

# FAX

Date: 21 NOV 00

Number of pages including cover sheet: 2

*Perken Flines Fluid Science*  
TO: PRESSURE SCIENCE  
SHERRY TURNER

From: Guy H. Stanford, P. Eng.  
TRIUMF  
4004 Wesbrook Mall  
Vancouver, B.C., V6T 2A3  
CANADA

*Susan*  
0134f } Sherry  
- 4010 P } Turner  
Tel (301) 937 - 0134

e-mail stanford@triumf.ca  
Phone 604-222-7388  
FAX Phone 604-222-1074

CC:

REMARKS:  Urgent  For your Quotation  Reply ASAP

See attached

Please quote on the 2 items listed.  
I would also like to receive a new  
catalogue of your products

Thank you

Randy Jones  
Wenco West

*3240*  
GHS

Wenco West  
Tom Johnson  
(801) 489-2159  
2199 (Fax)

# FAX

1.5

Date: 1 DEC '00

Number of pages including cover sheet: 1

TO: HELICOFLEX

BRIAN

-3240

Tel  
FAX (803) 783 - 4279

From: Guy H. Stanford, P. Eng.  
TRIUMF  
4004 Wesbrook Mall  
Vancouver, B.C., V6T 2A3  
CANADA

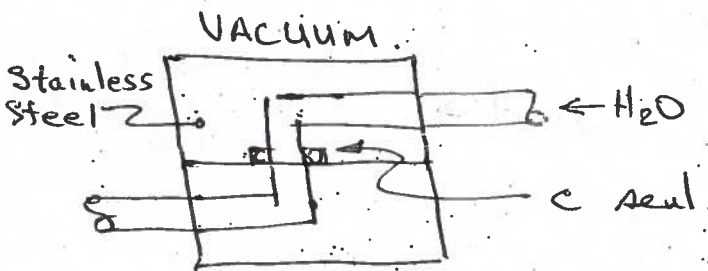
e-mail stanford@triumf.ca  
Phone 604-222-7388  
FAX Phone 604-222-1074

CC:

REMARKS:  Urgent  For your Quotation  Reply ASAP

Hi Brian —

Re: Telcon of same date.



2 sizes required

- ① 1/8" = ~ .200 wt ~.050
- ② 1/8" = ~ .300.      ~.090

Requested: Mat'l & coating = ?  
Lead Time: 6 wks.  
Min order = ~\$250

14 DEC 00

# WATER CONNECTION BLOCK C-SEALS - TARGET MODULES

## ① PRESSURE SCIENCE

613AS4 - 0003-2

613AS4 - 0004-2

- 61 - PART #
- 3 - 3/32  $\phi$  C-SEALS
- A - .010 MAT'L THICKNESS
- 5 - INCONEL X-750
- 4 - INDIUM COATING
- 0003 - .210 ID, .364 OD (for 1/4 LINES)
- 0004 - .272 ID, .426 OD (CAVITY .437) (for 3/8 LINES)
- 2 - QUALITY - LOOSE TOL.

## ② ENER RING

ELI - 000500 - 07-07-2 - IP - B

$$\begin{array}{r} \text{ID } .500 \\ - .160 \\ \hline .340 \end{array}$$

(No smaller 3/32 size)

- E - ENGLISH
- C - C-RING
- I - internal press.
- 000500 - OUTSIDE DIA
- 07 - STD .010 WALL
- 07 - INCONEL X-750
- 2 - AGE HARDENED
- IP - INDIUM COATING
- B - ~~.003~~ COAT THICK (STD)  
.001 - .0015

## ③ GFD - ULTRA SEAL

Smallest in 3/32

ID .210  
OD .364

Groove ID .20  
OD .375  
Depth .073 - .077

50

## ④ GAR-LOCK

Smallest is 1/2  $\phi$  for 3/32 c



# FAX

Date:

15 DEC '00

Number of pages including cover sheet:

2

TO: ULTRA SEAL

Attn: Michael Anderson.

Tel

FAX

(909) 980-2238

From:

Guy H. Stanford, P. Eng.

TRIUMF

4004 Wesbrook Mall

Vancouver, B.C., V6T 2A3

CANADA

e-mail

stanford@triumf.ca

Phone

604-222-7388

FAX Phone

604-222-1074

CC:

REMARKS:

Urgent

For your Quotation

Reply ASAP

See attached.

Hi Michael — Re our telcon of same date.

Please quote on  $q = 50$   
and time for delivery.

Radiation Level  $\cong 100R$ .

2001/04/11 10:17:37  
POAS/400

TRIPUMF  
REQUISITION CONFIRMATION REPORT

P.O. NUMBER : TR 132188 REQUISITION # : 336569 ACCOUNT # : 2204 ECR BUYER : COLLEEN MULLLEN  
ORDER DATE : 2001-01-15 REQUISITION DATE : 2001-01-12 SHIP TO :  
DESCRIPTION : CONFIRMATION OF FAXED ORDER  
SUPPLIER : WENCOR WEST  
1625 NORTH MT SPRINGS  
SPRINGVILLE UT  
USA  
801-489-2000

F.O.B. : UTAH, U.S.A.

ITEM	QUANTITY	UNIT	DESCRIPTION	STORES #	DEFERRED	UNIT PRICE	D F P	EXTENDED PRICE	QUOTE #
1	50.00	EA	613A54-0004-C METAL 'C' SEAL AS PER QUOTE NUMBER: U510584		2001-04-20	22.1300	1 P	1106.50	

DEL

77.46 GST  
77.46 PST  
1261.42

*Copy*  
Please  
fax  
order  
with credit  
card's  
first  
in. col

Randy Jones - Sales Mgr @ Wencor  
801-489-2024

5/8/01 Del. 70 days lead time - want to talk to you.

(Pressure Sc.)  
make them.

P.O. Box 1133, Corona, CA 92878  
Toll Free: 877-858-7732 Fax: 909-273-9212  
[ultraseal@earthlink.net](mailto:ultraseal@earthlink.net) [www.ultra-seal.net](http://www.ultra-seal.net)



# Fax

**To:** Mr. Guy Stanford **From:** Mike Anderson  
 TRIUMF

---

**Fax:** 604-222-1074 **Pages:** 3

---

**Phone:** **Date:** 5/11/01

---

**Re:** Metal C- Seals **CC:**

Urgent     For Review     Please Comment     Please Reply     Please Recycle

Dear Mr. Stanford,

I have taken the liberty of enclosing an updated quotation for the seal we've been discussing. I have also enclosed a copy of the design proposal drawing. Pricing and lead times are the same as in the previous quotation. To reiterate, our seal will be fabricated from Inconel 718, and Silver plated for optimum performance.

We are looking into the installation issue, and will get back to you with a recommendation.

Sincerely,

Michael Anderson

Program Manager

P.S. Pls. note our new address/phone numbers.



Ultra Seal  
 P.O. Box 1133  
 Corona, CA 92878  
 USA

909-273-9211 (tel)  
 909-273-9212 (fax)  
 E-mail: ultrasal@earthlink.net

*Other quote  
 3063*

# Quotation

Quote Number:  
 3054

Quote Date:  
 May 11, 2001

Page:  
 1

**Quoted to:**

Triumf  
 4004 Westbrook Mall  
 Vancouver, BC V6T 2A3  
 Canada

Customer ID	Good Thru	Payment Terms	Sales Rep
2189	8/10/01	2% 10, Net 30 Days OAC	Mike Anderson

Quantity	Item	Description	Unit Price	Extension
5.00	SP 50531	0.426" OD Inside C-Seal Inconel 718/Silver Plating	90.75	453.75
10.00	SP 50531	0.426" OD Inside C-Seal Inconel 718/Silver Plating	64.62	646.20
25.00	SP 50531	0.426" OD Inside C-Seal Inconel 718/Silver Plating	37.12	928.00
50.00	SP 50531	0.426" OD Inside C-Seal Inconel 718/Silver Plating	24.50	1,225.00
Delivery: 7-8 wks. ARO (Initial Order) 5-6 wks (Subsequent Orders)				
<b>Subtotal</b>				3,252.95
<b>Sales Tax</b>				
<b>Total</b>				3,252.95

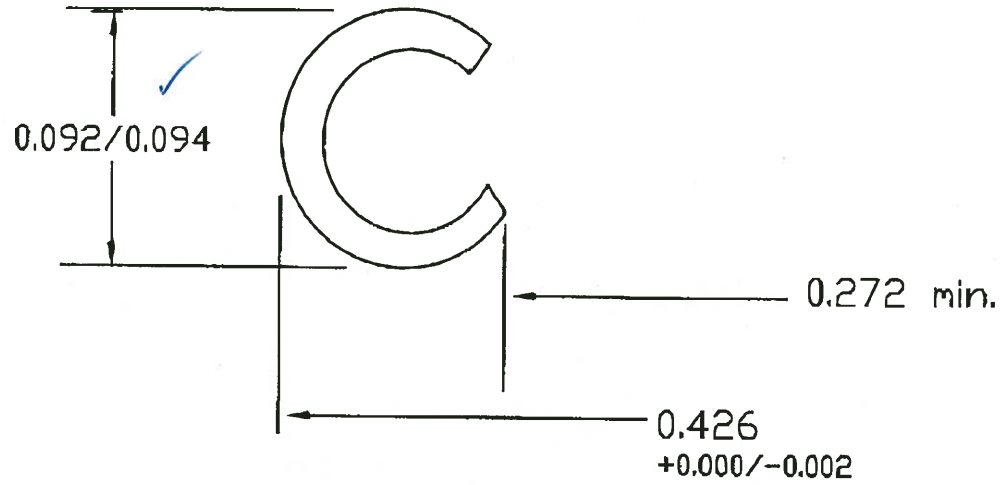
Notes:

Dimensions are in inches, and are prior to plating.  
 Diameters may be out of round in excess of tolerances.  
 Material: AMS5596 Inconel 718  
 Thickness: 0.010  
 Treatment: Precipitation heat treated  
 Plating Thickness: 0.0010/0.0015"

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

Flange Groove Detail:

OD: 0.437 +0.001/-0.000  
 ID: 0.262 max.  
 Groove Depth: 0.073/0.077



Ultra Seal P/N: SP 50531

Prepared For: TRIUMF(Canada)		Title: Metal C-Seal-Inside Pressure		
		<b>Ultra Seal</b> Rancho Cucamonga, CA		
Material: Inconel 718	SIZE: B	FORM NO.	DWG NO.	REV
Plating: Silver	SCALE: None		SHEET 1 OF 1	



# FAX

Date: 14 May 01

Number of pages including cover sheet: 5

TO:

Product Mgt.  
RANDY JONES  
WENCOR WEST

From:

Guy H. Stanford, P. Eng.  
TRIUMF  
4004 Wesbrook Mall  
Vancouver, B.C., V6T 2A3  
CANADA

Tel

FAX (801) 489-2199

e-mail

stanford@triumf.ca

Phone

604-222-7388

FAX Phone

604-222-1074

CC:

REMARKS:  Urgent  For your Quotation  Reply ASAP

Here is the info you requested

Corrie Curth

1. Give complete catalog descriptions and/or vendor's catalog numbers to fully identify your requirements.
2. Competitive quotations will be obtained by the Purchasing Department on all requisitions exceeding \$500.00. Attach any written quotations to this form.

**TRIUMF**  
REQUISITION


TX [Redacted]

**This is NOT a Purchase Order**

132188

SUGGESTED SUPPLIER

WENCOR WEST  
1625 North Mt. Spring Parkway  
Springville Utah  
84660. U.S.A.



PHONE \* (801) 489-2000

CONTACT 801-489-2028 FAX: 801-489-2199.

SUPP. CODE	NEW 58249
CURRENCY	U.S. \$
BUYER	Col.

ALTERNATE SOURCE No OTHER QUOTES REC'D. DATE OF REQUISITION 8 JAN 01

REQ. NO 336569 FIN. CODE SUP DS. ACCOUNT NO 2204 TASK NO ACC'T NAME ECR DATE REQUIRED

SHIPPING INSTRUCTIONS ~~By~~ FedEx # 1048-0110-2 F.O.B. Utah. DATE ORDER PLACED 11/15/01.

ITEM	QUANTITY	UNIT	DEL. DATE	PRICE	D	G	P	PART NO.	DESCRIPTION
1	50	EA	4/20/01	22.13	1		P	613A54 - 0004 - C	METAL 'C' SEAL
				each					
								REF :	QUOTE # U510584
									<del>See attached.</del>

Continuation of faxed order.

Wencor / Brenda  
- left message for her  
- Amber left message  
- called Amber.

U.S. MAIL PURCHASING DEPT.  
-01-12-2001  
REQUISITION DATE  
FAS Jan 16/2001

END USE OF PURCHASE (for customs, sales tax and financial reporting purposes)

ESTIMATED COST @ \$ 22.13 / each us ≈ 1200

REQUISITIONER LOCAL ACCOUNT HOLDER DIVISION HEAD  
G. Stanford 7388 G. Stanford Paul SC

Scotlor

To GUY STANFORD

Quotation # U510584

Date 12/04/00 PAGE # 1

To: GUY STANFORD

From: Wencor West Sales

NEW CUSTOMER A LEVEL  
, USA

Wencor West, Inc.  
Springville, UT. 84663-0514  
Phone: 801-489-2000 Fax: 801-489-2199  
email: sales@wencor.com

Customer Code: NEWAAA  
Fax: 1-604-222-1074

In response to your request for quotation number PHONE  
we are pleased to offer the following information.

ITM	PART NUMBER	NOUN	QTY	UNIT PRICE	DELIVERY
1	613A54-0003-2		25		0 in STK
	SHOULD BE 613A54-0003-C				
2	613A54-0003-C	C-SEAL	25	42.5000	0 in STK
			50	22.1300	Bal 80 Days ARO
3	613A54-0004-2		25		0 in STK
	SHOULD BE 613A54-0004-C				
4	613A54-0004-C	C-SEAL	25	48.5000	0 in STK
			50	22.1300	Bal <del>80</del> Days ARO

Minimum Order Line : \$ 12.50  
Minimum Total Order : \$ 50.00

F.O.B.: ORIGIN  
Credit Terms : COD

90

Stock material will ship within 48 hours after receipt of order unless otherwise specified on your order. If earlier delivery is required, please contact your sales representative.

When placing your order please reference our quotation # U510584

Prices are valid for 30 days unless otherwise noted.

May 17/01

Sent drops of  
TM Connector blocks  
to ULTRA SEM  
for consideration re:  
alternate coatings.

To: Mike Anderson

P.O. Box 1133, Corona, CA 92878  
Toll Free: 877-858-7732 Fax: 909-273-9212  
[ultraseal@earthlink.net](mailto:ultraseal@earthlink.net) [www.ultra-seal.net](http://www.ultra-seal.net)

**UltraSeal****Fax**

**To:** Mr. Guy Stanford  
TRIUMF

**From:** Mike Anderson

---

**Fax:** 604-222-1074  
**Pages:** 3

---

**Phone:**  
**Date:** 6/7/01

---

**Re:** Metal C-Seal  
**CC:**

---

**Urgent**     **For Review**     **Please Comment**     **Please Reply**     **Please Recycle**

Dear Mr. Stanford,

Thank you for your continuing interest in Ultra Seal. Based on recent information (gland drawings/service conditions) provided, I have enclosed a new proposal and quotation for **SP 50606**. The seal will be fabricated from an **Inconel 718** material and plated with **Indium**. Due to the high vacuum sealing requirement, and you gland surface finish callout, we are proposing a thicker plating, and a thicker seal wall for increased sealing force. An Indium plating material was selected due to the vacuum requirement. For optimum performance and reliability, we recommend improving the surface finish to 8-12 rms.

As requested, I have checked with our manufacturing department regarding assembly of the proposed seal. Apparently, we have experience in providing an out of round seal. It is an additional operation.

If additional information is required, please let us know.

Sincerely,



Mike Anderson

Program Manager



# Quotation

Ultra Seal  
 P.O. Box 1133  
 Corona, CA 92878  
 USA

Quote Number:  
 3063

909-273-9211 (tel)  
 909-273-9212 (fax)  
 E-mail: ultraseal@earthlink.net

Quote Date:  
 Jun 7, 2001

Page:  
 1

**Quoted to:**

Triumpf  
 4004 Westbrook Mall  
 Vancouver, BC V6T 2A3  
 Canada

Customer ID	Good Thru	Payment Terms	Sales Rep
2189	9/7/01	2% 10, Net 30 Days OAC	Mike Anderson

Quantity	Item	Description	Unit Price	Extension
10.00	SP 50606	0.426" OD Inside C-Seal Inconel 718 w/ Indium plating	92.50	925.00
25.00	SP 50606	0.426" OD Inside C-Seal Inconel 718 w/ Indium plating	48.62	1,215.50
50.00	SP 50606	0.426" OD Inside C-Seal Inconel 718 w/ Indium plating	33.12	1,656.00

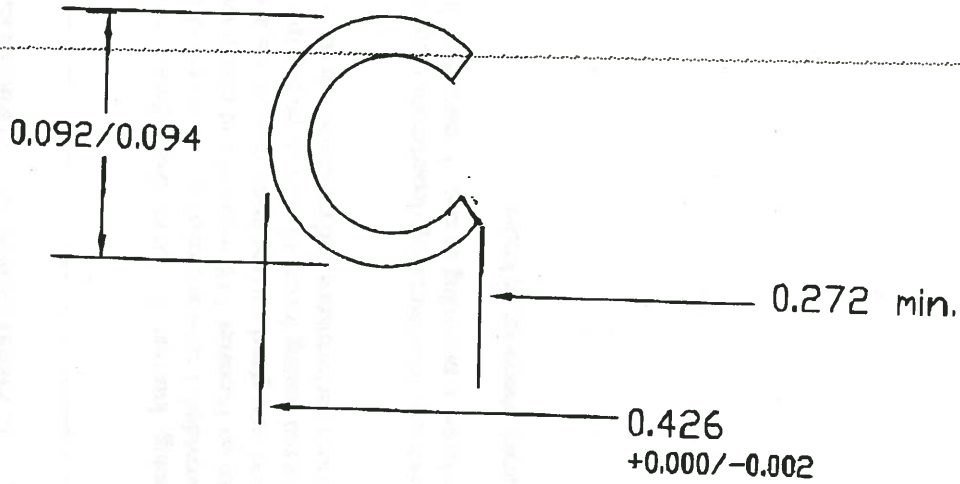
Minimum order: 10 pcs.  
 Delivery: 9-10 wks ARO.

<b>Subtotal</b>	3,796.50
<b>Sales Tax</b>	
<b>Total</b>	3,796.50

Notes:  
 Dimensions are in inches, and are prior to plating.  
 Diameters may be out of round in excess of tolerances.  
 Material: AMS5596 Inconel 718  
 Thickness: 0.015  
 Treatment: Precipitation heat treated  
 Plating Thickness: 0.0025

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

Flange Groove Detail:  
 OD: 0.437 +0.001/-0.000  
 ID: 0.262 max.  
 Groove Depth: 0.073/0.077



Ultra Seal P/N: SP 50606

Prepared For: TRIUMF(Canada)		Title: Metal C-Seal-Inside Pressure			
		<b>Ultra Seal</b> Corona, CA			
Material: Inconel 718	SIZE B	FORM NO.	DWG NO.		REV
Plating: Indium	SCALE None			SHEET 1 of 1	

# FAX

Date: 19 June 01

Number of pages including cover sheet: 4

TO: ADVANCED PRODUCTS CO.  
NORTH HAVEN. CON.

From: Guy H. Stanford, P. Eng.  
TRIUMF  
4004 Wesbrook Mall  
Vancouver, B.C., V6T 2A3  
CANADA

Tel  
FAX

(203) 234 - 7233

e-mail stanford@triumf.ca  
Phone 604-222-7388  
FAX Phone 604-222-1074

CC: \_\_\_\_\_

REMARKS:

Urgent

For your Quotation

Reply ASAP

To whom it may concern:

We are designing a high current coupling block to transmit  $H_2O$  & current up to 1000 amps. The design so far is as shown on the accompanying sketches. Our concerns are

- ① There will be 14 conx couplings - 28 seals. How reliably will they seal?
- ② What is the best seal config'n for this design?
- ③ " " " material selection?
- ④ Is there any way of retaining the seal in its groove since disconnect/connect will be in a hot cell & we do not want the seals to fall out.



# Application Data Sheet

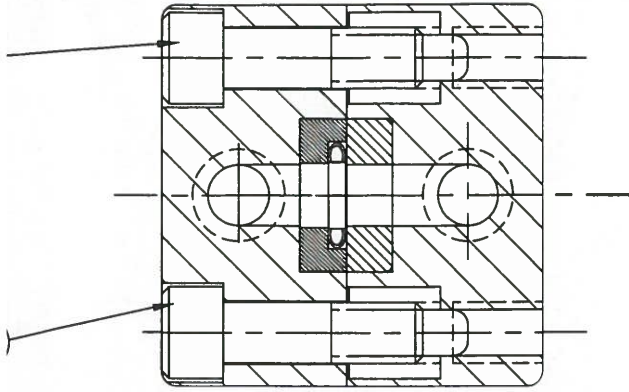
Please photocopy for future use!

<b>Advanced</b>		<b>FACE SEAL</b>			Sales Engineer _____
					Date _____
<b>CUSTOMER</b>	COMPANY <u>TRIUMF.</u>	PHONE <u>(604) 222-7388</u>			
	ADDRESS <u>4004 WESBROOK MALL</u>	FAX <u>" 222-1074</u>			
	CITY <u>VANCOUVER BC CAN.</u>	E-MAIL _____	<u>ST. BC ZIP V6T 2A5</u>		
	CONTACT <u>GUY STANFORD</u>	TITLE <u>ENG COORD.</u>			
<b>OPERATING CONDITIONS</b>	APPLICATION/EQUIPMENT <u>WATER CONNECTION BLOCK - HI CURRENT</u>				
	EXISTING SEAL <u>NEW DESIGN.</u>		CUSTOMER PART NUMBER <u>ITA 2371C</u>		
	CLAMPING LOAD AVAILABLE <u>2-1/4-28</u>		SURFACE FINISH <u>16 min.</u>		
	<input checked="" type="checkbox"/> INTERNAL PRESSURE @ <u>~100 psig</u>		<input type="checkbox"/> EXTERNAL PRESSURE		
	<input type="checkbox"/> STATIC		<input type="checkbox"/> CYCLIC (please fill in table below)		
	FREQUENCY _____				
	AMPLITUDE _____				
	FLUID MEDIUM <u>TREATED H<sub>2</sub>O.</u>		CAVITY MATERIALS <u>316 SS (SEE SKETCH)</u>		
	MAXIMUM ALLOWABLE LEAKAGE <u>10<sup>-9</sup> s.c.c. / sec</u>				
	ADDITIONAL INFORMATION <u>CURRENT ACROSS CPLG ≈ 1000 amps</u> <u>OP. ENVIRD → VACUUM, HIGH NEUTRON RADIATION.</u>				
(state all units)		AT ASSEMBLY	MINIMUM	MAXIMUM	OPERATING
TEMPERATURE		<u>ROOM.</u>			<u>&lt; 35°C</u>
PRESSURE		<u>"</u>			<u>~100 psig</u>
CAVITY DEPTH "F" (± tol.)		<u>SEE SK</u>			
CAVITY WIDTH "G" (± tol.)		<u>"</u>			
O.D. "D" (± tol.) internal pressure		<u>0.426</u>			
I.D. "D" (± tol.) external pressure					
<b>SKETCH of APPLICATION</b>	<u>SEE ATTACHED SKETCHES</u>				
<b>ENG. ACTION</b>	QUOTATION QUANTITIES _____		ANNUAL QUANTITY POTENTIAL _____		
	<input type="checkbox"/> NO. DRAWINGS REQUIRED		<input type="checkbox"/> SKETCH		<input type="checkbox"/> ENGINEERING DRAWING

c

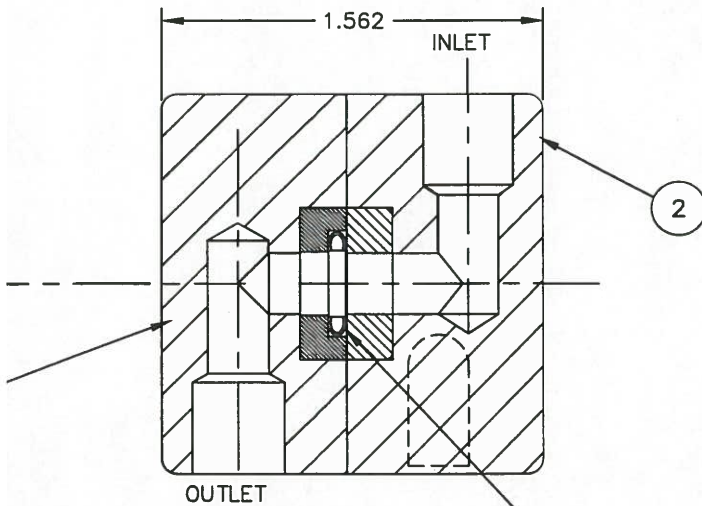
d

e

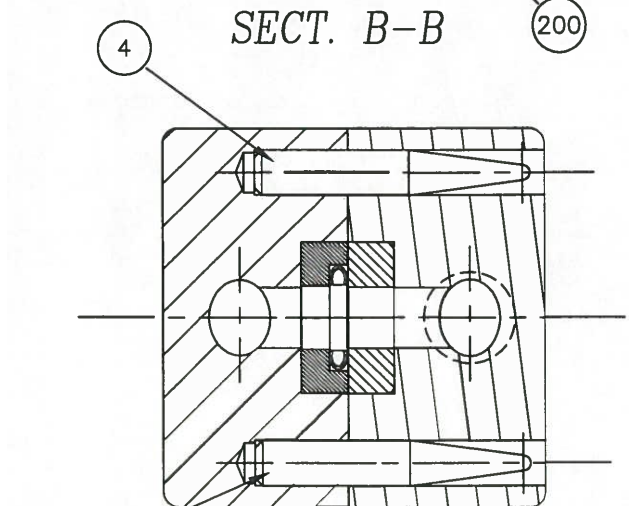
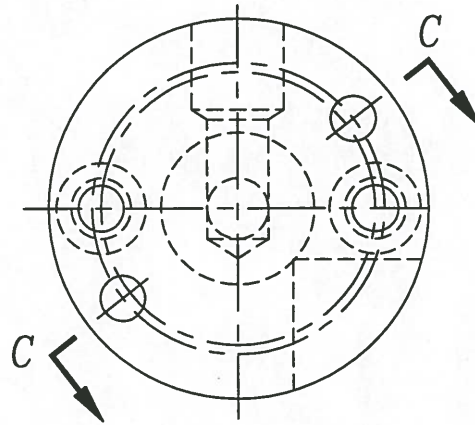


SECT. A-A

ITEM	REF No./DESCRIPTION	MATERIAL	QUAN
1	CONX OUTER HALF ITA2344C	Cu C110	1
2	CONX INNER HALF ITA2345C	Cu C110	1
3	BOLT ITA2347B TYPE 'B'	GR8 ST.	2
4	DOWEL ITA2373B	STEEL	2
200	C-SEAL 613A54-0004-2	INCONEL	1



SECT. B-B



SECT. C-C

SLIDE FIT

TOLERANCES UNLESS OTHERWISE SPECIFIED

FRACTIONS	± 1/32
DECIMALS .XX	± .010
.XXX	± .005
ANGULAR	± 1/4°
SURFACE FINISH	125 μin

REV	DATE	LOC	REVISION DESCRIPTION	BY	APP'D

**TRIUMF** 4004 WEBBROOK MALL VANCOUVER, BRITISH COLUMBIA CANADA V6T-2A3 CANADA'S NATIONAL MESON FACILITY

WATER CONX BLOCK ASSEMBLY. TYPE 'B'  
ECR SOURCE  
TARGET MODULE.

ALL DIMS IN INCHES

DESIGNED L.U.	SUB ASSY:
DRAWN <i>Jim Emmert</i>	ASSEMBLY:
CHECKED L.U. G.S.	ITA2349D
REA #	
TRI-DN-	

SCALE 2:1  
DATE 14/MAY/01



DWG NO. ITA2371C

REV 3

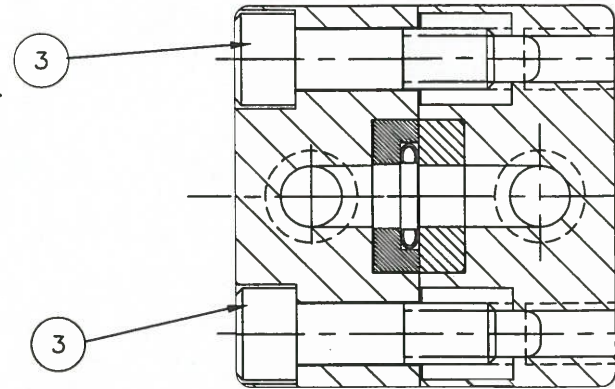
a

b

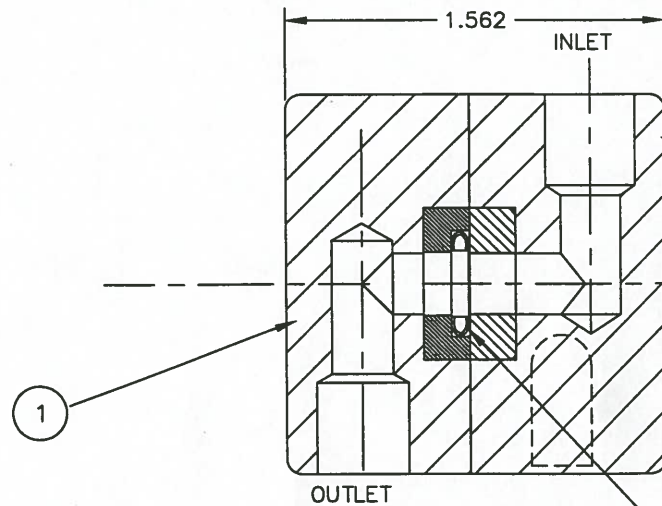
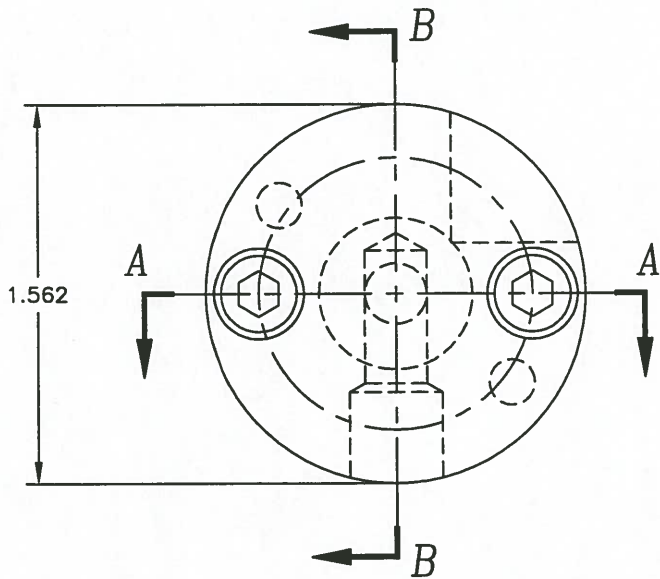
c

NOTES.

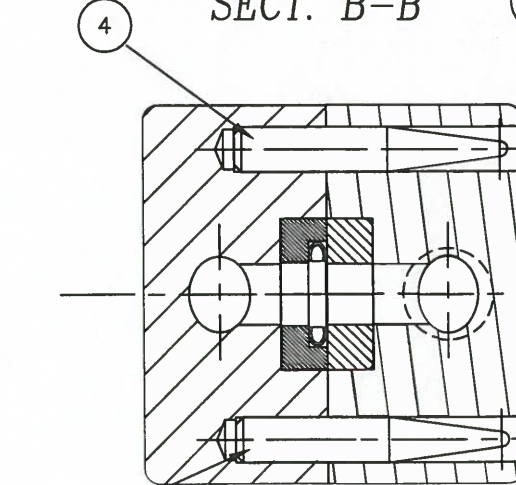
- 1. SEE ITA2349D FOR OVERALL INSTALLATION.
- 2. SEAL, ITEM 200, MAY HAVE A DIFFERENT SUPPLIER PART NUMBER.
- 3. INLET ONE 3/8 DIA. TUBE  
OUTLET ONE 3/8 DIA. TUBE.



SECT. A-A



SECT. B-B



SECT. C-C

DOWEL TP BE PRESS FIT  
INTO OUTER CONX AND SLIDE FIT  
INTO INNER CONX.

TOLERANCES
FRACTIONS
DECIMALS
ANGULAR
SURFACE FIN
ALL I
DESIGNED L.L.
DRAWN <i>Jm</i>
CHECKED L.L.
REA #
TRI-DN-

a

b

c

1

2

3

4

P.O. Box 1133, Corona, CA 92878  
Toll Free: 877-858-7732 Fax: 909-273-9212  
[ultraseal@earthlink.net](mailto:ultraseal@earthlink.net) [www.ultra-seal.net](http://www.ultra-seal.net)



**Fax**

**To:** Mr. Guy Stanford **From:** Mike Anderson  
**TRIUMF**

---

**Fax:** 604-222-1074 **Pages:** 3

---

**Phone:** **Date:** 12/11/01

---

**Re:** Spring Gaskets **CC:**

**Urgent**     **For Review**     **Please Comment**     **Please Reply**     **Please Recycle**

Dear Mr. Stanford,

As requested, I am enclosing information on the U-spring and Helicoil (ribbon) spring that we talked about. Standard materials are 301/302 SS for the U-spring and 17-7 SS for the ribbon spring. Ribbon springs provide higher loads than U-springs, and may be better suited for your application.

I am out of the office all morning, and will be back in the afternoon.

Regards,

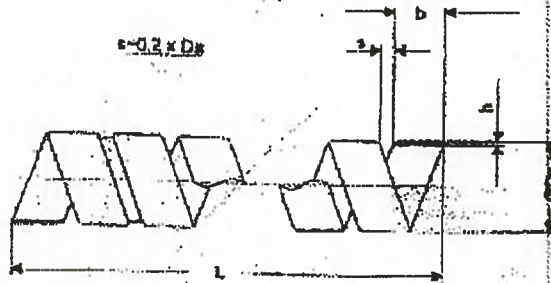
Mike Anderson



Federstützwendel  
-Helicoil-

DX - Norm 50.43

Werkstoff/Material: X12CrNi 17 7  
Werkstoff-Nr./Material-No.: 1.4310 = AISI 301



Standardabmessung Standard measurements b x h (mm)	Fertigungsbereich production range		Produkt-Nr. product-no.	outside diameter Da (mm)	max. load F <sub>max</sub> (N)	max. travel S <sub>max</sub> (mm)	spring rate c (N/mm)
	kleinster Außen-Ø min. outside diameter	größter Außen-Ø max. outside diameter					
0,6 X 0,06	0,9	3	DX50.43-10.010	1	340	0,32	1052
			DX50.43-10.015	1,5	360	0,40	900
0,6 X 0,08	0,9	3	DX50.43-20.020	2	500	0,64	781
			DX50.43-20.026	2,5	500	0,80	833
0,6 X 0,12	0,9	3,2	DX50.43-30.025	2,5	600	0,80	1000
			DX50.43-30.032	3,2	570	0,68	985
1,2 X 0,15	1,8	6	DX50.43-40.040	4	900	0,68	1363
			DX50.43-40.045	4,5	850	0,76	1118
2,0 X 0,15	3	10	DX50.43-50.050	5	700	0,80	878
			DX50.43-50.055	5,5	700	0,87	806
			DX50.43-50.060	6	760	0,94	806
			DX50.43-50.063	6,3	800	0,90	856
2,0 X 0,20	3	10	DX50.43-60.065	6,5	800	1,05	761
			DX50.43-60.070	7	880	0,88	1000
2,5 X 0,25	3,75	12,5	DX50.43-70.079	7,9	1000	0,89	1123
			DX50.43-80.080	8	1000	0,82	1219
3,0 X 0,30	4,5	15	DX50.43-80.085	8,5	1300	1,36	958
			DX50.43-80.096	9,6	1400	1,89	828
			DX50.43-80.120	12	1100	2,60	423
4,0 X 0,40	6	20	DX50.43-90.096	9,6	1900	1,05	1809
			DX50.43-90.100	10	1900	1,10	1772
			DX50.43-90.105	10,5	2100	1,50	1400
			DX50.43-90.117	11,7	2200	1,90	1158

F<sub>max</sub> und c beziehen sich auf 100mm Wendellänge  
Die Standardlänge beträgt 100mm

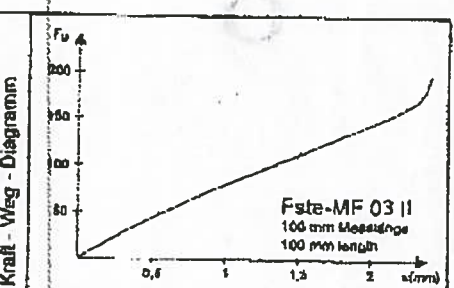
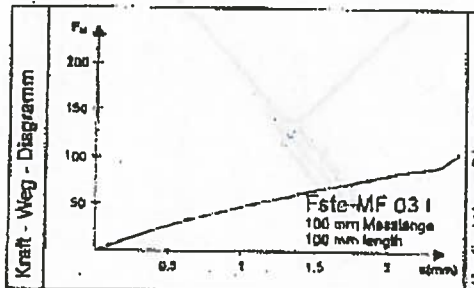
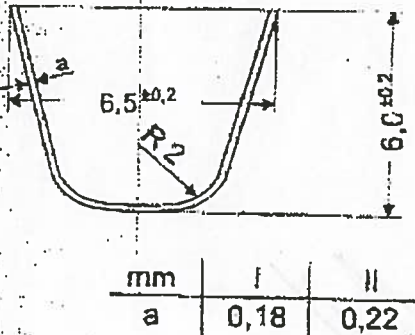
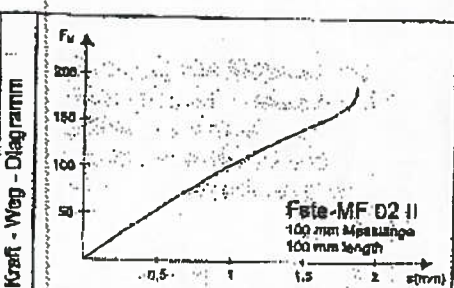
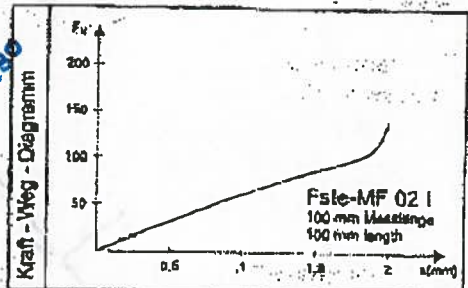
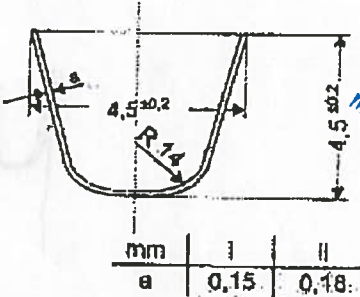
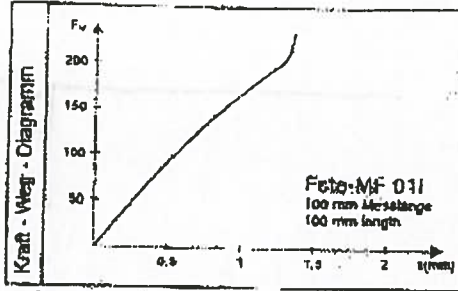
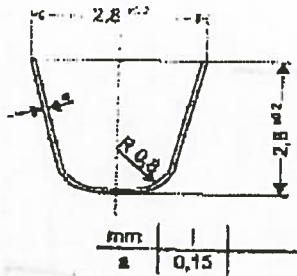
F<sub>max</sub> and c relate to 100mm spiral length  
Standard length 100mm





### Mäander - Feder

### Meander - Spring



### Werkstoffe - Materials

Staff - Nr.

Material No.

1.4310

Norm

DIN.17.224

int. Norm

AISI 302

Chem. Analyse / Analysis

X.12 CrNi 17.7



P.O. Box 1133, Corona, CA 92878  
Toll Free: 877-858-7732 Fax: 909-273-9212  
[ultraseal@earthlink.net](mailto:ultraseal@earthlink.net) [www.ultra-seal.net](http://www.ultra-seal.net)



**Fax**

**To:** Mr. Guy Stanford  
TRIUMF

**From:** Mike Anderson

**Fax:** 604-222-1074

**Pages:** 3

**Phone:**

**Date:** 12/11/01

**Re:** Spring Gaskets

**CC:**

- Urgent**
- For Review**
- Please Comment**
- Please Reply**
- Please Recycle**

Dear Mr. Stanford,

As requested, I am enclosing information on the U-spring and Helicoil (ribbon) spring that we talked about. Standard materials are 301/302 SS for the U-spring and 17-7 SS for the ribbon spring. Ribbon springs provide higher loads than U-springs, and may be better suited for your application.

I am out of the office all morning, and will be back in the afternoon.

Regards,

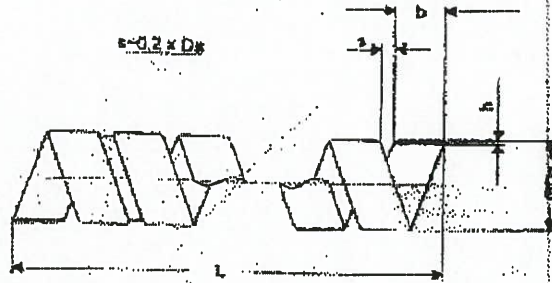
Mike Anderson



**Federstützwendel  
-Helicoil-**

**DX - Norm 50.43**

Werkstoff/Material: X12CrNi 17 7  
Werkstoff-Nr./Material-No.: 1.4310 n AISI 301



Standardabmessung Standard measurements b x h (mm)	Fertigungsbereich production range		Produkt-Nr. product-no.	outside diameter Da (mm)	max. load F <sub>max</sub> (N)	max. travel S <sub>max</sub> (mm)	spring rate c (N/mm)
	kleinster Außen-Ø min. outside diameter	größter Außen-Ø max. outside diameter					
0,6 X 0,06	0,9	3	DX50.43-10.010	1	340	0,32	1052
			DX50.43-10.015	1,5	360	0,40	900
0,8 X 0,08	0,9	3	DX50.43-20.020	2	500	0,64	781
			DX50.43-20.025	2,5	500	0,80	833
0,6 X 0,12	0,9	3,2	DX50.43-30.025	2,5	600	0,60	1000
			DX50.43-30.032	3,2	570	0,65	885
1,2 X 0,15	1,8	6	DX50.43-40.040	4	900	0,66	1363
			DX50.43-40.045	4,5	850	0,76	1118
2,0 X 0,15	3	10	DX50.43-60.050	5	700	0,80	879
			DX50.43-50.055	5,5	700	0,87	805
			DX50.43-50.060	6	760	0,94	808
			DX50.43-50.063	6,3	800	0,80	858
2,0 X 0,20	3	10	DX50.43-60.065	6,5	800	1,05	761
			DX50.43-60.070	7	880	0,88	1000
2,5 X 0,25	3,75	12,5	DX50.43-70.079	7,9	1000	0,89	1123
			DX50.43-80.080	8	1000	0,82	1218
			DX50.43-80.085	8,5	1300	1,36	955
			DX50.43-80.086	9,6	1400	1,89	828
3,0 X 0,30	4,5	15	DX50.43-80.120	12	1100	2,60	423
			DX50.43-90.095	9,5	1800	1,05	1809
			DX50.43-90.100	10	1900	1,10	1772
			DX50.43-90.105	10,5	2100	1,50	1400
4,0 X 0,40	6	20	DX50.43-90.117	11,7	2200	1,90	1158

F<sub>max</sub> und c beziehen sich auf 100mm Wendellänge  
Die Standardlänge beträgt 100mm

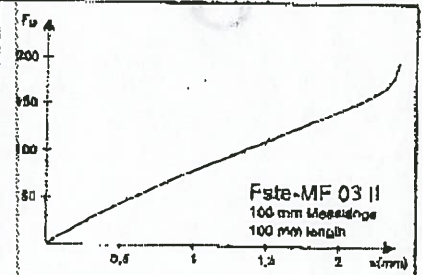
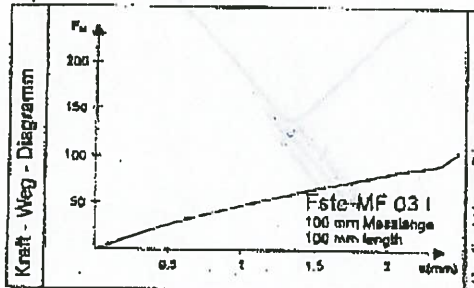
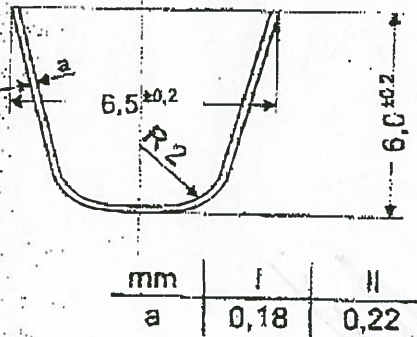
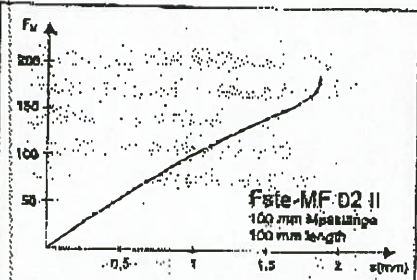
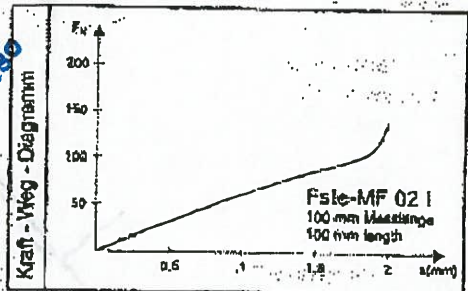
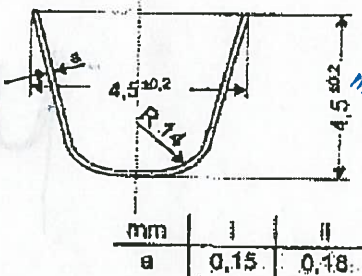
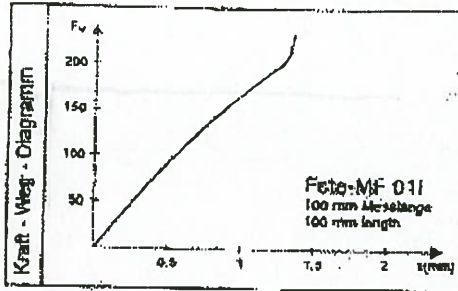
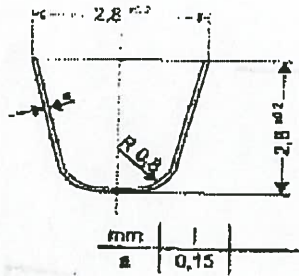
F<sub>max</sub> and c relate to 100mm spiral length  
Standard length 100mm







Mäander - Feder  
Meander - Spring



Werkstoffe - Materials

Stoff - Nr.

Material No.

Norm

int. Norm

Chem. Analyse / Analysis

1.4310

DIN.17.224

AISI 302

X.12 CrNi 17.7



P.O. Box 1133, Corona, CA 92878  
Toll Free: 877-858-7732 Fax: 909-273-9212  
[ultraseal@earthlink.net](mailto:ultraseal@earthlink.net) [www.ultra-seal.net](http://www.ultra-seal.net)

**UltraSeal****Fax**

**To:** Mr. Guy Stanford  
Triumpf

**From:** Mike Anderson

**Fax:** 604-222-1074

**Pages:** 32

**Phone:**

**Date:** 1/31/02

**Re:** C-Seal

**CC:**

**Urgent**     **For Review**     **Please Comment**     **Please Reply**     **Please Recycle**

Dear Mr. Stanford,

As requested, I am enclosing a quotation for an outside pressure C-Seal to fit a nominal groove ID of 8.5000". Ultra Seal part number **MS 1128** will be fabricated from **Inconel X 750** material and plated with **Indium**. Although Stainless Steel is cheaper, we prefer Inconel because it is a more reliable material offering better long-term benefits for the application. We believe Inconel to be superior for low temperature/thin gas sealing.

Pls. note that Indium has a maximum working temperature limit of 50 C. Surface finishes need to be good and in the region of 0.4 um or better.

Sincerely,

Mike Anderson

Program Manager



Ultra Seal  
 P.O. Box 1133  
 815 Mandevilla Way  
 Corona, CA 92878

909-273-9211 (tel)  
 909-273-9212 (fax)  
 E-mail: ultraseal@earthlink.net

# Quotation

Quote Number:  
 3140

Quote Date:  
 Jan 31, 2002

Page:  
 1

**Quoted to:**

Triumpf  
 4004 Westbrook Mall  
 Vancouver, BC V6T 2A3  
 Canada

Customer ID	Good Thru	Payment Terms	Sales Rep
2189	5/2/02	2% 10, Net 30 Days OAC	Mike Anderson

Quantity	Item	Description	Unit Price	Extension
25.00	MS 1128	8.5" ID C-Seal External Pressure Inconel x 750 Indium Plating	124.72	3,118.00
50.00	MS 1128	8.5" ID C-Seal External Pressure Inconel x 750 Indium Plating	117.65	5,882.50
100.00	MS 1128	8.5" ID C-Seal External Pressure Inconel x 750 Indium Plating	97.43	9,743.00

Std. Delivery: 8-9 wks. ARO

Seal Specifications:  
 Seal Material: Inconel X 750  
 Plating Material: Indium  
 Free Height: 0.125" nominal  
 Thickness: 0.020"  
 Plating Thickness:  
 0.001/0.0015"  
 Gland Recommendations:  
 Groove Width: 0.127" min.  
 Depth: 0.100/0.104"

Subtotal	18,743.50
Sales Tax	
<b>Total</b>	<b>18,743.50</b>

P.O. Box 1133, Corona, CA 92878  
Toll Free: 877-858-7732 Fax: 909-273-9212  
[ultraseal@earthlink.net](mailto:ultraseal@earthlink.net) [www.ultra-seal.net](http://www.ultra-seal.net)



# Fax

**To:** Mr. Guy Stanford  
Triumf

**From:** Mike Anderson

---

**Fax:** 604-222-1074

**Pages:** 1

---

**Phone:**

**Date:** 2/1/02

---

**Re:** Cryogenic Applications

**CC:**

- Urgent**     **For Review**     **Please Comment**     **Please Reply**     **Please Recycle**

Dear Mr. Stanford,

We regularly have applications sealing LOX in scanning equipment and using similar seal profiles. Provided the seal is correctly compressed in suitably dimensioned hardware attaining the recommended surface finishes and loading, there is no reason the seal will not work. The seating load, which must be maintained, should be in the region of 65 N/mm of circumference. We stress the importance of surface finish and texture, as this is an area which often creates the biggest headache based on the theory that "it looks good enough". It HAS to be good or BETTER when sealing thin gas. A hairline scratch can quickly turn into a leak path. In such applications, perfection is the word.

If necessary, we can provide a formal design proposal showing recommended hardware dimensions and conditions, as well as the corresponding seal specifications.

Sincerely,

Mike Anderson

Program Manager

*Can we get a similar C seal + test it?*

11/02/02

Advanced Products

Jim

(708) 267-8596

'c' seals.

This fellow will make some  
inquiries re: cryo. use &  
get back to me

13/02/02

Bruce Kilbom called  
about same thing. He  
will talk to Jim  
& call back

P.O. Box 1133, Corona, CA 92878  
Toll Free: 877-858-7732 Fax: 909-273-9212  
[ultraseal@earthlink.net](mailto:ultraseal@earthlink.net) [www.ultra-seal.net](http://www.ultra-seal.net)



# Fax

**To:** Mr. Guy Stanford  
Triumpf

**From:** Mike Anderson

---

**Fax:** 604-222-1074

**Pages:** 1

---

**Phone:**

**Date:** ~~2/1/02~~ 2/7/02

---

**Re:** Cryogenic Applications

**CC:**

- Urgent     For Review     Please Comment     Please Reply     Please Recycle

Dear Mr. Stanford,

We regularly have applications sealing LOX in scanning equipment and using similar seal profiles. Provided the seal is correctly compressed in suitably dimensioned hardware attaining the recommended surface finishes and loading, there is no reason the seal will not work. The seating load, which must be maintained, should be in the region of 65 N/mm of circumference. We stress the importance of surface finish and texture, as this is an area which often creates the biggest headache based on the theory that "it looks good enough". It HAS to be good or BETTER when sealing thin gas. A hairline scratch can quickly turn into a leak path. In such applications, perfection is the word.

If necessary, we can provide a formal design proposal showing recommended hardware dimensions and conditions, as well as the corresponding seal specifications.

Sincerely,

Mike Anderson

Program Manager

*Mr. Stanford,*

*Unfortunately, we are unable to provide a sample piece for testing. Metal C-seals are made to order and due to the cost involved, there's rarely any over-runs.*

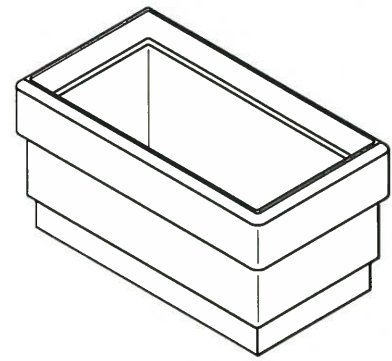
*Your application is severe and requires a custom design (thick wall, etc.) A "similar" piece may not work for testing. If you'd like, we can quote you 1-2 pcs. of the seal we are proposing. Pls. let me know.*

*Mike*

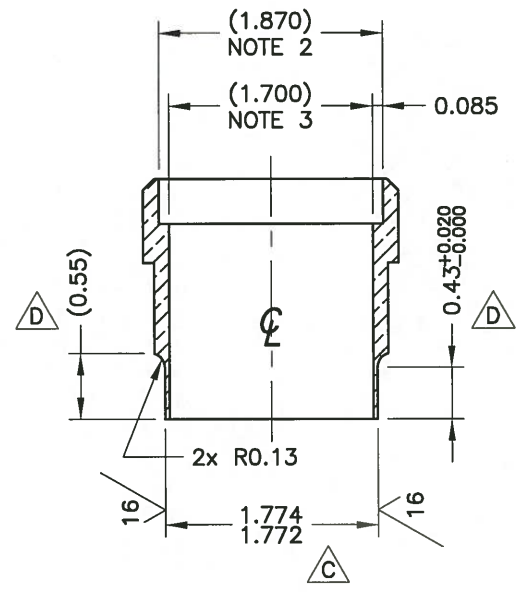
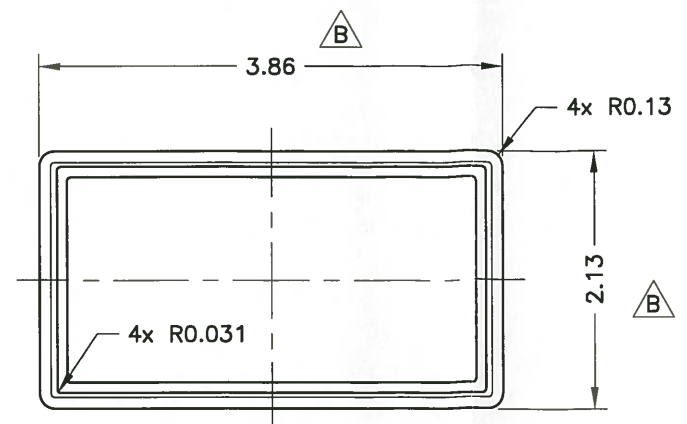


ITEM	REF No./DESCRIPTION	MATERIAL	QUAN
1	PLATE (2.00 x 2.13 x 3.86)	COPPER	

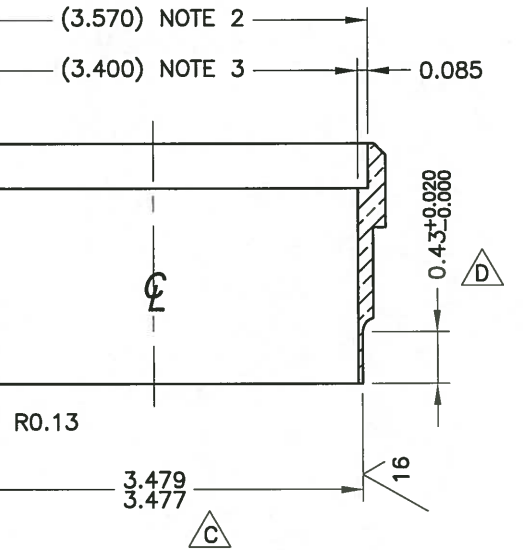
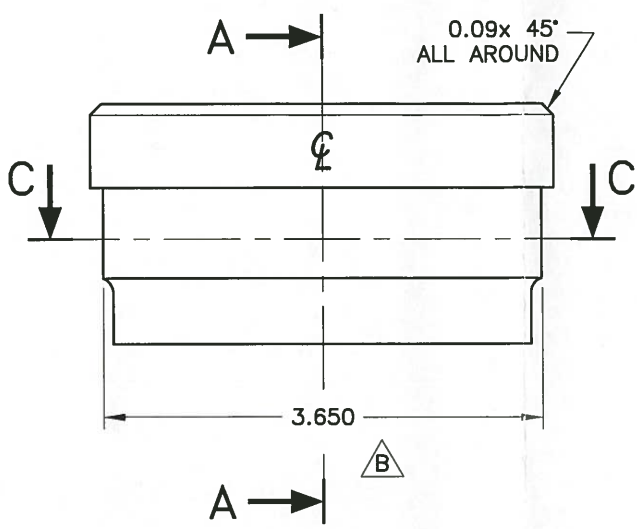
DIMENSIONS QUOTED ARE FINISHED DIMENSIONS,  
NO ALLOWANCE HAS BEEN MADE FOR MANUFACTURE.



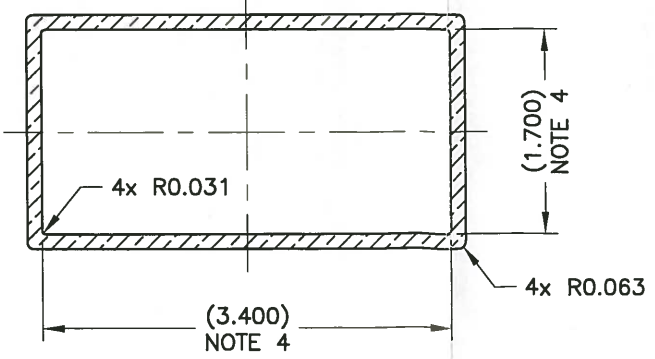
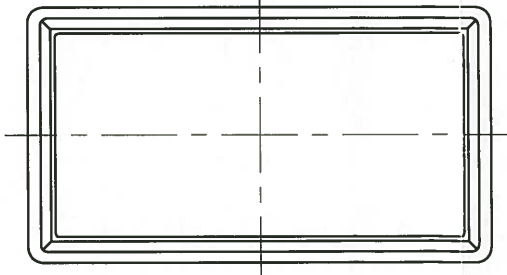
ISO VIEW  
NOT TO SCALE



SECTION A-A



SECTION B-B



SECTION C-C

NOTE:

- 1) REMOVE ALL BURRS AND SHARP EDGES.
- 2) MACHINE SEAT TO FIT EXTERIOR OF WAVEGUIDE, SEE DRAWING ITA2509D FOR REFERENCE. (SEE KEERTHI JAYAMANNA).
- 3) MACHINE OPENING TO MATCH INSIDE OF WAVEGUIDE TUBE. BLEND ANY TRANSITION BETWEEN WAVEGUIDE AND ALUMINA WINDOW (NOTE 4). SEE DRAWING ITA2509D FOR REFERENCE.
- 4) MACHINE THIS DIMENSION TO MAKE SLIDING FIT WITH ALUMINA WINDOW, ALLOW CLEARANCE FOR SOLDER JOINT. SEE DRAWING ITA2510C FOR REFERENCE.

REMOVE ALL BURRS AND SHARP EDGES

FOR REFERENCE ONLY

FEB 25 2002

TOLERANCES UNLESS OTHERWISE SPECIFIED

FRACTIONS	± 1/32
DECIMALS .XX	± 0.01
.XXX	± 0.005
ANGULAR	± 0.5°
SURFACE FINISH	125 μin

REV	DATE	LOC	REVISION DESCRIPTION	BY	APP'D
D	FEB 02/02	a2	Dim 0.43 was 0.33 and dim (0.55) was (0.45) ECO366	ProTech	Sa
C	SEPT 08/01	a2	DIM 1.774/1.772 AND 3.479/3.477 ADDED - ECO 314	ProTech	
B	NOV. 30/00	1/C	BILL OF MATERIAL ADDED. DIMS ADDED TO END AND SIDE SECTION VIEWS. LENGTH AND WIDTH DIMENSIONS ADDED	DJR	
A	NOV. 24/00		ORIGINAL ISSUE	DJR	

TRIUMF 4004 WEBBROOK MALL VANCOUVER, BRITISH COLUMBIA CANADA V6T-2A5 CANADA'S NATIONAL MESON FACILITY

ALL DIMS IN INCHES

DESIGNED D. ROSS DL-  
DRAWN D. ROSS SUB ASSY: ITA2510C  
CHECKED G. STANFORD ASSEMBLY: ITA2509D  
REA #  
TRI-DN-

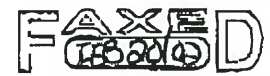
WAVEGUIDE ALUMINA WINDOW ADAPTER  
WAVEGUIDE - TARGET MODULE  
ISAC - TARGET MODULE

SCALE 1:1	DATE AUG. 31, '2000	THIRD-ANGLE PROJECTION	DWG NO. ITA2127C	REV D
-----------	---------------------	------------------------	------------------	-------



MESON FACILITY OF  
 THE UNIVERSITY OF ALBERTA  
 SIMON FRASER UNIVERSITY  
 THE UNIVERSITY OF VICTORIA  
 THE UNIVERSITY OF BRITISH COLUMBIA  
 CARLTON UNIVERSITY

**PURCHASE ORDER**  
**TRIUMF**



**INVOICE TO:**

4004 WEBBROOK MALL  
 VANCOUVER, B.C.  
 CANADA V6T 2A3  
 TELEPHONE (604) 222-1047  
 FAX (604) 222-1074  
 www.triumf.ca

PURCHASE ORDER NUMBER

TR 149302

SHOW THIS NUMBER ON ALL  
 CORRESPONDENCE AND  
 PACKAGES PERTAINING  
 TO THIS ORDER.

2002-02-19

DATE  
 SUPPLIER  
 ULTRASEAL CORP  
 521 MAIN STREET  
 NEW PALTZ NY  
 USA

12561

S  
H  
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P  
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A

FOR  
 TRIUMF C/O ACW FREIGHT SERVICE  
 270 'C' STREET  
 BLAINE, WASHINGTON  
 98231 U.S.A.  
 U.P.S. TO DESTINATION (ACW FRT)  
 DREPAY AND CHARGE \*ATTACH  
 INVOICE COPY INSIDE & OUTSIDE  
 PACKAGE FOR CANADIAN CUSTOMS\*

CORONA, CA

PAGE NO. 1

RE: DUTY AND TAXES SEE NOTES AND  
 CODES ON REVERSE

ITEM	QUANTITY	UNIT	DESCRIPTION	TRIUMF REQ. #	DELIVERY	UNIT PRICE	D	P	P	EXTENDED PRICE
			GOODS FOR EXPORT TO CANADA							
			CONTACT MIKE ANDERSON							
1	1.00	M	MF 02-1 CANTILEVER SPRING 0.15 THICK X 1M LONG		2002-03-11	28.0400			P	28.04
2	1.00	M	MF 02-11 CANTILEVER SPRING 0.18 THICK X 1M LONG		2002-03-11	38.1400			P	38.14
<p>**NOTE: THESE CAN BE CUT IN HALF                  TO PRODUCE A TOTAL OF 4 PIECES                  AT 0.5M LONG**</p> <p><i>Order shipped via                  FedEx (2 day)                  Tracking Number:                  8317 6082 1680</i></p> <p><i>Guy - our Broker has                  this in Blaine                  Expect delivery Tues or                  Wed</i></p>										
TERMS:					CURRENCY: US		66.18			

*DS 4/09/02*

**COPY**

CONTACT: DAVID KELSEY

TRIUMF AUTHORIZATION:

**U.S. SUPPLIERS**

- FOR SHIPMENTS UNDER \$1,100 U.S. FUNDS PLEASE SUPPLY COMMERCIAL INVOICE STATING: VALUE OF GOODS, COMPLETE DESCRIPTION OF GOODS, AND COUNTRY OF ORIGIN. IF GOODS ARE MANUFACTURED IN THE U.S., PLEASE SUPPLY A FREE TRADE CERTIFICATE.
- FOR SHIPMENTS OVER \$1,100.00 U.S. FUNDS SIGNED CANADIAN CUSTOMS INVOICES ARE REQUIRED IN ADDITION TO ALL OF THE ABOVE. PLEASE PLACE ALL DOCUMENTS IN AN ENVELOPE AND ATTACH TO THE OUTSIDE OF THE PACKAGE.



# Quotation

Ultra Seal  
 P.O. Box 1133  
 815 Mandevilla Way  
 Corona, CA 92878  
 USA  
 909-273-9211 (tel)  
 909-273-9212 (fax)  
 E-mail: ultraseal@earthlink.net

Quote Number:  
3063

Quote Date:  
Apr 12, 2002

Page:  
1

Quoted to: *Guy Stanford* (A)

Triumpf  
 4004 Westbrook Mall  
 Vancouver, BC V6T 2A3  
 Canada

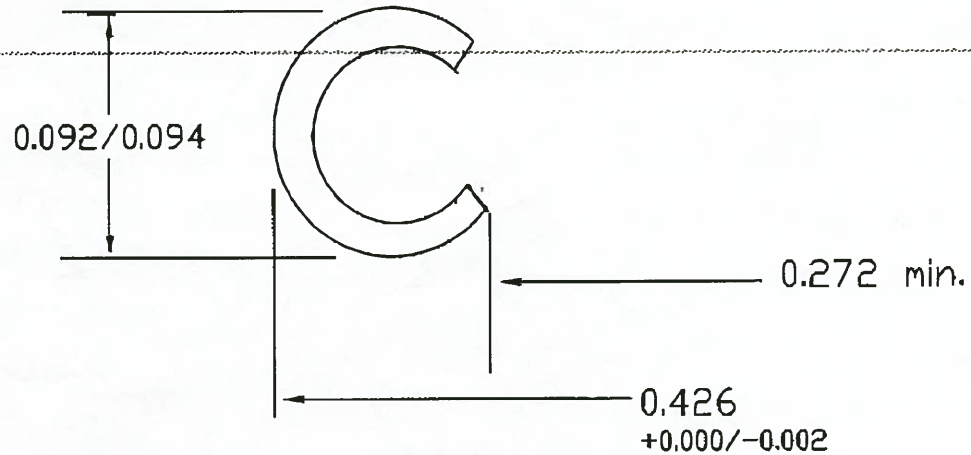
Customer ID	Good Thru	Payment Terms	Sales Rep
2189	7/12/02	2% 10, Net 30 Days OAC	Mike Anderson

Quantity	Item	Description	Unit Price	Extension
10.00	SP 50606	0.426" OD Inside C-Seal Inconel 718 w/ Indium plating	92.50	925.00
25.00	SP 50606	0.426" OD Inside C-Seal Inconel 718 w/ Indium plating	48.62	1,215.50
50.00	SP 50606	0.426" OD Inside C-Seal Inconel 718 w/ Indium plating	33.12	1,656.00
100.00	SP 50606	0.426" OD Inside C-Seal Inconel 718 w/ Indium plating	29.69	2,969.00
		Minimum order: 10 pcs. Delivery: 9-10 wks ARO.		
			<b>Subtotal</b>	6,765.50
			<b>Sales Tax</b>	
			<b>Total</b>	6,765.50

Notes:  
 Dimensions are in inches, and are prior to plating.  
 Diameters may be out of round in excess of tolerances.  
 Material: AMS5596 Inconel 718  
 Thickness: 0.015  
 Treatment: Precipitation heat treated  
 Plating Thickness: 0.0025

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

Flange Groove Detail:  
 OD: 0.437 +0.001/-0.000  
 ID: 0.262 max.  
 Groove Depth: 0.073/0.077



Ultra Seal P/N: SP 50606

Prepared For: TRIUMF(Canada)		Title: Metal C-Seal-Inside Pressure			
		<b>Ultra Seal</b> Corona, CA			
Material: Inconel 718	SIZE B	PSCH NO.	DWG NO.		REV
Plating: Indium	SCALE None		SHEET 1 of 1		



# WENCOR, INC.

*A Member of The Aero Technologies Group*

Date: April 16, 2002

Time: \_\_\_\_\_

This material has been sent via FAX because it is TIME SENSITIVE, please deliver this to the person addressed below AS SOON AS POSSIBLE.

Company: Triumpf 2

Attn: Guy

Number of pages  
you should receive  
(including this sheet)

Phone #: 1 604-222-1074

From: **Randy Jones**  
Phone #: (801) 489-2024  
FAX #: (801) 489-2199

Note: If these pages are not legible, please call.

Message:

QUOTE, PERKINELMER C-SEAL  
613A54-0004-C

Please send your response via fax at (801) 489-2199  
or via e-mail: [rjones@wencor.com](mailto:rjones@wencor.com)

**Wencor, Inc.**  
1625 N. Mountain Springs Parkway  
Springville, Utah 84663  
Web site : [www.wencor.com](http://www.wencor.com)



# WENCOR, INC.

A Member of The Aero Technologies Group

April 16, 2002

Guy  
Triumpf  
4004 Wesbrook Mall  
Vancouver, BC V6T 2A3  
Canada

Dear Guy,

Wencor is pleased to quote you on your C-Seal needs.

PerkinElmer part number 613A54-0004-C is available in the following quantities at the price listed:

613A54-0004-C	C-Seal	50 pcs	\$ 22.13 ea
613A54-0004-C	C-Seal	100 pcs	\$ 19.29 ea
613A54-0004-C	C-Seal	250 pcs	\$ 18.90 ea

Standard delivery is 8 wks ARO

Regards,

*Randy*  
 Randall D. Jones  
 Seal Product Manager

Pressure Science  
 Int pres' c' seal size I/D = .272 ✓  
 O/D = .426 ✓  
 61(A)354 - 0004  
 Indium coating (.001 - .002)  
 Inconel X-750  
 3/32 = .093" ✓

mat'l thickness = .015



# Quotation

Ultra Seal  
 P.O. Box 1133  
 815 Mandevilla Way  
 Corona, CA 92878  
 USA  
 909-273-9211 (tel)  
 909-273-9212 (fax)  
 E-mail: ultraseal@earthlink.net

Quote Number:  
3063

Quote Date:  
Apr 18, 2002

Page:  
1

Quoted to: *Guy Stanford*

Triumf  
 4004 Westbrook Mall  
 Vancouver, BC V6T 2A3  
 Canada

Customer ID	Good Thru	Payment Terms	Sales Rep
2189	7/18/02	2% 10, Net 30 Days OAC	Mike Anderson

Quantity	Item	Description	Unit Price	Extension
50.00	SP 50606	0.426" OD Inside C-Seal Inconel 718 w/ Indium plating	29.75	1,487.50
100.00	SP 50606	0.426" OD Inside C-Seal Inconel 718 w/ Indium plating	18.97	1,897.00
Seal wall is 0.015" thick. Delivery: 9-10 wks ARO.				
<b>Subtotal</b>				3,384.50
<b>Sales Tax</b>				
<b>Total</b>				3,384.50

# A.R. Thomson Group.

7930 130th Street, SURREY BC  
Phone (604) 507-6050 Fax (604) 507-6098

## FAX MESSAGE

To: CHAD FISCHER	Fax Number: 604 222-1074
Company : TRIUMF	Date : 4/22/03

From : Robert Ellis - Inside Sales	Fax Number : 1-604-507-6098
Company : A.R. Thomson Group	Pages including cover 1

Subject :

### Message:

Chad;  
Regarding your RFQ for helicoflex seals, we offer the following pricing.

Metal O-Ring as per attached drawing, Indium coated Alloy 718.

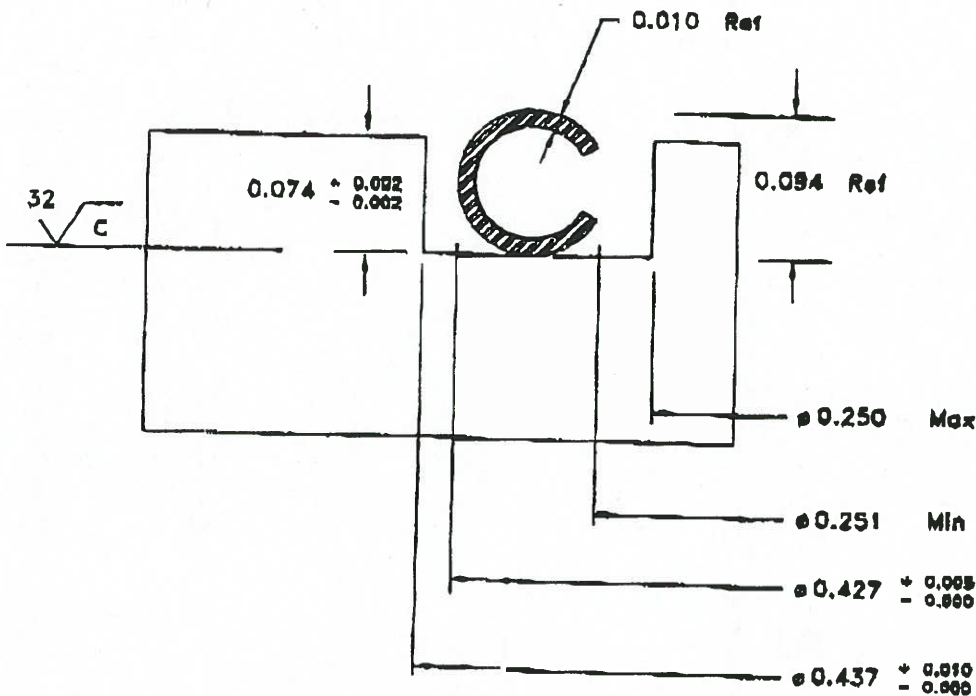
- 100pc - \$85.96ea
- 200pc - \$70.94ea
- 300pc - \$65.32ea

— ?! vs \$19.00 us from ULTRA SEAL

Delivery is approximately 6-8 weeks standard. If a better date is required, please advise a target date and the attempt to meet it will be made.

Regards,  
ROBERT ELLIS  
A.R. THOMSON GRP  
PH(604)507-6050  
FX(604)507-6098  
ellis.robert@arthomson.com

GARLOCK HELICOFLEX



Seal Type METAL C-RING	Part Number: C-601481 REV NC	Base Material: ALLOY 718
Working Temperature: UNKNOWN	Seating Load: Y2 (lbs/inch) 226 LB/IN (250 LBS TOTAL)	Compression: e2 0.020"
Working/Proof Pressure: UNKNOWN	Media: UNKNOWN	Other: Plating INDIUM 0.001"/0.002" THICK
Customer Target Leak Rate: UNKNOWN	Scale: none Dimensions: inches Finish: micrometers	

**GARLOCK**  
AN Empire Industries Company  
SEALING TECHNOLOGY

GARLOCK HELICOFLEX

2770 THE BLVD  
COLUMBIA, SC 29290  
PHONE: 803-783-1122  
FAX: 803-783-4222

THIS DRAWING CONTAINS PROPRIETARY INFORMATION OF GARLOCK HELICOFLEX, AND IS PROVIDED FOR ENGINEERING EVALUATION AND/OR RECEIVING AND INSPECTION PURPOSES ONLY. IT HAS BEEN ENTRUSTED TO THE RECIPIENT WITH THE UNDERSTANDING THAT ITS USE WILL BE RESTRICTED TO SUCH PURPOSES. COPYING, TRACING AND OTHER TYPES OF REPRODUCTION FOR MANUFACTURING AND/OR COMPETITIVE PROCUREMENT IS EXPRESSLY PROHIBITED BY GARLOCK HELICOFLEX.



# Quotation

Ultra Seal  
 P.O. Box 1133  
 Corona, CA 92878

Quote Number:  
 305

Quote Date:  
 May 8, 2003

Page:  
 1

Quoted to: *bug stanford*  
 TRIUMF  
 4004 Wesbrook Mall  
 Vancouver, BC V6T 2A3  
 Canada

Customer ID	Good Thru	Payment Terms	Sales Rep
2189	8/7/03	2% 10, Net 30 Days	Mike Anderson

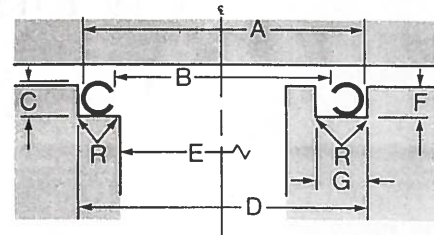
Quantity	Item	Description	Unit Price	Extension
100.00	C-Seal	SP 50606-1 0.426" OD Inside C-Seal Inconel 718 w/ Indium Plating (0.010" wall thickness)	21.95	2,195.00
100.00	C-Seal	SP 50606-2 0.426" OD Inside C-Seal Inconel 718 w/ Indium Plating (0.012" wall thickness)  Delivery: 7-8 weeks ARO.	21.34	2,134.00
			<b>Subtotal</b>	<b>4,329.00</b>
			<b>Sales Tax</b>	
			<b>Total</b>	<b>4,329.00</b>



# Section 5—Seal and Groove Specification Tables

## Metal-C-Rings

Internal Pressure



All dimensions are in inches and are shown before plating.

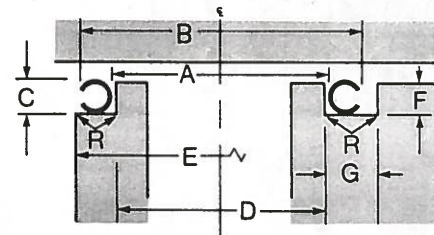
RING				GROOVE										
C		A		B (min)		Std Plating Thickness*		D		E (max)		F	G	R
Free Height	Tol	OD Range	Tol	A Minus	Min/Max	A Plus	Tol -.000	A Minus	Min/Max	Min	Max			
.031	±.002	.250-1.000		.056	.0010/.0015	.002	+.002	.070	.025/.027	.035	.010			
.047	±.002	.315-1.375		.082	.0010/.0015	.002	+.003	.095	.037/.040	.050	.012			
.062	±.002	.375-4.000		.106	.0010/.0015	.003	+.004	.120	.050/.054	.065	.015			
.094	±.002	.500-6.000		.160	.0010/.0015	.004	+.004	.170	.075/.079	.095	.020			
.125	±.003	1.000-8.000		.213	.0010/.0015	.004	+.005	.225	.100/.105	.125	.030			
.156	±.003	1.250-12.000		.266	.0015/.0025	.005	+.006	.280	.125/.130	.160	.050			
.188	±.004	3.750-24.000		.324	.0015/.0025	.006	+.006	.340	.151/.157	.190	.060			
.250	±.004	4.500-36.000		.428	.0020/.0030	.008	+.008	.440	.200/.206	.250	.060			
.375	±.004	14.750-80.000		.642	.0020/.0030	.010	+.010	.655	.300/.306	.380	.060			
.500	±.005	21.000-112.000		.850	.0030/.0040	.010	+.010	.870	.400/.406	.500	.060			

\* To determine allowances for plating or coating thickness, see page 4.

NOTE: The inside C-section may not have the plating/coating thickness specified.

## Metal-C-Rings

External Pressure



All dimensions are in inches and are shown before plating.

RING				GROOVE										
C		A		B (max)		Std Plating Thickness*		D		E (min)		F	G	R
Free Height	Tol	ID Range	Tol	A Plus	Min/Max	A Minus	Tol +.000	A Plus	Min/Max	Min	Max			
.031	±.002	.195-1.000		.056	.0010/.0015	.002	-.002	.070	.025/.027	.035	.010			
.047	±.002	.225-1.375		.082	.0010/.0015	.002	-.003	.095	.037/.040	.050	.012			
.062	±.002	.250-4.000		.106	.0010/.0015	.003	-.004	.120	.050/.054	.065	.015			
.094	±.002	.300-6.000		.160	.0010/.0015	.004	-.004	.170	.075/.079	.095	.020			
.125	±.003	.750-8.000		.213	.0010/.0015	.004	-.005	.225	.100/.105	.125	.030			
.156	±.003	1.250-12.000		.266	.0015/.0025	.005	-.006	.280	.125/.130	.160	.050			
.188	±.004	3.750-24.000		.324	.0015/.0025	.006	-.006	.340	.151/.157	.190	.060			
.250	±.004	4.500-36.000		.428	.0020/.0030	.008	-.008	.440	.200/.206	.250	.060			
.375	±.004	14.750-80.000		.642	.0020/.0030	.010	-.010	.655	.300/.306	.380	.060			
.500	±.005	21.000-112.000		.850	.0030/.0040	.010	-.010	.870	.400/.406	.500	.060			

\* To determine allowances for plating or coating thickness, see page 4.

NOTE: The inside C-section may not have the plating/coating thickness specified.