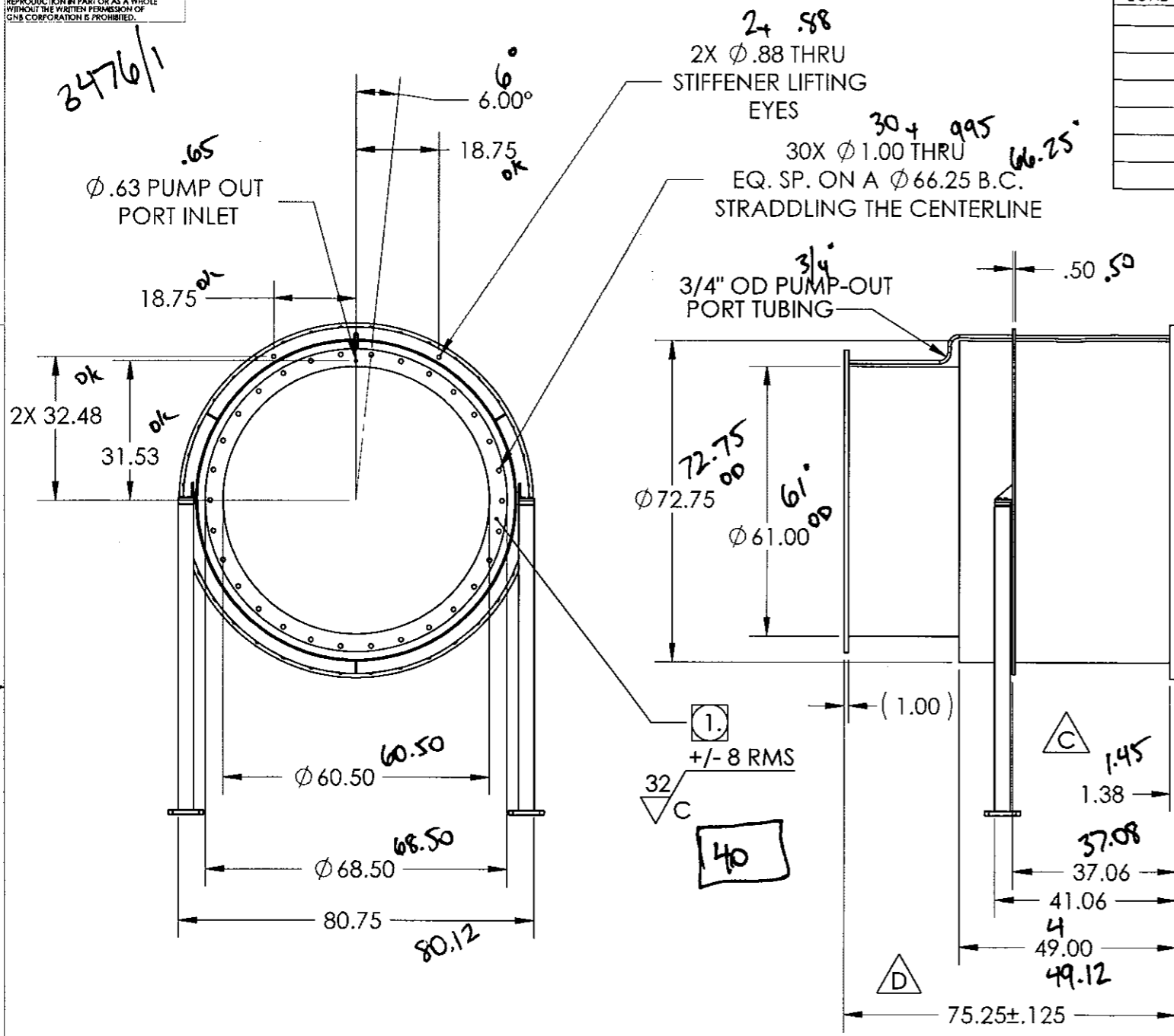
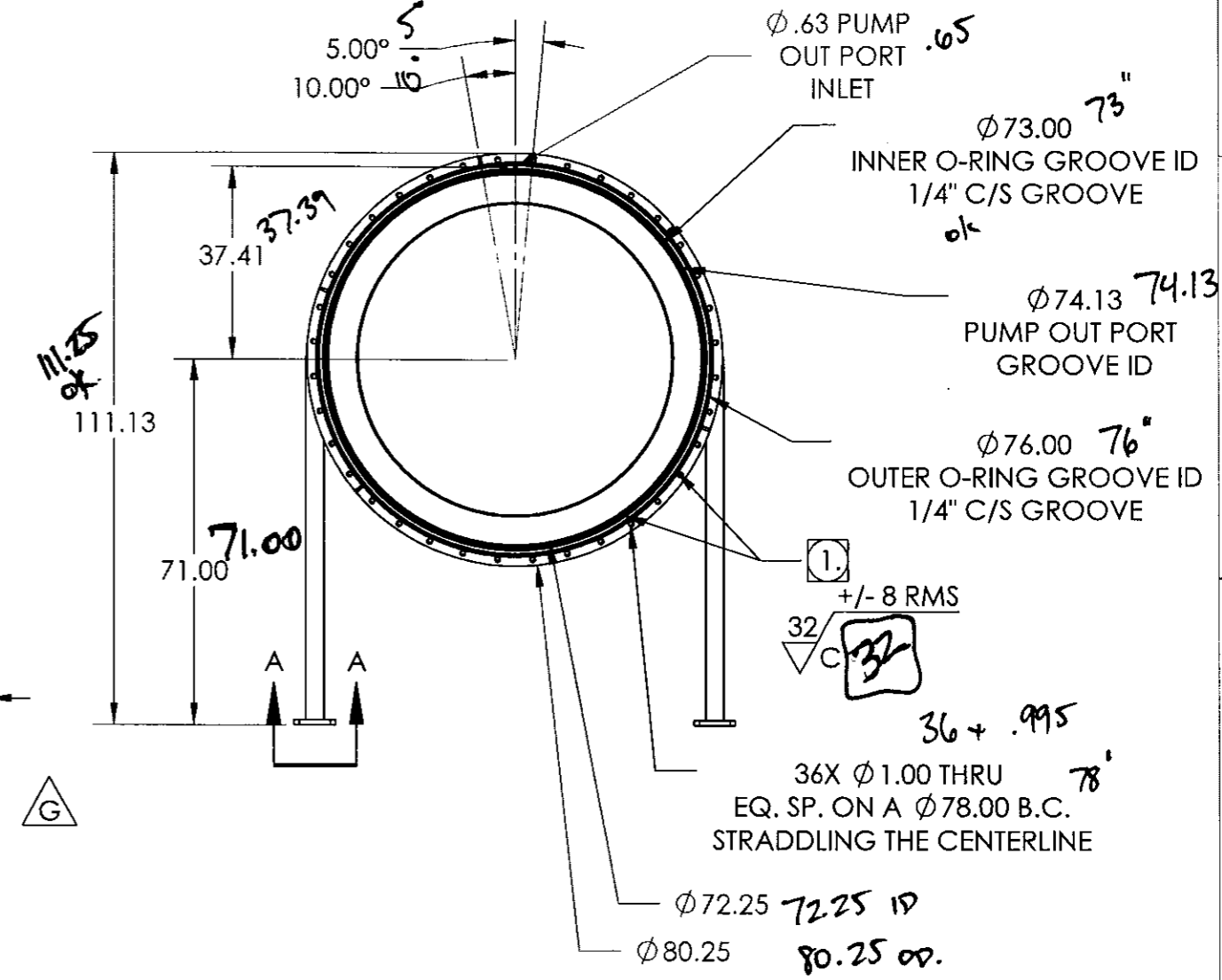


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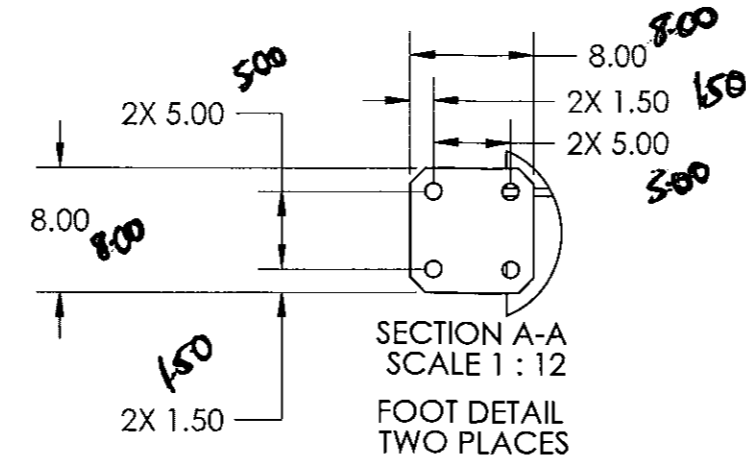


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	REVISED MODEL TO MATCH MFG PROCESSES	6/9/10	MKM2
	B	REVISED TOLERANCE BLOCK, GD&T TOLERANCE WAS .05, NOW .03	6/24/10	MKM2
	C	ADDED STAND AND BRACKETRY	7/30/2010	MKM2
	D	72.25 WAS 72.00	8/18/2010	MKM2
	E	RELEASED TO PRODUCTION	8/20/2010	MKM2
	F	OVERALL HEIGHT AND STAND HEIGHT REDUCED BY 2"	2/16/2011	MKM2
	G	REVISED STAND LOCATION PER CUSTOMER REQUEST	3/28/2011	MKM2



3476/1
 .65
 18.75
 6.00
 18.75
 2X 32.48
 31.53
 60.50
 68.50
 80.75
 80.12
 11 = .028
 □ = .023
 L = .014

NOTES:
 ① VACUUM SEALING SURFACE ✓



MATERIAL: AISI 304/AISI 304L DUAL CERT PER SA-240
 UNLESS OTHERWISE SPECIFIED: FINISH 125
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 ANGULAR: \pm 0°30'
 .XX \pm .06
 .XXX \pm .005
 UNSPECIFIED FILLETS: R.015
 BREAK EDGES .010x45°
 REMOVE ALL BURRS
 WITHIN .03
 THIRD ANGLE PROJECTION

WEIGHT: 2603.28#		GNB CORPORATION SCIENTIFIC AND INDUSTRIAL EQUIPMENT 3200 DWIGHT RD. SUITE 100 ELK GROVE, CA, 95758 916-395-3003 FAX: 916-395-3363 www.gnbvalves.com
APPROVALS	DATE	
DRAFTER MKM2	6/9/10	
CHECKER RW	6/15/10	
ENGINEER MKM2	6/9/10	
TITLE: OUTLINE, ADAPTER A-18		
DO NOT SCALE DRAWING	B DWG. NO. 114143-00	REV G
	SCALE: 1:32	SHEET 1 OF 1



QP1750-D2

Subject: Aqueous Cleaning Procedure (LIGO Only)
 Revision: B Page 8 of 9

GNB - LIGO FINAL CLEANING RECORD

This Version For MC or Mid-Station Tubes

Component Name: 1 ST A-18	GNB Dwg Number: 114444-005	Serial Number: 85113	Date: 5-17-11
External Surfaces - Detergent Wash & Rinse			
Start Time: 3:00 pm	End Time: 3:15		
VBS - Pre-Rinse / Component Heat-Up			
Start Time: 3:15	Rinse Water Temperature: 170 @ Pump		
Int#1:	Int#2:	Int#3:	Ext#1: Ext#2:
End Time: 3:35 3:25			
VBS - Detergent Wash			
Washing with Fixture-	Start Time: 3:30	End Time: 4:30	
Typical Surface Temps Attained:	#1: 89	#2: 96	#3: 93
Washing with Wand(s)-	Start Time:	End Time:	
Area Location:	Approx Sq.Ft.:	Start Temp:	Time to get to 130F:
#1 Exterior Everywhere		170 @ pump	
#2			
#3			
First DI Rinse			
Start Time: 4:45	End Time:	Rinse Duration at least 15 minutes? (y/n): 4	
Spot Check for Film or Residue			
Swab Coloration Evident? (y/n): <u> </u> . If yes, comments & title/signature: NOT Done			
Final DI Rinse			
Start Time: 5-17-11 7:45	End Time:	Rinse Duration at least 15 minutes? (y/n): 4	
Nitrogen Blow Dry			
Start Time: 8:45	End Time: 9:15		
Operators: Clancy	1: Clancy Blivly	2:	
Comments:			
Visual Inspection (VC-Exterior / Vis+UV-VB Surfaces)			
Vacuum Boundary? (pass/fail):	Title of Inspector: <i>[Signature]</i>		
External Surfaces? (pass/fail):	Signature/Date: <i>[Signature]</i> 5-18-11		
Comments:			



QP1750-A3

Subject: Testing, PCL&NVR (LIGO Only)

Revision: A

Page 5 of 7

GNB - LIGO CLEANLINESS TESTING RECORD

Component (check only 1)

- 114141-00 A16 Adptr
 114142-00 A17 Adptr
 114143-00 A18 Adptr
 114144-00 Mid-St Sp
 114146-00 MC-B
 114146-01 MC-B
 114146-02 MC-B
 114146-03 MC-B
 114145-00 MC-A
 114425-00S Sept. Plt.
 114424-01S Sept. Plt.
 114424-02S Sept. Plt.
 114424-03S Sept. Plt.
 114424-04S Sept. Plt.
 Other Items (pn/description/quantity):

Revision: Serial Number: 85113

Samples

Sample(s) Taken By: Clancy/Rick

Date: 5-19-11

Result Comments

Sample 1 - Bottle Number & Area Sampled:

Supply bottle directly into sample bottle

Sample 2 - Bottle Number & Area Sampled:

Supply bottle direct into rinsed and dried sample bottle

Sample 3 - Bottle Number & Area Sampled: (Base for normalization)

Supply/collection tool / non rinsed sample bottle.

Sample 4 - Bottle Number & Area Sampled:

A-18 large roll inner wall

Sample 5 - Bottle Number & Area Sampled:

A-18 large flange grooves

Sample 6 - Bottle Number & Area Sampled:

A-18 small roll inner wall

AstroPak PO Number: LC-D107-01

Ship Date, Carrier, Tracking#:

Test Result Disposition

AstroPak Test Report Attached? (y/n): Is this a Repeated Test? (y/n)

Is Component Accepted or Rejected?

Title: DM

Signature: Richard Reed

Date: 5-25-11

Comments (enter here and/or to right of sample area descriptions):



ASTRO PAK

astropak.com

12201 Pangborn Avenue, Downey, CA 90241 (562) 293-3557 Fax (562) 803-3870
For inquiries regarding in-process orders, please call Customer Service at (562) 293-3552 or (866) 492-7876 ext. 3552

Certificate of Compliance

Astro Pak Corporation hereby certifies that all processes required by your purchase order were performed and that all materials used were in accordance with the applicable specification(s). Any evidence of tampering with the package or seals prior to installation without specific approval, nullifies this certification.

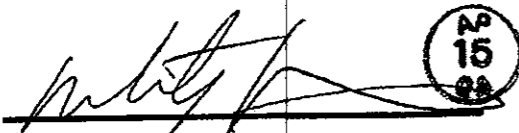
Customer GNB 3200 Dwight Road Suite 100 Elk Grove, CA 95758
P.O. LC-0107-01 Log 93717453 Total Quantity 6 Date 5/24/2011

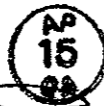
The process specification or service performed: **Particle and NVR Testing**

Tested per IEST-STD-CC1246D for particulate levels and reported results

Line #	Qty	Part #	Part Description	Extended Description	Serial #s	Job #
1	1	Bottle #1	Supply & Rinsed Sample bottle	Sample Tested at Level 62 A/50		
2	1	Bottle #2	Supply & Rinsed Sample bottle	Sample Tested at Level 76 A/33.3		
3	1	Bottle #3	Supply/collection tool/ non rinsed sample bottle	Sample Tested at Level 76 A/33.3		
4	1	Bottle #4	A-18 Large roll inner Wall	Sample Tested at Level 62 A/50		
5	1	Bottle #5	A-18 Large Flange grooves	Sample Tested at Level 49 A/33.3		
6	1	Bottle #6	A-18 Small roll inner wall	Sample Tested at Level 62 A/100		

Quality Assurance


Martin Smith, QA Manager



Date MAY 24 2011

Source Required No

Date _____



Astro Pak Corporation's Precision Cleaning Facility - Downey CA is an AS 9100B:2004 and ISO 9001:2008 registered facility.

Cert. #42548



1 of 1



Certified Test Report

Customer: GNB Corporation

PO: LC-0107-01

Log # 93717453

Description: Samples

Specification: IEST-STD-CC1246D, Level 100A/20

Acceptance Criteria and Results

Size/microns	> 5	> 15	> 25	> 50	> 100	NVR
Allowable	1,780	264	78	11	1	0.05 mg
1	28	7	5	2	0	0.02 mg
2	31	19	14	4	0	0.03 mg
3	50	18	15	4	0	0.03 mg
Δ of 4	44	12	0	2	0	0.02 mg
IEST-STD-CC1246D Levels	27	33	44	62	NA	A/50
IEST-STD-CC1246D Levels	28	46	61	76	NA	A/33.3
IEST-STD-CC1246D Levels	33	45	62	76	NA	A/33.3
IEST-STD-CC1246D Levels	32	39	NA	62	NA	A/50

1 = " 95% UCL = 40 particles > 5 μm / 0.1 m² ; LCL = 20 "

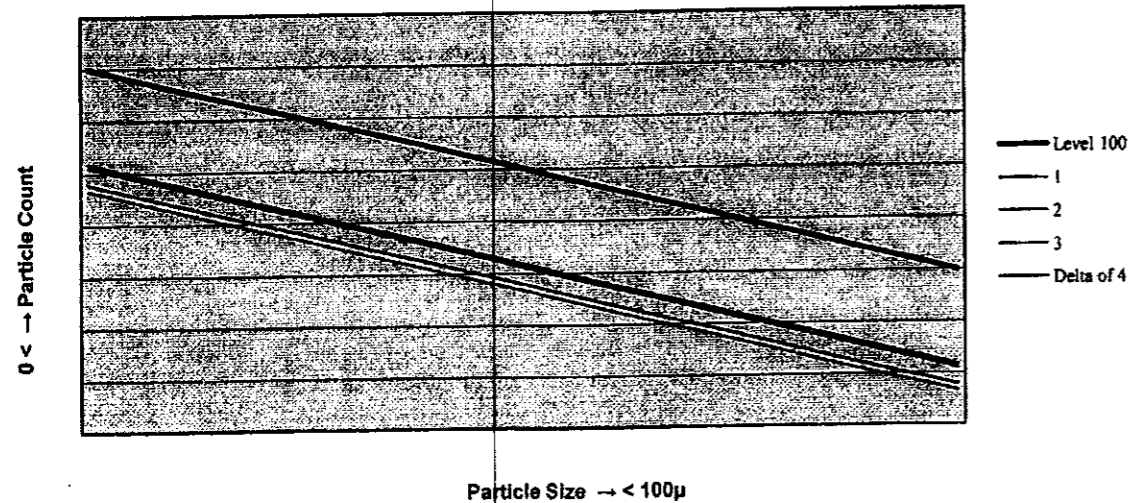
2 = " 95% UCL = 44 particles > 5 μm / 0.1 m² ; LCL = 22 "

3 = " 95% UCL = 66 particles > 5 μm / 0.1 m² ; LCL = 38 "

Delta of 4 = " 95% UCL = 59 particles > 5 μm / 0.1 m² ; LCL = 33 "

NOTE: The graph below is merely a visual representation of the raw laboratory data reported above.
The graph extrapolates the median cleanliness levels to form a graphable line.

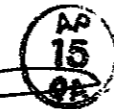
IEST-STD-CC1246D , Level 100



Lab Tech: Carlos Alcala
 Date/Time: 05/24/11 1100
 Relative Humidity: 44%
 Temp: 64° F
 Sample method: ASTM F303
 Test Method: ASTM F311, F312 & F331

THE ABOVE DATA HAS BEEN REVIEWED AND APPROVED

[Signature]
 Astro Pak Quality



MAY 24 2011



Certified Test Report

Customer: GNB Corporation

PO: LC-0107-01

Log # 93717453

Description: Samples

Specification: IEST-STD-CC1246D, Level 100A/20

Acceptance Criteria and Results

Size/microns	> 5	> 15	> 25	> 50	> 100		NVR
Allowable	1,780	264	78	11	1		0.05 mg
Δ of 5	70	0	7	0	0		0.03 mg
Δ of 6	27	4	2	2	0		0.01 mg
**	*	*	*	*	*		*
IEST-STD-CC1246D Levels	38	NA	49	NA	NA		A/33.3
IEST-STD-CC1246D Levels	27	27	32	62	NA		A/100
**	*	*	*	*	*		*

Delta of 5 = " 95% UCL = 88 particles > 5 μm / 0.1 m² ; LCL = 56 "

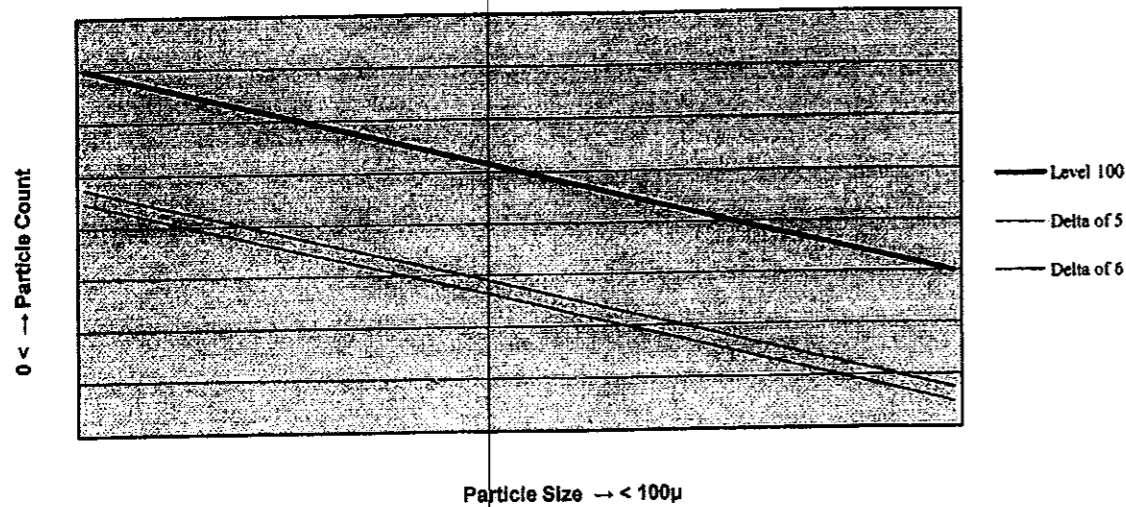
Delta of 6 = " 95% UCL = 39 particles > 5 μm / 0.1 m² ; LCL = 19 "

Test 7 = " NA "

Test 8 = " NA "

NOTE: The graph below is merely a visual representation of the raw laboratory data reported above.
The graph extrapolates the median cleanliness levels to form a graphable line.

IEST-STD-CC1246D , Level 100



Lab Tech: Carlos Alcalá
Date/Time: 05/24/11 1100
Relative Humidity: 44%
Temp: 64° F
Sample method: ASTM F303
Test Method: ASTM F311, F312 & F331

THE ABOVE DATA HAS BEEN REVIEWED AND APPROVED

[Signature]
Astro Pak Quality
MAY 24 2011

2ND A-16, 17 1ST A-18 assembled at bake out



QP1750-A7

Subject: Leak Test Procedure (LIGO Only)
Revision: B

Page 4 of 4

GNB - LIGO LEAK TEST RECORD AND CERTIFICATION

GNB - LIGO LEAK TEST RECORD AND CERTIFICATION			
Detector			
Mdl: Varian VSMD301	SN: LL10074-045	Cal. Exp. Date: 6-9-11	Tracer Gas: He4
Std Lk Rate: 9.1 ⁻⁸ @ 19.2°C	Std Response: 9.1 ⁻⁸ @ 18.8°C		
Component	(1)	(2)	(3)
Component Name	2 ND A-16	2 ND A-17	1 ST A-18
GNB Drawing No. & Rev.	114434-005	114436-005	114444-005
Serial No.	85110	85112	85113
Leak Test Data			
Pressure	1.4 ⁻⁴ with only leak checker		
Duration	#		
Response	NO LEAK DETECTED!		
Leak Rate	Allowable: $\leq 1 \times 10^{-9}$ Torr-L/S		
Welds I, Measured	6.7 ⁻¹⁰	6.7 ⁻¹⁰	6.7 ⁻¹⁰
Welds II, Measured	6.7 ⁻¹⁰	6.7 ⁻¹⁰	6.7 ⁻¹⁰
CF III, Measured	6.7 ⁻¹⁰	6.7 ⁻¹⁰	6.7 ⁻¹⁰
Performed By/Date: Clarence Bleby/DAM	Pre-Final Clean	Post Bakeout <input checked="" type="checkbox"/>	
Witnessed By: M. J. Fitz	Title: Final Assembly & Test SUPERVISOR		
Signature/Date: M. J. Fitz			
Comments:	leak checker calibrated at 8:45 "CAL @ 1:30 PRE FINAL L/C"		
Annulus Pump-down			
Allowable: $\leq 1 \times 10^{-5}$ Torr	Pass / Fail	Pass / Fail	Pass / Fail
Annulus1/Category IV			
Annulus1/Category V			
Measured Vacuum			
Annulus2/Category IV			
Annulus2/Category V			
Measured Vacuum			
Performed By/Date:			
Witnessed By:	Signature/Date:		
Comments:			

Base Pressure with turbo + scroll after ramp down

6.8⁻⁸

Isolate turbos and spin down so only leak checker is pulling on chamber for leak check.

START LEAK RATE 9.1⁻⁸ TORR L/SEC
END LEAK RATE 6.8⁻⁸ TORR L/SEC

GNB - LIGO LEAK TEST RECORD AND CERTIFICATION			
Detector			
Mdl: Varian VSMD301	SN: LL10074045	Cal. Exp. Date: 6-9-11	Tracer Gas: He4
Std Lk Rate: 8.3-8 @ 16.3C	Std Response: 8.3-8		
Component	(1)	(2)	(3)
Component Name	3476 1 ST A-18		
GNB Drawing No. & Rev.	114434-005 114444-005		
Serial No.	85113		
Leak Test Data			
Pressure	1.8 x 10 ⁻⁹		
Duration			
Response			
Leak Rate Allowable: $\leq 1 \times 10^{-9}$ Torr-L/S			
Welds I, Measured	3 ⁻¹⁰ torr/sec		
Welds II, Measured	3 ⁻¹⁰ torr/sec		
CF III, Measured	3 ⁻¹⁰ torr/sec		
} NO Leaks Detected			
Performed By/Date: Clarence Blaily	Pre-Final Clean <input checked="" type="checkbox"/> Post Bakeout		
Witnessed By:	Title: Lead Tech		
Signature/Date: 5-14-11			
Comments: Spin down turbo and isolate chamber for 1 hour with only the Varian leak checker pumping on chamber before start He leak checking			
Annulus Pump-down			
Allowable: $\leq 1 \times 10^{-5}$ Torr	Pass / Fail	Pass / Fail	Pass / Fail
Annulus1/CategoryIV	Pass		
Annulus1/CategoryV			
Measured Vacuum	1.0-5		
Annulus2/CategoryIV			
Annulus2/CategoryV			
Measured Vacuum			
Performed By/Date: Clarence Blaily 5/14/11	Signature/Date: <i>[Signature]</i> 5/14/11		
Witnessed By: <i>[Signature]</i>			
Comments:			

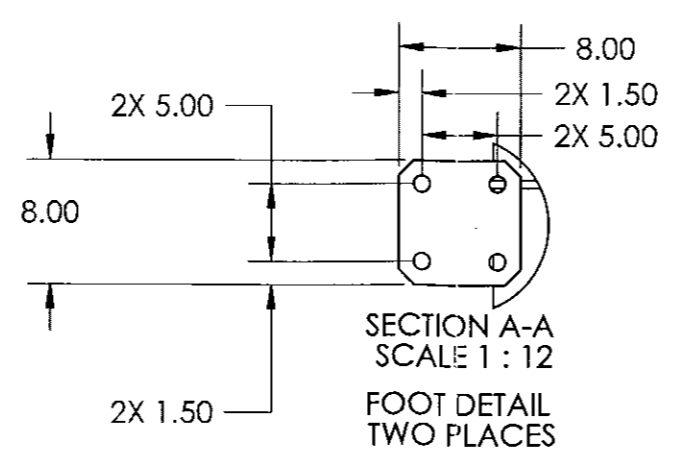
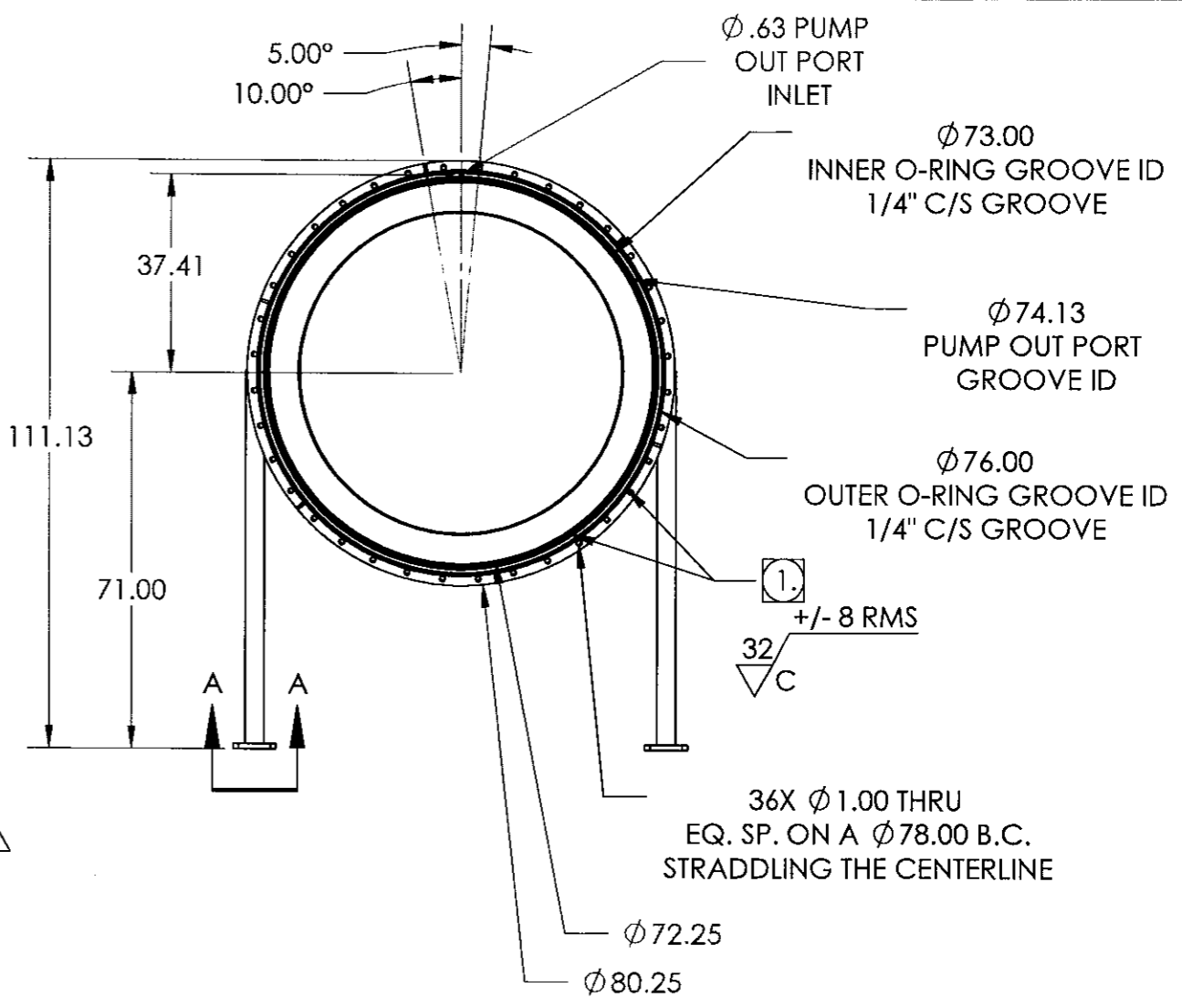
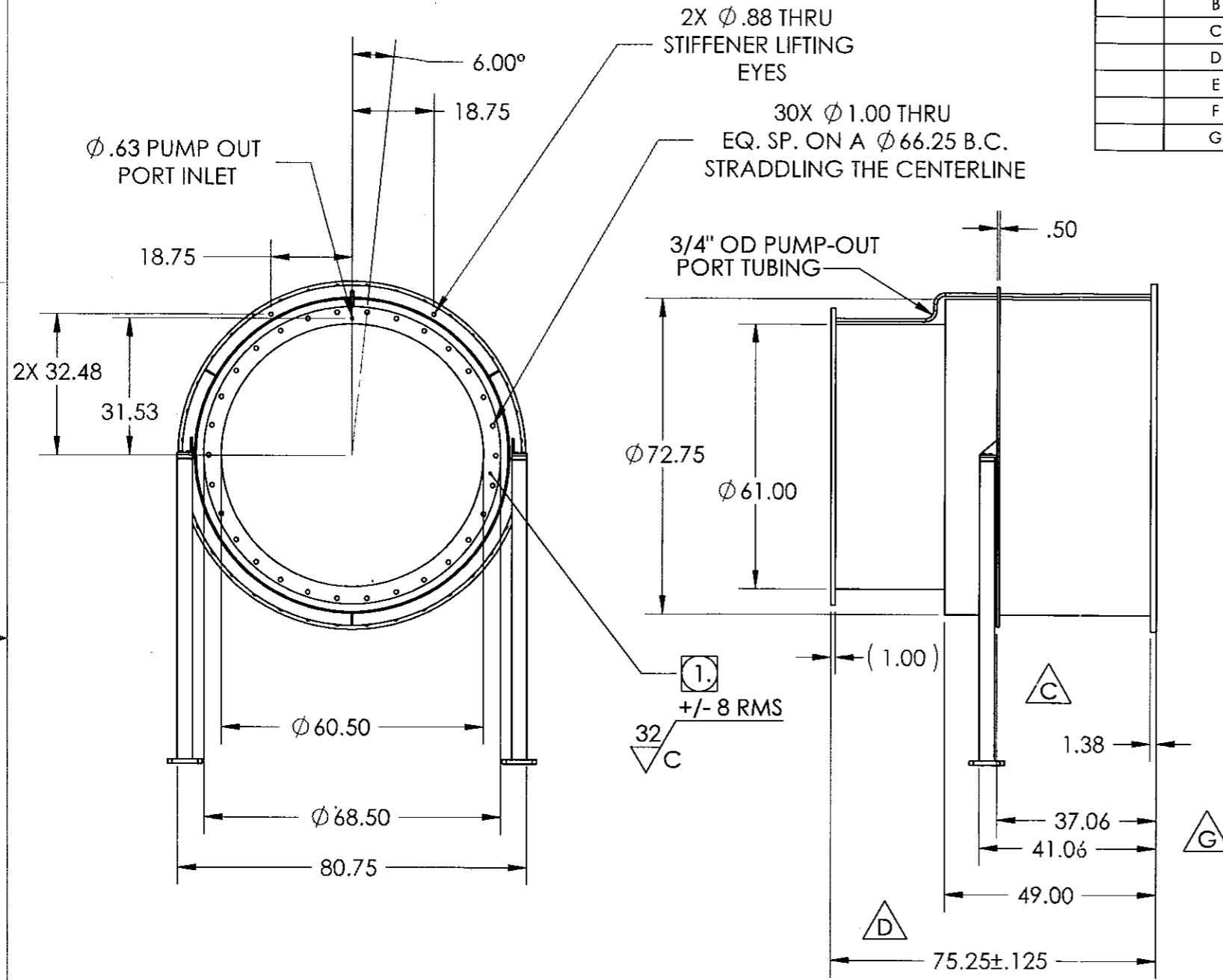
Chamber base pressure with turbo and scroll pumping all night 7.6⁻⁸ ...

Bakeout		Time (min)		Temperature (°C)		Time (min)		Temperature (°C)	
				78	5.1 ⁻⁷				
				72	3.6 ⁻⁷				
				66	2.8 ⁻⁷				
				60	1.5 ⁻⁷				
				54	1.2 ⁻⁷				
				48	9.2 ⁻⁸				
				42	7.2 ⁻⁸				
	150	4.2 ⁻⁶		36	5.6 ⁻⁸				
				30	5.4 ⁻⁸				
				24	6.5 ⁻⁸				
	150	4.7 ⁻⁶							
	144	4.6 ⁻⁶							
	138	3.9 ⁻⁶							
	132	3.1 ⁻⁶							
	126	2.7 ⁻⁶							
	120	2.4 ⁻⁶							
	114	1.2 ⁻⁶							
	108	9.9 ⁻⁷							
	102	9.6 ⁻⁷							
	96	8.7 ⁻⁷							
	90	8.3 ⁻⁷							
	84	5.6 ⁻⁷							

Time	Temp	Pressure	Time	Temp	Pressure	Time	Temp	Pressure
			78	5.1 ⁻⁷				
			72	3.6 ⁻⁷				
			66	2.8 ⁻⁷				
			60	1.5 ⁻⁷				
			54	1.2 ⁻⁷				
			48	9.2 ⁻⁸				
			42	7.2 ⁻⁸				
	150	4.2 ⁻⁶	36	5.6 ⁻⁸				
			30	5.4 ⁻⁸				
			24	6.5 ⁻⁸				
	150	4.7 ⁻⁶						
	144	4.6 ⁻⁶						
	138	3.9 ⁻⁶						
	132	3.1 ⁻⁶						
	126	2.7 ⁻⁶						
	120	2.4 ⁻⁶						
	114	1.2 ⁻⁶						
	108	9.9 ⁻⁷						
	102	9.6 ⁻⁷						
	96	8.7 ⁻⁷						
	90	8.3 ⁻⁷						
	84	5.6 ⁻⁷						

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	G	REVISED STAND LOCATION PER CUSTOMER REQUEST	3/28/2011	MKM2



NOTES:
 ① VACUUM SEALING SURFACE

MATERIAL: AISI 304/AISI 304L DUAL CERT PER SA-240
 UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES
 TOLERANCES: FINISH 125
 ANGULAR: ±0°30'
 .XX ± .06
 .XXX ± .005
 UNSPECIFIED FILLETS: R.015
 BREAK EDGES .010x45°
 REMOVE ALL BURRS
 // .□ .⊥ WITHIN .03
 THIRD ANGLE PROJECTION

WEIGHT: 2603.28#

APPROVALS	DATE
DRAFTER MKM2	6/9/10
CHECKER RW	6/15/10
ENGINEER MKM2	6/9/10

GNB CORPORATION
 SCIENTIFIC AND INDUSTRIAL EQUIPMENT
 3200 DWIGHT RD. SUITE 100
 ELK GROVE, CA, 95758
 916-395-3003 FAX: 916-395-3363
 www.gnbvalves.com

TITLE: **OUTLINE, ADAPTER A-18**

DO NOT SCALE DRAWING
 DWG. NO. 114143-00
 SCALE: 1:32
 SHEET 1 OF 1
 REV G