

AMERIFLEX, INC.

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Job/PN
Customer

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Fnal.gov

Desing Parameters

P	Presure	14.7	psig
D b	Inside Dia (ID)	9.055	in
D r	Outside Dia (OD)	9.724	in
q	Pitch	0.4	in
w	Conv Hieght	0.322	in
N	No. of Conv.	2.5	
n	No. of Plies	1	
t	Bellows Thick.	0.012	in
t c	Collar mat. Thick.		in
L b	Bellows Live Length	1.024	in
L t	Tanget length , Lt=Lc		in

Constants

D m	9.389	in
t p	0.0118	in
D c	9.079	in
K	0.0000	
k r	1.130	
A e	69.235	in^2
VOLUME	70.89710736	in^3

Design Movement Constrains

x	0.13	in.
y		in
θ		deg

Pressure Stress

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

Deflection Stresses

S 5	912	psi
S 6	78856	psi

S t	82226	psi
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N c	764,058	Cycles
	FULL CYCLE	

Notes:

	Below the Creep Range
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Axial

f iu	6598	
f w	4098	lb./in.
K sr	2,639.04	lb/in.

Angular

S/R	317.89	In-Lbs /deg
M θ	0.00	In-Lbs /deg

Lateral

S/R	162,756.45	Lb/in.
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FREQUENCY

f n	#DIV/0!	
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Bellows Material	TIGR. 2
T max Temperature	70 deg F
T min Temperature	70 deg F
E b Bellows Modulus	15.2E+06
E c Collar Modulus	15.2E+06
S a Allowable Mat. Stress	03.6E+04
C m (=3 as-formed or 1.5 annealed)	3
G Rigidity Modulus	
L Tube Length AOL	1.024 in

T	0.621
M	0.547
C p	0.6031
C f	1.8026
C d	1.8987
C n	9.8100
W	0.0000

e x	0.052
e y	0.000
e θ	0.000
e ε	0.052

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

N c = FATIGUE LIFE, NUMBER OF CYCLES TO FAILURE

f iu = BELLOWS INITIAL AXIAL ELASTIC S/R (THEORETICAL)
f w = WORKING S/R - PER CONV.
K sr = OVER ALL BELLOW AXIAL S/R

M θ = MOMENT AT THE ENDS OFF CONV. LENGTH

f n = NATURAL FREQUENCY

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