.7480	-.0011	.0080	-.0080	---*---	

Feature - 1-20 ctr PCD

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS Y	.0000	.0000	.0000	.0030	-.0030	---*---	

Feature - 10 - 11 ctr PCD

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS Y	.0000	.0000	.0000	.0030	-.0030	---*---	

Feature - 5.512 +/- .008

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS X	.0000	.0000	.0000	.0030	-.0030	---*---	
AXIS Y	.0025	.0000	.0025	.0030	-.0030	---+---*	

Feature - pcd 7.128 Hole#1

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5612	3.5640	-.0028				
ANGLE	9.0117	9.0000	.0117				
DIAMETER	.3375	.3360	.0015	.0040	-.0040	----+---	
T.P.RADIUS			.0029	.0015			.0014
T.P.ANGLE			174.4346				
T.P.DIAM.			.0058	.0030			.0028

Feature - pcd 7.128 Hole#2

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5619	3.5640	-.0021				
ANGLE	27.0127	27.0000	.0127				
DIAMETER	.3371	.3360	.0011	.0040	-.0040	----+---	
T.P.RADIUS			.0022	.0015			.0007
T.P.ANGLE			186.1284				
T.P.DIAM.			.0044	.0030			.0014

Feature - pcd 7.128		Hole#3					
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5620	3.5640	-.0020				
ANGLE	45.0118	45.0000	.0118				
DIAMETER	.3373	.3360	.0013	.0040	-.0040	---+*--	
T.P.RADIUS			.0021	.0015			.0006
T.P.ANGLE			204.4123				
T.P.DIAM.			.0042	.0030			.0012

Feature - pcd 7.128		Hole#4					
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5633	3.5640	-.0007				
ANGLE	63.0086	63.0000	.0086				
DIAMETER	.3377	.3360	.0017	.0040	-.0040	---+*--	
T.P.RADIUS			.0009	.0015			
T.P.ANGLE			203.9971				
T.P.DIAM.			.0017	.0030			

Feature - pcd 7.128		Hole#5					
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5647	3.5640	.0007				
ANGLE	81.0256	81.0000	.0256				
DIAMETER	.3369	.3360	.0009	.0040	-.0040	---+*--	
T.P.RADIUS			.0017	.0015			.0002
T.P.ANGLE			147.5549				
T.P.DIAM.			.0035	.0030			.0005

Feature - pcd 7.128		Hole#6					
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5649	3.5640	.0009				
ANGLE	99.0368	99.0000	.0368				
DIAMETER	.3374	.3360	.0014	.0040	-.0040	---+*--	
T.P.RADIUS			.0024	.0015			.0009
T.P.ANGLE			168.1886				
T.P.DIAM.			.0049	.0030			.0019

Feature - pcd 7.128		Hole#7					
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5643	3.5640	.0003				
ANGLE	117.0203	117.0000	.0203				
DIAMETER	.3380	.3360	.0020	.0040	-.0040	---+*--	
T.P.RADIUS			.0013	.0015			
T.P.ANGLE			194.0301				
T.P.DIAM.			.0026	.0030			

Feature - pcd 7.128		Hole#8					
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5644	3.5640	.0004				
ANGLE	135.0200	135.0000	.0200				
DIAMETER	.3371	.3360	.0011	.0040	-.0040	---+*--	
T.P.RADIUS			.0013	.0015			
T.P.ANGLE			208.0595				
T.P.DIAM.			.0026	.0030			

Feature - pcd 7.128		Hole#9					
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5650	3.5640	.0010				
ANGLE	153.0139	153.0000	.0139				
DIAMETER	.3381	.3360	.0021	.0040	-.0040	---+*--	
T.P.RADIUS			.0013	.0015			

T.P.ANGLE 194.1649
T.P.DIAM. .0026 .0030

Feature - pcd 7.128 Hole#10

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5650	3.5640	.0010				
ANGLE	170.9981	171.0000	-.0019				
DIAMETER	.3370	.3360	.0010	.0040	-.0040	----+*--	
T.P.RADIUS			.0010	.0015			
T.P.ANGLE			163.9202				
T.P.DIAM.			.0019	.0030			

Feature - pcd 7.128 Hole#11

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5650	3.5640	.0010				
ANGLE	188.9998	189.0000	-.0002				
DIAMETER	.3376	.3360	.0016	.0040	-.0040	----+*--	
T.P.RADIUS			.0010	.0015			
T.P.ANGLE			188.2292				
T.P.DIAM.			.0019	.0030			

Feature - pcd 7.128 Hole#12

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5645	3.5640	.0005				
ANGLE	206.9948	207.0000	-.0052				
DIAMETER	.3368	.3360	.0008	.0040	-.0040	----+*--	
T.P.RADIUS			.0006	.0015			
T.P.ANGLE			173.8641				
T.P.DIAM.			.0012	.0030			

Feature - pcd 7.128 Hole#13

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5654	3.5640	.0014				
ANGLE	224.9950	225.0000	-.0050				
DIAMETER	.3374	.3360	.0014	.0040	-.0040	----+*--	
T.P.RADIUS			.0014	.0015			
T.P.ANGLE			212.4037				
T.P.DIAM.			.0029	.0030			

Feature - pcd 7.128 Hole#14

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5659	3.5640	.0019				
ANGLE	242.9913	243.0000	-.0087				
DIAMETER	.3376	.3360	.0016	.0040	-.0040	----+*--	
T.P.RADIUS			.0020	.0015			.0005
T.P.ANGLE			227.2603				
T.P.DIAM.			.0040	.0030			.0010

Feature - pcd 7.128 Hole#15

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5649	3.5640	.0009				
ANGLE	260.9573	261.0000	-.0427				
DIAMETER	.3377	.3360	.0017	.0040	-.0040	----+*--	
T.P.RADIUS			.0028	.0015			.0013
T.P.ANGLE			189.0462				
T.P.DIAM.			.0056	.0030			.0026

Feature - pcd 7.128 Hole#16

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5651	3.5640	.0011				
ANGLE	278.9737	279.0000	-.0263				

DIAMETER	.3377	.3360	.0017	.0040	-.0040	---+*--	
T.P.RADIUS			.0020	.0015			.0005
T.P.ANGLE			222.9554				
T.P.DIAM.			.0039	.0030			.0009

Feature - pcd 7.128 Hole#17

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5652	3.5640	.0012				
ANGLE	296.9826	297.0000	-.0174				
DIAMETER	.3372	.3360	.0012	.0040	-.0040	---+*--	
T.P.RADIUS			.0016	.0015			.0001
T.P.ANGLE			253.7613				
T.P.DIAM.			.0032	.0030			.0002

Feature - pcd 7.128 Hole#18

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5630	3.5640	-.0010				
ANGLE	314.9729	315.0000	-.0271				
DIAMETER	.3371	.3360	.0011	.0040	-.0040	---+*--	
T.P.RADIUS			.0019	.0015			.0004
T.P.ANGLE			194.9627				
T.P.DIAM.			.0039	.0030			.0009

Feature - pcd 7.128 Hole#19

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5631	3.5640	-.0009				
ANGLE	332.9951	333.0000	-.0049				
DIAMETER	.3373	.3360	.0013	.0040	-.0040	---+*--	
T.P.RADIUS			.0009	.0015			
T.P.ANGLE			171.5569				
T.P.DIAM.			.0019	.0030			

Feature - pcd 7.128 Hole#20

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
RADIUS	3.5607	3.5640	-.0033				
ANGLE	350.9872	351.0000	-.0128				
DIAMETER	.3373	.3360	.0013	.0040	-.0040	---+*--	
T.P.RADIUS			.0034	.0015			.0019
T.P.ANGLE			184.6937				
T.P.DIAM.			.0067	.0030			.0037

Feature - pcd 7.128

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS X	-.0016	.0000	-.0016				
AXIS Y	-.0005	.0000	-.0005				
DIAMETER	7.1279	7.1280	-.0001	.0080	-.0080	---*---	
ROUNDNESS	.0032			.0080		+*--	
T.P.RADIUS			.0017	.0015			.0002
T.P.ANGLE			197.7862				
T.P.DIAM.			.0034	.0030			.0004

Feature - Hole B

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS X	4.8640	4.8650	-.0010	.0050	-.0050	---*---	
AXIS Y	.0021	.0000	.0021	.0050	-.0050	---+*--	
DIAMETER	.7079	.7086	-.0007	.0080	-.0080	---*---	

Feature - Hole C

	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS X	-3.7429	-3.7420	-.0009	.0050	-.0050	---+*--	
AXIS Y	3.1102	3.1080	.0022	.0050	-.0050	---+*--	

DIAMETER	.7080	.7086	-.0006	.0080	-.0080	---*---	
Feature - Hole F							
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS X	3.7417	3.7420	-.0003	.0050	-.0050	---*---	
AXIS Y	3.1101	3.1080	.0021	.0050	-.0050	---+*---	
DIAMETER	.7079	.7086	-.0007	.0080	-.0080	---*---	
Feature - Hole E							
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS X	3.7413	3.7420	-.0007	.0050	-.0050	---*---	
AXIS Y	-3.1059	-3.1080	.0021	.0050	-.0050	---+*---	
DIAMETER	.7080	.7086	-.0006	.0080	-.0080	---*---	
Feature - Hole D							
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
AXIS X	-3.7434	-3.7420	-.0014	.0050	-.0050	---+*---	
AXIS Y	-3.1057	-3.1080	.0023	.0050	-.0050	---+*---	
DIAMETER	.7080	.7086	-.0006	.0080	-.0080	---*---	
Feature - A to B distance							
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
LENGTH	9.7286	9.7300	-.0014	.0080	-.0080	---+*---	
Feature - C to D distance							
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
LENGTH	6.2159	6.2160	-.0001	.0080	-.0080	---*---	
Feature - F to E distance							
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
LENGTH	6.2161	6.2160	.0001	.0080	-.0080	---*---	
Feature - 7.484 C-F							
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
LENGTH	7.4846	7.4840	.0006	.0080	-.0080	---*---	
Feature - 7.484 D - E							
	Actual	Nominal	Difference	Hi-tol	Lo-tol	Graphic	Error
LENGTH	7.4847	7.4840	.0007	.0080	-.0080	---*---	



CERTIFICATE OF CONFORMANCE

SHIPPED FROM: TC LTD,
 UNITS 1-6 BRIMINGTON ROAD NORTH
 WHITTINGTON WOOD, CHESTERFIELD
 DERBYSHIRE S41 9PD, ENGLAND.

SALES OFFICE: TC LTD., PO BOX 130, UXBRIDGE, URB2 2YS, ENGLAND
 FAX: 01895 273540 TELEPHONE: 01895 252222
 E MAIL: sales@tc.co.uk WEB SITE: http://www.tc.co.uk
 Registered in England No. 1125377 VAT No. GB 223 7880 35

DELIVER TO:

PIPELLI CABLES LTD 7P574-01
 PLANT 59, COMPONENTS DIVISION
 HALL LANE
 PRESCOTT
 MERREYSIDE L39 5RN

OUR REFERENCE	54394/1
YOUR ORDER NUMBER	4500126405

ACCOUNT NUMBER	7P574-01	DEPARTCH NUMBER	07 55374/1	DEPARTCH DATE	11-07-02
DATE ORDER RECEIVED	10/07/02	ESTIMATED SHIP DATE	11/09/02	ORDER ANALYSIS DATA	TH

PRODUCT CODE	DESCRIPTION	QUANTITY	UNITS	REMARKS
174	RTD ASSEMBLY TYPE 15 15-1-S.O-4-25-DE2A-RIGG-A-2 MTRS SH 17 OVERNIGHT DELIVERY CUSTOMER CONTACT IS DARREN SPILLER YOUR CONTACT AT TC IS TOM HALL-JONES PACKING, DARRIASSE & INSURANCE	30	EACH	
UBA		1	LOT	

We certify that the goods supplied against this certificate of conformance have been inspected and tested in accordance with our normal test procedures and fully comply with the description shown, our published specification and the relevant British Standards, details of which are available on request.

Customer Agreed Concession:
 Reference: and date: NONE

Inspector: Dee
 Signature: [Signature]
 Date: 11/09/02

TC

Damage or shortage must be reported in writing or by fax within 7 days of receipt of goods. Customers intending to return goods to us for any reason whatsoever must first obtain our written agreement with instructions as to which factory site the goods are to be returned to. We accept no liability for shortage, damage or non-receipt in any way for goods being returned.



Varian Vacuum Technologies
Varian S.p.A.
Via Flli Varian, 54
10040 Leini (Torino)Italy

Phone: +39-011-9979-111
Fax: +39-011-9979-350
www.varianinc.com

Date September 17, 2002

**CERTIFICATO DI CONFORMITA'
AFFIDAVIT OF COMPLIANCE
TEST REPORT**

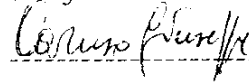
Si certifica che il seguente materiale:
We certify that the following material:

Part number and description Numero di parte e descrizione	Order Ordine	Delivery Prelievo	Quantity Quantità
FG0275CI GASKET,CU,FOR 2.75"CFF,10/PK	318393991	310907508	8
F06000000NC4 FLANGE,CF,6.00"X0.00",NR,CBH,304L SST	318393991	310902929	20
F06000000NC4 FLANGE,CF,6.00"X0.00",NR,CBH,304L SST	318393991	310908849	20
FG0600CI GASKET,CU,FOR 6.0"CFF,10/PK	318393991	31090758	3
F06000000RM4 FLANGE,CF,6.00"X0.00",ROT,M8,TAP	318393991	310917050	20
F06000000RM4 FLANGE,CF,6.00"X0.00",ROT,M8,TAP	318393991	310917050	20

PURCHASE ORDER REF. 4500126836

E' stato costruito secondo la norme applicabili, incluse le norme ISO 9001, ed è conforme a quanto richiesto dall'ordine d'acquisto e dalle nome e/o disegni da questo ordine citati. Le informazioni relative sono a disposizione per eventuali ispezioni.

Was manufactured in accordance with applicable specification, ISO 9001 norms included, and is in conformance with the requirements, specifications and drawing applicable to that purchase order. Test report may be examined upon request.

A handwritten signature in black ink, appearing to read 'C. M. P. S. R.', is written over a horizontal dashed line.

Firma
Authorized-Signature

CLEANING PROCEDURE FOR STAINLESS STEEL COMPONENTS USED IN ULTRA HIGH VACUUM APPLICATIONS

PRE-WELDING CLEANING:

- REMOVE EXCESS GREASE AND OIL FROM COMPONENT USING PAPER OR CLOTH WIPERS, TAKING EXTRA CARE TO ENSURE HOLES ARE CLEAR OF CUTTING OIL, GREASE AND SWARF
- ULTRASONIC IN HOT DECON 90 OR SIMILAR DEGREASANT FOR 30 MINUTES
- RINSE ITEM IN HOT RUNNING WATER TO REMOVE DEGREASANT
- BLOW OFF EXCESS WATER WITH OXYGEN FREE NITROGEN
- ULTRASONIC IN FERROTONE SOLUTION FOR 30 MINUTES
- RINSE UNDER COLD RUNNING WATER TO REMOVE FERROTONE
- BLOW OFF WITH OXYGEN FREE NITROGEN
- ULTRASONIC IN DE-IONISED WATER FOR 10 MINUTES
- BLOW OFF WITH OXYGEN FREE NITROGEN
- OVEN DRY AT 90 – 120 DEG C FOR 30 MINUTES

WELDING:

- WIPE AREA TO BE WELDED WITH ISO PROPONOL OR SIMILAR, USING A LINT FREE TISSUE
- ENSURE A GOOD ARGON PURGED SYSTEM DURING THE WELD PROCEDURE

CLEANING PROCEDURE CONTINUED

POST- WELDING CLEANING:

- SCOTCHBRIGHT MANUALLY TO REMOVE WELD BURN, POLARIS POWDER CAN BE USED TO AID BURN REMOVAL
- ULTRASONIC IN HOT DECON 90 OR SIMILAR FOR 30 MINUTES
- RINSE OFF EXCESS UNDER HOT RUNNING WATER
- BLOW OFF USING OXYGEN FREE NITROGEN
- ULTRASONIC IN BOILING DE-IONISED WATER FOR 30 MINUTES
- BLOW OFF USING OXYGEN FREE NITROGEN
- OVEN DRY AT 90 – 120 DEG C FOR 12 HOURS

PACKAGING

- HANDLE WITH CARE USING LINT FREE & DUST FREE GLOVES
- COVER ALL FLANGE FACES WITH TIN FOIL
- PROTECT FLANGE USING A SUITABLE CAP
- PLACE ITEM IN 2 PLATIC BAGS AND HEAT SEAL
- EACH ITEM MUST BE CLEARLY MARKED ON THE OUTSIDE WITH THE FOLLOWING:
 - A: UHV CLEAN COMPONENTS HANDLE WITH CARE AND GLOVES
 - B: DRAWING NUMBER
 - C: ISSUE NUMBER
 - D: ORDER NUMBER

To: PIRELLI CABLES LTD.

This is to certify that 8 pieces of Ceramaseal part number
4511-02-CF, your part number NA; shipped against your purchase
order number 4500126247, on 8/30/02, met all applicable
requirements of current specifications, drawings and exceptions listed
on the above purchase order and that appropriate test results are on
file. Shipped on Ceramaseal sales order number 62361.
Manufactured on Ceramaseal work order number 101764.

Juan A. Hoffman
Company Official

Quality Technician
Title



Vacweld

Vacweld Ltd
Folgate House, Folgate Road,
North Walsham, Norfolk, NR28 0AJ, England.
Tel: (01692) 500000 Fax: (01692) 500188
Email:sales@vacweld.co.uk
Web Site: www.vacweld.co.uk

CERTIFICATION OF LEAK TEST

ORDER NO: 4500133041

ADVICE NOTE NO: 000000518

QTY: 40 CONCESSIONS: -

PART/DRAWING NO: UBNL70Z ISSUE: 2

DESCRIPTION: REDUCER ASSY

SERIAL NO: -

VALVE NO: -


CALIBRATED LEAK RATE: Within 1×10^{-11} mbar l/s

LEAK CHECKED/VACUUM BAKED BY: Mr. D HARBOUR

POSITION: DIRECTOR

DATE: 17th OCTOBER 2002

PRINT NAME: D HARBOUR

SIGNED: 

Specialist welding and instrument-making for science and industry

Bodycote Group

Member of Bodycote International Plc

**TEST CERTIFICATE/ADVICE NOTE
CERTIFICATE OF CONFORMITY
APPROVED CERTIFICATE**

Delete as appropriate

FROM: BODYCOTE HEAT TREATMENTS LTD.
THE INDUSTRIAL ESTATE
MERSEYCH
CAMERIDGE

VAJ No: 01223 863498 TEL: 01223 860741
FAX No: 01223 863490

LINE No.	JOB No.	DESCRIPTION	UNIT	QUANTITY	CERTIFICATE DECLARATION
001	6500	PIRELLI CABLES LIMITED COMPONENTS DIVISION PO BOX 4, HALL LANE, PRESQUIT, MERSEYSIDE, L34 5UR.	LOAD ITEMS	1.000 1.000	<p>Certified that the whole of the supplies/materials detailed hereon have been processed, inspected, tested and - unless otherwise stated - conform in all respects with the requirements of the contract, order or specifications.</p> <p>The quality control arrangements adopted in respect of these supplies/materials have accorded with the conditions applicable to the following approvals:</p> <p>BS EN ISO 9002 APPROVED REF: 14/05/1996</p>
002	0660	LOWER SEAL ASSY Part No. 11164-69 QUALITY RANGE TO OUR DATA CATED 08/04 1996.02 BRGZE N50 REG. No. 10785433	EACH ITEMS	10.000 10.000	

Furnace Charge 478501

Helium Leak checked - Acceptable.

14-11-02



DELIVERY ADDRESS
PIRELLI CABLES LIMITED
COMPONENTS DIVISION
PO BOX 4, HALL LANE,
PRESQUIT, MERSEYSIDE,
L34 5UR.

SERIAL NUMBER 0442709
TRANSPORT DETAILS WORKS ORDER No. 0372074
INCOMING ORDER No. 4500134270
MATERIAL SPEC/ISSUE No. 00000000000000000000

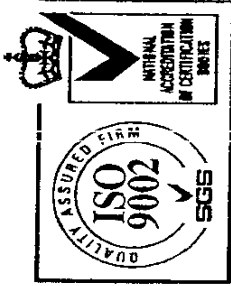
PAGE: 001 OF 001
DATE: 14/11/02

Certified that unless otherwise stated above, the whole of the above mentioned materials and/or parts have been processed and inspected in accordance with the terms of the contract/order applicable thereto and conform fully to the standards/specification quoted hereon and the requirements of the Civil Aviation Authority.

For and on behalf of:

BODYCOTE HEAT TREATMENTS LTD.

Signed: *[Signature]* Insp. Stamp (75)



Certificate Of Conformity

Web Site : WWW.LLANDAFF.COM

Deliver to

Pirelli Cables Components Unit
PLANT 58, COMPONENTS DIVISION
PIRELLI CABLES LIMITED
HALL LANE
PRESCOTT, MERSEYSIDE
L34 5UR

Invoice to

Pirelli Cables Components Unit
PO Box 4
Hall Lane
Prescot
Merseyside
L34 5UR

Our VAT reg

Delivery no
28042

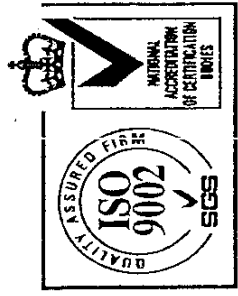
Account code
BICC00184

Delivery date
9/20/02

Item	Part no	Your part no	Your order no	Qty ordered	Qty balance	Qty despatched
1	PICALBNL42 6" CONFLAT FLANGE TO DRG. LBNL42 Complete Order Item		4500131111 UOM : EACH Our order : 10223/1	20.000	0.000	20.000
<i>DELIVERED BY PARCELINE</i>						
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p>Signature</p> </div>						

The above items have been manufactured using Llandaff Engineering's Quality Management system's accredited to BS.EN.ISO 9002 (1994) and unless stated comply in all respects to your requirements.

Certificate Of Conformity



PAPERMILL ROAD,
CARDIFF, CF11 8PH UK
TEL: 029 2083 8300
FAX: 029 2056 5125
FAX: 029 2056 3523

**LANDAFF
ENGINEERING**

Web Site : WWW.LLANDAFF.COM

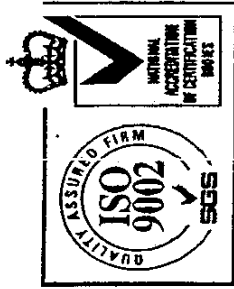
Our VAT reg	
Delivery no	28032
Account code	BICC00184
Delivery date	19/09/2002

Invoice to
Pirelli Cables Components Unit
PO Box 4
Hall Lane
Prescot
Merseyside
L34 5UR

Deliver to
Pirelli Cables Components Unit
PLANT 58, COMPONENTS DIVISION
PIRELLI CABLES LIMITED
HALL LANE
PRESCOTT, MERSEYSIDE
L34 5UR

Item	Part no	Your part no	Your order no	Qty ordered	Qty balance	Qty despatched
1	PICALBNL137 SUPPORT ROD OUTER TO DRG. LBNL137 Complete Order Item		4500126409 UOM : EACH Our order : 10091/4	160.000	0.000	160.000
2	PICALBNL13 STATION 2 SEALING RING TO DRG. LBNL13 Complete Order Item		4500126409 UOM : EACH Our order : 10091/15	40.000	0.000	40.000
3	PICALBNL35 LIA INSULATOR FLANGE TO DRG. LBNL35 Complete Order Item		4500126409 UOM : EACH Our order : 10091/17	40.000	0.000	40.000
DELIVERED BY PARCELINE						
Signature						

The above items have been manufactured using Landaff Engineering's Quality Management system's accredited to BS.EN.ISO 9002 (1994) and unless stated comply in all respects to your requirements.



Certificate Of Conformity

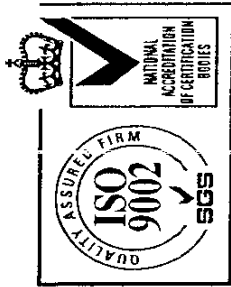
Our VAT reg
Delivery no 28196
Account code BICC00184
Delivery date 10/4/02

Invoice to
Pirelli Cables Components Unit
PO Box 4
Hall Lane
Prescot
Merseyside
L34 5UR

Deliver to
Pirelli Cables Components Unit
PLANT 58, COMPONENTS DIVISION
PIRELLI CABLES LIMITED
HALL LANE
PRESCOTT, MERSEYSIDE
L34 5UR

Item	Part no.	Your part no	Your order no	Qty ordered	Qty balance	Qty despatched
1	PICALBNL14 UPPER SEAL TO DRG. LBNE14 Complete Order Item		4500126409 UOM : EACH Our order : 100917	40.000	0.000	40.000
DELIVERED BY PARCELINE						
Signature						

The above items have been manufactured using Llandaff Engineering's Quality Management system's accredited to BS:EN ISO 9002 (1994) and unless stated comply in all respects to your requirements.



Certificate of Conformity

Web Site : WWW.LLANDAFF.COM

Page 1 of 1

Deliver to

Pirelli Cables Components Unit
PLANT 58, COMPONENTS DIVISION
PIRELLI CABLES LIMITED
HALL LANE
PRESCOTT, MERSEYSIDE
L34 5UR

Invoice to

Pirelli Cables Components Unit
PO Box 4
Hall Lane
Prescot
Merseyside
L34 5UR

Our VAT reg

Delivery no

28149

Account code

BICC00184

Delivery date

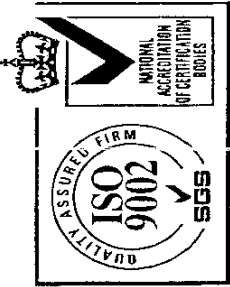
9/27/02

Item	Part no	Your part no	Your order no	Qty ordered	Qty balance	Qty despatched
1	PICALBNL138 SUPPORT ROD INNER TO DRG. LBNL138 Complete Order Item		4500126409 UOM : EACH Our order : 10091/5	160.000	0.000	160.000
2	PICALBNL68 THERMOMETER SLEEVE TO DRG. LBNL68 Complete Order Item		4500126409 UOM : EACH Our order : 10091/11	10.000	0.000	10.000
<i>DELIVERED BY PARCELINE</i>						

Signature

The above items have been manufactured using Llandaff Engineering's Quality Management system's accredited to BS EN ISO 9002 (1994) and unless stated comply in all respects to your requirements.

Certificate Of Conformity



PAPERMILL ROAD,
CARDIFF, CF11 8PH UK
TEL: 029 2083 8300
FAX: 029 2056 5125
FAX: 029 2056 3523

**LLANDAFF
ENGINEERING**

Web Site : WWW.LLANDAFF.COM

Our VAT reg	
Delivery no	27810
Account code	BICC00184
Delivery date	28/08/02

Invoice to
Pirelli Cables Components Unit
PO Box 4
Hall Lane
Prescot
Merseyside
L34 5UR

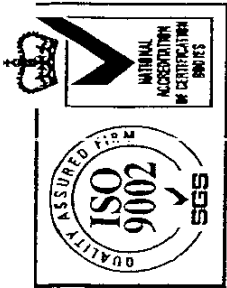
Deliver to
Pirelli Cables Components Unit
PLANT 58, COMPONENTS DIVISION
PIRELLI CABLES LIMITED
HALL LANE
PRESCOTT, MERSEYSIDE
L34 5UR

Item	Part no	Your part no	Your order no	Qty ordered	Qty balance	Qty despatched
1	PICALBNL42 6" CONFLAT FLANGE TO DRG. LBNL42 Complete Order Item <i>Delivered by Parceline</i>		4500129463 UOM : EACH Our order : 10156/1	20.000	0.000	20.000

CONFIRMATION

Signature
[Signature]

The above items have been manufactured using Llandaff Engineering's Quality Management system's accredited to BS.EN.ISO 9002 (1994) and unless stated comply in all respects to your requirements.



Certificate Of Conformity

Web Site : WWW.LLANDAFF.COM

Page 1 of 1

Deliver to

Pirelli Cables Components Unit
PLANT 58, COMPONENTS DIVISION
PIRELLI CABLES LIMITED
HALL LANE
PRESCOTT, MERSEYSIDE
L34 5UR

Invoice to

Pirelli Cables Components Unit
PO Box 4
Hall Lane
Prescot
Merseyside
L34 5UR

Our VAT reg

Delivery no

28137

Account code

BICC00184

Delivery date

9/27/02

Item	Part no	Your part no	Your order no	Qty ordered	Qty balance	Qty despatched
1	PICALBNL32 6" ROTATABLE CONFLAT FLANGE TO DRG. LBNL32 Complete Order Item		4500131112 UOM : EACH Our order : 10243/1	40.000	0.000	40.000
<i>DELIVERED BY PARCELINE</i>						
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Signature </div>						

The above items have been manufactured using Llandaff Engineering's Quality Management system's accredited to BS.EN.ISO 9002 (1994) and unless stated comply in all respects to your requirements.

DMS

FAO A JONES 2 SHEETS
1 of 2

TOTAL P. 02

COPPER AND BRASS MILLS SEVOJNO



UŽICE
YUGOSLAVIA

CERTIFICATE

N° 428.-
DATE 11.05.01.

CUSTOMER: EAST POINT
THE METAL CENTRE

FORM: Copper sheets

Net: 8.385 kg

Quantity Btl: 8.913 kg.

STANDARD: BS EN 1652

Material

Temper

CUSTOMER'S REF. 7358

Export ref. 16943/87-A

Sample No	CHEMICAL COMPOSITION, (%)				MECHANICAL, METALLOGRAPHICAL AND TECHNOLOGICAL PROPERTIES						
	Cu	P			Tensile strength Rm	Yield strength Rp	Elongation A10	Hardness scale	Average Grain size (mm)		
1623/1 2 3	99,90	0,026			277,2 284,5 275,9		37,6 36,4 38,0				
CW 024A 2,0 x 1000 x 2000 mm = 2.173 kg.											
1644/1 2 3 4	99,90	0,022			274,8 271,6 276,6 272,9		37,4 37,6 37,0 38,6				
CW 024A 3,0 x 1000 x 2000 mm = 3.125 kg.											
1683/1 2	99,90	0,025			266,7 271,0		39,6 40,0				
CW 024A 1,5 x 1000 x 2000 mm = 1.557 kg.											
1704/1 2	99,90	0,022			272,6 272,0		39,8 38,4				
CW 024A 0,55 x 1000 x 2000 mm = 1.530 kg.											

121260-01-04

121261-01-06

121262-01-03

121263-01-03

- 380 -
3.1.b.

CONTROL'S DEPARTMENT

J. Ljubić
A. Jones

POKK12110

DELIVERED ON 22/05/01 11:06 Page 01701

LLANDAFF ENGINEERING LTD
 PAPERMILL ROAD
 ELY
 CARDIFF, SOUTH GLAM.
 1/1
 CF1 6UH

LLANDAFF ENGINEERING LTD
 PAPERMILL ROAD
 ELY
 CARDIFF, SOUTH GLAM.

CF1 6UH DELIVERY DUE : 25/06/01

IRF No. ACCT No. CUSTOMER ORDER REF. DATE PAYMENT TERMS

CFN20194

PRODUCT CODE QUANTITY DESCRIPTION

PRODUCT CODE	QUANTITY	DESCRIPTION	PRICE PER UNIT	VA CODE	No. OF UNITS	LINE VALUE
010999	6.00	BS. EN1653:1998/BS2870:1980/C105 CU SHT CW024A/C105 H/H 2000mm X 1000mm X 2.0mm Batch ID: Cast No. --- Cert. No. --- 121250-1-0 1623/1 428	218.00			0142554

P/W 0.762
R300.0
CFN 26777

W. Whyte 6.01 85 Above

FOR INSPECTION AND APPROVAL ADDITIONAL REQUIREMENTS

W. Whyte 6.01 85 Above

Certified that the supplies detailed hereon have been subject to the procedures of our ISO 9002 registered Quality System and fully comply with the requirements of the contract or purchase order, unless otherwise stated.

Zof



PMD (UK) LIMITED

Broad Lane, Coventry CV5 7AY
Tel: (02476) 466691, Fax: (02476) 473034
e-mail: sales@pmdgroup.co.uk

Delivery Note / Certificate of Conformity

BIC	
Delivery / C of C Note No.	83439 / 0
Date	13/11/2002
Customer Order No.	4500134978
Customer Advice Note No.	
Incoming C of C No.	10785081
Delivery	Courier
Batch No.	83439 / 0

Cables Ltd.
Elements Unit
Box 4
Wester Road
at
Ysida
JR

Qty	Part Number / Description	Process Comments
10.0	LBNL69V Lower Seal Braze Assy.	Bright Nickel 10.0 Microns.

396321

WE NOW CONSIDER THIS ORDER COMPLETE

That the supplies / services detailed hereon have been inspected in accordance with the conditions and requirements of the purchase order and unless otherwise noted above conform to the specification(s), drawing(s) relevant thereto.

Received on behalf of _____

Signature _____ **Pirelli Cables Ltd.**

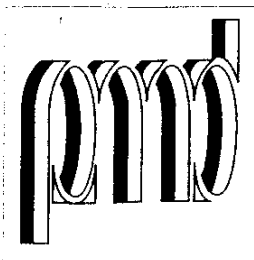
Print Name _____

on behalf of PMD (UK) Limited
J. Smith

BS EN ISO 9001 1994



CERTIFICATE NUMBER FM 093



PMD (UK) LIMITED

Broad Lane, Coventry CV5 7AY
Tel: (02476) 466691, Fax: (02476) 473034
e-mail: sales@pmdgroup.co.uk

Delivery Note / Certificate of Conformity

Delivery / C of C Note No.	83438 / 0
Date	13/11/2002
Customer Order No.	4500134976
Customer Advice Note No.	
Incoming C of C No.	10785059
Delivery	Courier
Batch No.	83438 / 0

Pirelli Cables Ltd.
Components Unit
PO Box 4
Manchester Road
Prescot
Merseyside
L34 5UR

Quantity	Part Number / Description	Process Comments
----------	---------------------------	------------------

10.0 LBNL31V

Termination assy.

Bright Nickel 10.0 Microns

WE NOW CONSIDER THIS ORDER COMPLETE

Certified that the supplies / services detailed hereon have been inspected and tested in accordance with the conditions and requirements of the contract or purchase order and unless otherwise noted above conform in all respects to the specification(s), drawing(s) relevant thereto.

Received on behalf of

Pirelli Cables Ltd

Signature

Signed for on behalf of PMD (UK) Limited

Print Name

BS EN ISO 9001 1994



CERTIFICATE NUMBER FM 093

For Conditions see over



PMD (UK) LIMITED

Broad Lane, Coventry CV5 7AY
Tel: (02476) 466691, Fax: (02476) 473034
e-mail: sales@pmdgroup.co.uk

Pirelli Cables Ltd.
Components Unit
PO Box 4
Manchester Road
Prescot
Merseyside
L34 5UR

Delivery Note / Certificate of Conformity

BIC

Delivery / C of C Note No.	83575 / 0
Date	14/11/2002
Customer Order No.	4500135403
Customer Advice Note No.	
Incoming C of C No.	
Delivery	
Batch No.	83575 / 0

Quantity	Part Number / Description	Process Comments
----------	---------------------------	------------------

10.0 LBNL02AG

Station 1

Silver 10.0 - 15.0 Microns

397259

WE NOW CONSIDER THIS ORDER COMPLETE

certified that the supplies / services detailed hereon have been inspected and tested in accordance with the conditions and requirements of the contract or purchase order and unless otherwise noted above, conform in all respects to the specification(s), drawing(s) relevant thereto.

signed for on behalf of PMD (UK) Limited

BS EN ISO 9001 1994



Received on behalf of

Pirelli Cables Ltd.

Signature

Print Name

CERTIFICATE NUMBER FM 093

Conditions see over



Member of Bodycote International Plc

MANUFACTURING
WOLFELOOCH
DUMFRIES

VAT No: 01223 6330 02
FAX No: 01223 663399
TEL: 01223 660740
CIVIL 01223 660740

INVOICE ADDRESS
BUREAU OF AERONAUTICS
COMMERCE DIVISION
3000 WASHINGTON BLVD
BETHESDA, MARYLAND
20814

DELIVERY ADDRESS
BUREAU OF AERONAUTICS
COMMERCE DIVISION
3000 WASHINGTON BLVD
BETHESDA, MARYLAND
20814

SERIAL NUMBER 0442701
PAGE: 1
DATE: 1/9/97
ORDER ENTRY DATE: 04/10/96
TRANSPORT DETAILS
WORKS ORDER No.: 01223 660740
INCOMING ORDER No.: 0575066
INCOMING CERT No.: 4500134270
MATERIAL SPEC/ISSUE No.: 0001

CERTIFICATE DECLARATION
Certified that the whole of the supplies/materials detailed hereon have been processed, inspected, tested and - unless otherwise stated - conform in all respects with the requirements of the contract, order or specifications.
The quality control arrangements adopted in respect of these supplies/materials have accorded with the conditions applicable to the following approvals:
AG 01223 660740 APPROVAL NO: 005106

For and on behalf of:
SIGNED: *M. Dark*
Insp. Stamp
Date: 1-11-97

Standard Contract Conditions overleaf apply.

Bodycote Heat Treatments Ltd.
Issue 2 1/9/97

LINE No.	JOB No.	DESCRIPTION	UNIT	QUANTITY
001	0000	ALUMINIUM 7050 PART NO. 4344-01 WALFORD DIVISION 3000 WASHINGTON BLVD BETHESDA, MD 20814 TEL: 01223 660740	CF8H ITEMS	10.000 10.000
002	6500	ALUMINIUM 7050 PART NO. 4344-01 WALFORD DIVISION 3000 WASHINGTON BLVD BETHESDA, MD 20814 TEL: 01223 660740	CF8H ITEMS	1.000 1.000

DISTRIBUTION: White - Customer; Pink - Inspector; Blue - File; Green - Signature & Return

Vacweld

Vacweld Ltd
Folgate House, Folgate Road,
North Walsham, Norfolk, NR28 0AJ, England.
Tel: (01692) 500000 Fax: (01692) 500188
Email: sales@vacweld.co.uk
Web Site: www.vacweld.co.uk

CERTIFICATION OF CONFORMITY

This is to certify the components listed below have been manufactured to their relevant drawing numbers, unless otherwise agreed. The components have been welded, cleaned and leak checked to UHV standards.

ORDER NO: 4500126332

ADVICE NOTE NO: 438

QTY: 80 CONCESSIONS: -


PART/DRAWING NO: ULBNL23 ISSUE: 1

DESCRIPTION: LEAD THROUGH ASSY

SERIAL NO: -

CERTIFIED BY: Mr. D HARBOUR

POSITION: DIRECTOR DATE: 9th SEPTEMBER 2002

PRINT NAME: D HARBOUR SIGNED: 

Specialist welding and instrument-making for science and industry