SENIOR FLEXONICS INC.
PATHWAY DIV. REF: Z26771 ITEM: 1
CUSTOMER REF:
DATE: 08/17/11 15:04
AUTHOR: Eric Bastien

SENIOR FLEXONICS INC.
PATHWAY DIVISION
SHEET _____ OF _____
REVISION: 4/14/2011
APPROVED BY:

DESIGN IS IN ACCORDANCE WITH ASME B31.1, 2007 EDITION AND THE STANDARDS OF THE EXPANSION JOINT MANUFACTURER'S ASSOCIATION, INC. 9TH. EDITION.

UNIVERSAL BELLOWS DESIGN ANALYSIS

MAXIMUM DESIGN PRESSURE	300	PSIG
DESIGN TEMPERATURE	500	DEG. F.
BELLOWS MATERIAL	A240-T304 (S30400)	
ALLOWABLE STRESS	15,900	PSI
ELASTIC MODULUS	25,800,000	PSI
WELD JOINT EFFICIENCY	0.70	

DESIGN MOVEMENT CONDITIONS (INCHES, DEGREES.)

CONDITION	CYCLES	AXIAL 1	AXIAL 2	LAT 1	LAT 2	ANG 1	ANG 2	PSIG PRESSURE	PSI S5	PSI S6
Design	2000	0.250	0.000	2.000	0.000	0.00	0.00	300.00	2846	209544

INSIDE DIAMETER	6.625	INCHES
OUTSIDE DIAMETER	8.125	INCHES
NUMBER OF CONVOLUTIONS	6 X 6	CONVOLUTIONS
MATERIAL THICKNESS	0.030	INCHES
NUMBER OF PLIES	2	PLIES
FREE LENGTH OVER CONVOLUTIONS	3.750	INCHES
INSTALLED LENGTH OVER CONVOLUTIONS	3.750	INCHES
TANGENT LENGTH	0.375	INCHES
UNIVERSAL LIVE LENGTH	18.125	INCHES

S1 (TANGENT CIRC. MEMBRANE STRESS DUE TO PRESSURE)	9,372	PSI
S2 (CIRC. MEMBRANE STRESS DUE TO PRESSURE)	7,363	PSI
S3 (MERIDIONAL MEMBRANE STRESS DUE TO PRESSURE)	1,820	PSI
S4 (MERIDIONAL BENDING STRESS DUE TO PRESSURE)	29,254	PSI
S3+S4	31,074	PSI
S5 (MERIDIONAL MEMBRANE STRESS DUE TO DEFLECTION)	SEE TABLE ABOVE	PSI
S6 (MERIDIONAL BENDING STRESS DUE TO DEFLECTION)	SEE TABLE ABOVE	PSI
ST (STRESS RANGE FOR PRIMARY DESIGN CONDITION)	234,142	PSI
DESIGN CYCLE LIFE FOR PRIMARY DESIGN CONDITION	2,000	CYCLES
RATED CYCLE LIFE FOR PRIMARY DESIGN CONDITION	2,801	CYCLES
MAXIMUM DESIGN PRESSURE BASED ON STABILITY	345	PSIG
AXIAL SPRING RATE	1,624	LB/IN
LATERAL SPRING RATE	209	LB/IN
ANGULAR SPRING RATE	193	IN-LB/DEG
TORSIONAL SPRING RATE	1.139E+05	IN-LB/DEG
BELLOWS EFFECTIVE AREA	42.72	SQ. INCHES

EC43211

FOR INFORMATION ONLY