AMERIFLEX,INC.

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Job/PN	08.0-9056
Custumer	Fnal.gov

Desing Parameters

P		Presure	14.7	psig		Bellows Material	TI GR. 2
D	b	Inside Dia (ID)	9.055	in	T max	Temperature	70 deg F
D	r	Outside Dia (OD)	9.724	in	T min	Temperature	70 deg F
q		Pitch	0.4	in	E b	Bellows Modulus	15.2E+06
w		Conv Hieght	0.322	in	E c	Collar Modulus	15.2E+06
N		No. of Conv.	2.5		S a	Allowable Mat. Stress	03.6E+04
n		No. of Plies	1		C m	(=3 as-formed or 1.5 annealed)	3
t		Bellows Thick.	0.012	in	G	Rigidity Modulus	
t	c	Collar mat. Thick.		in	L	Tube Length AOL	1.024 in
L	b	Bellows Live Length	1.024	in			
L	t	Tanget length , Lt=Lc		in			

Constants

D	m	9.389	in		T		0.621
t	p	0.0118	in		M		0.547
D	c	9.079	in		C	p	0.6031
K		0.0000			C	f	1.8026
k	r	1.130			C	d	1.8987
A	e	69.235	in^2		C	n	9.8100
	VOLUME	70.89710736	in^3		W	weight	0.0000

Design Movement Constrains

x	0.13	in.	PASS	e	x	0.052	
y		in	PASS	e	y	0.000	
θ		deg		e	θ	0.000	
				e	ε	0.052	

Pressure Stress

S 1	#DIV/0!	psi
S 2	3034	psi
S 3	201	psi
S 4	3309	psi

1 3 inner conv is equal to 2.5 conv. for calculation purpose.

Deflection Stresses

S 5	912	psi
S 6	78856	psi

S t	82226	psi

N c	764,058	Cycles	N c = FATIGUE LIFE, NUMBER OF CYCLES TO FAILURE

FULL CYCLE

Notes:

Below the Creep Range

Axial

f iu	6598		f iu = *BELLOWS INITIAL AXIAL ELASTIC S/R (THEORETICAL)*
f w	4098	lb./in.	f w = WORKINGING S/R - PER CONV.
K sr	2,639.04	lb/in.	K sr = OVER ALL BELLOW AXIAL S/R

Angular

S/R	317.89	In-Lbs /deg	
M θ	0.00	In-Lbs /deg	M θ = MOMENT AT THE ENDS OFF CONV. LENGTH

Lateral

S/R	162,756.45	Lb/in.	

FREQUENCY

f n	#DIV/0!	f n = NATURAL FREQUENCY