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1/26/2018

Structural Analysis for  
**20.5x20.5 Plated Box Truss Tables**  
CRE Project # 16.614.01

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We trust this information is suitable for your needs at this time. If you have any questions, please do not hesitate to contact our office.

Regards,  
**Clark Reder Engineering Inc.**



Jeffrey M. Reder, P.E.

Eric Kelly



## SECTION 1



## **GENERAL STRUCTURAL NOTES**

### **CODES AND REFERENCE**

1. 2012 INTERNATIONAL BUILDING CODE
2. ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
3. ASCE 37-14 DESIGN LOADS ON STRUCTURES UNDER CONSTRUCTION
4. ALUMINUM DESIGN MANUAL, 2010 EDITION

### **DESIGN LOADS**

1. DEAD LOAD: SELFWEIGHT OF ALUMINUM TRUSS
2. RIGGING LOADS: SEE ATTACHED ALLOWABLE LOADING

### **CONSTRUCTION AND SAFETY**

1. ENGINEER SHALL NOT BE RESPONSIBLE FOR MEANS, METHODS, OR SEQUENCE OF CONSTRUCTION UNLESS SPECIFICALLY STATED ON THE DRAWINGS.
2. ENGINEER HAS DESIGNED THE STRUCTURES FOR THEIR FINAL AS-BUILT CONDITION. ENGINEER IS NOT RESPONSIBLE FOR TEMPORARY STABILITY OF STRUCTURES DURING ERECTION UNLESS SPECIFICALLY STATED ON THE DRAWINGS.
3. STRUCTURE HAS BEEN DESIGNED AS A TEMPORARY STRUCTURE THAT SHALL BE IN PLACE FOR LESS THAN 6 WEEKS.

### **ALUMINUM**

1. ALUMINUM SHALL CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE ON THE DRAWINGS:
  - A. MEMBER ALLOY: 6061-T6
  - B. CHANNELS, PLATES AND SHEETS: 6061 -T6
  - C. WELD FILLER ALLOW: 4043
2. ALL DETAILING, FABRICATION AND ERECTION SHALL CONFORM TO THE ALUMINUM ASSOCIATION ALUMINUM DESIGN MANUAL, CURRENT EDITION.
3. WELDING SHALL BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY LATEST EDITION.
4. FIELD CONNECTIONS SHALL BE BOLTED UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS.
5. ALUMINUM TRUSS TO ALUMINUM TRUSS CONNECTION BOLTS: 5/8" DIAMETER GRADE 8 BOLTS

### **ALLOWABLE LOADING GUIDELINES**

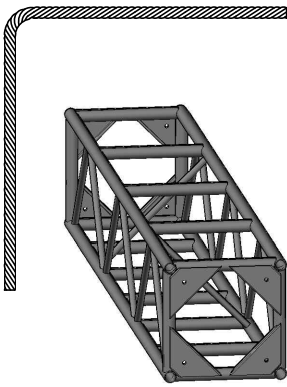
1. EACH LOAD INDICATED IN THE TABLE IS INDEPENDENT OF THE OTHER LOADS AND IS NOT ADDITIVE TO ANY OTHER LOAD.
2. CARE SHOULD BE TAKEN WHEN APPLYING LOADS AS LOADING OF ONE TRUSS MAY INDUCE LOAD ON ANOTHER TRUSS RESULTING IN AN OVERLOAD SITUATION.
3. THE UNIFORMLY DISTRIBUTED LOAD IS ONLY APPLICABLE IF THE LOAD IS APPLIED EVENLY OVER THE ENTIRE LENGTH OF THE TRUSS.
4. SELFWEIGHT OF THE TRUSS HAS BEEN INCLUDED IN THE CALCULATION OF THE ALLOWABLE LOADS.
5. ALL LOADS SHALL BE APPLIED AT TRUSS PANEL POINTS ONLY. ON BOX TRUSS, PANEL POINTS ARE LOCATIONS WHERE THE CHORD IS BRACED BOTH VERTICALLY AND HORIZONTALLY. ON LADDER TRUSS, PANEL POINTS ARE LOCATIONS WHERE THE CHORD IS BRACED BY A VERTICAL OR DIAGONAL MEMBER.
6. BRIDLES ARE NOT PERMITTED UNLESS APPROVED IN WRITING BY THE ENGINEER OF RECORD.
7. ALLOWABLE LOADS INDICATED ARE FOR GENERAL GUIDANCE ONLY. ALL RIGGING PLOTS SHOULD BE EVALUATED BY A LICENSED STRUCTURAL ENGINEER PRIOR TO HANGING ANY RIGGING LOADS.
8. NO DYNAMIC OR SHOCK LOADS HAVE BEEN TAKEN INTO ACCOUNT.

### **INSPECTIONS**

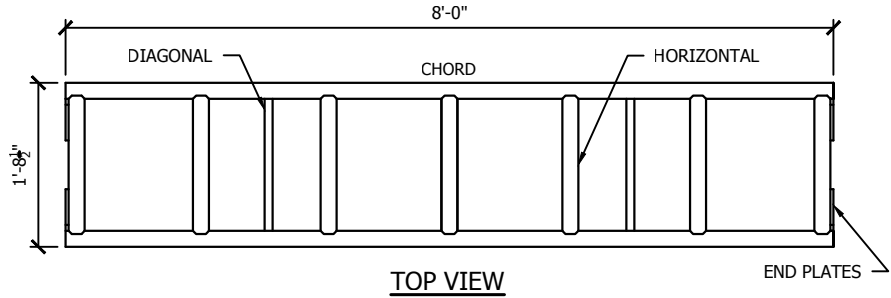
1. ALL TRUSS UNITS, SCAFFOLD AND/OR OTHER RIGGING EQUIPMENT SHALL BE VISUALLY INSPECTED PRIOR TO ERECTION. DAMAGED OR CORRODED EQUIPMENT SHALL NOT BE USED. FIELD MODIFICATIONS SHALL BE APPROVED BY THE ENGINEER OF RECORD PRIOR TO INSTALLATION.



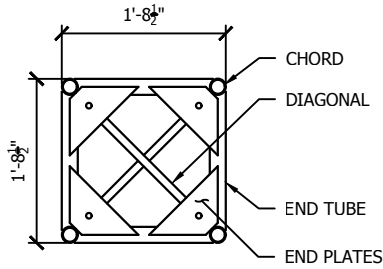
## SECTION 2



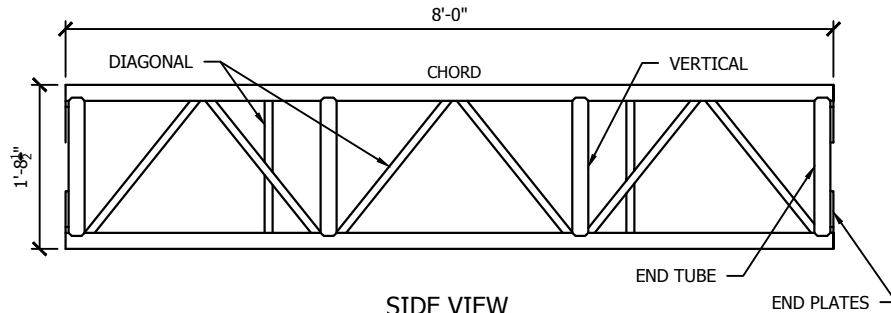
**3D VIEW**



**TOP VIEW**



**END VIEW**



**SIDE VIEW**

**20.5"x20.5" BOLT PLATE TRUSS TABLE**

TRUSS SPAN	UNIFORMLY DISTRIBUTED LOAD		CENTER POINT LOAD		THIRD POINT LOAD		QUARTER POINT LOAD		FIFTH POINT LOAD	
	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION
8'-0"	840 lb/ft	0.148 in	3,625 lbs	0.096 in	2,550 lbs	0.119 in	1,760 lbs	0.118 in	1,540 lbs	0.122 in
16'-0"	210 lb/ft	0.395 in	1,750 lbs	0.382 in	1,275 lbs	0.398 in	850 lbs	0.392 in	700 lbs	0.388 in
24'-0"	100 lb/ft	0.826 in	1,525 lbs	0.823 in	800 lbs	0.782 in	675 lbs	0.824 in	475 lbs	0.795 in
32'-0"	45 lb/ft	1.305 in	750 lbs	1.169 in	550 lbs	1.337 in	375 lbs	1.328 in	300 lbs	1.330 in
40'-0"	25 lb/ft	1.985 in	625 lbs	1.909 in	400 lbs	2.031 in	275 lbs	2.007 in	200 lbs	1.895 in
48'-0"	15 lb/ft	2.847 in	375 lbs	2.587 in	275 lbs	2.941 in	185 lbs	2.814 in	155 lbs	2.891 in

**PARTS LIST**

DIAGONALS	1" x1/8" PIPE
HORIZONTALS	2" x1/8" PIPE
VERTICALS	2" x1/8" PIPE
CHORDS	2" x1/8" PIPE
END TUBE	2" x1/8" PIPE
END PLATES	PLATE 3/8"

**NOTES:**

- ALL ALUMINUM IS 6061-T6
- WELD FILLER 4043

**TABLE USAGE NOTES:**

- THE TRUSS IS SUPPORTING VERTICAL LOADS ONLY, I.E. THE TRUSS LADDERS ARE ORIENTED VERTICALLY AND NO LATERAL LOADS ARE APPLIED TO THE TRUSS.
- THE TRUSS WAS ANALYZED AS A SIMPLE SPAN BEAM WITH SUPPORTS AT TRUSS ENDS ONLY.
- THE TRUSS HAS BEEN ANALYZED FOR STATIC LOADS ONLY.
- ALL LOADS ARE APPLIED CENTERED BETWEEN THE LADDERS.
- ALL LOADS AND SUPPORTS ARE TO BE LOCATED AT THE PANEL POINTS OF THE TRUSS ONLY.
- SELF WEIGHT HAS BEEN CONSIDERED IN THE ANALYSIS OF THE TRUSS.
- MAXIMUM DEFLECTION LIMITED TO SPAN/180.
- ALLOWABLE LOADS BASED ON 2010 ALUMINUM DESIGN MANUAL.

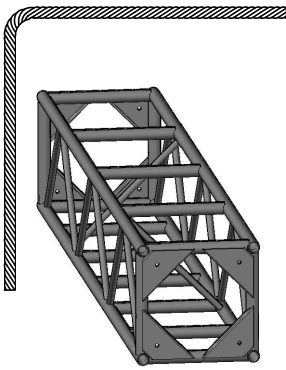
**CHRISTIE LITES**  
**20.5"x20.5" BOLT PLATE TRUSS**  
 SINGLE USE

**CLARK REDER**  
**ENGINEERING**  
 10091 Mosteller Lane  
 West Chester, OH 45069  
 513 851 1223

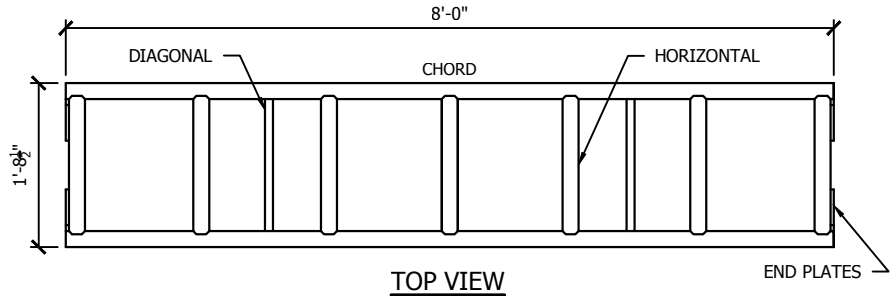
**20.5"X20.5" BOLT PLATE TRUSS**  
**8'-0" INCREMENTS**

DATE: 6/7/2016  
 CRE PROJECT NO: 16.614.01(1)  
 DRAWN BY: EPK/DDL

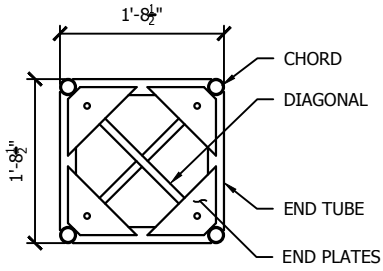
**ST1.1**



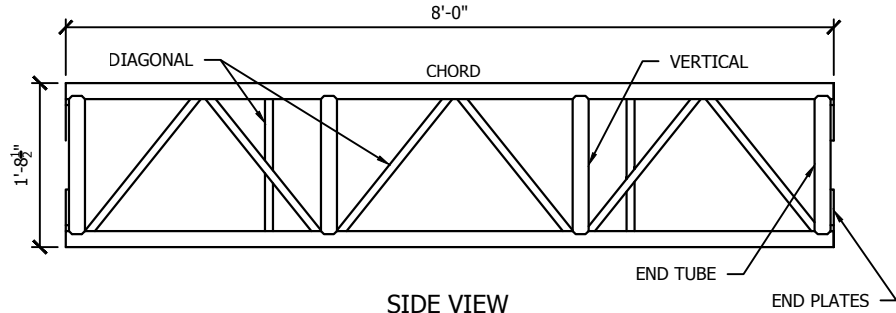
**3D VIEW**



**TOP VIEW**



**END VIEW**



**SIDE VIEW**

20.5"x20.5" BOLT PLATE TRUSS TABLE										
TRUSS SPAN	UNIFORMLY DISTRIBUTED LOAD		CENTER POINT LOAD		THIRD POINT LOAD		QUARTER POINT LOAD		FIFTH POINT LOAD	
	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION
8'-0"	714 lb/ft	0.126 in	3,081 lbs	0.082 in	2,168 lbs	0.101 in	1,496 lbs	0.100 in	1,309 lbs	0.104 in
16'-0"	179 lb/ft	0.336 in	1,488 lbs	0.325 in	1,084 lbs	0.338 in	723 lbs	0.333 in	595 lbs	0.330 in
24'-0"	85 lb/ft	0.702 in	1,296 lbs	0.700 in	680 lbs	0.665 in	574 lbs	0.700 in	404 lbs	0.676 in
32'-0"	38 lb/ft	1.109 in	638 lbs	0.994 in	468 lbs	1.136 in	319 lbs	1.129 in	255 lbs	1.131 in
40'-0"	21 lb/ft	1.687 in	531 lbs	1.623 in	340 lbs	1.726 in	234 lbs	1.706 in	170 lbs	1.611 in
48'-0"	13 lb/ft	2.420 in	319 lbs	2.199 in	234 lbs	2.500 in	157 lbs	2.392 in	132 lbs	2.457 in

PARTS LIST	
DIAGONALS	1" x1/8" PIPE
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CHORDS	2" x1/8" PIPE
END TUBE	2" x1/8" PIPE
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5. ALL LOADS AND SUPPORTS ARE TO BE LOCATED AT THE PANEL POINTS OF THE TRUSS ONLY.
6. SELF WEIGHT HAS BEEN CONSIDERED IN THE ANALYSIS OF THE TRUSS.
7. MAXIMUM DEFLECTION LIMITED TO SPAN/180.
8. ALLOWABLE LOADS BASED ON 2010 ALUMINUM DESIGN MANUAL. ALL CAPACITIES ARE REDUCED TO 0.85 PER ANSI E1.2-2012 FOR REPETITIVE USE MEMBERS

<b>CHRISTIE LITES</b> <b>20.5"x20.5" BOLT PLATE TRUSS</b> REPETITIVE USE	 10091 Mosteller Lane West Chester, OH 45069 513 851 1223	<b>20.5"X20.5" BOLT PLATE TRUSS</b> <b>8'-0" INCREMENTS</b>	
		DATE: 6/7/2016	<b>ST1.2</b>
		CRE PROJECT NO: 16.614.01(1)	
		DRAWN BY: EPK/DDL	



## SECTION 3

## End Plated 2 x 125 wall - Round Pipe (Chords)

Location: Anywhere, USA

### Codes and Referenced Standards

- 2012 International Building Code and 2013 California Building Code
- Aluminum Design Manual, 2010 ed.
- American Society of Civil Engineers 7-10 (ASCE 7-10) "Minimum Design Loads for Buildings and Other Structures"
- ANSI E 1.2-2012 "Manufacture and Use of Aluminum Trusses and Towers"

### Project Description

Provide allowable loading tables for 20.5 x 20.5 truss.

### Pipe Properties

Pipe diameter:  $D := 2.0\text{in}$

Pipe thickness:  $t := 0.125\text{in}$

Aluminum alloy: Alloy :=

Unbraced length (includes K-factor):  $L_b := 14.55\text{in}$

### Pipe Cross Section Properties

Inner diameter:  $D_1 := D - 2 \cdot t = 1.75 \cdot \text{in}$

Radius:  $R_x := \frac{D}{2} = 1.00 \cdot \text{in}$

Moment of inertia:  $I_x := \frac{\pi \cdot (D^4 - D_1^4)}{64} = 0.325 \cdot \text{in}^4$

Area:  $\text{Area} := \frac{\pi \cdot (D^2 - D_1^2)}{4} = 0.736 \cdot \text{in}^2$

Radius of gyration:  $r_y := \sqrt{\frac{I_x}{\text{Area}}} = 0.664 \cdot \text{in}$

Elastic section modulus:  $S_x := \frac{\pi \cdot (D^4 - D_1^4)}{32 \cdot D} = 0.325 \cdot \text{in}^3$

Alloy Properties

Safety Factors

Buckling Constants



	<u>Unwelded</u>	<u>Welded</u>
Ultimate tensile strength:	$F_{tu} = 42.00 \cdot \text{ksi}$	$F_{tuw} = 24.00 \cdot \text{ksi}$
Tensile yield strength:	$F_{ty} = 35.00 \cdot \text{ksi}$	$F_{tyw} = 15.00 \cdot \text{ksi}$
Compressive yield strength:	$F_{cy} = 35.00 \cdot \text{ksi}$	$F_{cyw} = 15.00 \cdot \text{ksi}$
Shear yield strength:	$F_{sy} = 21.00 \cdot \text{ksi}$	$F_{syw} = 9.00 \cdot \text{ksi}$
Modulus of elasticity:	$E_a = 10100 \cdot \text{ksi}$	$E_a = 10100 \cdot \text{ksi}$

End Weld

**Tension Capacity**

Section D.2a:

Welded or unwelded:

Weld<sub>D2a</sub> :=

Allowable yield stress:

$$F_{y\_D2a} := \frac{1}{\Omega_{ty}} \cdot \begin{cases} F_{ty} & \text{if Weld}_{D2a} = 1 \\ F_{tyw} & \text{otherwise} \end{cases} \quad F_{y\_D2a} = 9.09 \cdot \text{ksi}$$

Allowable tension force:

$$T_{n\_D2a} := F_{y\_D2a} \cdot \text{Area} \quad T_{n\_D2a} = 6.69 \cdot \text{kip}$$

Section D.2b:

Welded or unwelded:

Weld<sub>D2b</sub> :=

Allowable yield stress:

$$F_{y\_D2b} := \frac{1}{\Omega_{tu}} \cdot \begin{cases} F_{tu} & \text{if Weld}_{D2b} = 1 \\ F_{tuw} & \text{otherwise} \end{cases} \quad F_{y\_D2b} = 12.31 \cdot \text{ksi}$$

Allowable tension force:

$$T_{n\_D2b} := F_{y\_D2b} \cdot \text{Area} \quad T_{n\_D2b} = 9.06 \cdot \text{kip}$$

Tension Summary:

Controlling tension capacity:

$$T_{n\_pipe} := \min(T_{n\_D2a}, T_{n\_D2b}, T_{n\_weld})$$

$$T_{n\_pipe} = 6.69 \cdot \text{kip}$$

Controlling tension stress:

$$F_{t\_pipe} := \frac{T_{n\_pipe}}{\text{Area}}$$

$$F_{t\_pipe} = 9.09 \cdot \text{ksi}$$

Compression Capacity

Section E.3:

Welded or unwelded:

$$\text{Weld}_{E3} := \text{Unwelded} \downarrow$$

Slenderness limit:

$$S_{2\_E3} := \begin{cases} C_c & \text{if } \text{Weld}_{E3} = 1 \\ C_{cw} & \text{otherwise} \end{cases} = 66$$

KL/r:

$$KLr := \frac{L_b}{r_y} = 21.90$$

Allowable compressive stress:

$$F_{c\_E3} := \frac{1}{\Omega_c} \cdot \begin{cases} \text{if } KLr < S_{2\_E3} \\ \begin{cases} \min[0.85 \cdot (B_c - D_c \cdot KLr), F_{cy}] & \text{if } \text{Weld}_{E3} = 1 \\ \min[0.85 \cdot (B_{cw} - D_{cw} \cdot KLr), F_{cy}] & \text{otherwise} \end{cases} \\ \frac{0.85 \cdot \pi^2 \cdot E_a}{KLr^2} & \text{otherwise} \end{cases}$$

$$F_{c\_E3} = 17.51 \cdot \text{ksi}$$

Allowable axial load:

$$P_{n\_E3} := F_{c\_E3} \cdot \text{Area}$$

$$P_{n\_E3} = 12.89 \cdot \text{kip}$$

Section B.5.4.5:

Welded or unwelded:

Weld<sub>B545</sub> :=

Slenderness limits:

$$S_{1\_B545} := \begin{cases} \left(\frac{B_t - F_{cy}}{D_t}\right)^2 & \text{if Weld}_{B545} = 1 = 46 \\ \left(\frac{B_{tw} - F_{cyw}}{D_{tw}}\right)^2 & \text{otherwise} \end{cases}$$

$$S_{2\_B545} := \begin{cases} C_t & \text{if Weld}_{B545} = 1 = 390 \\ C_{tw} & \text{otherwise} \end{cases}$$

Rb/t:

$$Rbt := \frac{R}{t} = 8.00$$

Allowable compressive stress:

$$F_{c\_B545} := \frac{1}{\Omega_c} \cdot \begin{cases} \text{if Weld}_{B545} = 1 \\ \begin{cases} F_{cy} & \text{if } Rbt < S_{1\_B545} \\ \frac{\pi^2 \cdot E_a}{16 \cdot Rbt \cdot \left(1 + \frac{\sqrt{Rbt}}{35}\right)^2} & \text{if } Rbt > S_{2\_B545} \\ B_t - D_t \cdot \sqrt{Rbt} & \text{otherwise} \end{cases} \\ \text{otherwise} \\ \begin{cases} F_{cyw} & \text{if } Rbt < S_{1\_B545} \\ \frac{\pi^2 \cdot E_a}{16 \cdot Rbt \cdot \left(1 + \frac{\sqrt{Rbt}}{35}\right)^2} & \text{if } Rbt > S_{2\_B545} \\ B_{tw} - D_{tw} \cdot \sqrt{Rbt} & \text{otherwise} \end{cases} \end{cases}$$

$$F_{c\_B545} = 9.09 \cdot \text{ksi}$$

Allowable compressive force:

$$P_{n\_B545} := F_{c\_B545} \cdot \text{Area}$$

$$P_{n\_B545} = 6.69 \cdot \text{kip}$$

Compression Summary:

Controlling compression capacity:  $P_{n\_pipe} := \min(P_{n\_E3}, P_{n\_B545}, T_{n\_weld})$   $P_{n\_pipe} = 6.69 \cdot \text{kip}$

Controlling compressive stress:  $F_{c\_pipe} := \frac{P_{n\_pipe}}{\text{Area}}$   $F_{c\_pipe} = 9.09 \cdot \text{ksi}$

Flexure Capacity

Section F.8.1.2:

Welded or unwelded:  $\text{Weld}_{F812} :=$

Moment capacity: **Tensile yielding:**  $F_{b\_F812_1} := \frac{1}{\Omega_{by}} \cdot \begin{cases} 1.3 \cdot F_{ty} & \text{if } \text{Weld}_{F812} = 1 \\ 1.3 \cdot F_{tyw} & \text{otherwise} \end{cases}$   $F_{b\_F812_1} = 11.82 \cdot \text{ksi}$

**Tensile rupture:**  $F_{b\_F812_2} := \frac{1}{\Omega_{bu}} \cdot \begin{cases} 1.42 \cdot \frac{F_{tu}}{k_t} & \text{if } \text{Weld}_{F812} = 1 \\ 1.42 \cdot \frac{F_{tuw}}{k_t} & \text{otherwise} \end{cases}$   $F_{b\_F812_2} = 17.48 \cdot \text{ksi}$

Allowable flexural capacity:  $M_{n\_F812} := \min(F_{b\_F812}) \cdot S_x$   $M_{n\_F812} = 3.84 \cdot \text{kip} \cdot \text{in}$

Section F.6.1:

Welded or unwelded:  $\text{Weld}_{F61} :=$

Compressive yielding:  $M_{n\_F61_1} := \frac{1.17 \cdot F_{cy} \cdot S_x}{\Omega_{by}} = 8.07 \cdot \text{kip} \cdot \text{in}$

Tensile yielding:  $M_{n\_F61_2} := \frac{1.17 \cdot F_{ty} \cdot S_x}{\Omega_{by}} = 8.07 \cdot \text{kip} \cdot \text{in}$

Tensile rupture:  $M_{n\_F61_3} := \frac{1.24 \cdot F_{tu} \cdot S_x}{k_t \cdot \Omega_{bu}} = 8.68 \cdot \text{kip} \cdot \text{in}$

Flexural capacity:  $M_{n\_F61} := \min(M_{n\_F61})$   $M_{n\_F61} = 8.07 \cdot \text{kip} \cdot \text{in}$

Section F.6.2:

Welded or unwelded:

$$\text{Weld}_{F62} :=$$

Slenderness limits:

$$S_{1\_F62} := \begin{cases} \left( \frac{B_{tb} - B_t}{D_{tb} - D_t} \right)^2 & \text{if } \text{Weld}_{F62} = 1 \\ \left( \frac{B_{tbw} - B_{tw}}{D_{tbw} - D_{tw}} \right)^2 & \text{otherwise} \end{cases} = 121$$

$$S_{2\_F62} := \begin{cases} C_t & \text{if } \text{Weld}_{F62} = 1 \\ C_{tw} & \text{otherwise} \end{cases} = 390$$

Rb/t:

$$R_{bt} = 8.00$$

Allowable flexural stress:

$$F_{b\_F62} := \frac{1}{\Omega_{by}} \cdot \begin{cases} \begin{cases} B_{tb} - D_{tb} \cdot \sqrt{R_{bt}} & \text{if } R_{bt} < S_{1\_F62} \\ \frac{\pi^2 \cdot E_a}{16 \cdot R_{bt} \cdot \left( 1 + \frac{\sqrt{R_{bt}}}{35} \right)^2} & \text{if } R_{bt} > S_{2\_F62} \\ B_t - D_t \cdot \sqrt{R_{bt}} & \text{otherwise} \end{cases} \\ \text{otherwise} \\ \begin{cases} B_{tbw} - D_{tbw} \cdot \sqrt{R_{bt}} & \text{if } R_{bt} < S_{1\_F62} \\ \frac{\pi^2 \cdot E_a}{16 \cdot R_{bt} \cdot \left( 1 + \frac{\sqrt{R_{bt}}}{35} \right)^2} & \text{if } R_{bt} > S_{2\_F62} \\ B_{tw} - D_{tw} \cdot \sqrt{R_{bt}} & \text{otherwise} \end{cases} \end{cases}$$

$$F_{b\_F62} = 15.05 \cdot \text{ksi}$$

Allowable flexural capacity:

$$M_{n\_F62} := F_{b\_F62} \cdot S_x$$

$$M_{n\_F62} = 4.89 \cdot \text{kip-in}$$

Flexural Summary:

Controlling flexural capacity:  $M_{n\_pipe} := \min(M_{n\_F812}, M_{n\_F61}, M_{n\_F62})$   $M_{n\_pipe} = 3.84 \cdot \text{kip} \cdot \text{in}$

Controlling flexural stress:  $F_{b\_pipe} := \frac{M_{n\_pipe}}{S_x}$   $F_{b\_pipe} = 11.82 \cdot \text{ksi}$

Shear capacity

Section G.3:

Welded or unwelded:  $Weld_{G3} :=$  Welded

Slenderness limits:  $S_{1\_G3} := \begin{cases} \frac{1.3 \cdot B_s - F_{sy}}{1.63 \cdot D_s} & \text{if } Weld_{G3} = 1 \\ \frac{1.3 \cdot B_{sw} - F_{syw}}{1.63 \cdot D_{sw}} & \text{otherwise} \end{cases} = 80$

$S_{2\_G3} := \begin{cases} \frac{C_s}{1.25} & \text{if } Weld_{G3} = 1 \\ \frac{C_{sw}}{1.25} & \text{otherwise} \end{cases} = 126$

Length of tube from maximum to zero force:  $L_v := 12 \text{in}$

$\lambda_t := 2.9 \cdot (Rbt)^{\frac{5}{8}} \cdot \sqrt{\frac{L_v}{R}} = 19.80$

Allowable shear stress:

$$F_{v\_G3} := \frac{1}{\Omega_v} \cdot \begin{cases} \text{if Weld}_{G3} = 1 \\ \left| \begin{array}{l} F_{sy} \text{ if } \lambda_t < S1\_G3 \\ \frac{1.3 \cdot \pi^2 \cdot E_a}{(1.25 \cdot \lambda_t)^2} \text{ if } \lambda_t > S2\_G3 \\ 1.3 \cdot B_s - 1.63 \cdot D_s \cdot \lambda_t \text{ otherwise} \end{array} \right. \\ \text{otherwise} \\ \left| \begin{array}{l} F_{syw} \text{ if } \lambda_t < S1\_G3 \\ \frac{1.3 \cdot \pi^2 \cdot E_a}{(1.25 \cdot \lambda_t)^2} \text{ if } \lambda_t > S2\_G3 \\ 1.3 \cdot B_{sw} - 1.63 \cdot D_{sw} \cdot \lambda_t \text{ otherwise} \end{array} \right. \end{cases}$$

$$F_{v\_G3} = 5.45 \cdot \text{ksi}$$

Allowable shear capacity:

$$V_{n\_G3} := F_{v\_G3} \cdot \frac{\text{Area}}{2}$$

$$V_{n\_G3} = 2.01 \cdot \text{kip}$$

Shear Summary:

Controlling shear capacity:

$$V_{n\_pipe} := \min(V_{n\_G3}, V_{n\_weld})$$

$$V_{n\_pipe} = 2.01 \cdot \text{kip}$$

Controlling shear stress:

$$F_{v\_pipe} := \frac{V_{n\_pipe}}{\text{Area}} \cdot 2$$

$$F_{v\_pipe} = 5.45 \cdot \text{ksi}$$

Component summary:

	<u>Allowable Force</u>	<u>Allowable Stress</u>
Tension capacity:	$T_{n\_pipe} = 6.69 \cdot \text{kip}$	$F_{t\_pipe} = 9.09 \cdot \text{ksi}$
Compressive capacity:	$P_{n\_pipe} = 6.69 \cdot \text{kip}$	$F_{c\_pipe} = 9.09 \cdot \text{ksi}$
Moment capacity:	$M_{n\_pipe} = 3.84 \cdot \text{kip} \cdot \text{in}$	$F_{b\_pipe} = 11.82 \cdot \text{ksi}$
Shear capacity:	$V_{n\_pipe} = 2.01 \cdot \text{kip}$	$F_{v\_pipe} = 5.45 \cdot \text{ksi}$

## End Plated 2 x 125 wall - Round Pipe (Horizontals)

Location: Anywhere, USA

### Codes and Referenced Standards

- 2012 International Building Code and 2013 California Building Code
- Aluminum Design Manual, 2010 ed.
- American Society of Civil Engineers 7-10 (ASCE 7-10) "Minimum Design Loads for Buildings and Other Structures"
- ANSI E 1.2-2012 "Manufacture and Use of Aluminum Trusses and Towers"

### Project Description

Provide allowable loading tables for 12x18 box truss.

### Pipe Properties

Pipe diameter:  $D := 2.0\text{in}$

Pipe thickness:  $t := 0.125\text{in}$

Aluminum alloy: Alloy :=

Unbraced length (includes K-factor):  $L_b := 14.75\text{in}$

### Pipe Cross Section Properties

Inner diameter:  $D_1 := D - 2 \cdot t = 1.75 \cdot \text{in}$

Radius:  $R_x := \frac{D}{2} = 1.00 \cdot \text{in}$

Moment of inertia:  $I_x := \frac{\pi \cdot (D^4 - D_1^4)}{64} = 0.325 \cdot \text{in}^4$

Area:  $\text{Area} := \frac{\pi \cdot (D^2 - D_1^2)}{4} = 0.736 \cdot \text{in}^2$

Radius of gyration:  $r_y := \sqrt{\frac{I_x}{\text{Area}}} = 0.664 \cdot \text{in}$

Elastic section modulus:  $S_x := \frac{\pi \cdot (D^4 - D_1^4)}{32 \cdot D} = 0.325 \cdot \text{in}^3$

Alloy Properties

Safety Factors

Buckling Constants



	<u>Unwelded</u>	<u>Welded</u>
Ultimate tensile strength:	$F_{tu} = 42.00 \cdot \text{ksi}$	$F_{tuw} = 24.00 \cdot \text{ksi}$
Tensile yield strength:	$F_{ty} = 35.00 \cdot \text{ksi}$	$F_{tyw} = 15.00 \cdot \text{ksi}$
Compressive yield strength:	$F_{cy} = 35.00 \cdot \text{ksi}$	$F_{cyw} = 15.00 \cdot \text{ksi}$
Shear yield strength:	$F_{sy} = 21.00 \cdot \text{ksi}$	$F_{syw} = 9.00 \cdot \text{ksi}$
Modulus of elasticity:	$E_a = 10100 \cdot \text{ksi}$	$E_a = 10100 \cdot \text{ksi}$

End Weld

**Tension Capacity**

Section D.2a:

Welded or unwelded:

Weld<sub>D2a</sub> :=

Allowable yield stress:

$$F_{y\_D2a} := \frac{1}{\Omega_{ty}} \cdot \begin{cases} F_{ty} & \text{if Weld}_{D2a} = 1 \\ F_{tyw} & \text{otherwise} \end{cases}$$

$F_{y\_D2a} = 9.09 \cdot \text{ksi}$

Allowable tension force:

$T_{n\_D2a} := F_{y\_D2a} \cdot \text{Area}$

$T_{n\_D2a} = 6.69 \cdot \text{kip}$

Section D.2b:

Welded or unwelded:

Weld<sub>D2b</sub> :=

Allowable yield stress:

$$F_{y\_D2b} := \frac{1}{\Omega_{tu}} \cdot \begin{cases} F_{tu} & \text{if Weld}_{D2b} = 1 \\ F_{tuw} & \text{otherwise} \end{cases}$$

$F_{y\_D2b} = 12.31 \cdot \text{ksi}$

Allowable tension force:

$T_{n\_D2b} := F_{y\_D2b} \cdot \text{Area}$

$T_{n\_D2b} = 9.06 \cdot \text{kip}$

Tension Summary:

Controlling tension capacity:

$$T_{n\_pipe} := \min(T_{n\_D2a}, T_{n\_D2b}, T_{n\_weld})$$

$$T_{n\_pipe} = 6.69 \cdot \text{kip}$$

Controlling tension stress:

$$F_{t\_pipe} := \frac{T_{n\_pipe}}{\text{Area}}$$

$$F_{t\_pipe} = 9.09 \cdot \text{ksi}$$

Compression Capacity

Section E.3:

Welded or unwelded:

$$\text{Weld}_{E3} := \text{Unwelded} \downarrow$$

Slenderness limit:

$$S_{2\_E3} := \begin{cases} C_c & \text{if } \text{Weld}_{E3} = 1 \\ C_{cw} & \text{otherwise} \end{cases} = 66$$

KL/r:

$$KLr := \frac{L_b}{r_y} = 22.20$$

Allowable compressive stress:

$$F_{c\_E3} := \frac{1}{\Omega_c} \cdot \begin{cases} \text{if } KLr < S_{2\_E3} \\ \begin{cases} \min[0.85 \cdot (B_c - D_c \cdot KLr), F_{cy}] & \text{if } \text{Weld}_{E3} = 1 \\ \min[0.85 \cdot (B_{cw} - D_{cw} \cdot KLr), F_{cy}] & \text{otherwise} \end{cases} \\ \frac{0.85 \cdot \pi^2 \cdot E_a}{KLr^2} & \text{otherwise} \end{cases}$$

$$F_{c\_E3} = 17.47 \cdot \text{ksi}$$

Allowable axial load:

$$P_{n\_E3} := F_{c\_E3} \cdot \text{Area}$$

$$P_{n\_E3} = 12.86 \cdot \text{kip}$$

Section B.5.4.5:

Welded or unwelded:

Weld<sub>B545</sub> :=

Slenderness limits:

$$S_{1\_B545} := \begin{cases} \left(\frac{B_t - F_{cy}}{D_t}\right)^2 & \text{if Weld}_{B545} = 1 = 46 \\ \left(\frac{B_{tw} - F_{cyw}}{D_{tw}}\right)^2 & \text{otherwise} \end{cases}$$

$$S_{2\_B545} := \begin{cases} C_t & \text{if Weld}_{B545} = 1 = 390 \\ C_{tw} & \text{otherwise} \end{cases}$$

Rb/t:

$$R_{bt} := \frac{R}{t} = 8.00$$

Allowable compressive stress:

$$F_{c\_B545} := \frac{1}{\Omega_c} \cdot \begin{cases} \text{if Weld}_{B545} = 1 \\ \begin{cases} F_{cy} & \text{if } R_{bt} < S_{1\_B545} \\ \frac{\pi^2 \cdot E_a}{16 \cdot R_{bt} \cdot \left(1 + \frac{\sqrt{R_{bt}}}{35}\right)^2} & \text{if } R_{bt} > S_{2\_B545} \\ B_t - D_t \cdot \sqrt{R_{bt}} & \text{otherwise} \end{cases} \\ \text{otherwise} \\ \begin{cases} F_{cyw} & \text{if } R_{bt} < S_{1\_B545} \\ \frac{\pi^2 \cdot E_a}{16 \cdot R_{bt} \cdot \left(1 + \frac{\sqrt{R_{bt}}}{35}\right)^2} & \text{if } R_{bt} > S_{2\_B545} \\ B_{tw} - D_{tw} \cdot \sqrt{R_{bt}} & \text{otherwise} \end{cases} \end{cases}$$

$$F_{c\_B545} = 9.09 \cdot \text{ksi}$$

Allowable compressive force:

$$P_{n\_B545} := F_{c\_B545} \cdot \text{Area}$$

$$P_{n\_B545} = 6.69 \cdot \text{kip}$$

Compression Summary:

Controlling compression capacity:  $P_{n\_pipe} := \min(P_{n\_E3}, P_{n\_B545}, T_{n\_weld})$   $P_{n\_pipe} = 6.69 \cdot \text{kip}$

Controlling compressive stress:  $F_{c\_pipe} := \frac{P_{n\_pipe}}{\text{Area}}$   $F_{c\_pipe} = 9.09 \cdot \text{ksi}$

Flexure Capacity

Section F.8.1.2:

Welded or unwelded:  $\text{Weld}_{F812} :=$  Welded

Moment capacity: **Tensile yielding:**  $F_{b\_F812_1} := \frac{1}{\Omega_{by}} \cdot \begin{cases} 1.3 \cdot F_{ty} & \text{if } \text{Weld}_{F812} = 1 \\ 1.3 \cdot F_{tyw} & \text{otherwise} \end{cases}$   $F_{b\_F812_1} = 11.82 \cdot \text{ksi}$

**Tensile rupture:**  $F_{b\_F812_2} := \frac{1}{\Omega_{bu}} \cdot \begin{cases} 1.42 \cdot \frac{F_{tu}}{k_t} & \text{if } \text{Weld}_{F812} = 1 \\ 1.42 \cdot \frac{F_{tuw}}{k_t} & \text{otherwise} \end{cases}$   $F_{b\_F812_2} = 17.48 \cdot \text{ksi}$

Allowable flexural capacity:  $M_{n\_F812} := \min(F_{b\_F812}) \cdot S_x$   $M_{n\_F812} = 3.84 \cdot \text{kip} \cdot \text{in}$

Section F.6.1:

Welded or unwelded:  $\text{Weld}_{F61} :=$  Welded

Compressive yielding:  $M_{n\_F61_1} := \frac{1.17 \cdot F_{cy} \cdot S_x}{\Omega_{by}} = 8.07 \cdot \text{kip} \cdot \text{in}$

Tensile yielding:  $M_{n\_F61_2} := \frac{1.17 \cdot F_{ty} \cdot S_x}{\Omega_{by}} = 8.07 \cdot \text{kip} \cdot \text{in}$

Tensile rupture:  $M_{n\_F61_3} := \frac{1.24 \cdot F_{tu} \cdot S_x}{k_t \cdot \Omega_{bu}} = 8.68 \cdot \text{kip} \cdot \text{in}$

Flexural capacity:  $M_{n\_F61} := \min(M_{n\_F61})$   $M_{n\_F61} = 8.07 \cdot \text{kip} \cdot \text{in}$

Section F.6.2:

Welded or unwelded: Weld<sub>F62</sub> :=

Slenderness limits:  $S_{1\_F62} := \begin{cases} \left(\frac{B_{tb} - B_t}{D_{tb} - D_t}\right)^2 & \text{if Weld}_{F62} = 1 \\ \left(\frac{B_{tbw} - B_{tw}}{D_{tbw} - D_{tw}}\right)^2 & \text{otherwise} \end{cases} = 121$

$S_{2\_F62} := \begin{cases} C_t & \text{if Weld}_{F62} = 1 \\ C_{tw} & \text{otherwise} \end{cases} = 390$

Rb/t: Rbt = 8.00

Allowable flexural stress:  $F_{b\_F62} := \frac{1}{\Omega_{by}} \cdot \begin{cases} \begin{cases} B_{tb} - D_{tb} \cdot \sqrt{Rbt} & \text{if } Rbt < S_{1\_F62} \\ \frac{\pi^2 \cdot E_a}{16 \cdot Rbt \cdot \left(1 + \frac{\sqrt{Rbt}}{35}\right)^2} & \text{if } Rbt > S_{2\_F62} \\ B_t - D_t \cdot \sqrt{Rbt} & \text{otherwise} \end{cases} & \text{if Weld}_{F62} = 1 \\ \begin{cases} B_{tbw} - D_{tbw} \cdot \sqrt{Rbt} & \text{if } Rbt < S_{1\_F62} \\ \frac{\pi^2 \cdot E_a}{16 \cdot Rbt \cdot \left(1 + \frac{\sqrt{Rbt}}{35}\right)^2} & \text{if } Rbt > S_{2\_F62} \\ B_{tw} - D_{tw} \cdot \sqrt{Rbt} & \text{otherwise} \end{cases} & \text{otherwise} \end{cases}$  F<sub>b\_F62</sub> = 15.05·ksi

Allowable flexural capacity:  $M_{n\_F62} := F_{b\_F62} \cdot S_x$  M<sub>n\_F62</sub> = 4.89·kip·in

Flexural Summary:

Controlling flexural capacity:  $M_{n\_pipe} := \min(M_{n\_F812}, M_{n\_F61}, M_{n\_F62})$   $M_{n\_pipe} = 3.84 \cdot \text{kip} \cdot \text{in}$

Controlling flexural stress:  $F_{b\_pipe} := \frac{M_{n\_pipe}}{S_x}$   $F_{b\_pipe} = 11.82 \cdot \text{ksi}$

Shear capacity

Section G.3:

Welded or unwelded:  $Weld_{G3} :=$  Welded

Slenderness limits:  $S_{1\_G3} := \begin{cases} \frac{1.3 \cdot B_s - F_{sy}}{1.63 \cdot D_s} & \text{if } Weld_{G3} = 1 \\ \frac{1.3 \cdot B_{sw} - F_{syw}}{1.63 \cdot D_{sw}} & \text{otherwise} \end{cases} = 80$

$S_{2\_G3} := \begin{cases} \frac{C_s}{1.25} & \text{if } Weld_{G3} = 1 \\ \frac{C_{sw}}{1.25} & \text{otherwise} \end{cases} = 126$

Length of tube from maximum to zero force:  $L_v := 12 \text{in}$

$\lambda_t := 2.9 \cdot (Rbt)^{\frac{5}{8}} \cdot \sqrt{\frac{L_v}{R}} = 19.80$

Allowable shear stress:

$$F_{v\_G3} := \frac{1}{\Omega_v} \cdot \begin{cases} \text{if Weld}_{G3} = 1 \\ \left| \begin{array}{l} F_{sy} \text{ if } \lambda_t < S1\_G3 \\ \frac{1.3 \cdot \pi^2 \cdot E_a}{(1.25 \cdot \lambda_t)^2} \text{ if } \lambda_t > S2\_G3 \\ 1.3 \cdot B_s - 1.63 \cdot D_s \cdot \lambda_t \text{ otherwise} \end{array} \right. \\ \text{otherwise} \\ \left| \begin{array}{l} F_{syw} \text{ if } \lambda_t < S1\_G3 \\ \frac{1.3 \cdot \pi^2 \cdot E_a}{(1.25 \cdot \lambda_t)^2} \text{ if } \lambda_t > S2\_G3 \\ 1.3 \cdot B_{sw} - 1.63 \cdot D_{sw} \cdot \lambda_t \text{ otherwise} \end{array} \right. \end{cases}$$

$$F_{v\_G3} = 5.45 \cdot \text{ksi}$$

Allowable shear capacity:

$$V_{n\_G3} := F_{v\_G3} \cdot \frac{\text{Area}}{2}$$

$$V_{n\_G3} = 2.01 \cdot \text{kip}$$

Shear Summary:

Controlling shear capacity:

$$V_{n\_pipe} := \min(V_{n\_G3}, V_{n\_weld})$$

$$V_{n\_pipe} = 2.01 \cdot \text{kip}$$

Controlling shear stress:

$$F_{v\_pipe} := \frac{V_{n\_pipe}}{\text{Area}} \cdot 2$$

$$F_{v\_pipe} = 5.45 \cdot \text{ksi}$$

Component summary:

	<u>Allowable Force</u>	<u>Allowable Stress</u>
Tension capacity:	$T_{n\_pipe} = 6.69 \cdot \text{kip}$	$F_{t\_pipe} = 9.09 \cdot \text{ksi}$
Compressive capacity:	$P_{n\_pipe} = 6.69 \cdot \text{kip}$	$F_{c\_pipe} = 9.09 \cdot \text{ksi}$
Moment capacity:	$M_{n\_pipe} = 3.84 \cdot \text{kip} \cdot \text{in}$	$F_{b\_pipe} = 11.82 \cdot \text{ksi}$
Shear capacity:	$V_{n\_pipe} = 2.01 \cdot \text{kip}$	$F_{v\_pipe} = 5.45 \cdot \text{ksi}$

## End Plated 20.5 x 20.5 Box Truss- Round Pipe (Diags)

Location: Anywhere, USA

### Codes and Referenced Standards

- 2012 International Building Code and 2013 California Building Code
- Aluminum Design Manual, 2010 ed.
- American Society of Civil Engineers 7-10 (ASCE 7-10) "Minimum Design Loads for Buildings and Other Structures"
- ANSI E 1.2-2012 "Manufacture and Use of Aluminum Trusses and Towers"

### Project Description

Provide allowable loading tables for 20.5 x 20.5 box truss.

### Pipe Properties

Pipe diameter:  $D := 1.0\text{in}$

Pipe thickness:  $t := 0.125\text{in}$

Aluminum alloy: Alloy :=

Unbraced length (includes K-factor):  $L_b := 23.845\text{in}$

### Pipe Cross Section Properties

Inner diameter:  $D_1 := D - 2 \cdot t = 0.75 \cdot \text{in}$

Radius:  $R_x := \frac{D}{2} = 0.50 \cdot \text{in}$

Moment of inertia:  $I_x := \frac{\pi \cdot (D^4 - D_1^4)}{64} = 0.034 \cdot \text{in}^4$

Area:  $\text{Area} := \frac{\pi \cdot (D^2 - D_1^2)}{4} = 0.344 \cdot \text{in}^2$

Radius of gyration:  $r_y := \sqrt{\frac{I_x}{\text{Area}}} = 0.313 \cdot \text{in}$

Elastic section modulus:  $S_x := \frac{\pi \cdot (D^4 - D_1^4)}{32 \cdot D} = 0.067 \cdot \text{in}^3$

Alloy Properties

Safety Factors

Buckling Constants



	<u>Unwelded</u>	<u>Welded</u>
Ultimate tensile strength:	$F_{tu} = 42.00 \cdot \text{ksi}$	$F_{tuw} = 24.00 \cdot \text{ksi}$
Tensile yield strength:	$F_{ty} = 35.00 \cdot \text{ksi}$	$F_{tyw} = 15.00 \cdot \text{ksi}$
Compressive yield strength:	$F_{cy} = 35.00 \cdot \text{ksi}$	$F_{cyw} = 15.00 \cdot \text{ksi}$
Shear yield strength:	$F_{sy} = 21.00 \cdot \text{ksi}$	$F_{syw} = 9.00 \cdot \text{ksi}$
Modulus of elasticity:	$E_a = 10100 \cdot \text{ksi}$	$E_a = 10100 \cdot \text{ksi}$

End Weld

**Tension Capacity**

**Section D.2a:**

Welded or unwelded:

$Weld_{D2a} :=$

Allowable yield stress:

$$F_{y\_D2a} := \frac{1}{\Omega_{ty}} \cdot \begin{cases} F_{ty} & \text{if } Weld_{D2a} = 1 \\ F_{tyw} & \text{otherwise} \end{cases} \quad F_{y\_D2a} = 9.09 \cdot \text{ksi}$$

Allowable tension force:

$$T_{n\_D2a} := F_{y\_D2a} \cdot Area \quad T_{n\_D2a} = 3.12 \cdot \text{kip}$$

**Section D.2b:**

Welded or unwelded:

$Weld_{D2b} :=$

Allowable yield stress:

$$F_{y\_D2b} := \frac{1}{\Omega_{tu}} \cdot \begin{cases} F_{tu} & \text{if } Weld_{D2b} = 1 \\ F_{tuw} & \text{otherwise} \end{cases} \quad F_{y\_D2b} = 12.31 \cdot \text{ksi}$$

Allowable tension force:

$$T_{n\_D2b} := F_{y\_D2b} \cdot Area \quad T_{n\_D2b} = 4.23 \cdot \text{kip}$$

Tension Summary:

Controlling tension capacity:  $T_{n\_pipe} := \min(T_{n\_D2a}, T_{n\_D2b}, T_{n\_weld})$   $T_{n\_pipe} = 3.12 \cdot \text{kip}$

Controlling tension stress:  $F_{t\_pipe} := \frac{T_{n\_pipe}}{\text{Area}}$   $F_{t\_pipe} = 9.09 \cdot \text{ksi}$

Compression Capacity

Section E.3:

Welded or unwelded:  $\text{Weld}_{E3} :=$

Slenderness limit:  $S_{2\_E3} := \begin{cases} C_c & \text{if } \text{Weld}_{E3} = 1 \\ C_{cw} & \text{otherwise} \end{cases} = 66$

KL/r:  $KLr := \frac{L_b}{r_y} = 76.30$

Allowable compressive stress:  $F_{c\_E3} := \frac{1}{\Omega_c} \cdot \begin{cases} \text{if } KLr < S_{2\_E3} \\ \min[0.85 \cdot (B_c - D_c \cdot KLr), F_{cy}] & \text{if } \text{Weld}_{E3} = 1 \\ \min[0.85 \cdot (B_{cw} - D_{cw} \cdot KLr), F_{cy}] & \text{otherwise} \\ \frac{0.85 \cdot \pi^2 \cdot E_a}{KLr^2} & \text{otherwise} \end{cases}$   $F_{c\_E3} = 8.82 \cdot \text{ksi}$

Allowable axial load:  $P_{n\_E3} := F_{c\_E3} \cdot \text{Area}$   $P_{n\_E3} = 3.03 \cdot \text{kip}$

Section B.5.4.5:

Welded or unwelded:  $Weld_{B545} :=$

Slenderness limits:  $S_{1\_B545} := \begin{cases} \left(\frac{B_t - F_{cy}}{D_t}\right)^2 & \text{if } Weld_{B545} = 1 = 46 \\ \left(\frac{B_{tw} - F_{cyw}}{D_{tw}}\right)^2 & \text{otherwise} \end{cases}$

$$S_{2\_B545} := \begin{cases} C_t & \text{if } Weld_{B545} = 1 = 390 \\ C_{tw} & \text{otherwise} \end{cases}$$

Rb/t:  $Rbt := \frac{R}{t} = 4.00$

Allowable compressive stress:  $F_{c\_B545} := \frac{1}{\Omega_c} \cdot \begin{cases} \text{if } Weld_{B545} = 1 \\ \begin{cases} F_{cy} & \text{if } Rbt < S_{1\_B545} \\ \frac{\pi^2 \cdot E_a}{16 \cdot Rbt \cdot \left(1 + \frac{\sqrt{Rbt}}{35}\right)^2} & \text{if } Rbt > S_{2\_B545} \\ B_t - D_t \cdot \sqrt{Rbt} & \text{otherwise} \end{cases} \\ \text{otherwise} \\ \begin{cases} F_{cyw} & \text{if } Rbt < S_{1\_B545} \\ \frac{\pi^2 \cdot E_a}{16 \cdot Rbt \cdot \left(1 + \frac{\sqrt{Rbt}}{35}\right)^2} & \text{if } Rbt > S_{2\_B545} \\ B_{tw} - D_{tw} \cdot \sqrt{Rbt} & \text{otherwise} \end{cases} \end{cases}$   $F_{c\_B545} = 9.09 \cdot \text{ksi}$

Allowable compressive force:  $P_{n\_B545} := F_{c\_B545} \cdot \text{Area}$   $P_{n\_B545} = 3.12 \cdot \text{kip}$

Compression Summary:

Controlling compression capacity:  $P_{n\_pipe} := \min(P_{n\_E3}, P_{n\_B545}, T_{n\_weld})$   $P_{n\_pipe} = 3.03 \cdot \text{kip}$

Controlling compressive stress:  $F_{c\_pipe} := \frac{P_{n\_pipe}}{\text{Area}}$   $F_{c\_pipe} = 8.82 \cdot \text{ksi}$

Flexure Capacity

Section F.8.1.2:

Welded or unwelded:  $\text{Weld}_{F812} :=$

Moment capacity: **Tensile yielding:**  $F_{b\_F812_1} := \frac{1}{\Omega_{by}} \cdot \begin{cases} 1.3 \cdot F_{ty} & \text{if } \text{Weld}_{F812} = 1 \\ 1.3 \cdot F_{tyw} & \text{otherwise} \end{cases}$   $F_{b\_F812_1} = 11.82 \cdot \text{ksi}$

**Tensile rupture:**  $F_{b\_F812_2} := \frac{1}{\Omega_{bu}} \cdot \begin{cases} 1.42 \cdot \frac{F_{tu}}{k_t} & \text{if } \text{Weld}_{F812} = 1 \\ 1.42 \cdot \frac{F_{tuw}}{k_t} & \text{otherwise} \end{cases}$   $F_{b\_F812_2} = 17.48 \cdot \text{ksi}$

Allowable flexural capacity:  $M_{n\_F812} := \min(F_{b\_F812}) \cdot S_x$   $M_{n\_F812} = 0.79 \cdot \text{kip} \cdot \text{in}$

Section F.6.1:

Welded or unwelded:  $\text{Weld}_{F61} :=$

Compressive yielding:  $M_{n\_F61_1} := \frac{1.17 \cdot F_{cy} \cdot S_x}{\Omega_{by}} = 1.67 \cdot \text{kip} \cdot \text{in}$

Tensile yielding:  $M_{n\_F61_2} := \frac{1.17 \cdot F_{ty} \cdot S_x}{\Omega_{by}} = 1.67 \cdot \text{kip} \cdot \text{in}$

Tensile rupture:  $M_{n\_F61_3} := \frac{1.24 \cdot F_{tu} \cdot S_x}{k_t \cdot \Omega_{bu}} = 1.79 \cdot \text{kip} \cdot \text{in}$

Flexural capacity:  $M_{n\_F61} := \min(M_{n\_F61})$   $M_{n\_F61} = 1.67 \cdot \text{kip} \cdot \text{in}$

Section F.6.2:

Welded or unwelded:

$$\text{Weld}_{F62} :=$$

Slenderness limits:

$$S_{1\_F62} := \begin{cases} \left( \frac{B_{tb} - B_t}{D_{tb} - D_t} \right)^2 & \text{if } \text{Weld}_{F62} = 1 \\ \left( \frac{B_{tbw} - B_{tw}}{D_{tbw} - D_{tw}} \right)^2 & \text{otherwise} \end{cases} = 121$$

$$S_{2\_F62} := \begin{cases} C_t & \text{if } \text{Weld}_{F62} = 1 \\ C_{tw} & \text{otherwise} \end{cases} = 390$$

Rb/t:

$$R_{bt} = 4.00$$

Allowable flexural stress:

$$F_{b\_F62} := \frac{1}{\Omega_{by}} \cdot \begin{cases} \text{if } \text{Weld}_{F62} = 1 \\ \begin{cases} B_{tb} - D_{tb} \cdot \sqrt{R_{bt}} & \text{if } R_{bt} < S_{1\_F62} \\ \frac{\pi^2 \cdot E_a}{16 \cdot R_{bt} \cdot \left( 1 + \frac{\sqrt{R_{bt}}}{35} \right)^2} & \text{if } R_{bt} > S_{2\_F62} \\ B_t - D_t \cdot \sqrt{R_{bt}} & \text{otherwise} \end{cases} \\ \text{otherwise} \\ \begin{cases} B_{tbw} - D_{tbw} \cdot \sqrt{R_{bt}} & \text{if } R_{bt} < S_{1\_F62} \\ \frac{\pi^2 \cdot E_a}{16 \cdot R_{bt} \cdot \left( 1 + \frac{\sqrt{R_{bt}}}{35} \right)^2} & \text{if } R_{bt} > S_{2\_F62} \\ B_{tw} - D_{tw} \cdot \sqrt{R_{bt}} & \text{otherwise} \end{cases} \end{cases}$$

$$F_{b\_F62} = 15.82 \cdot \text{ksi}$$

Allowable flexural capacity:

$$M_{n\_F62} := F_{b\_F62} \cdot S_x$$

$$M_{n\_F62} = 1.06 \cdot \text{kip-in}$$

Flexural Summary:

Controlling flexural capacity:  $M_{n\_pipe} := \min(M_{n\_F812}, M_{n\_F61}, M_{n\_F62})$   $M_{n\_pipe} = 0.79 \cdot \text{kip} \cdot \text{in}$

Controlling flexural stress:  $F_{b\_pipe} := \frac{M_{n\_pipe}}{S_x}$   $F_{b\_pipe} = 11.82 \cdot \text{ksi}$

Shear capacity

Section G.3:

Welded or unwelded:  $\text{Weld}_{G3} :=$

Slenderness limits:  $S_{1\_G3} := \begin{cases} \frac{1.3 \cdot B_s - F_{sy}}{1.63 \cdot D_s} & \text{if } \text{Weld}_{G3} = 1 \\ \frac{1.3 \cdot B_{sw} - F_{syw}}{1.63 \cdot D_{sw}} & \text{otherwise} \end{cases} = 80$

$S_{2\_G3} := \begin{cases} \frac{C_s}{1.25} & \text{if } \text{Weld}_{G3} = 1 \\ \frac{C_{sw}}{1.25} & \text{otherwise} \end{cases} = 126$

Length of tube from maximum to zero force:  $L_v := 12 \text{in}$

$\lambda_t := 2.9 \cdot (Rbt)^{\frac{5}{8}} \cdot \sqrt{\frac{L_v}{R}} = 15.27$

Allowable shear stress:

$$F_{v\_G3} := \frac{1}{\Omega_v} \cdot \begin{cases} \text{if Weld}_{G3} = 1 \\ \left| \begin{array}{l} F_{sy} \text{ if } \lambda_t < S_{1\_G3} \\ \frac{1.3 \cdot \pi^2 \cdot E_a}{(1.25 \cdot \lambda_t)^2} \text{ if } \lambda_t > S_{2\_G3} \\ 1.3 \cdot B_s - 1.63 \cdot D_s \cdot \lambda_t \text{ otherwise} \end{array} \right. \\ \text{otherwise} \\ \left| \begin{array}{l} F_{syw} \text{ if } \lambda_t < S_{1\_G3} \\ \frac{1.3 \cdot \pi^2 \cdot E_a}{(1.25 \cdot \lambda_t)^2} \text{ if } \lambda_t > S_{2\_G3} \\ 1.3 \cdot B_{sw} - 1.63 \cdot D_{sw} \cdot \lambda_t \text{ otherwise} \end{array} \right. \end{cases}$$

$F_{v\_G3} = 5.45 \cdot \text{ksi}$

Allowable shear capacity:

$V_{n\_G3} := F_{v\_G3} \cdot \frac{\text{Area}}{2}$

$V_{n\_G3} = 0.94 \cdot \text{kip}$

Shear Summary:

Controlling shear capacity:

$V_{n\_pipe} := \min(V_{n\_G3}, V_{n\_weld})$

$V_{n\_pipe} = 0.94 \cdot \text{kip}$

Controlling shear stress:

$F_{v\_pipe} := \frac{V_{n\_pipe}}{\text{Area}} \cdot 2$

$F_{v\_pipe} = 5.45 \cdot \text{ksi}$

Component summary:

	<u>Allowable Force</u>	<u>Allowable Stress</u>
Tension capacity:	$T_{n\_pipe} = 3.12 \cdot \text{kip}$	$F_{t\_pipe} = 9.09 \cdot \text{ksi}$
Compressive capacity:	$P_{n\_pipe} = 3.03 \cdot \text{kip}$	$F_{c\_pipe} = 8.82 \cdot \text{ksi}$
Moment capacity:	$M_{n\_pipe} = 0.79 \cdot \text{kip} \cdot \text{in}$	$F_{b\_pipe} = 11.82 \cdot \text{ksi}$
Shear capacity:	$V_{n\_pipe} = 0.94 \cdot \text{kip}$	$F_{v\_pipe} = 5.45 \cdot \text{ksi}$

Weld of Diagonal to Chord

*Per J.2.2.2 stress on a fillet weld shall be considered to be shear for any direction of applied load.*

Filler shear ultimate (4043):

$$F_{\text{sufiller}} := 11.5 \text{ ksi}$$

Base metal shear ultimate welded (6005A-T61):

$$F_{\text{suw}} = 15.00 \cdot \text{ksi}$$

Base metal tensile ultimate welded (6005A-T61):

$$F_{\text{tuw}} = 24.00 \cdot \text{ksi}$$

Safety factor

$$n_u := 1.95$$

Angle of diagonal to horizontal:

$$\theta_d := 45 \cdot \text{deg}$$

Length of weld

$$L_{\text{weld}} := \pi \sqrt{2 \cdot \left[ \left( \frac{D}{\sin(\theta_d)} \cdot 0.5 \right)^2 + (D \cdot 0.5)^2 \right]} \quad \text{ellipse} \quad L_{\text{weld}} = 3.85 \cdot \text{in}$$

Size of weld

$$S_{\text{weld}} := \frac{1}{4} \text{ in}$$

Weld section modulus:

$$S_w := (0.5 \cdot D)^2 \cdot \pi \quad S_w = 0.79 \cdot \frac{\text{in}^3}{\text{in}} \quad \text{assuming weld is round}$$

Effective throat of fillet weld

$$E_{\text{weld}} := S_{\text{weld}} \frac{\sqrt{2}}{2} \quad E_{\text{weld}} = 0.1768 \cdot \text{in}$$

Nominal weld stress:

$$F_{\text{sw}} := \min(F_{\text{sufiller}} \cdot E_{\text{weld}}, F_{\text{suw}} \cdot S_{\text{weld}}, F_{\text{tuw}} \cdot S_{\text{weld}})$$

Allowable weld stress:

$$F_{\text{asw}} := \frac{F_{\text{sw}}}{n_u} \quad F_{\text{asw}} = 1.04 \cdot \frac{\text{kip}}{\text{in}}$$

Allowable weld axial & shear capacity:

$$V_w := F_{\text{asw}} \cdot L_{\text{weld}} \quad V_w = 4.01 \cdot \text{kip}$$

Allowable weld moment capacity:

$$M_w := F_{\text{asw}} \cdot S_w \quad M_w = 0.82 \cdot \text{kip} \cdot \text{in}$$

Allowable weld torsional capacity:

$$\text{Tor}_w := F_{\text{asw}} \cdot \pi \cdot D \cdot (0.5 \cdot D) \quad \text{Tor}_w = 1.64 \cdot \text{kip} \cdot \text{in}$$

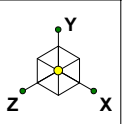
Diag axial capacity:

$$P_d := \min(T_{n\_pipe}, P_{n\_pipe}, V_w) \quad \text{controlled by diag compression} \quad P_d = 3.03 \cdot \text{kip}$$

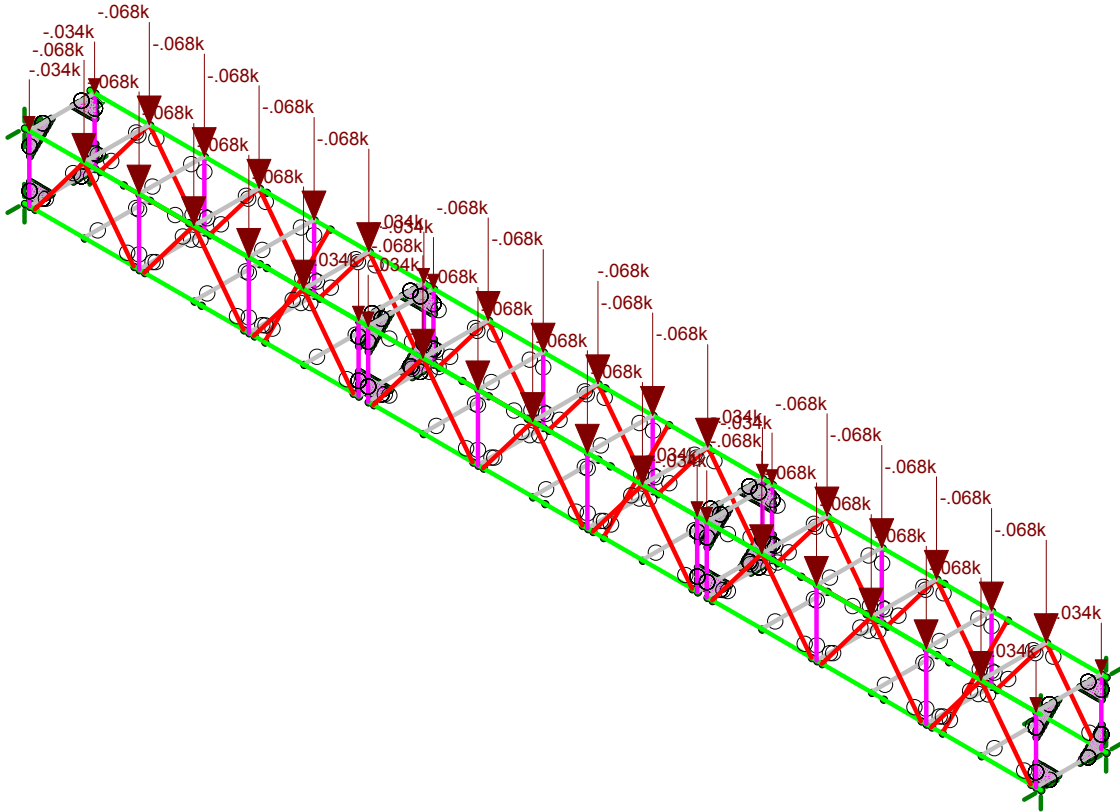
Diag moment capacity:

$$M_{\text{diag}} := \min(M_{n\_pipe}, M_w) \quad \text{controlled by diag moment} \quad M_{\text{diag}} = 0.79 \cdot \text{kip} \cdot \text{in}$$



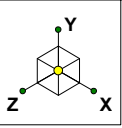


Section Sets	
<span style="color: blue;">■</span>	Bolts
<span style="color: green;">■</span>	Chords
<span style="color: red;">■</span>	Diagonals
<span style="color: gray;">■</span>	Horizontals
<span style="color: magenta;">■</span>	Verticals

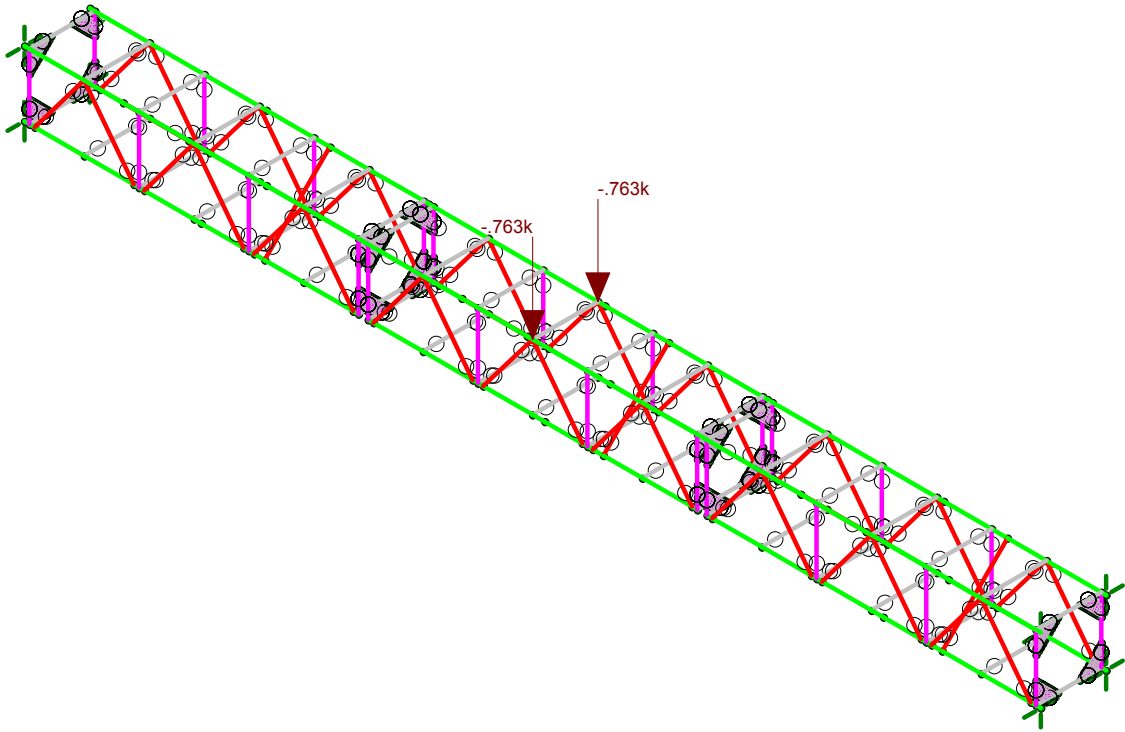


Loads: LC 2, Selfweight + UDL

Clark Reder	20.5x20.5 Christie Lite Truss	SK - 1
EPK		June 7, 2016 at 4:21 PM
16.614.01		16.614.01 24'-20.5x20.5 Christie Li...

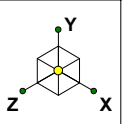


Section Sets	
Blue	Bolts
Green	Chords
Red	Diagonals
Grey	Horizontals
Purple	Verticals

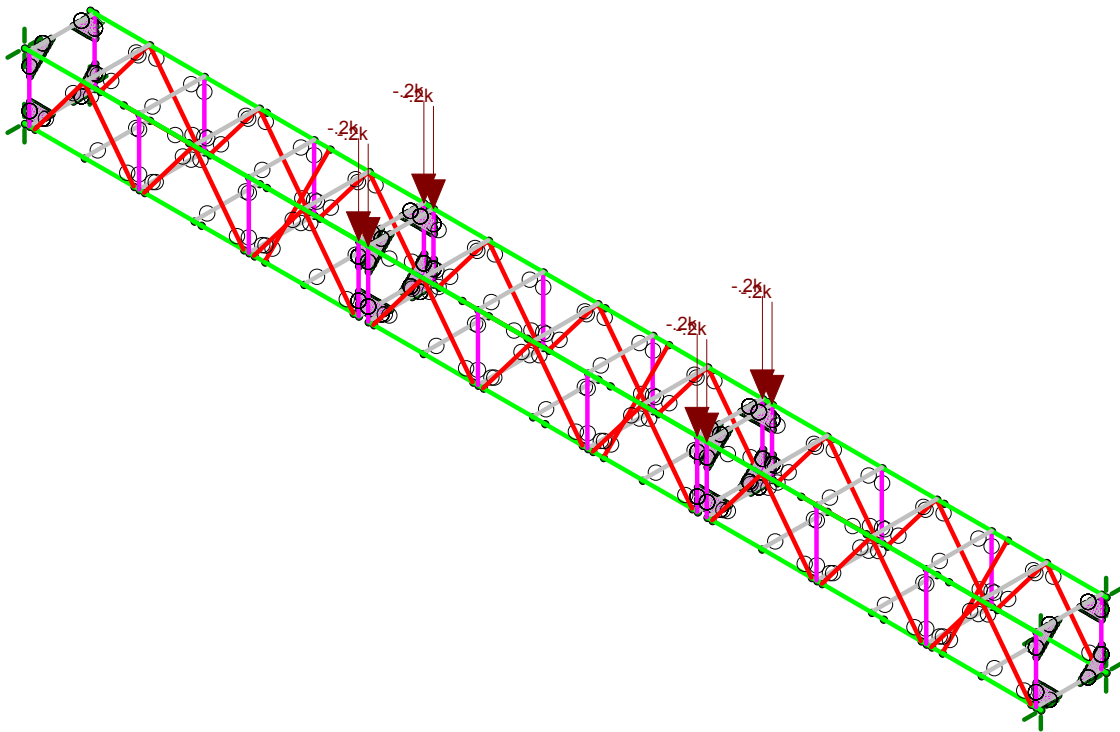


Loads: LC 3, Selfweight + CPL

Clark Reder	20.5x20.5 Christie Lite Truss	SK - 2
EPK		June 7, 2016 at 4:21 PM
16.614.01		16.614.01 24'-20.5x20.5 Christie Li...

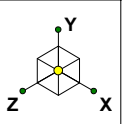


Section Sets	
Blue	Bolts
Green	Chords
Red	Diagonals
Grey	Horizontals
Purple	Verticals

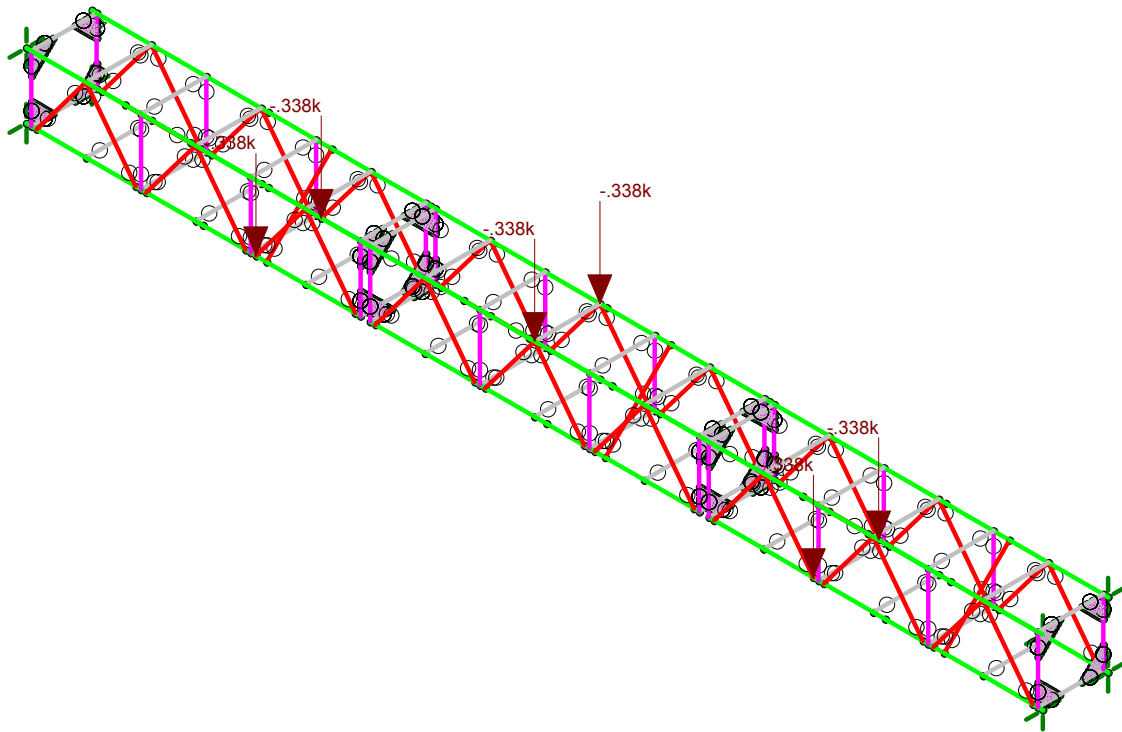


Loads: LC 4, Selfweight + TPL

Clark Reder	20.5x20.5 Christie Lite Truss	SK - 3
EPK		June 7, 2016 at 4:22 PM
16.614.01		16.614.01 24'-20.5x20.5 Christie Li...

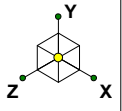


Section Sets	
Blue	Bolts
Green	Chords
Red	Diagonals
Grey	Horizontals
Purple	Verticals

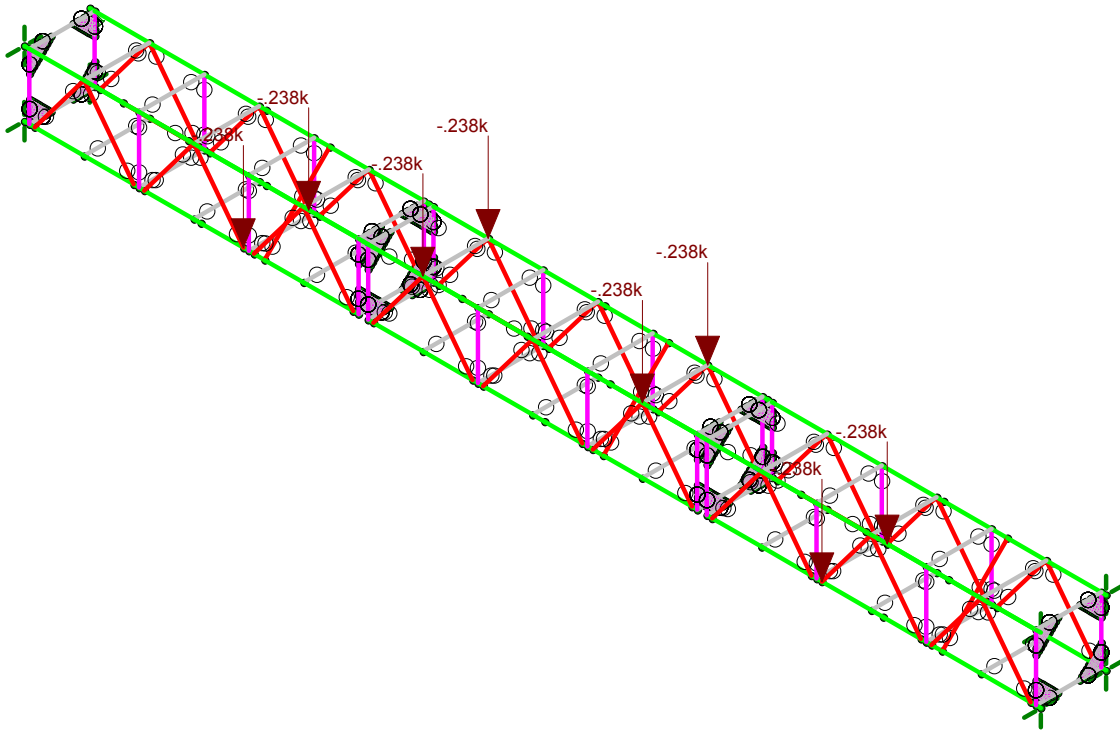


Loads: LC 5, Selfweight + QPL

Clark Reder	20.5x20.5 Christie Lite Truss	SK - 4
EPK		June 7, 2016 at 4:22 PM
16.614.01		16.614.01 24'-20.5x20.5 Christie Li...



- Section Sets
- Bolts
  - Chords
  - Diagonals
  - Horizontals
  - Verticals



Loads: LC 6, Selfweight + FPL

Clark Reder	20.5x20.5 Christie Lite Truss	SK - 6
EPK		June 7, 2016 at 4:23 PM
16.614.01		16.614.01 24'-20.5x20.5 Christie Li...



**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Selfweight	None		-1						
2	Selfweight + UDL	None				42				
3	Selfweight + CPL	None				2				
4	Selfweight + TPL	None				8				
5	Selfweight + QPL	None				6				
6	Selfweight + FPL	None				8				

**Load Combinations**

	Description	Solve	PDe...	SRSS	B...	Fa...	B...	Fa...	B...	F...	B...	F...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	
1	Selfweight				1	1															
2	Selfweight + UDL	Yes			1	1	2	1.35													
3	Selfweight + CPL	Yes			1	1	3	15...													
4	Selfweight + TPL	Yes			1	1	4	8													
5	Selfweight + QPL	Yes			1	1	5	6.75													
6	Selfweight + FPL	Yes			1	1	6	4.75													

**Envelope Joint Displacements**

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC
1	N1	max	-.142	4	0	3	0	2	2.582e-4	5	6.712e-5	6	-9.41e-3	3
2		min	-.15	2	0	2	0	3	1.666e-4	6	4.675e-5	3	-1.069e-2	2
3	N2	max	0	4	0	3	0	3	1.224e-4	5	-4.499e-5	3	-8.877e-3	3
4		min	0	5	0	2	0	2	1.889e-5	6	-6.107e-5	6	-9.913e-3	2
5	N3	max	-.142	4	0	3	0	3	-6.31e-5	3	3.144e-5	6	-9.399e-3	3
6		min	-.15	2	0	2	0	2	-1.239e-4	4	1.404e-5	5	-1.067e-2	2
7	N4	max	0	5	0	3	0	2	1.12e-4	3	-3.471e-5	3	-8.871e-3	3
8		min	0	4	0	2	0	3	6.777e-5	4	-4.848e-5	6	-9.904e-3	2
9	N5	max	-.142	4	-.013	3	0	3	2.582e-4	5	7.371e-5	6	-9.377e-3	3
10		min	-.15	2	-.015	2	0	6	1.666e-4	6	5.231e-5	3	-1.064e-2	2
11	N6	max	-.142	4	-.027	3	0	3	2.582e-4	5	7.128e-5	6	-9.203e-3	3
12		min	-.15	2	-.031	2	0	6	1.666e-4	6	4.913e-5	3	-1.039e-2	2
13	N7	max	-.141	4	-.227	4	-.001	3	2.713e-4	5	2.706e-5	5	-8.299e-3	4
14		min	-.149	2	-.244	2	-.002	6	1.808e-4	6	1.005e-5	6	-8.789e-3	5
15	N8	max	-.14	4	-.252	4	-.001	3	2.729e-4	5	1.531e-5	5	-8.838e-3	3
16		min	-.148	2	-.271	2	-.002	6	1.825e-4	6	-1.226e-5	6	-9.463e-3	5
17	N9	max	-.14	4	-.266	4	-.001	3	2.737e-4	5	1.006e-5	5	-8.999e-3	3
18		min	-.148	2	-.286	2	-.002	6	1.835e-4	6	-2.004e-5	6	-9.66e-3	5
19	N10	max	-.14	4	-.279	4	-.001	3	2.745e-4	5	8.462e-6	5	-8.872e-3	3
20		min	-.148	2	-.3	2	-.002	6	1.845e-4	6	-2.749e-5	6	-9.494e-3	2
21	N11	max	-.136	4	-.493	4	0	6	2.998e-4	5	3.638e-5	4	-7.244e-3	6
22		min	-.142	2	-.524	2	0	5	2.07e-4	6	2.227e-5	5	-8.447e-3	5
23	N12	max	-.136	4	-.505	4	0	6	3.015e-4	5	6.817e-5	4	-7.225e-3	6
24		min	-.142	2	-.536	2	0	5	2.089e-4	6	4.905e-5	5	-8.527e-3	5
25	N13	max	-.135	4	-.517	4	0	6	3.031e-4	5	9.58e-5	4	-7.014e-3	6
26		min	-.142	2	-.547	2	0	5	2.107e-4	6	7.143e-5	5	-8.234e-3	5
27	N14	max	-.128	4	-.712	4	.004	5	3.483e-4	5	1.098e-3	2	-8.849e-3	5
28		min	-.134	2	-.746	2	.003	6	2.633e-4	6	1.012e-3	5	-9.821e-3	3
29	N15	max	-.128	4	-.727	4	.002	5	3.483e-4	5	1.61e-3	2	-9.368e-3	5
30		min	-.133	2	-.761	2	0	6	2.633e-4	6	1.514e-3	5	-1.036e-2	3
31	N17	max	-.007	3	-.538	4	.003	5	8.273e-5	5	3.073e-5	6	-7.026e-3	6
32		min	-.009	5	-.569	2	0	6	-2.711e-5	6	1.658e-5	3	-7.32e-3	2
33	N18	max	0	4	-.012	3	0	6	1.224e-4	5	-4.844e-5	3	-8.785e-3	3
34		min	0	5	-.014	2	0	3	1.889e-5	6	-6.526e-5	6	-9.771e-3	2
35	N19	max	0	3	-.14	4	.001	6	1.224e-4	5	-6.403e-5	4	-8.029e-3	4



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [ ...	LC		
36		0	2	-152	2	0	3	1.889e-5	6	-8.312e-5	5	-8.576e-3	2	
37	N21	max	-0.002	3	-266	4	.002	5	1.138e-4	5	-7.732e-6	6	-8.006e-3	4
38		min	-0.002	2	-286	2	.002	3	8.193e-6	6	-5.431e-5	5	-8.483e-3	2
39	N22	max	-0.003	3	-388	4	.003	5	1.052e-4	5	6.137e-5	6	-7.742e-3	4
40		min	-0.004	2	-414	2	.002	6	-2.489e-6	6	-2.312e-5	5	-8.149e-3	5
41	N24	max	-0.006	3	-505	4	.003	5	8.777e-5	5	5.e-5	6	-7.209e-3	6
42		min	-0.008	2	-536	2	0	6	-2.158e-5	6	1.581e-5	5	-7.503e-3	5
43	N25	max	-0.009	3	-618	4	.003	5	4.915e-5	5	3.688e-5	5	-7.311e-3	6
44		min	-0.012	5	-651	2	0	6	-4.674e-5	6	-1.054e-5	6	-7.603e-3	2
45	N27	max	-0.014	3	-729	4	.002	5	1.932e-5	5	6.564e-5	5	-5.548e-3	5
46		min	-0.017	5	-762	2	0	6	-6.634e-5	3	2.937e-5	3	-6.114e-3	3
47	N28	max	-0.014	3	-736	4	.002	5	1.669e-5	5	-3.021e-5	5	-5.044e-3	4
48		min	-0.017	5	-769	2	0	6	-6.853e-5	3	-6.096e-5	3	-5.675e-3	3
49	N29	max	-.142	4	-.013	3	0	5	-6.31e-5	3	2.522e-5	6	-9.366e-3	3
50		min	-.15	2	-.015	2	0	6	-1.239e-4	4	7.189e-6	5	-1.062e-2	2
51	N30	max	-.142	4	-.027	3	0	5	-6.31e-5	3	4.038e-5	6	-9.19e-3	3
52		min	-.15	2	-.031	2	0	6	-1.239e-4	4	2.138e-5	5	-1.037e-2	2
53	N31	max	0	3	-.229	4	.002	5	1.177e-4	3	-3.765e-5	6	-8.06e-3	4
54		min	-0.001	2	-.247	2	.002	3	7.417e-5	4	-7.438e-5	5	-8.579e-3	2
55	N32	max	-.14	4	-.252	4	-.001	3	-6.552e-5	3	5.877e-6	5	-8.85e-3	3
56		min	-.148	2	-.271	2	-.002	6	-1.271e-4	4	-1.412e-5	6	-9.468e-3	5
57	N33	max	-.14	4	-.266	4	-.001	3	-6.629e-5	3	-1.501e-6	5	-9.01e-3	3
58		min	-.148	2	-.286	2	-.002	6	-1.28e-4	4	-2.538e-5	6	-9.663e-3	5
59	N34	max	-.14	4	-.279	4	-.001	3	-6.706e-5	3	-5.492e-6	5	-8.881e-3	3
60		min	-.148	2	-.3	2	-.002	6	-1.288e-4	4	-3.738e-5	6	-9.505e-3	2
61	N35	max	-.136	4	-.493	4	0	6	-9.273e-5	3	-1.045e-4	4	-7.264e-3	6
62		min	-.142	2	-.524	2	0	5	-1.564e-4	4	-1.204e-4	6	-8.448e-3	5
63	N36	max	-.135	4	-.505	4	0	6	-9.426e-5	3	-1.33e-4	4	-7.248e-3	6
64		min	-.142	2	-.536	2	0	5	-1.581e-4	4	-1.453e-4	5	-8.528e-3	5
65	N37	max	-.135	4	-.517	4	0	6	-9.58e-5	3	-1.63e-4	4	-7.04e-3	6
66		min	-.141	2	-.547	2	0	5	-1.598e-4	4	-1.79e-4	5	-8.234e-3	5
67	N38	max	-.128	4	-.712	4	0	5	-1.479e-4	3	-1.074e-3	6	-8.869e-3	5
68		min	-.134	2	-.746	2	-.002	6	-2.147e-4	4	-1.142e-3	5	-9.824e-3	3
69	N39	max	-.127	4	-.727	4	.002	5	-1.479e-4	3	-1.562e-3	6	-9.389e-3	5
70		min	-.133	2	-.761	2	0	6	-2.147e-4	4	-1.633e-3	5	-1.037e-2	3
71	N41	max	-.134	4	-.538	4	.001	6	-1.014e-4	3	-1.624e-4	6	-6.507e-3	6
72		min	-.141	2	-.569	2	0	5	-1.656e-4	4	-1.993e-4	5	-7.372e-3	5
73	N42	max	0	5	-.012	3	0	6	1.12e-4	3	-3.153e-5	3	-8.779e-3	3
74		min	0	4	-.014	2	0	3	6.777e-5	4	-4.466e-5	6	-9.762e-3	2
75	N43	max	0	5	-.14	4	.001	6	1.12e-4	3	-6.991e-5	4	-8.024e-3	4
76		min	0	4	-.152	2	0	3	6.777e-5	4	-8.912e-5	5	-8.57e-3	2
77	N45	max	-.001	3	-.266	4	.002	5	1.217e-4	3	-2.006e-7	6	-8.009e-3	4
78		min	-.002	2	-.286	2	.002	3	7.515e-5	4	-5.261e-5	5	-8.489e-3	2
79	N46	max	-.003	3	-.388	4	.003	5	1.355e-4	3	6.529e-5	6	-7.744e-3	4
80		min	-.004	2	-.414	2	.002	6	7.852e-5	4	-1.983e-5	5	-8.151e-3	5
81	N48	max	-.006	3	-.505	4	.003	5	1.573e-4	3	2.536e-5	6	-7.219e-3	6
82		min	-.008	2	-.536	2	0	6	9.013e-5	4	1.833e-8	5	-7.503e-3	5
83	N49	max	-.009	3	-.618	4	.003	5	1.791e-4	3	5.223e-5	5	-7.306e-3	6
84		min	-.011	5	-.651	2	0	6	1.017e-4	4	8.338e-6	6	-7.604e-3	2
85	N51	max	-.013	3	-.729	4	.002	5	1.849e-4	3	-4.53e-5	5	-5.549e-3	5
86		min	-.016	5	-.762	2	0	6	9.612e-5	4	-6.691e-5	3	-6.109e-3	3
87	N52	max	-.014	3	-.736	4	.002	5	1.854e-4	3	4.338e-5	5	-5.042e-3	4
88		min	-.017	5	-.769	2	0	6	9.562e-5	4	1.568e-5	3	-5.667e-3	3
89	N53	max	-.141	4	-.141	4	0	3	2.655e-4	5	6.029e-5	6	-7.505e-3	4
90		min	-.149	2	-.154	2	-.001	6	1.745e-4	6	3.814e-5	3	-7.907e-3	2
91	N54	max	-.141	4	-.141	4	0	3	-6.431e-5	3	7.303e-5	6	-7.5e-3	4
92		min	-.149	2	-.154	2	-.001	6	-1.255e-4	4	5.115e-5	3	-7.9e-3	2



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
93	N57	max	-.138	4	-.39	4	0	3	2.871e-4	5	-4.726e-5	5	-7.273e-3	4
94		min	-.145	2	-.418	2	-.001	5	1.958e-4	6	-1.058e-4	6	-7.612e-3	2
95	N58	max	-.138	4	-.39	4	0	3	-7.989e-5	3	7.806e-7	5	-7.273e-3	4
96		min	-.145	2	-.418	2	-.001	5	-1.426e-4	4	-5.7e-5	6	-7.611e-3	2
97	N61	max	-.132	4	-.607	4	0	3	3.257e-4	5	-4.264e-4	6	-6.099e-3	5
98		min	-.138	2	-.64	5	0	4	2.37e-4	6	-5.184e-4	5	-6.321e-3	2
99	N62	max	-.131	4	-.607	4	0	3	-1.219e-4	3	4.36e-4	6	-6.102e-3	4
100		min	-.137	2	-.64	5	0	4	-1.872e-4	4	3.37e-4	5	-6.32e-3	2
101	N65	max	-.107	4	-.013	3	0	2	-7.318e-6	3	-5.107e-5	3	-7.7e-3	4
102		min	-.113	2	-.014	2	0	6	-1.197e-5	2	-8.1e-5	2	-8.162e-3	2
103	N66	max	-.143	4	-.013	3	0	4	2.589e-5	2	1.692e-4	2	-9.22e-3	3
104		min	-.151	2	-.014	2	0	6	1.758e-5	3	1.177e-4	4	-1.04e-2	2
105	N67	max	-.034	4	-.012	3	0	6	1.872e-5	2	1.843e-5	2	-7.644e-3	4
106		min	-.036	2	-.014	2	0	3	1.375e-5	3	5.969e-6	6	-8.083e-3	2
107	N70	max	-.143	4	-.013	3	0	3	-1.803e-5	3	-8.071e-5	3	-9.226e-3	3
108		min	-.151	2	-.014	2	0	6	-2.678e-5	2	-1.3e-4	2	-1.041e-2	2
109	N69	max	0	2	-.012	3	0	6	-1.943e-5	3	-5.03e-5	3	-8.677e-3	3
110		min	0	4	-.014	2	0	3	-2.805e-5	2	-8.757e-5	2	-9.608e-3	2
111	N70A	max	0	2	-.012	3	0	6	2.793e-5	2	1.234e-4	2	-8.683e-3	3
112		min	0	4	-.014	2	0	3	1.957e-5	3	8.473e-5	4	-9.615e-3	2
113	N71	max	-.035	4	-.012	3	0	6	-3.847e-6	6	-4.604e-5	3	-7.643e-3	4
114		min	-.037	2	-.014	2	0	2	-7.511e-6	2	-6.389e-5	2	-8.082e-3	2
115	N72	max	-.107	4	-.013	3	0	3	2.32e-5	2	1.179e-4	2	-7.704e-3	4
116		min	-.113	2	-.014	2	0	6	1.684e-5	3	8.187e-5	3	-8.167e-3	2
117	N73	max	-.082	4	-.728	4	.002	5	7.681e-5	5	-2.712e-3	6	-8.205e-3	6
118		min	-.087	2	-.761	2	0	6	5.773e-5	6	-2.799e-3	2	-8.468e-3	2
119	N74	max	-.102	4	-.728	4	.002	5	-7.262e-5	5	-3.789e-3	3	-1.069e-2	5
120		min	-.107	2	-.761	2	0	6	-9.52e-5	4	-4.08e-3	2	-1.153e-2	3
121	N75	max	-.03	4	-.728	4	.002	5	-8.785e-6	5	-5.967e-4	3	-3.765e-3	4
122		min	-.033	2	-.762	2	0	6	-2.782e-5	6	-6.349e-4	2	-3.941e-3	3
123	N76	max	-.102	4	-.728	4	.002	5	1.192e-4	3	4.116e-3	2	-1.067e-2	5
124		min	-.107	2	-.761	2	0	6	9.001e-5	6	3.824e-3	3	-1.153e-2	3
125	N77	max	-.012	3	-.729	4	.002	5	-3.726e-6	3	-2.688e-5	5	-5.439e-3	5
126		min	-.016	5	-.762	2	0	6	-2.2e-5	6	-1.161e-4	3	-5.955e-3	3
127	N78	max	-.013	3	-.729	4	.002	5	3.09e-5	5	1.582e-4	3	-5.44e-3	5
128		min	-.016	5	-.762	2	0	6	1.377e-5	4	7.478e-5	5	-5.961e-3	3
129	N79	max	-.031	4	-.728	4	.002	5	4.175e-5	3	6.298e-4	2	-3.758e-3	4
130		min	-.034	2	-.761	2	0	6	2.178e-5	6	5.62e-4	3	-3.928e-3	3
131	N80	max	-.082	4	-.728	4	.002	5	-4.271e-5	3	2.79e-3	2	-8.209e-3	6
132		min	-.087	2	-.761	2	0	6	-6.322e-5	6	2.68e-3	5	-8.471e-3	2
133	N81	max	-.124	4	-.013	3	0	2	0	2	-4.149e-4	3	-7.895e-3	4
134		min	-.13	2	-.014	2	0	6	0	2	-6.317e-4	2	-8.444e-3	2
135	N82	max	-.124	4	-.013	3	0	3	0	2	6.712e-4	2	-7.902e-3	4
136		min	-.131	2	-.014	2	0	6	0	2	4.522e-4	3	-8.451e-3	2
137	N83	max	-.018	3	-.012	3	0	6	0	2	4.562e-4	2	-7.751e-3	4
138		min	-.019	2	-.014	2	0	3	0	2	3.06e-4	3	-8.242e-3	2
139	N84	max	-.018	4	-.012	3	0	6	0	2	-2.769e-4	3	-7.776e-3	4
140		min	-.019	2	-.014	2	0	2	0	2	-4.298e-4	2	-8.272e-3	2
141	N85	max	-.08	4	-.727	4	.001	5	0	2	-6.687e-4	5	-6.092e-3	5
142		min	-.085	2	-.761	2	0	6	0	2	-6.898e-4	4	-6.885e-3	3
143	N86	max	-.08	4	-.727	4	.002	5	0	2	7.3e-4	2	-6.092e-3	5
144		min	-.085	2	-.761	2	0	6	0	2	7.05e-4	5	-6.898e-3	3
145	N87	max	-.024	3	-.729	4	.002	5	0	2	9.734e-5	5	-5.064e-3	4
146		min	-.027	2	-.762	2	0	6	0	2	6.582e-5	3	-5.708e-3	3
147	N88	max	-.024	4	-.729	4	.002	5	0	2	-8.239e-5	5	-5.067e-3	4
148		min	-.027	2	-.762	2	0	6	0	2	-1.047e-4	3	-5.723e-3	3
149	N93	max	-.043	4	-.743	4	.001	5	5.177e-4	4	-1.809e-3	3	2.255e-3	4





**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [ ...	LC	
150		min	-0.048	5	-0.777	2	0	6	3.932e-4	3	-1.99e-3	2	9.337e-4	3
151	N94	max	-0.043	4	-0.74	4	.004	5	5.177e-4	4	-1.199e-3	3	1.662e-3	4
152		min	-0.048	5	-0.775	2	.002	6	3.932e-4	3	-1.348e-3	2	4.611e-4	3
153	N95	max	-0.035	4	-0.764	4	-.001	6	4.661e-4	4	-1.294e-4	5	-1.662e-3	6
154		min	-0.039	5	-0.804	2	-.003	3	3.502e-4	3	-1.48e-4	6	-2.929e-3	3
155	N96	max	-0.034	4	-0.769	4	0	6	4.599e-4	4	-1.532e-4	6	-1.416e-3	6
156		min	-0.038	5	-0.81	2	-.003	3	3.451e-4	3	-1.817e-4	3	-3.222e-3	3
157	N97	max	-0.033	4	-0.771	4	0	6	4.586e-4	4	-1.241e-4	6	-1.279e-3	6
158		min	-0.038	5	-0.813	2	-.002	3	3.441e-4	3	-1.656e-4	3	-3.256e-3	3
159	N98	max	-0.033	4	-0.773	4	0	6	4.572e-4	4	-9.412e-5	6	-1.15e-3	6
160		min	-0.037	5	-0.815	2	-.002	3	3.431e-4	3	-1.518e-4	3	-3.048e-3	3
161	N99	max	-0.024	3	-0.772	4	.002	3	4.433e-4	4	4.371e-5	4	3.064e-3	3
162		min	-0.027	2	-0.814	2	0	6	3.228e-4	3	-9.619e-6	3	1.118e-3	6
163	N100	max	-0.024	3	-0.771	4	.002	3	4.438e-4	4	8.449e-5	5	3.249e-3	3
164		min	-0.027	2	-0.812	2	0	6	3.236e-4	3	4.764e-5	3	1.219e-3	6
165	N101	max	-0.023	3	-0.769	4	.002	3	4.444e-4	4	1.281e-4	5	3.188e-3	3
166		min	-0.026	2	-0.809	2	0	6	3.244e-4	3	9.645e-5	3	1.324e-3	6
167	N102	max	-0.014	3	-0.739	4	.002	6	4.873e-4	4	1.16e-3	5	2.272e-4	3
168		min	-0.017	5	-0.773	2	0	5	3.728e-4	3	1.059e-3	6	-9.231e-4	4
169	N103	max	-0.013	3	-0.74	4	0	6	4.873e-4	4	1.635e-3	5	-8.462e-5	3
170		min	-0.017	5	-0.774	2	-.002	5	3.728e-4	3	1.525e-3	6	-1.353e-3	4
171	N105	max	-0.035	4	-0.767	4	0	6	-5.615e-5	4	4.494e-5	5	1.633e-3	3
172		min	-0.04	5	-0.807	2	-.003	3	-1.669e-4	3	1.387e-5	6	9.296e-4	6
173	N106	max	-0.015	3	-0.742	4	.002	5	1.406e-5	5	-1.508e-4	5	-4.233e-3	4
174		min	-0.017	5	-0.776	2	0	6	-7.072e-5	3	-1.8e-4	3	-4.901e-3	3
175	N107	max	-0.019	3	-0.759	4	.003	3	-1.576e-5	5	2.083e-5	4	-1.3e-4	4
176		min	-0.022	5	-0.798	2	0	6	-9.557e-5	3	-3.118e-5	3	-8.254e-4	3
177	N109	max	-0.024	4	-0.771	4	.003	3	-2.617e-5	4	6.354e-5	3	-7.727e-4	6
178		min	-0.027	5	-0.813	2	0	6	-1.1e-4	3	5.284e-6	6	-1.494e-3	3
179	N110	max	-0.029	4	-0.776	4	0	5	-2.822e-5	4	2.262e-4	3	4.375e-5	3
180		min	-0.033	5	-0.819	2	0	6	-1.244e-4	3	6.61e-5	6	3.382e-5	4
181	N112	max	-0.034	4	-0.77	4	0	6	-4.988e-5	4	1.12e-4	3	1.511e-3	3
182		min	-0.038	5	-0.812	2	-.003	3	-1.573e-4	3	3.903e-5	6	7.584e-4	6
183	N113	max	-0.039	4	-0.758	4	0	6	-6.743e-5	4	-2.86e-5	4	1.133e-3	3
184		min	-0.043	5	-0.796	2	-.003	3	-1.714e-4	3	-8.786e-5	3	4.498e-4	4
185	N115	max	-0.043	4	-0.741	4	0	6	-7.757e-5	4	6.993e-5	5	3.865e-3	3
186		min	-0.048	5	-0.774	2	-.002	5	-1.698e-4	3	4.358e-5	3	3.153e-3	4
187	N116	max	-0.044	4	-0.736	4	0	6	-7.846e-5	4	-2.384e-5	5	4.471e-3	3
188		min	-0.049	5	-0.769	2	-.002	5	-1.696e-4	3	-4.935e-5	3	3.79e-3	4
189	N117	max	-0.043	4	-0.743	4	.002	5	-3.974e-4	3	2.142e-3	5	2.281e-3	4
190		min	-0.048	5	-0.777	2	0	6	-5.1e-4	4	2.029e-3	6	1.004e-3	3
191	N118	max	-0.042	4	-0.74	4	0	5	-3.974e-4	3	1.522e-3	5	1.689e-3	4
192		min	-0.047	5	-0.775	2	-.002	6	-5.1e-4	4	1.418e-3	6	5.351e-4	3
193	N119	max	-0.023	3	-0.767	4	.003	3	1.837e-4	3	4.829e-5	5	-9.589e-4	6
194		min	-0.025	2	-0.808	2	0	6	7.473e-5	4	1.734e-5	6	-1.648e-3	3
195	N120	max	-0.034	4	-0.769	4	0	6	-3.273e-4	3	1.615e-4	5	-1.439e-3	6
196		min	-0.038	5	-0.81	2	-.002	3	-4.452e-4	4	1.304e-4	3	-3.289e-3	3
197	N121	max	-0.033	4	-0.771	4	0	6	-3.256e-4	3	1.114e-4	4	-1.299e-3	6
198		min	-0.037	5	-0.813	2	-.002	3	-4.437e-4	4	7.488e-5	3	-3.315e-3	3
199	N122	max	-0.033	4	-0.773	4	0	6	-3.239e-4	3	6.383e-5	4	-1.167e-3	6
200		min	-0.037	5	-0.815	2	-.002	3	-4.422e-4	4	1.057e-5	3	-3.099e-3	3
201	N123	max	-0.024	3	-0.773	4	.002	3	3.264e-4	3	-7.784e-5	6	3.013e-3	3
202		min	-0.027	2	-0.814	2	0	6	-4.382e-4	4	-1.353e-4	3	1.101e-3	6
203	N124	max	-0.023	3	-0.771	4	.002	3	-3.265e-4	3	-1.013e-4	6	3.19e-3	3
204		min	-0.026	2	-0.812	2	0	6	-4.387e-4	4	-1.424e-4	3	1.2e-3	6
205	N125	max	-0.023	3	-0.769	4	.002	3	-3.266e-4	3	-1.248e-4	6	3.121e-3	3
206		min	-0.026	2	-0.81	2	0	6	-4.391e-4	4	-1.528e-4	3	1.302e-3	6



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC
207	N126	max	-.013	3	-.739	4	-.003	6	-3.539e-4	3	-8.454e-4	3
208		min	-.016	2	-.773	2	-.004	5	-4.758e-4	4	-9.9e-4	4
209	N127	max	-.013	3	-.74	4	0	6	-3.539e-4	3	-1.309e-3	3
210		min	-.016	2	-.774	2	-.002	5	-4.758e-4	4	-1.48e-3	2
211	N129	max	-.022	3	-.764	4	.003	3	-3.295e-4	3	-1.013e-4	5
212		min	-.025	2	-.804	2	.001	6	-4.43e-4	4	-1.199e-4	6
213	N130	max	-.014	3	-.742	4	.002	5	1.86e-4	3	1.565e-4	5
214		min	-.017	5	-.776	2	0	6	9.513e-5	4	1.258e-4	3
215	N131	max	-.019	3	-.759	4	.003	3	1.918e-4	3	-5.972e-5	4
216		min	-.022	2	-.798	2	0	6	8.95e-5	4	-1.175e-4	3
217	N133	max	-.024	4	-.771	4	.003	3	1.725e-4	3	1.172e-4	3
218		min	-.027	2	-.813	2	0	6	6.69e-5	4	4.453e-5	6
219	N134	max	-.029	4	-.776	4	0	5	1.342e-4	3	2.224e-4	3
220		min	-.032	5	-.819	2	0	6	3.987e-5	4	6.224e-5	6
221	N136	max	-.034	4	-.771	4	0	6	1.142e-4	3	7.476e-5	3
222		min	-.038	5	-.812	2	-.003	3	3.237e-5	4	1.659e-5	6
223	N137	max	-.038	4	-.758	4	0	6	9.419e-5	3	-2.413e-6	4
224		min	-.043	5	-.796	2	-.003	3	1.591e-5	5	-5.291e-5	3
225	N139	max	-.043	4	-.741	4	0	6	7.312e-5	3	-6.276e-5	5
226		min	-.048	5	-.774	2	-.002	5	-9.991e-6	5	-9.637e-5	3
227	N140	max	-.044	4	-.736	4	0	6	7.126e-5	3	3.785e-5	5
228		min	-.048	5	-.769	2	-.002	5	-1.227e-5	5	4.911e-6	3
229	N141	max	-.038	4	-.744	4	0	4	4.888e-4	4	6.495e-4	3
230		min	-.043	5	-.782	2	-.001	3	3.692e-4	3	5.531e-4	6
231	N142	max	-.038	4	-.743	4	0	4	-3.623e-4	3	-3.517e-4	3
232		min	-.042	5	-.782	2	-.001	3	-4.776e-4	4	-4.606e-4	6
233	N145	max	-.029	4	-.782	4	0	3	4.503e-4	4	-4.476e-5	6
234		min	-.032	5	-.826	2	0	6	3.33e-4	3	-1.816e-4	3
235	N146	max	-.028	4	-.782	4	0	3	-3.252e-4	3	-5.636e-5	6
236		min	-.032	2	-.826	2	0	6	-4.402e-4	4	-1.933e-4	3
237	N149	max	-.018	3	-.745	4	.001	3	4.658e-4	4	-2.54e-4	3
238		min	-.022	2	-.784	2	0	4	3.486e-4	3	-3.642e-4	6
239	N150	max	-.018	3	-.746	4	.001	3	-3.403e-4	3	5.413e-4	3
240		min	-.021	2	-.784	2	0	4	-4.574e-4	4	4.471e-4	6
241	N153	max	-.056	4	-.743	4	.002	5	-5.933e-5	3	3.746e-3	2
242		min	-.061	2	-.777	2	0	6	-8.212e-5	6	3.575e-3	3
243	N154	max	-.074	4	-.743	4	.002	5	1.326e-4	3	5.127e-3	2
244		min	-.079	2	-.777	2	0	6	9.608e-5	4	4.895e-3	3
245	N155	max	-.035	3	-.743	4	.002	5	5.198e-5	3	1.087e-3	2
246		min	-.038	2	-.776	2	0	6	2.799e-5	4	1.046e-3	3
247	N156	max	-.074	4	-.743	4	.001	5	-8.717e-5	5	-4.833e-3	3
248		min	-.08	2	-.777	2	0	6	-1.087e-4	3	-5.079e-3	2
249	N157	max	-.013	3	-.742	4	.002	5	1.637e-5	4	-1.739e-4	5
250		min	-.016	5	-.776	2	0	6	1.81e-6	6	-2.042e-4	3
251	N158	max	-.013	3	-.742	4	.002	5	1.341e-5	3	2.465e-4	3
252		min	-.016	5	-.776	2	0	6	-9.715e-6	4	2.125e-4	4
253	N159	max	-.036	4	-.743	4	.002	5	-9.133e-6	3	-1.021e-3	3
254		min	-.039	2	-.776	2	0	6	-2.695e-5	6	-1.062e-3	2
255	N160	max	-.057	4	-.743	4	.001	5	1.008e-4	3	-3.392e-3	3
256		min	-.061	2	-.777	2	0	6	8.353e-5	6	-3.644e-3	2
257	N161	max	-.004	4	-.74	4	0	6	6.388e-5	4	-2.382e-3	3
258		min	-.007	5	-.774	2	-.002	5	4.01e-5	3	-2.615e-3	2
259	N162	max	.013	3	-.74	4	0	6	-2.766e-5	3	-4.063e-3	3
260		min	.01	5	-.774	2	-.002	5	-5.198e-5	5	-4.237e-3	2
261	N163	max	-.025	4	-.741	4	0	6	-1.53e-5	6	-6.358e-4	5
262		min	-.029	5	-.774	2	-.002	5	-3.431e-5	3	-6.663e-4	2
263	N164	max	.013	3	-.74	4	0	6	4.328e-5	4	4.284e-3	2



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [ ...	LC	
264		min	.01	5	-.774	2	-.002	5	-1.327e-6	3	4.124e-3	3	-2.626e-3	4
265	N165	max	-.044	4	-.741	4	0	6	-2.301e-5	4	1.816e-4	3	3.869e-3	3
266		min	-.048	2	-.774	2	-.002	5	-4.682e-5	3	1.007e-4	4	3.195e-3	4
267	N166	max	-.044	4	-.741	4	0	6	2.825e-5	6	-5.334e-5	5	3.86e-3	3
268		min	-.048	2	-.774	2	-.002	5	1.44e-5	4	-1.392e-4	3	3.192e-3	4
269	N167	max	-.025	4	-.741	4	0	6	1.197e-5	4	6.903e-4	5	4.06e-3	3
270		min	-.029	5	-.774	2	-.002	5	-1.567e-5	3	6.651e-4	6	3.892e-3	4
271	N168	max	-.004	4	-.74	4	0	6	-6.732e-5	6	2.711e-3	2	-1.455e-4	3
272		min	-.007	5	-.774	2	-.002	5	-8.971e-5	3	2.556e-3	3	-5.196e-4	4
273	N169	max	-.08	4	-.743	4	.002	5	0	2	1.171e-2	2	6.347e-3	4
274		min	-.085	2	-.777	2	.001	6	0	2	1.1e-2	3	5.709e-3	3
275	N170	max	-.08	4	-.743	4	.001	5	0	2	-1.092e-2	3	6.325e-3	4
276		min	-.085	2	-.777	2	0	6	0	2	-1.166e-2	2	5.65e-3	3
277	N171	max	-.024	3	-.742	4	.002	5	0	2	-5.559e-4	3	-4.826e-3	4
278		min	-.027	2	-.776	2	0	6	0	2	-7.246e-4	5	-5.015e-3	3
279	N172	max	-.024	4	-.742	4	.002	5	0	2	7.77e-4	5	-4.832e-3	4
280		min	-.027	2	-.776	2	0	6	0	2	5.978e-4	3	-5.035e-3	3
281	N173	max	.015	4	-.74	4	0	6	0	2	-5.18e-4	3	4.062e-3	3
282		min	.012	5	-.774	2	-.002	5	0	2	-6.013e-4	4	3.154e-3	4
283	N174	max	.015	4	-.74	4	0	6	0	2	6.59e-4	5	4.038e-3	3
284		min	.012	5	-.774	2	-.001	5	0	2	6.039e-4	3	3.146e-3	5
285	N175	max	-.035	4	-.741	4	0	6	0	2	1.041e-4	5	4.537e-3	3
286		min	-.04	5	-.774	2	-.002	5	0	2	7.533e-5	3	3.824e-3	4
287	N176	max	-.036	4	-.741	4	0	6	0	2	-8.589e-5	5	4.518e-3	3
288		min	-.04	5	-.774	2	-.002	5	0	2	-1.108e-4	3	3.818e-3	4
289	N171A	max	-.137	4	-.405	4	0	6	-8.172e-5	3	4.522e-6	5	-7.215e-3	4
290		min	-.144	2	-.433	2	-.001	5	-1.446e-4	4	-4.959e-5	6	-7.513e-3	2
291	N172A	max	-.003	3	-.403	4	.003	5	1.383e-4	3	6.907e-5	6	-7.708e-3	4
292		min	-.004	2	-.43	2	.001	6	8.002e-5	4	-1.501e-5	5	-8.116e-3	5
293	N173A	max	-.004	3	-.403	4	.003	5	1.029e-4	5	6.219e-5	6	-7.705e-3	4
294		min	-.005	2	-.43	2	.001	6	-4.957e-6	6	-2.004e-5	5	-8.114e-3	5
295	N174A	max	-.138	4	-.405	4	0	6	2.889e-4	5	-5.773e-5	5	-7.215e-3	4
296		min	-.145	2	-.433	2	-.001	5	1.974e-4	6	-1.139e-4	6	-7.513e-3	2
297	N175A	max	-.027	4	-.781	4	0	3	-3.255e-4	3	-2.782e-5	6	7.94e-4	3
298		min	-.031	2	-.825	2	0	6	-4.397e-4	4	-1.588e-4	3	3.225e-4	6
299	N176A	max	-.03	4	-.776	4	0	6	1.316e-4	3	2.257e-4	3	2.912e-4	3
300		min	-.033	5	-.819	2	0	3	3.89e-5	4	6.505e-5	6	9.973e-5	4
301	N177	max	-.03	4	-.776	4	0	6	-3.102e-5	4	2.211e-4	3	3.021e-4	3
302		min	-.033	5	-.819	2	0	3	-1.287e-4	3	6.3e-5	6	1.04e-4	4
303	N178	max	-.028	4	-.781	4	0	3	4.486e-4	4	-6.992e-5	6	7.866e-4	3
304		min	-.031	5	-.825	2	0	6	3.305e-4	3	-2.032e-4	3	3.216e-4	6
305	N179	max	-.08	4	-.736	4	.002	5	0	2	-5.479e-4	5	-5.997e-3	5
306		min	-.085	2	-.769	2	0	6	0	2	-5.667e-4	4	-6.802e-3	3
307	N180	max	-.08	4	-.736	4	.001	5	0	2	6.108e-4	3	-5.998e-3	5
308		min	-.085	2	-.769	2	0	6	0	2	5.844e-4	5	-6.815e-3	3
309	N181	max	-.024	3	-.736	4	.002	5	0	2	8.471e-5	5	-5.083e-3	4
310		min	-.027	2	-.769	2	0	6	0	2	5.151e-5	3	-5.733e-3	3
311	N182	max	-.024	4	-.735	4	.002	5	0	2	-7.004e-5	5	-5.086e-3	4
312		min	-.027	2	-.769	2	0	6	0	2	-9.126e-5	3	-5.747e-3	3
313	N183	max	-.051	4	-.743	4	.002	5	5.669e-5	3	3.401e-3	2	3.299e-3	4
314		min	-.056	2	-.777	2	.001	6	2.245e-5	4	3.253e-3	6	2.832e-3	3
315	N184	max	-.057	4	-.743	4	.002	5	-8.78e-5	5	3.346e-3	2	-3.147e-4	4
316		min	-.061	2	-.777	2	0	6	-1.08e-4	6	3.194e-3	3	-6.155e-4	3
317	N185	max	-.059	4	-.743	4	.002	5	1.085e-4	3	7.422e-3	2	3.522e-3	4
318		min	-.064	2	-.777	2	0	6	3.757e-5	4	7.089e-3	3	2.258e-3	3
319	N186	max	-.081	4	-.743	4	.002	5	1.025e-4	3	3.379e-3	2	4.289e-3	4
320		min	-.086	2	-.777	2	0	6	7.746e-5	4	3.228e-3	3	3.014e-3	3



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
321	N187	max	-0.057	4	-0.743	4	.002	5	-7.787e-5	3	3.62e-3	2	5.319e-4	4
322		min	-0.061	2	-0.777	2	0	6	-9.805e-5	6	3.454e-3	3	1.931e-4	3
323	N188	max	-0.054	4	-0.743	4	.002	5	3.582e-6	3	3.755e-3	2	2.429e-3	4
324		min	-0.058	2	-0.777	2	.001	6	-2.515e-5	6	3.588e-3	3	2.002e-3	3
325	N189	max	-0.082	4	-0.743	4	.002	5	0	2	3.603e-3	2	5.778e-3	4
326		min	-0.087	2	-0.777	2	0	6	0	2	3.434e-3	3	4.487e-3	3
327	N190	max	-0.084	4	-0.743	4	.002	5	0	2	3.091e-3	2	9.057e-3	4
328		min	-0.089	2	-0.777	2	0	6	0	2	2.924e-3	3	7.765e-3	3
329	N191	max	-0.089	4	-0.743	4	.002	5	0	2	3.65e-3	2	1.179e-2	4
330		min	-0.094	2	-0.777	2	0	6	0	2	3.397e-3	3	1.062e-2	3
331	N192	max	-0.093	4	-0.743	4	.002	5	0	2	6.505e-3	2	1.089e-2	4
332		min	-0.098	2	-0.777	2	.001	6	0	2	6.054e-3	3	9.96e-3	3
333	N193	max	-0.093	4	-0.743	4	.002	5	0	2	1.17e-2	2	5.596e-3	4
334		min	-0.098	2	-0.777	2	.001	6	0	2	1.095e-2	3	5.005e-3	3
335	N194	max	-0.086	4	-0.743	4	.002	5	0	2	1.604e-2	2	2.54e-4	4
336		min	-0.091	2	-0.777	2	.001	6	0	2	1.507e-2	3	-6.273e-5	3
337	N195	max	-0.075	4	-0.743	4	.002	5	0	2	1.545e-2	2	-2.171e-3	4
338		min	-0.08	2	-0.777	2	0	6	0	2	1.455e-2	3	-2.368e-3	3
339	N196	max	-0.066	4	-0.743	4	.002	5	0	2	1.035e-2	2	-1.999e-3	4
340		min	-0.07	2	-0.777	2	0	6	0	2	9.769e-3	3	-2.21e-3	3
341	N197	max	-0.06	4	-0.743	4	.002	5	0	2	5.479e-3	2	-6.249e-4	4
342		min	-0.064	2	-0.777	2	0	6	0	2	5.2e-3	3	-9.076e-4	3
343	N198	max	-0.066	4	-0.743	4	.002	5	1.243e-4	3	6.558e-3	2	3.966e-3	4
344		min	-0.071	2	-0.777	2	0	6	7.194e-5	4	6.261e-3	3	2.702e-3	3
345	N199	max	-0.077	4	-0.743	4	.002	5	1.268e-4	3	4.454e-3	2	4.28e-3	4
346		min	-0.082	2	-0.777	2	0	6	9.468e-5	4	4.253e-3	3	3.008e-3	3
347	N200	max	-0.053	4	-0.743	4	.002	5	0	2	1.264e-2	2	5.387e-3	4
348		min	-0.057	2	-0.777	2	.001	6	0	2	1.192e-2	3	4.828e-3	3
349	N201	max	-0.056	4	-0.743	4	.002	5	0	2	1.187e-2	2	6.692e-3	4
350		min	-0.061	2	-0.777	2	0	6	0	2	1.12e-2	3	6.045e-3	3
351	N202	max	-0.058	4	-0.743	4	.002	5	0	2	9.909e-3	2	8.227e-3	4
352		min	-0.063	2	-0.777	2	0	6	0	2	9.4e-3	3	7.391e-3	3
353	N203	max	-0.059	4	-0.743	4	.002	5	0	2	8.098e-3	2	9.332e-4	4
354		min	-0.063	2	-0.777	2	0	6	0	2	7.659e-3	3	5.768e-4	3
355	N204	max	-0.06	4	-0.743	4	.002	5	0	2	1.305e-2	2	1.266e-3	4
356		min	-0.065	2	-0.777	2	.001	6	0	2	1.231e-2	3	8.904e-4	3
357	N205	max	-0.057	4	-0.743	4	.002	5	0	2	1.146e-2	2	3.64e-3	4
358		min	-0.061	2	-0.777	2	.001	6	0	2	1.081e-2	3	3.16e-3	3
359	N206	max	-0.06	4	-0.743	4	.002	5	0	2	1.346e-2	2	4.907e-3	4
360		min	-0.065	2	-0.777	2	.001	6	0	2	1.269e-2	3	4.37e-3	3
361	N207	max	-0.063	4	-0.743	4	.002	5	0	2	1.225e-2	2	7.348e-3	4
362		min	-0.067	2	-0.777	2	.001	6	0	2	1.155e-2	3	6.673e-3	3
363	N208	max	-0.064	4	-0.743	4	.002	5	0	2	9.662e-3	2	8.748e-3	4
364		min	-0.069	2	-0.777	2	0	6	0	2	9.13e-3	3	7.871e-3	3
365	N209	max	-0.064	4	-0.743	4	.002	5	0	2	8.262e-3	2	8.033e-3	4
366		min	-0.069	2	-0.777	2	0	6	0	2	7.847e-3	3	6.995e-3	3
367	N210	max	-0.071	4	-0.743	4	.002	5	0	2	6.47e-3	2	9.894e-3	4
368		min	-0.076	2	-0.777	2	0	6	0	2	6.141e-3	3	8.754e-3	3
369	N211	max	-0.074	4	-0.743	4	.002	5	0	2	5.244e-3	2	7.258e-3	4
370		min	-0.08	2	-0.777	2	0	6	0	2	4.999e-3	3	6.e-3	3
371	N212	max	-0.078	4	-0.743	4	.002	5	0	2	4.346e-3	2	8.205e-3	4
372		min	-0.084	2	-0.777	2	0	6	0	2	4.137e-3	3	6.919e-3	3
373	N213	max	-0.083	4	-0.743	4	.002	5	0	2	3.637e-3	2	1.014e-2	4
374		min	-0.088	2	-0.777	2	0	6	0	2	3.43e-3	3	8.899e-3	3
375	N214	max	-0.085	4	-0.743	4	.002	5	0	2	4.646e-3	2	1.138e-2	4
376		min	-0.09	2	-0.777	2	0	6	0	2	4.351e-3	3	1.027e-2	3
377	N215	max	-0.088	4	-0.743	4	.002	5	0	2	6.505e-3	2	1.03e-2	4



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
378		min	-0.093	2	-0.777	2	.001	6	0	2	6.069e-3	3	9.412e-3	3
379	N216	max	-0.087	4	-0.743	4	.002	5	0	2	1.09e-2	2	4.561e-3	4
380		min	-0.092	2	-0.777	2	.001	6	0	2	1.021e-2	3	4.e-3	3
381	N217	max	-0.081	4	-0.743	4	.002	5	0	2	1.555e-2	2	5.482e-4	4
382		min	-0.086	2	-0.777	2	.001	6	0	2	1.462e-2	3	2.035e-4	3
383	N218	max	-0.072	4	-0.743	4	.002	5	0	2	1.524e-2	2	-1.172e-3	4
384		min	-0.077	2	-0.777	2	0	6	0	2	1.435e-2	3	-1.424e-3	3
385	N219	max	-0.066	4	-0.743	4	.002	5	0	2	1.203e-2	2	-1.434e-3	4
386		min	-.07	2	-0.777	2	0	6	0	2	1.134e-2	3	-1.673e-3	3
387	N220	max	-0.061	4	-0.743	4	.002	5	0	2	8.794e-3	2	-1.599e-4	4
388		min	-0.065	2	-0.777	2	0	6	0	2	8.312e-3	3	-4.635e-4	3
389	N221	max	-0.069	4	-0.743	4	.002	5	0	2	1.585e-2	2	4.293e-3	4
390		min	-0.074	2	-0.777	2	.001	6	0	2	1.493e-2	3	3.782e-3	3
391	N222	max	-0.077	4	-0.743	4	.002	5	0	2	1.017e-2	2	9.916e-3	4
392		min	-0.082	2	-0.777	2	.001	6	0	2	9.563e-3	3	9.104e-3	3
393	N223	max	-0.079	4	-0.743	4	.002	5	0	2	5.441e-3	2	1.134e-2	4
394		min	-0.084	2	-0.777	2	0	6	0	2	5.125e-3	3	1.027e-2	3
395	N224	max	-.07	4	-0.743	4	.002	5	0	2	9.222e-3	2	1.028e-2	4
396		min	-0.075	2	-0.777	2	0	6	0	2	8.693e-3	3	9.392e-3	3
397	N225	max	-0.068	4	-0.743	4	.002	5	0	2	1.198e-2	2	8.08e-3	4
398		min	-0.073	2	-0.777	2	.001	6	0	2	1.128e-2	3	7.37e-3	3
399	N226	max	-0.075	4	-0.743	4	.002	5	0	2	1.611e-2	2	1.365e-3	4
400		min	-.08	2	-0.777	2	.001	6	0	2	1.516e-2	3	9.703e-4	3
401	N227	max	-0.067	4	-0.743	4	.002	5	0	2	1.417e-2	2	1.529e-4	4
402		min	-0.071	2	-0.777	2	.001	6	0	2	1.335e-2	3	-1.662e-4	3
403	N228	max	-0.083	4	-0.743	4	.002	5	0	2	6.884e-3	2	1.017e-2	4
404		min	-0.088	2	-0.777	2	.001	6	0	2	6.442e-3	3	9.296e-3	3
405	N232	max	-0.051	4	-0.743	4	.001	5	-4.518e-6	5	-3.034e-3	3	3.298e-3	4
406		min	-0.056	5	-0.777	2	0	6	-2.627e-5	6	-3.278e-3	2	2.825e-3	3
407	N233	max	-0.057	4	-0.743	4	.002	5	1.399e-4	3	-3.038e-3	3	-3.182e-4	4
408		min	-0.061	2	-0.777	2	0	6	1.103e-4	4	-3.257e-3	2	-6.262e-4	3
409	N234	max	-0.059	4	-0.743	4	.001	5	-2.895e-5	4	-0.023e-3	3	3.501e-3	4
410		min	-0.065	2	-0.777	2	0	6	-7.782e-5	3	-7.373e-3	2	2.201e-3	3
411	N235	max	-0.081	4	-0.743	4	.002	5	-7.084e-5	5	-3.169e-3	3	4.28e-3	4
412		min	-0.086	2	-0.777	2	0	6	-8.689e-5	6	-3.333e-3	2	2.988e-3	3
413	N236	max	-0.057	4	-0.743	4	.001	5	1.225e-4	3	-3.282e-3	3	5.288e-4	4
414		min	-0.061	2	-0.777	2	0	6	9.975e-5	4	-3.522e-3	2	1.829e-4	3
415	N237	max	-0.054	4	-0.743	4	.001	5	4.547e-5	5	-3.382e-3	3	2.427e-3	4
416		min	-0.059	2	-0.777	2	0	6	2.509e-5	6	-3.642e-3	2	1.994e-3	3
417	N238	max	-0.082	4	-0.743	4	.001	5	0	2	-3.381e-3	3	5.763e-3	4
418		min	-0.087	2	-0.777	2	0	6	0	2	-3.559e-3	2	4.446e-3	3
419	N239	max	-0.084	4	-0.743	4	.001	5	0	2	-2.876e-3	3	9.036e-3	4
420		min	-.09	2	-0.777	2	0	6	0	2	-3.05e-3	2	7.704e-3	3
421	N240	max	-0.089	4	-0.743	4	.001	5	0	2	-3.347e-3	3	1.177e-2	4
422		min	-0.094	2	-0.777	2	0	6	0	2	-3.615e-3	4	1.055e-2	3
423	N241	max	-0.094	4	-0.743	4	.001	5	0	2	-5.993e-3	3	1.086e-2	4
424		min	-0.099	2	-0.777	2	0	6	0	2	-6.464e-3	4	9.88e-3	3
425	N242	max	-0.093	4	-0.743	4	.001	5	0	2	-1.087e-2	3	5.57e-3	4
426		min	-0.098	2	-0.777	2	0	6	0	2	-1.164e-2	2	4.934e-3	3
427	N243	max	-0.086	4	-0.743	4	.001	5	0	2	-1.495e-2	3	2.351e-4	4
428		min	-0.091	2	-0.777	2	0	6	0	2	-1.596e-2	2	-1.134e-4	3
429	N244	max	-0.076	4	-0.743	4	.001	5	0	2	-1.44e-2	3	-2.182e-3	4
430		min	-.08	2	-0.777	2	0	6	0	2	-1.537e-2	2	-2.397e-3	3
431	N245	max	-0.066	4	-0.743	4	.001	5	0	2	-9.596e-3	3	-2.002e-3	4
432		min	-.07	2	-0.777	2	0	6	0	2	-1.025e-2	2	-2.217e-3	3
433	N246	max	-0.06	4	-0.743	4	.001	5	0	2	-5.028e-3	3	-6.263e-4	4
434		min	-0.065	2	-0.777	2	0	6	0	2	-5.382e-3	2	-9.119e-4	3



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
435	N247	max	-0.066	4	-0.743	4	.001	5	-6.4e-5	4	-6.197e-3	3	3.948e-3	4
436		min	-0.072	2	-0.777	2	0	6	-9.558e-5	3	-6.509e-3	2	2.652e-3	3
437	N248	max	-0.077	4	-0.743	4	.001	5	-8.65e-5	5	-4.192e-3	3	4.268e-3	4
438		min	-0.083	2	-0.777	2	0	6	-1.057e-4	3	-4.407e-3	2	2.973e-3	3
439	N249	max	-0.053	4	-0.743	4	.001	5	0	2	-1.18e-2	3	5.382e-3	4
440		min	-0.058	5	-0.777	2	0	6	0	2	-1.257e-2	2	4.81e-3	3
441	N250	max	-0.056	4	-0.743	4	.001	5	0	2	-1.112e-2	3	6.676e-3	4
442		min	-0.061	2	-0.777	2	0	6	0	2	-1.182e-2	2	5.998e-3	3
443	N251	max	-0.058	4	-0.743	4	.001	5	0	2	-9.332e-3	3	8.206e-3	4
444		min	-0.063	2	-0.777	2	0	6	0	2	-9.859e-3	2	7.33e-3	3
445	N252	max	-0.059	4	-0.743	4	.001	5	0	2	-7.48e-3	3	9.315e-4	4
446		min	-0.064	2	-0.777	2	0	6	0	2	-7.997e-3	2	5.709e-4	3
447	N253	max	-0.061	4	-0.743	4	.001	5	0	2	-1.216e-2	3	1.262e-3	4
448		min	-0.065	2	-0.777	2	0	6	0	2	-1.296e-2	2	8.767e-4	3
449	N254	max	-0.057	4	-0.743	4	.001	5	0	2	-1.067e-2	3	3.635e-3	4
450		min	-0.062	2	-0.777	2	0	6	0	2	-1.137e-2	2	3.144e-3	3
451	N255	max	-0.061	4	-0.743	4	.001	5	0	2	-1.258e-2	3	4.895e-3	4
452		min	-0.065	2	-0.777	2	0	6	0	2	-1.34e-2	2	4.335e-3	3
453	N256	max	-0.063	4	-0.743	4	.001	5	0	2	-1.147e-2	3	7.33e-3	4
454		min	-0.068	2	-0.777	2	0	6	0	2	-1.22e-2	2	6.621e-3	3
455	N257	max	-0.064	4	-0.743	4	.001	5	0	2	-9.061e-3	3	8.726e-3	4
456		min	-0.069	2	-0.777	2	0	6	0	2	-9.611e-3	2	7.809e-3	3
457	N258	max	-0.065	4	-0.743	4	.001	5	0	2	-7.782e-3	3	8.011e-3	4
458		min	-0.07	2	-0.777	2	0	6	0	2	-8.213e-3	2	6.933e-3	3
459	N259	max	-0.071	4	-0.743	4	.001	5	0	2	-6.08e-3	3	9.871e-3	4
460		min	-0.076	2	-0.777	2	0	6	0	2	-6.422e-3	2	8.688e-3	3
461	N260	max	-0.074	4	-0.743	4	.001	5	0	2	-4.94e-3	3	7.238e-3	4
462		min	-0.08	2	-0.777	2	0	6	0	2	-5.198e-3	2	5.945e-3	3
463	N261	max	-0.079	4	-0.743	4	.001	5	0	2	-4.083e-3	3	8.184e-3	4
464		min	-0.084	2	-0.777	2	0	6	0	2	-4.302e-3	2	6.861e-3	3
465	N262	max	-0.083	4	-0.743	4	.001	5	0	2	-3.38e-3	3	1.012e-2	4
466		min	-0.088	2	-0.777	2	0	6	0	2	-3.594e-3	2	8.833e-3	3
467	N263	max	-0.085	4	-0.743	4	.001	5	0	2	-4.297e-3	3	1.135e-2	4
468		min	-0.09	2	-0.777	2	0	6	0	2	-4.601e-3	2	1.02e-2	3
469	N264	max	-0.088	4	-0.743	4	.001	5	0	2	-6.005e-3	3	1.027e-2	4
470		min	-0.093	2	-0.777	2	0	6	0	2	-6.457e-3	2	9.336e-3	3
471	N265	max	-0.087	4	-0.743	4	.001	5	0	2	-1.013e-2	3	4.538e-3	4
472		min	-0.092	2	-0.777	2	0	6	0	2	-1.084e-2	2	3.936e-3	3
473	N266	max	-0.081	4	-0.743	4	.001	5	0	2	-1.451e-2	3	5.312e-4	4
474		min	-0.086	2	-0.777	2	0	6	0	2	-1.548e-2	2	1.577e-4	3
475	N267	max	-0.072	4	-0.743	4	.001	5	0	2	-1.42e-2	3	-1.181e-3	4
476		min	-0.077	2	-0.777	2	0	6	0	2	-1.515e-2	2	-1.449e-3	3
477	N268	max	-0.066	4	-0.743	4	.001	5	0	2	-1.118e-2	3	-1.439e-3	4
478		min	-0.071	2	-0.777	2	0	6	0	2	-1.193e-2	2	-1.685e-3	3
479	N269	max	-0.061	4	-0.743	4	.001	5	0	2	-8.136e-3	3	-1.616e-4	4
480		min	-0.066	2	-0.777	2	0	6	0	2	-8.695e-3	2	-4.688e-4	3
481	N270	max	-0.07	4	-0.743	4	.001	5	0	2	-1.483e-2	3	4.277e-3	4
482		min	-0.075	2	-0.777	2	0	6	0	2	-1.579e-2	2	3.738e-3	3
483	N271	max	-0.077	4	-0.743	4	.001	5	0	2	-9.489e-3	3	9.893e-3	4
484		min	-0.082	2	-0.777	2	0	6	0	2	-1.012e-2	2	9.039e-3	3
485	N272	max	-0.079	4	-0.743	4	.001	5	0	2	-5.067e-3	3	1.132e-2	4
486		min	-0.085	2	-0.777	2	0	6	0	2	-5.395e-3	2	1.02e-2	3
487	N273	max	-0.071	4	-0.743	4	.001	5	0	2	-8.625e-3	3	1.026e-2	4
488		min	-0.076	2	-0.777	2	0	6	0	2	-9.172e-3	2	9.327e-3	3
489	N274	max	-0.069	4	-0.743	4	.001	5	0	2	-1.12e-2	3	8.061e-3	4
490		min	-0.074	2	-0.777	2	0	6	0	2	-1.192e-2	2	7.314e-3	3
491	N275	max	-0.075	4	-0.743	4	.001	5	0	2	-1.505e-2	3	1.351e-3	4



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
492		min	-0.08	2	-0.777	2	0	6	0	2	-1.604e-2	2	9.298e-4	3
493	N276	max	-0.067	4	-0.743	4	.001	5	0	2	-1.32e-2	3	1.466e-4	4
494		min	-0.072	2	-0.777	2	0	6	0	2	-1.408e-2	2	-1.838e-4	3
495	N277	max	-0.084	4	-0.743	4	.001	5	0	2	-6.376e-3	3	1.015e-2	4
496		min	-0.089	2	-0.777	2	0	6	0	2	-6.834e-3	2	9.225e-3	3
497	N281	max	-0.024	3	-0.743	4	.002	5	3.662e-5	3	5.371e-4	5	-4.642e-3	4
498		min	-0.027	2	-0.776	2	0	6	1.979e-5	6	5.114e-4	3	-4.819e-3	2
499	N282	max	-0.042	4	-0.743	4	.002	5	1.711e-5	3	1.544e-3	2	-3.89e-3	4
500		min	-0.045	2	-0.776	2	0	6	-5.416e-6	4	1.481e-3	3	-4.057e-3	2
501	N283	max	-0.013	3	-0.742	4	.002	5	-8.351e-6	4	-2.534e-4	5	-4.223e-3	4
502		min	-0.016	5	-0.776	2	0	6	-3.616e-5	6	-3.037e-4	3	-4.85e-3	3
503	N284	max	-0.013	3	-0.742	4	.002	5	1.231e-5	4	-1.065e-4	5	-4.208e-3	4
504		min	-0.016	5	-0.776	2	0	6	9.481e-7	6	-1.267e-4	3	-4.824e-3	3
505	N285	max	-0.038	4	-0.743	4	.002	5	4.502e-5	3	1.259e-3	2	-4.189e-3	4
506		min	-0.041	2	-0.776	2	0	6	1.939e-5	4	1.21e-3	3	-4.36e-3	2
507	N286	max	-0.029	3	-0.743	4	.002	5	4.651e-5	3	7.432e-4	2	-4.555e-3	4
508		min	-0.032	2	-0.776	2	0	6	2.689e-5	6	7.154e-4	3	-4.73e-3	2
509	N287	max	-0.016	3	-0.742	4	.002	5	0	2	-1.295e-4	5	-4.167e-3	4
510		min	-0.018	5	-0.776	2	0	6	0	2	-1.429e-4	3	-4.766e-3	3
511	N288	max	-0.019	3	-0.742	4	.002	5	0	2	-1.373e-4	3	-4.11e-3	4
512		min	-0.021	2	-0.776	2	0	6	0	2	-1.635e-4	4	-4.65e-3	3
513	N289	max	-0.021	4	-0.742	4	.002	5	0	2	-1.926e-4	3	-4.186e-3	4
514		min	-0.024	2	-0.776	2	0	6	0	2	-2.922e-4	5	-4.603e-3	3
515	N290	max	-0.024	4	-0.742	4	.002	5	0	2	-3.481e-4	3	-4.484e-3	4
516		min	-0.027	2	-0.776	2	0	6	0	2	-5.222e-4	5	-4.768e-3	3
517	N291	max	-0.028	4	-0.742	4	.002	5	0	2	-5.703e-4	3	-4.965e-3	4
518		min	-0.03	2	-0.776	2	0	6	0	2	-7.955e-4	5	-5.143e-3	2
519	N292	max	-0.031	4	-0.742	4	.002	5	0	2	-6.26e-4	3	-5.282e-3	4
520		min	-0.034	2	-0.776	2	0	6	0	2	-8.521e-4	5	-5.464e-3	2
521	N293	max	-0.035	4	-0.743	4	.002	5	0	2	-2.724e-4	3	-5.242e-3	6
522		min	-0.038	2	-0.776	2	0	6	0	2	-4.417e-4	5	-5.431e-3	2
523	N294	max	-0.038	4	-0.743	4	.002	5	0	2	4.391e-4	3	-4.901e-3	4
524		min	-0.041	2	-0.776	2	0	6	0	2	3.701e-4	5	-5.081e-3	2
525	N295	max	-0.041	4	-0.743	4	.002	5	0	2	1.134e-3	2	-4.376e-3	4
526		min	-0.044	2	-0.776	2	0	6	0	2	1.098e-3	6	-4.549e-3	2
527	N296	max	-0.013	3	-0.742	4	.002	5	7.801e-6	4	-2.257e-4	5	-4.216e-3	4
528		min	-0.016	5	-0.776	2	0	6	-1.234e-5	6	-2.668e-4	3	-4.834e-3	3
529	N297	max	-0.013	3	-0.742	4	.002	5	1.574e-5	4	-1.482e-4	5	-4.208e-3	4
530		min	-0.016	5	-0.776	2	0	6	2.378e-6	6	-1.744e-4	3	-4.823e-3	3
531	N298	max	-0.022	3	-0.743	4	.002	5	0	2	-4.734e-4	3	-4.641e-3	4
532		min	-0.025	2	-0.776	2	0	6	0	2	-6.022e-4	5	-4.816e-3	2
533	N299	max	-0.019	3	-0.743	4	.002	5	0	2	-5.729e-4	3	-4.664e-3	4
534		min	-0.022	2	-0.776	2	0	6	0	2	-6.893e-4	2	-4.856e-3	3
535	N300	max	-0.016	3	-0.742	4	.002	5	0	2	-4.635e-4	3	-4.501e-3	4
536		min	-0.019	5	-0.776	2	0	6	0	2	-4.96e-4	2	-4.778e-3	3
537	N301	max	-0.034	3	-0.743	4	.002	5	0	2	4.776e-4	3	-4.61e-3	4
538		min	-0.037	2	-0.776	2	0	6	0	2	4.386e-4	5	-4.786e-3	2
539	N302	max	-0.029	3	-0.743	4	.002	5	0	2	-2.082e-4	3	-4.85e-3	4
540		min	-0.032	2	-0.776	2	0	6	0	2	-3.307e-4	5	-5.029e-3	2
541	N303	max	-0.026	3	-0.743	4	.002	5	0	2	-2.013e-4	3	-4.717e-3	4
542		min	-0.029	2	-0.776	2	0	6	0	2	-3.03e-4	5	-4.893e-3	2
543	N304	max	-0.023	3	-0.743	4	.002	5	0	2	-5.352e-4	3	-4.761e-3	4
544		min	-0.026	2	-0.776	2	0	6	0	2	-6.737e-4	5	-4.937e-3	2
545	N305	max	-0.02	3	-0.742	4	.002	5	0	2	-5.918e-4	3	-4.642e-3	4
546		min	-0.023	2	-0.776	2	0	6	0	2	-7.191e-4	2	-4.839e-3	3
547	N306	max	-0.018	3	-0.742	4	.002	5	0	2	-4.653e-4	3	-4.448e-3	4
548		min	-0.021	2	-0.776	2	0	6	0	2	-5.384e-4	2	-4.741e-3	3



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
549	N307	max	-0.16	3	-0.742	4	.002	5	0	2	-3.712e-4	3	-4.328e-3	4
550		min	-0.19	5	-0.776	2	0	6	0	2	-3.871e-4	2	-4.733e-3	3
551	N308	max	-0.17	3	-0.742	4	.002	5	0	2	-2.769e-4	3	-4.203e-3	4
552		min	-0.19	5	-0.776	2	0	6	0	2	-2.945e-4	2	-4.636e-3	3
553	N309	max	-0.15	3	-0.742	4	.002	5	0	2	-1.876e-4	5	-4.167e-3	4
554		min	-0.18	5	-0.776	2	0	6	0	2	-2.095e-4	3	-4.719e-3	3
555	N310	max	-0.16	3	-0.742	4	.002	5	0	2	-1.69e-4	5	-4.128e-3	4
556		min	-0.19	5	-0.776	2	0	6	0	2	-1.794e-4	6	-4.68e-3	3
557	N311	max	-0.18	3	-0.742	4	.002	5	0	2	-1.632e-4	3	-4.139e-3	4
558		min	-0.21	2	-0.776	2	0	6	0	2	-2.035e-4	4	-4.627e-3	3
559	N312	max	-0.21	3	-0.742	4	.002	5	0	2	-2.227e-4	3	-4.258e-3	4
560		min	-0.23	2	-0.776	2	0	6	0	2	-3.101e-4	4	-4.64e-3	3
561	N313	max	-0.23	4	-0.742	4	.002	5	0	2	-3.225e-4	3	-4.522e-3	4
562		min	-0.26	2	-0.776	2	0	6	0	2	-4.773e-4	5	-4.789e-3	3
563	N314	max	-0.26	4	-0.742	4	.002	5	0	2	-5.064e-4	3	-4.986e-3	4
564		min	-0.29	2	-0.776	2	0	6	0	2	-7.06e-4	5	-5.165e-3	2
565	N315	max	-0.29	4	-0.742	4	.002	5	0	2	-6.259e-4	3	-5.208e-3	4
566		min	-0.32	2	-0.776	2	0	6	0	2	-8.383e-4	5	-5.39e-3	2
567	N316	max	-0.33	4	-0.743	4	.002	5	0	2	-3.251e-4	3	-5.136e-3	4
568		min	-0.36	2	-0.776	2	0	6	0	2	-4.943e-4	5	-5.317e-3	2
569	N317	max	-0.36	4	-0.743	4	.002	5	0	2	1.643e-4	3	-4.925e-3	4
570		min	-0.39	2	-0.776	2	0	6	0	2	6.177e-5	5	-5.105e-3	2
571	N318	max	-0.36	3	-0.743	4	.002	5	0	2	5.276e-4	3	-4.639e-3	4
572		min	-0.39	2	-0.776	2	0	6	0	2	4.818e-4	5	-4.815e-3	2
573	N319	max	-0.25	3	-0.742	4	.002	5	0	2	-7.363e-4	3	-4.888e-3	4
574		min	-0.27	2	-0.776	2	0	6	0	2	-9.138e-4	5	-5.066e-3	2
575	N320	max	-0.22	3	-0.742	4	.002	5	0	2	-4.946e-4	3	-4.51e-3	4
576		min	-0.24	2	-0.776	2	0	6	0	2	-6.318e-4	5	-4.741e-3	3
577	N321	max	-0.19	3	-0.742	4	.002	5	0	2	-2.398e-4	3	-4.263e-3	4
578		min	-0.22	2	-0.776	2	0	6	0	2	-3.03e-4	4	-4.629e-3	3
579	N322	max	-0.19	3	-0.742	4	.002	5	0	2	-4.512e-4	3	-4.405e-3	4
580		min	-0.22	2	-0.776	2	0	6	0	2	-5.463e-4	2	-4.68e-3	3
581	N323	max	-0.21	3	-0.742	4	.002	5	0	2	-5.71e-4	3	-4.607e-3	4
582		min	-0.24	2	-0.776	2	0	6	0	2	-7.068e-4	5	-4.811e-3	3
583	N324	max	-0.27	3	-0.742	4	.002	5	0	2	-6.789e-4	3	-5.09e-3	4
584		min	-0.3	2	-0.776	2	0	6	0	2	-8.722e-4	5	-5.272e-3	2
585	N325	max	-0.32	3	-0.743	4	.002	5	0	2	-2.572e-4	3	-4.971e-3	4
586		min	-0.34	2	-0.776	2	0	6	0	2	-4.048e-4	5	-5.151e-3	2
587	N326	max	-0.22	3	-0.742	4	.002	5	0	2	-3.137e-4	3	-4.49e-3	4
588		min	-0.25	2	-0.776	2	0	6	0	2	-4.483e-4	5	-4.755e-3	3
589	N327	max	-0.25	3	-0.742	4	.002	5	-6.066e-7	3	-5.068e-4	5	-4.647e-3	4
590		min	-0.28	2	-0.776	2	0	6	-1.955e-5	6	-5.303e-4	2	-4.823e-3	2
591	N328	max	-0.43	4	-0.743	4	.002	5	3.338e-5	3	-1.43e-3	3	-3.895e-3	4
592		min	-0.46	2	-0.776	2	0	6	8.943e-6	6	-1.506e-3	2	-4.062e-3	2
593	N329	max	-0.14	3	-0.742	4	.002	5	6.398e-5	3	3.44e-4	3	-4.225e-3	4
594		min	-0.17	5	-0.776	2	0	6	1.794e-5	4	2.925e-4	4	-4.859e-3	3
595	N330	max	-0.13	3	-0.742	4	.002	5	7.136e-6	3	1.699e-4	3	-4.209e-3	4
596		min	-0.16	5	-0.776	2	0	6	-8.686e-6	4	1.452e-4	4	-4.828e-3	3
597	N331	max	-0.38	4	-0.743	4	.002	5	6.491e-7	3	-1.175e-3	3	-4.194e-3	4
598		min	-0.42	2	-0.776	2	0	6	-1.878e-5	6	-1.229e-3	2	-4.365e-3	2
599	N332	max	-0.3	3	-0.743	4	.002	5	-8.419e-6	3	-7.012e-4	5	-4.559e-3	4
600		min	-0.32	2	-0.776	2	0	6	-2.616e-5	6	-7.296e-4	2	-4.734e-3	2
601	N333	max	-0.16	3	-0.742	4	.002	5	0	2	1.873e-4	3	-4.169e-3	4
602		min	-0.19	5	-0.776	2	0	6	0	2	1.678e-4	4	-4.774e-3	3
603	N334	max	-0.19	3	-0.742	4	.002	5	0	2	2.057e-4	5	-4.113e-3	4
604		min	-0.21	2	-0.776	2	0	6	0	2	1.837e-4	3	-4.664e-3	3
605	N335	max	-0.22	4	-0.742	4	.002	5	0	2	3.424e-4	5	-4.191e-3	4





**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
606		min	-0.024	2	-0.776	2	0	6	0	2	2.406e-4	3	-4.623e-3	3
607	N336	max	-0.024	4	-0.742	4	.002	5	0	2	5.736e-4	5	-4.49e-3	4
608		min	-0.027	2	-0.776	2	0	6	0	2	3.952e-4	3	-4.791e-3	3
609	N337	max	-0.028	4	-0.742	4	.002	5	0	2	8.477e-4	5	-4.97e-3	4
610		min	-0.031	2	-0.776	2	0	6	0	2	6.127e-4	3	-5.156e-3	3
611	N338	max	-0.031	4	-0.742	4	.002	5	0	2	9.044e-4	5	-5.286e-3	4
612		min	-0.034	2	-0.776	2	0	6	0	2	6.606e-4	3	-5.473e-3	2
613	N339	max	-0.035	4	-0.742	4	.002	5	0	2	4.939e-4	5	-5.247e-3	6
614		min	-0.038	2	-0.776	2	0	6	0	2	2.994e-4	3	-5.435e-3	2
615	N340	max	-0.038	4	-0.743	4	.002	5	0	2	-3.167e-4	5	-4.902e-3	4
616		min	-0.042	2	-0.776	2	0	6	0	2	-4.16e-4	3	-5.081e-3	2
617	N341	max	-0.041	4	-0.743	4	.002	5	0	2	-1.065e-3	5	-4.378e-3	4
618		min	-0.044	2	-0.776	2	0	6	0	2	-1.105e-3	2	-4.55e-3	2
619	N342	max	-0.013	3	-0.742	4	.002	5	3.422e-5	3	3.08e-4	3	-4.218e-3	4
620		min	-0.016	5	-0.776	2	0	6	8.38e-7	4	2.645e-4	4	-4.843e-3	3
621	N343	max	-0.013	3	-0.742	4	.002	5	1.015e-5	3	2.171e-4	3	-4.21e-3	4
622		min	-0.016	5	-0.776	2	0	6	-1.02e-5	4	1.868e-4	4	-4.83e-3	3
623	N344	max	-0.022	3	-0.742	4	.002	5	0	2	6.53e-4	5	-4.644e-3	4
624		min	-0.025	5	-0.776	2	0	6	0	2	5.075e-4	3	-4.82e-3	2
625	N345	max	-0.019	3	-0.742	4	.002	5	0	2	7.4e-4	5	-4.67e-3	4
626		min	-0.022	5	-0.776	2	0	6	0	2	6.159e-4	3	-4.875e-3	3
627	N346	max	-0.017	3	-0.742	4	.002	5	0	2	5.359e-4	2	-4.508e-3	4
628		min	-0.019	5	-0.776	2	0	6	0	2	5.074e-4	3	-4.801e-3	3
629	N347	max	-0.034	4	-0.743	4	.002	5	0	2	-3.873e-4	5	-4.613e-3	4
630		min	-0.037	2	-0.776	2	0	6	0	2	-4.58e-4	3	-4.789e-3	2
631	N348	max	-0.029	3	-0.742	4	.002	5	0	2	3.807e-4	5	-4.853e-3	4
632		min	-0.032	2	-0.776	2	0	6	0	2	2.319e-4	3	-5.032e-3	2
633	N349	max	-0.026	3	-0.742	4	.002	5	0	2	3.507e-4	5	-4.72e-3	4
634		min	-0.029	2	-0.776	2	0	6	0	2	2.24e-4	3	-4.898e-3	2
635	N350	max	-0.024	3	-0.742	4	.002	5	0	2	7.246e-4	5	-4.766e-3	4
636		min	-0.026	2	-0.776	2	0	6	0	2	5.695e-4	3	-4.945e-3	2
637	N351	max	-0.021	3	-0.742	4	.002	5	0	2	7.712e-4	5	-4.648e-3	4
638		min	-0.023	5	-0.776	2	0	6	0	2	6.345e-4	3	-4.86e-3	3
639	N352	max	-0.018	3	-0.742	4	.002	5	0	2	5.838e-4	5	-4.454e-3	4
640		min	-0.021	5	-0.776	2	0	6	0	2	5.095e-4	3	-4.763e-3	3
641	N353	max	-0.016	3	-0.742	4	.002	5	0	2	4.266e-4	2	-4.333e-3	4
642		min	-0.019	5	-0.776	2	0	6	0	2	4.089e-4	4	-4.752e-3	3
643	N354	max	-0.017	3	-0.742	4	.002	5	0	2	3.345e-4	2	-4.208e-3	4
644		min	-0.02	5	-0.776	2	0	6	0	2	3.199e-4	4	-4.655e-3	3
645	N355	max	-0.015	3	-0.742	4	.002	5	0	2	2.525e-4	3	-4.17e-3	4
646		min	-0.018	5	-0.776	2	0	6	0	2	2.257e-4	4	-4.732e-3	3
647	N356	max	-0.017	3	-0.742	4	.002	5	0	2	2.224e-4	3	-4.13e-3	4
648		min	-0.019	5	-0.776	2	0	6	0	2	2.066e-4	4	-4.692e-3	3
649	N357	max	-0.019	3	-0.742	4	.002	5	0	2	2.477e-4	5	-4.142e-3	4
650		min	-0.021	5	-0.776	2	0	6	0	2	2.095e-4	3	-4.644e-3	3
651	N358	max	-0.021	4	-0.742	4	.002	5	0	2	3.602e-4	5	-4.263e-3	4
652		min	-0.023	2	-0.776	2	0	6	0	2	2.695e-4	3	-4.661e-3	3
653	N359	max	-0.023	4	-0.742	4	.002	5	0	2	5.286e-4	5	-4.527e-3	4
654		min	-0.026	2	-0.776	2	0	6	0	2	3.69e-4	3	-4.813e-3	3
655	N360	max	-0.026	4	-0.742	4	.002	5	0	2	7.583e-4	5	-4.991e-3	4
656		min	-0.029	2	-0.776	2	0	6	0	2	5.491e-4	3	-5.177e-3	3
657	N361	max	-0.03	4	-0.742	4	.002	5	0	2	8.91e-4	5	-5.212e-3	4
658		min	-0.032	2	-0.776	2	0	6	0	2	6.619e-4	3	-5.399e-3	2
659	N362	max	-0.033	4	-0.742	4	.002	5	0	2	5.468e-4	5	-5.138e-3	4
660		min	-0.036	2	-0.776	2	0	6	0	2	3.538e-4	3	-5.322e-3	2
661	N363	max	-0.036	4	-0.743	4	.002	5	0	2	-8.629e-6	5	-4.927e-3	4
662		min	-0.039	2	-0.776	2	0	6	0	2	-1.395e-4	3	-5.107e-3	2



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
663	N364	max	-0.036	4	-0.743	4	.002	5	0	2	-4.282e-4	5	-4.641e-3	4
664		min	-.04	2	-.776	2	0	6	0	2	-5.048e-4	3	-4.817e-3	2
665	N365	max	-.025	3	-.742	4	.002	5	0	2	9.671e-4	5	-4.893e-3	4
666		min	-.028	2	-.776	2	0	6	0	2	7.755e-4	3	-5.075e-3	2
667	N366	max	-.022	3	-.742	4	.002	5	0	2	6.839e-4	5	-4.515e-3	4
668		min	-.025	2	-.776	2	0	6	0	2	5.39e-4	3	-4.763e-3	3
669	N367	max	-.02	3	-.742	4	.002	5	0	2	3.509e-4	5	-4.268e-3	4
670		min	-.022	2	-.776	2	0	6	0	2	2.853e-4	3	-4.65e-3	3
671	N368	max	-.02	3	-.742	4	.002	5	0	2	5.965e-4	5	-4.411e-3	4
672		min	-.022	5	-.776	2	0	6	0	2	4.959e-4	3	-4.702e-3	3
673	N369	max	-.022	3	-.742	4	.002	5	0	2	7.591e-4	5	-4.612e-3	4
674		min	-.024	2	-.776	2	0	6	0	2	6.133e-4	3	-4.832e-3	3
675	N370	max	-.028	4	-.742	4	.002	5	0	2	9.252e-4	5	-5.094e-3	4
676		min	-.03	2	-.776	2	0	6	0	2	7.156e-4	3	-5.28e-3	2
677	N371	max	-.032	4	-.742	4	.002	5	0	2	4.57e-4	5	-4.973e-3	4
678		min	-.035	2	-.776	2	0	6	0	2	2.848e-4	3	-5.154e-3	2
679	N372	max	-.022	4	-.742	4	.002	5	0	2	4.998e-4	5	-4.495e-3	4
680		min	-.025	2	-.776	2	0	6	0	2	3.595e-4	3	-4.778e-3	3
681	N379	max	-.104	4	-.728	4	.001	5	-2.928e-5	5	-2.568e-3	6	-1.024e-2	6
682		min	-.109	2	-.761	2	0	6	-5.216e-5	6	-2.655e-3	2	-1.055e-2	2
683	N380	max	-.07	4	-.728	4	.002	5	1.108e-4	3	-2.381e-3	6	-6.98e-3	6
684		min	-.074	2	-.761	2	0	6	8.6e-5	6	-2.458e-3	2	-7.211e-3	2
685	N381	max	-.114	4	-.727	4	.002	5	-1.803e-5	5	-5.592e-3	3	-1.03e-2	5
686		min	-.119	2	-.761	2	0	6	-6.12e-5	3	-6.027e-3	2	-1.118e-2	3
687	N382	max	-.097	4	-.728	4	.002	5	-5.733e-5	5	-2.489e-3	3	-1.07e-2	5
688		min	-.102	2	-.761	2	0	6	-7.383e-5	4	-2.68e-3	2	-1.155e-2	3
689	N383	max	-.077	4	-.728	4	.002	5	9.269e-5	3	-2.599e-3	6	-7.709e-3	6
690		min	-.082	2	-.761	2	0	6	7.311e-5	6	-2.683e-3	2	-7.959e-3	2
691	N384	max	-.094	4	-.728	4	.001	5	2.387e-5	5	-2.794e-3	6	-9.393e-3	6
692		min	-.099	2	-.761	2	0	6	2.033e-6	6	-2.885e-3	2	-9.685e-3	2
693	N385	max	-.091	4	-.728	4	.002	5	0	2	-2.91e-3	3	-1.138e-2	5
694		min	-.096	2	-.761	2	0	6	0	2	-3.134e-3	2	-1.217e-2	3
695	N386	max	-.085	4	-.728	4	.001	5	0	2	-2.918e-3	3	-1.275e-2	5
696		min	-.09	2	-.761	2	0	6	0	2	-3.133e-3	2	-1.34e-2	3
697	N387	max	-.079	4	-.728	4	.001	5	0	2	-2.849e-3	3	-1.356e-2	5
698		min	-.084	2	-.761	2	0	6	0	2	-3.002e-3	4	-1.406e-2	2
699	N388	max	-.073	4	-.728	4	.001	5	0	2	-3.948e-3	5	-1.204e-2	5
700		min	-.078	2	-.761	2	0	6	0	2	-4.158e-3	4	-1.243e-2	3
701	N389	max	-.07	4	-.727	4	.001	5	0	2	-6.31e-3	5	-9.527e-3	5
702		min	-.074	2	-.761	2	0	6	0	2	-6.548e-3	2	-9.813e-3	3
703	N390	max	-.069	4	-.727	4	.001	5	0	2	-8.215e-3	5	-6.359e-3	4
704		min	-.074	2	-.761	2	0	6	0	2	-8.49e-3	2	-6.571e-3	3
705	N391	max	-.071	4	-.727	4	.001	5	0	2	-9.145e-3	5	-5.451e-3	4
706		min	-.076	2	-.761	2	0	6	0	2	-9.426e-3	2	-5.637e-3	2
707	N392	max	-.073	4	-.728	4	.002	5	0	2	-6.49e-3	5	-6.164e-3	6
708		min	-.078	2	-.761	2	0	6	0	2	-6.673e-3	2	-6.384e-3	2
709	N393	max	-.072	4	-.728	4	.002	5	0	2	-3.666e-3	6	-6.966e-3	6
710		min	-.077	2	-.761	2	0	6	0	2	-3.767e-3	2	-7.202e-3	2
711	N394	max	-.108	4	-.728	4	.002	5	-5.148e-5	5	-4.88e-3	3	-1.057e-2	5
712		min	-.114	2	-.761	2	0	6	-8.286e-5	3	-5.256e-3	2	-1.142e-2	3
713	N395	max	-.1	4	-.728	4	.002	5	-7.106e-5	5	-3.289e-3	3	-1.07e-2	5
714		min	-.105	2	-.761	2	0	6	-9.147e-5	4	-3.542e-3	2	-1.154e-2	3
715	N396	max	-.106	4	-.727	4	.001	5	0	2	-1.128e-2	3	-1.071e-2	6
716		min	-.111	2	-.761	2	0	6	0	2	-1.182e-2	2	-1.101e-2	2
717	N397	max	-.106	4	-.727	4	.001	5	0	2	-8.842e-3	3	-1.256e-2	6
718		min	-.112	2	-.761	2	0	6	0	2	-9.273e-3	2	-1.292e-2	2
719	N398	max	-.11	4	-.727	4	.001	5	0	2	-6.323e-3	3	-1.547e-2	6



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
720		min	-0.115	2	-0.761	2	0	6	0	-6.696e-3	2	-1.592e-2	2	
721	N399	max	-0.084	4	-0.728	4	.001	5	0	-5.305e-3	6	-8.122e-3	6	
722		min	-0.089	2	-0.761	2	0	6	0	-5.44e-3	2	-8.383e-3	2	
723	N400	max	-0.09	4	-0.728	4	.001	5	0	-9.951e-3	3	-7.554e-3	6	
724		min	-0.095	2	-0.761	2	0	6	0	-1.024e-2	2	-7.787e-3	2	
725	N401	max	-0.097	4	-0.728	4	.001	5	0	-9.798e-3	3	-9.579e-3	6	
726		min	-0.103	2	-0.761	2	0	6	0	-1.021e-2	2	-9.851e-3	2	
727	N402	max	-0.097	4	-0.727	4	.001	5	0	-1.119e-2	3	-1.05e-2	6	
728		min	-0.102	2	-0.761	2	0	6	0	-1.169e-2	2	-1.079e-2	2	
729	N403	max	-0.099	4	-0.727	4	.001	5	0	-9.119e-3	3	-1.32e-2	6	
730		min	-0.104	2	-0.761	2	0	6	0	-9.57e-3	2	-1.357e-2	2	
731	N404	max	-0.101	4	-0.727	4	.001	5	0	-6.366e-3	3	-1.528e-2	6	
732		min	-0.107	2	-0.761	2	0	6	0	-6.711e-3	2	-1.571e-2	2	
733	N405	max	-0.105	4	-0.727	4	.002	5	0	-5.532e-3	3	-1.483e-2	5	
734		min	-0.11	2	-0.761	2	0	6	0	-5.898e-3	2	-1.536e-2	2	
735	N406	max	-0.099	4	-0.728	4	.002	5	0	-3.838e-3	3	-1.482e-2	5	
736		min	-0.104	2	-0.761	2	0	6	0	-4.085e-3	2	-1.536e-2	2	
737	N407	max	-0.098	4	-0.728	4	.002	5	0	-3.952e-3	3	-1.203e-2	5	
738		min	-0.103	2	-0.761	2	0	6	0	-4.249e-3	2	-1.272e-2	3	
739	N408	max	-0.093	4	-0.728	4	.002	5	0	-3.48e-3	3	-1.238e-2	5	
740		min	-0.098	2	-0.761	2	0	6	0	-3.742e-3	2	-1.306e-2	3	
741	N409	max	-0.087	4	-0.728	4	.001	5	0	-2.903e-3	3	-1.33e-2	5	
742		min	-0.092	2	-0.761	2	0	6	0	-3.094e-3	2	-1.387e-2	2	
743	N410	max	-0.083	4	-0.728	4	.001	5	0	-3.143e-3	3	-1.332e-2	5	
744		min	-0.088	2	-0.761	2	0	6	0	-3.286e-3	2	-1.378e-2	2	
745	N411	max	-0.078	4	-0.728	4	.001	5	0	-3.416e-3	5	-1.204e-2	5	
746		min	-0.083	2	-0.761	2	0	6	0	-3.589e-3	4	-1.241e-2	3	
747	N412	max	-0.075	4	-0.727	4	.001	5	0	-5.68e-3	5	-8.574e-3	5	
748		min	-0.08	2	-0.761	2	0	6	0	-5.892e-3	2	-8.849e-3	3	
749	N413	max	-0.075	4	-0.727	4	.001	5	0	-8.27e-3	5	-5.975e-3	4	
750		min	-0.079	2	-0.761	2	0	6	0	-8.535e-3	2	-6.223e-3	3	
751	N414	max	-0.076	4	-0.728	4	.001	5	0	-9.209e-3	5	-5.935e-3	6	
752		min	-0.081	2	-0.761	2	0	6	0	-9.487e-3	2	-6.129e-3	2	
753	N415	max	-0.076	4	-0.728	4	.001	5	0	-7.562e-3	5	-6.23e-3	6	
754		min	-0.081	2	-0.761	2	0	6	0	-7.78e-3	2	-6.443e-3	2	
755	N416	max	-0.079	4	-0.728	4	.002	5	0	-5.66e-3	5	-7.342e-3	6	
756		min	-0.083	2	-0.761	2	0	6	0	-5.811e-3	2	-7.586e-3	2	
757	N417	max	-0.088	4	-0.727	4	.001	5	0	-1.139e-2	3	-8.657e-3	4	
758		min	-0.093	2	-0.761	2	0	6	0	-1.186e-2	2	-8.931e-3	3	
759	N418	max	-0.086	4	-0.727	4	.001	5	0	-4.846e-3	3	-1.362e-2	6	
760		min	-0.091	2	-0.761	2	0	6	0	-5.013e-3	2	-1.398e-2	2	
761	N419	max	-0.088	4	-0.728	4	.001	5	0	-3.069e-3	3	-1.44e-2	5	
762		min	-0.093	2	-0.761	2	0	6	0	-3.217e-3	2	-1.486e-2	2	
763	N420	max	-0.094	4	-0.727	4	.001	5	0	-5.668e-3	3	-1.595e-2	6	
764		min	-0.099	2	-0.761	2	0	6	0	-5.954e-3	2	-1.64e-2	2	
765	N421	max	-0.092	4	-0.727	4	.001	5	0	-8.248e-3	3	-1.339e-2	6	
766		min	-0.097	2	-0.761	2	0	6	0	-8.639e-3	2	-1.375e-2	2	
767	N422	max	-0.08	4	-0.727	4	.001	5	0	-1.102e-2	5	-6.4e-3	4	
768		min	-0.085	2	-0.761	2	0	6	0	-1.134e-2	2	-6.591e-3	3	
769	N423	max	-0.082	4	-0.728	4	.001	5	0	-9.182e-3	5	-6.712e-3	6	
770		min	-0.086	2	-0.761	2	0	6	0	-9.447e-3	2	-6.92e-3	2	
771	N424	max	-0.082	4	-0.728	4	.001	5	0	-3.777e-3	5	-1.302e-2	5	
772		min	-0.087	2	-0.761	2	0	6	0	-3.931e-3	2	-1.337e-2	2	
773	N425	max	-0.104	4	-0.727	4	.002	5	7.742e-5	3	2.644e-3	2	-1.024e-2	6
774		min	-0.11	2	-0.761	2	0	6	4.782e-5	6	2.53e-3	5	-1.056e-2	2
775	N426	max	-0.07	4	-0.728	4	.002	5	-6.896e-5	5	2.45e-3	2	-6.982e-3	6
776		min	-0.074	2	-0.761	2	0	6	-9.272e-5	6	2.349e-3	3	-7.212e-3	2



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
777	N427	max	- .114	4	- .727	4	.002	5	8.904e-5	3	6.061e-3	2	-1.028e-2	5
778		min	- .12	2	- .761	2	0	6	4.241e-5	5	5.624e-3	3	-1.117e-2	3
779	N428	max	- .097	4	- .728	4	.002	5	9.325e-5	3	2.717e-3	2	-1.069e-2	5
780		min	- .102	2	- .761	2	0	6	7.05e-5	6	2.525e-3	3	-1.154e-2	3
781	N429	max	- .077	4	- .728	4	.002	5	-5.979e-5	5	2.674e-3	2	-7.712e-3	6
782		min	- .082	2	- .761	2	0	6	-7.906e-5	6	2.569e-3	3	-7.962e-3	2
783	N430	max	- .095	4	- .728	4	.002	5	2.037e-5	3	2.875e-3	2	-9.398e-3	6
784		min	- .1	2	- .761	2	0	6	-6.722e-6	6	2.759e-3	5	-9.691e-3	2
785	N431	max	- .091	4	- .728	4	.002	5	0	2	3.171e-3	2	-1.137e-2	5
786		min	- .096	2	- .761	2	0	6	0	2	2.946e-3	3	-1.217e-2	3
787	N432	max	- .085	4	- .728	4	.002	5	0	2	3.17e-3	2	-1.273e-2	5
788		min	- .091	2	- .761	2	0	6	0	2	2.955e-3	3	-1.339e-2	3
789	N433	max	- .079	4	- .728	4	.002	5	0	2	3.03e-3	4	-1.353e-2	5
790		min	- .084	2	- .761	2	0	6	0	2	2.889e-3	3	-1.405e-2	2
791	N434	max	- .073	4	- .728	4	.002	5	0	2	4.184e-3	4	-1.201e-2	5
792		min	- .078	2	- .761	2	0	6	0	2	3.99e-3	5	-1.242e-2	3
793	N435	max	- .07	4	- .727	4	.002	5	0	2	6.584e-3	2	-9.494e-3	5
794		min	- .074	2	- .761	2	0	6	0	2	6.34e-3	5	-9.797e-3	3
795	N436	max	- .07	4	- .727	4	.002	5	0	2	8.522e-3	2	-6.346e-3	4
796		min	- .074	2	- .761	2	0	6	0	2	8.231e-3	5	-6.554e-3	3
797	N437	max	- .072	4	- .727	4	.002	5	0	2	9.445e-3	2	-5.441e-3	4
798		min	- .076	2	- .761	2	0	6	0	2	9.131e-3	5	-5.629e-3	2
799	N438	max	- .073	4	- .727	4	.002	5	0	2	6.676e-3	2	-6.163e-3	6
800		min	- .078	2	- .761	2	0	6	0	2	6.443e-3	5	-6.381e-3	2
801	N439	max	- .072	4	- .728	4	.002	5	0	2	3.761e-3	2	-6.968e-3	6
802		min	- .077	2	- .761	2	0	6	0	2	3.621e-3	5	-7.203e-3	2
803	N440	max	- .109	4	- .728	4	.002	5	1.099e-4	3	5.291e-3	2	-1.055e-2	5
804		min	- .114	2	- .761	2	0	6	7.304e-5	6	4.912e-3	3	-1.141e-2	3
805	N441	max	- .1	4	- .728	4	.002	5	1.137e-4	3	3.578e-3	2	-1.069e-2	5
806		min	- .105	2	- .761	2	0	6	8.691e-5	6	3.325e-3	3	-1.154e-2	3
807	N442	max	- .106	4	- .727	4	.002	5	0	2	1.184e-2	2	-1.071e-2	6
808		min	- .111	2	- .761	2	0	6	0	2	1.128e-2	3	-1.101e-2	2
809	N443	max	- .107	4	- .727	4	.002	5	0	2	9.305e-3	2	-1.256e-2	6
810		min	- .112	2	- .761	2	0	6	0	2	8.869e-3	3	-1.291e-2	2
811	N444	max	- .11	4	- .727	4	.002	5	0	2	6.732e-3	2	-1.547e-2	5
812		min	- .116	2	- .761	2	0	6	0	2	6.357e-3	3	-1.591e-2	2
813	N445	max	- .084	4	- .728	4	.002	5	0	2	5.44e-3	2	-8.125e-3	6
814		min	- .089	2	- .761	2	0	6	0	2	5.249e-3	5	-8.386e-3	2
815	N446	max	- .09	4	- .727	4	.002	5	0	2	1.025e-2	2	-7.557e-3	6
816		min	- .095	2	- .761	2	0	6	0	2	9.94e-3	5	-7.789e-3	2
817	N447	max	- .098	4	- .727	4	.002	5	0	2	1.022e-2	2	-9.583e-3	6
818		min	- .103	2	- .761	2	0	6	0	2	9.789e-3	3	-9.856e-3	2
819	N448	max	- .097	4	- .727	4	.002	5	0	2	1.171e-2	2	-1.051e-2	6
820		min	- .102	2	- .761	2	0	6	0	2	1.12e-2	3	-1.079e-2	2
821	N449	max	- .099	4	- .727	4	.002	5	0	2	9.603e-3	2	-1.32e-2	6
822		min	- .104	2	- .761	2	0	6	0	2	9.145e-3	3	-1.357e-2	2
823	N450	max	- .102	4	- .727	4	.002	5	0	2	6.747e-3	2	-1.525e-2	5
824		min	- .107	2	- .761	2	0	6	0	2	6.4e-3	3	-1.57e-2	2
825	N451	max	- .105	4	- .727	4	.002	5	0	2	5.934e-3	2	-1.48e-2	5
826		min	- .11	2	- .761	2	0	6	0	2	5.566e-3	3	-1.535e-2	2
827	N452	max	- .099	4	- .728	4	.002	5	0	2	4.122e-3	2	-1.479e-2	5
828		min	- .104	2	- .761	2	0	6	0	2	3.875e-3	3	-1.535e-2	2
829	N453	max	- .098	4	- .728	4	.002	5	0	2	4.285e-3	2	-1.201e-2	5
830		min	- .104	2	- .761	2	0	6	0	2	3.987e-3	3	-1.272e-2	3
831	N454	max	- .093	4	- .728	4	.002	5	0	2	3.778e-3	2	-1.236e-2	5
832		min	- .098	2	- .761	2	0	6	0	2	3.516e-3	3	-1.305e-2	3
833	N455	max	- .087	4	- .728	4	.002	5	0	2	3.131e-3	2	-1.328e-2	5



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
834		min	-0.092	2	-0.761	2	0	6	0	2	2.941e-3	3	-1.386e-2	2
835	N456	max	-0.083	4	-0.728	4	.002	5	0	2	3.325e-3	2	-1.329e-2	5
836		min	-0.088	2	-0.761	2	0	6	0	2	3.182e-3	3	-1.377e-2	2
837	N457	max	-0.078	4	-0.727	4	.002	5	0	2	3.615e-3	4	-1.201e-2	5
838		min	-0.083	2	-0.761	2	0	6	0	2	3.457e-3	5	-1.24e-2	3
839	N458	max	-0.075	4	-0.727	4	.002	5	0	2	5.929e-3	2	-8.544e-3	5
840		min	-0.08	2	-0.761	2	0	6	0	2	5.711e-3	5	-8.836e-3	3
841	N459	max	-0.075	4	-0.727	4	.002	5	0	2	8.567e-3	2	-5.965e-3	4
842		min	-0.08	2	-0.761	2	0	6	0	2	8.287e-3	5	-6.212e-3	3
843	N460	max	-0.076	4	-0.727	4	.002	5	0	2	9.508e-3	2	-5.931e-3	4
844		min	-0.081	2	-0.761	2	0	6	0	2	9.199e-3	5	-6.124e-3	2
845	N461	max	-0.076	4	-0.727	4	.002	5	0	2	7.789e-3	2	-6.23e-3	6
846		min	-0.081	2	-0.761	2	0	6	0	2	7.526e-3	5	-6.441e-3	2
847	N462	max	-0.079	4	-0.728	4	.002	5	0	2	5.812e-3	2	-7.344e-3	6
848		min	-0.084	2	-0.761	2	0	6	0	2	5.606e-3	5	-7.588e-3	2
849	N463	max	-0.088	4	-0.727	4	.002	5	0	2	1.189e-2	2	-8.653e-3	4
850		min	-0.093	2	-0.761	2	0	6	0	2	1.141e-2	3	-8.929e-3	3
851	N464	max	-0.086	4	-0.727	4	.002	5	0	2	5.052e-3	2	-1.361e-2	5
852		min	-0.091	2	-0.761	2	0	6	0	2	4.885e-3	3	-1.397e-2	2
853	N465	max	-0.088	4	-0.728	4	.002	5	0	2	3.255e-3	2	-1.437e-2	5
854		min	-0.094	2	-0.761	2	0	6	0	2	3.108e-3	3	-1.485e-2	2
855	N466	max	-0.094	4	-0.727	4	.002	5	0	2	5.991e-3	2	-1.595e-2	5
856		min	-0.099	2	-0.761	2	0	6	0	2	5.704e-3	3	-1.639e-2	2
857	N467	max	-0.093	4	-0.727	4	.002	5	0	2	8.672e-3	2	-1.339e-2	6
858		min	-0.098	2	-0.761	2	0	6	0	2	8.277e-3	3	-1.375e-2	2
859	N468	max	-0.081	4	-0.727	4	.002	5	0	2	1.137e-2	2	-6.392e-3	4
860		min	-0.086	2	-0.761	2	0	6	0	2	1.104e-2	5	-6.584e-3	3
861	N469	max	-0.082	4	-0.727	4	.002	5	0	2	9.464e-3	2	-6.714e-3	6
862		min	-0.087	2	-0.761	2	0	6	0	2	9.165e-3	5	-6.919e-3	2
863	N470	max	-0.082	4	-0.727	4	.002	5	0	2	3.969e-3	2	-1.299e-2	5
864		min	-0.087	2	-0.761	2	0	6	0	2	3.818e-3	5	-1.336e-2	2
865	N471	max	-0.021	3	-0.729	4	.002	5	-1.423e-5	3	-2.437e-4	3	-3.647e-3	4
866		min	-0.024	2	-0.762	2	0	6	-3.111e-5	6	-2.602e-4	2	-3.859e-3	3
867	N472	max	-0.037	4	-0.728	4	.002	5	2.844e-5	3	-9.545e-4	3	-4.056e-3	4
868		min	-0.04	2	-0.761	2	0	6	7.925e-6	6	-9.999e-4	2	-4.226e-3	2
869	N473	max	-0.013	3	-0.729	4	.002	5	2.877e-5	4	-7.36e-5	5	-5.463e-3	5
870		min	-0.016	5	-0.762	2	0	6	8.121e-7	6	-2.103e-4	3	-5.989e-3	3
871	N474	max	-0.012	3	-0.729	4	.002	5	-1.163e-6	3	-8.226e-6	5	-5.44e-3	5
872		min	-0.016	5	-0.762	2	0	6	-1.679e-5	6	-6.709e-5	3	-5.956e-3	3
873	N475	max	-0.033	4	-0.728	4	.002	5	9.467e-7	5	-7.283e-4	3	-3.852e-3	4
874		min	-0.036	2	-0.762	2	0	6	-1.813e-5	6	-7.698e-4	2	-4.02e-3	2
875	N476	max	-0.025	3	-0.728	4	.002	5	-1.591e-5	5	-3.583e-4	3	-3.666e-3	4
876		min	-0.028	2	-0.762	2	0	6	-3.365e-5	6	-3.857e-4	2	-3.865e-3	3
877	N477	max	-0.016	3	-0.729	4	.002	5	0	2	-1.433e-6	5	-5.428e-3	5
878		min	-0.019	5	-0.762	2	0	6	0	2	-6.866e-5	3	-5.933e-3	3
879	N478	max	-0.02	3	-0.729	4	.002	5	0	2	6.251e-5	5	-5.34e-3	5
880		min	-0.022	2	-0.762	2	0	6	0	2	7.021e-6	3	-5.81e-3	3
881	N479	max	-0.023	3	-0.729	4	.002	5	0	2	3.099e-4	2	-5.058e-3	4
882		min	-0.026	2	-0.762	2	0	6	0	2	3.015e-4	6	-5.499e-3	3
883	N480	max	-0.026	4	-0.729	4	.002	5	0	2	6.362e-4	3	-4.765e-3	4
884		min	-0.028	2	-0.762	2	0	6	0	2	5.836e-4	5	-5.22e-3	3
885	N481	max	-0.028	4	-0.729	4	.002	5	0	2	9.763e-4	3	-4.12e-3	4
886		min	-0.031	2	-0.762	2	0	6	0	2	8.816e-4	5	-4.514e-3	3
887	N482	max	-0.03	4	-0.729	4	.002	5	0	2	1.504e-3	3	-3.312e-3	4
888		min	-0.032	2	-0.762	2	0	6	0	2	1.286e-3	5	-3.582e-3	3
889	N483	max	-0.031	4	-0.729	4	.002	5	0	2	1.475e-3	3	-2.977e-3	4
890		min	-0.033	2	-0.762	2	0	6	0	2	1.211e-3	5	-3.157e-3	3



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
891	N484	max	-0.032	4	-0.728	4	.002	5	0	2	5.511e-4	3	-3.124e-3	4
892		min	-0.035	2	-0.762	2	0	6	0	2	3.691e-4	5	-3.285e-3	5
893	N485	max	-0.034	4	-0.728	4	.002	5	0	2	-4.582e-4	3	-3.629e-3	4
894		min	-0.037	2	-0.762	2	0	6	0	2	-5.334e-4	5	-3.795e-3	2
895	N486	max	-0.013	3	-0.729	4	.002	5	7.813e-6	3	-5.006e-5	5	-5.443e-3	5
896		min	-0.016	5	-0.762	2	0	6	-1.418e-5	6	-1.667e-4	3	-5.961e-3	3
897	N487	max	-0.012	3	-0.729	4	.002	5	-3.846e-6	3	-1.934e-5	5	-5.439e-3	5
898		min	-0.016	5	-0.762	2	0	6	-2.109e-5	6	-9.676e-5	3	-5.956e-3	3
899	N488	max	-0.019	3	-0.729	4	.002	5	0	2	8.31e-4	2	-3.938e-3	4
900		min	-0.022	2	-0.762	2	0	6	0	2	8.085e-4	5	-4.224e-3	3
901	N489	max	-0.018	3	-0.729	4	.002	5	0	2	7.352e-4	2	-4.016e-3	4
902		min	-0.02	5	-0.762	2	0	6	0	2	7.181e-4	5	-4.304e-3	3
903	N490	max	-0.016	3	-0.729	4	.002	5	0	2	2.936e-4	5	-4.29e-3	4
904		min	-0.018	5	-0.762	2	0	6	0	2	2.362e-4	3	-4.572e-3	3
905	N491	max	-0.029	4	-0.728	4	.002	5	0	2	2.553e-4	3	-3.543e-3	4
906		min	-0.031	2	-0.762	2	0	6	0	2	1.387e-4	5	-3.723e-3	3
907	N492	max	-0.026	4	-0.729	4	.002	5	0	2	1.158e-3	3	-3.404e-3	4
908		min	-0.028	2	-0.762	2	0	6	0	2	9.881e-4	5	-3.614e-3	3
909	N493	max	-0.023	3	-0.729	4	.002	5	0	2	7.373e-4	3	-3.785e-3	4
910		min	-0.025	2	-0.762	2	0	6	0	2	6.774e-4	5	-4.051e-3	3
911	N494	max	-0.021	3	-0.729	4	.002	5	0	2	9.659e-4	3	-3.889e-3	4
912		min	-0.024	2	-0.762	2	0	6	0	2	9.199e-4	5	-4.182e-3	3
913	N495	max	-0.019	3	-0.729	4	.002	5	0	2	7.345e-4	2	-4.108e-3	4
914		min	-0.022	2	-0.762	2	0	6	0	2	7.18e-4	3	-4.407e-3	3
915	N496	max	-0.018	3	-0.729	4	.002	5	0	2	4.142e-4	2	-4.416e-3	4
916		min	-0.02	5	-0.762	2	0	6	0	2	3.835e-4	3	-4.722e-3	3
917	N497	max	-0.016	3	-0.729	4	.002	5	0	2	1.384e-4	5	-4.762e-3	4
918		min	-0.019	5	-0.762	2	0	6	0	2	5.525e-5	3	-5.112e-3	3
919	N498	max	-0.017	3	-0.729	4	.002	5	0	2	1.114e-4	5	-4.946e-3	4
920		min	-0.02	5	-0.762	2	0	6	0	2	5.723e-5	3	-5.328e-3	3
921	N499	max	-0.015	3	-0.729	4	.002	5	0	2	-5.319e-6	5	-5.329e-3	5
922		min	-0.019	5	-0.762	2	0	6	0	2	-9.184e-5	3	-5.803e-3	3
923	N500	max	-0.017	3	-0.729	4	.002	5	0	2	1.476e-5	5	-5.351e-3	5
924		min	-0.02	5	-0.762	2	0	6	0	2	-5.969e-5	3	-5.826e-3	3
925	N501	max	-0.019	3	-0.729	4	.002	5	0	2	1.266e-4	5	-5.206e-3	4
926		min	-0.022	2	-0.762	2	0	6	0	2	8.925e-5	3	-5.654e-3	3
927	N502	max	-0.022	3	-0.729	4	.002	5	0	2	3.389e-4	3	-4.938e-3	4
928		min	-0.024	2	-0.762	2	0	6	0	2	3.278e-4	5	-5.368e-3	3
929	N503	max	-0.024	3	-0.729	4	.002	5	0	2	5.747e-4	3	-4.698e-3	4
930		min	-0.027	2	-0.762	2	0	6	0	2	5.222e-4	5	-5.142e-3	3
931	N504	max	-0.026	4	-0.729	4	.002	5	0	2	9.224e-4	3	-3.967e-3	4
932		min	-0.029	2	-0.762	2	0	6	0	2	8.234e-4	5	-4.336e-3	3
933	N505	max	-0.028	4	-0.729	4	.002	5	0	2	1.399e-3	3	-3.406e-3	4
934		min	-0.031	2	-0.762	2	0	6	0	2	1.21e-3	5	-3.694e-3	3
935	N506	max	-0.029	4	-0.729	4	.002	5	0	2	1.436e-3	3	-3.103e-3	4
936		min	-0.032	2	-0.762	2	0	6	0	2	1.195e-3	5	-3.293e-3	3
937	N507	max	-0.03	4	-0.728	4	.002	5	0	2	8.821e-4	3	-3.179e-3	4
938		min	-0.033	2	-0.762	2	0	6	0	2	6.781e-4	5	-3.338e-3	3
939	N508	max	-0.031	4	-0.728	4	.002	5	0	2	3.277e-4	3	-3.445e-3	4
940		min	-0.033	2	-0.762	2	0	6	0	2	1.831e-4	5	-3.609e-3	2
941	N509	max	-0.023	3	-0.729	4	.002	5	0	2	1.184e-3	3	-4.024e-3	4
942		min	-0.026	2	-0.762	2	0	6	0	2	1.109e-3	5	-4.392e-3	3
943	N510	max	-0.022	3	-0.729	4	.002	5	0	2	6.398e-4	3	-4.437e-3	4
944		min	-0.024	2	-0.762	2	0	6	0	2	5.928e-4	5	-4.799e-3	3
945	N511	max	-0.02	3	-0.729	4	.002	5	0	2	2.637e-4	2	-4.837e-3	4
946		min	-0.023	2	-0.762	2	0	6	0	2	2.552e-4	4	-5.232e-3	3
947	N512	max	-0.019	3	-0.729	4	.002	5	0	2	4.514e-4	2	-4.415e-3	4



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
948		min	-0.022	2	-0.762	2	0	6	0	2	4.353e-4	3	-4.718e-3	3
949	N513	max	-0.021	3	-0.729	4	.002	5	0	2	7.117e-4	2	-4.247e-3	4
950		min	-0.023	2	-0.762	2	0	6	0	2	6.944e-4	5	-4.573e-3	3
951	N514	max	-0.026	4	-0.729	4	.002	5	0	2	1.61e-3	3	-3.363e-3	4
952		min	-0.029	2	-0.762	2	0	6	0	2	1.414e-3	5	-3.622e-3	3
953	N515	max	-0.028	4	-0.729	4	.002	5	0	2	1.263e-3	3	-3.317e-3	4
954		min	-0.03	2	-0.762	2	0	6	0	2	1.058e-3	5	-3.529e-3	3
955	N516	max	-0.023	3	-0.729	4	.002	5	0	2	7.32e-4	3	-4.464e-3	4
956		min	-0.025	2	-0.762	2	0	6	0	2	6.401e-4	5	-4.834e-3	3
957	N517	max	-0.022	3	-0.728	4	.002	5	4.083e-5	3	2.587e-4	5	-3.639e-3	4
958		min	-0.025	5	-0.762	2	0	6	2.586e-5	6	2.092e-4	3	-3.842e-3	3
959	N518	max	-0.037	4	-0.728	4	.002	5	6.659e-6	5	9.942e-4	2	-4.05e-3	4
960		min	-0.04	2	-0.761	2	0	6	-1.5e-5	6	9.186e-4	3	-4.221e-3	2
961	N519	max	-0.013	3	-0.729	4	.002	5	1.136e-5	5	2.48e-4	3	-5.464e-3	5
962		min	-0.016	5	-0.762	2	0	6	-2.099e-5	4	1.193e-4	5	-5.996e-3	3
963	N520	max	-0.012	3	-0.729	4	.002	5	2.553e-5	3	1.12e-4	3	-5.441e-3	5
964		min	-0.016	5	-0.762	2	0	6	1.194e-5	4	5.743e-5	5	-5.961e-3	3
965	N521	max	-0.033	4	-0.728	4	.002	5	3.167e-5	3	7.644e-4	2	-3.846e-3	4
966		min	-0.036	2	-0.761	2	0	6	1.171e-5	6	6.932e-4	3	-4.014e-3	2
967	N522	max	-0.026	4	-0.728	4	.002	5	4.558e-5	3	3.81e-4	2	-3.658e-3	4
968		min	-0.028	5	-0.762	2	0	6	2.82e-5	6	3.242e-4	3	-3.85e-3	3
969	N523	max	-0.016	3	-0.729	4	.002	5	0	2	1.162e-4	3	-5.432e-3	5
970		min	-0.019	5	-0.762	2	0	6	0	2	5.165e-5	5	-5.945e-3	3
971	N524	max	-0.02	3	-0.729	4	.002	5	0	2	4.503e-5	3	-5.351e-3	4
972		min	-0.023	5	-0.762	2	0	6	0	2	-1.043e-5	5	-5.84e-3	3
973	N525	max	-0.023	3	-0.729	4	.002	5	0	2	-2.544e-4	5	-5.071e-3	4
974		min	-0.026	2	-0.762	2	0	6	0	2	-2.745e-4	4	-5.544e-3	3
975	N526	max	-0.026	4	-0.729	4	.002	5	0	2	-5.417e-4	5	-4.777e-3	4
976		min	-0.029	2	-0.762	2	0	6	0	2	-6.057e-4	3	-5.263e-3	3
977	N527	max	-0.028	4	-0.729	4	.002	5	0	2	-8.528e-4	5	-4.127e-3	4
978		min	-0.031	2	-0.762	2	0	6	0	2	-9.731e-4	3	-4.539e-3	3
979	N528	max	-0.03	4	-0.729	4	.002	5	0	2	-1.269e-3	5	-3.315e-3	4
980		min	-0.033	2	-0.762	2	0	6	0	2	-1.521e-3	3	-3.596e-3	3
981	N529	max	-0.031	4	-0.728	4	.002	5	0	2	-1.202e-3	5	-2.977e-3	4
982		min	-0.034	2	-0.762	2	0	6	0	2	-1.496e-3	3	-3.16e-3	3
983	N530	max	-0.032	4	-0.728	4	.002	5	0	2	-3.693e-4	5	-3.121e-3	4
984		min	-0.035	2	-0.762	2	0	6	0	2	-5.812e-4	3	-3.28e-3	5
985	N531	max	-0.034	4	-0.728	4	.002	5	0	2	5.267e-4	2	-3.624e-3	4
986		min	-0.037	2	-0.761	2	0	6	0	2	4.238e-4	3	-3.789e-3	2
987	N532	max	-0.013	3	-0.729	4	.002	5	2.456e-5	5	2.06e-4	3	-5.444e-3	5
988		min	-0.016	5	-0.762	2	0	6	7.706e-7	4	9.661e-5	5	-5.968e-3	3
989	N533	max	-0.013	3	-0.729	4	.002	5	2.959e-5	5	1.401e-4	3	-5.44e-3	5
990		min	-0.016	5	-0.762	2	0	6	1.412e-5	4	6.781e-5	5	-5.961e-3	3
991	N534	max	-0.02	3	-0.728	4	.002	5	0	2	-7.805e-4	5	-3.934e-3	4
992		min	-0.023	5	-0.762	2	0	6	0	2	-8.097e-4	3	-4.219e-3	3
993	N535	max	-0.018	3	-0.728	4	.002	5	0	2	-6.842e-4	5	-4.017e-3	4
994		min	-0.021	5	-0.762	2	0	6	0	2	-7.083e-4	2	-4.311e-3	3
995	N536	max	-0.016	3	-0.729	4	.002	5	0	2	-2.106e-4	3	-4.292e-3	4
996		min	-0.019	5	-0.762	2	0	6	0	2	-2.549e-4	5	-4.583e-3	3
997	N537	max	-0.029	4	-0.728	4	.002	5	0	2	-1.385e-4	5	-3.537e-3	4
998		min	-0.032	2	-0.762	2	0	6	0	2	-2.856e-4	3	-3.711e-3	3
999	N538	max	-0.026	4	-0.728	4	.002	5	0	2	-9.746e-4	5	-3.401e-3	4
1000		min	-0.028	2	-0.762	2	0	6	0	2	-1.167e-3	3	-3.61e-3	3
1001	N539	max	-0.023	3	-0.728	4	.002	5	0	2	-6.587e-4	5	-3.78e-3	4
1002		min	-0.026	5	-0.762	2	0	6	0	2	-7.399e-4	3	-4.042e-3	3
1003	N540	max	-0.022	3	-0.728	4	.002	5	0	2	-8.928e-4	5	-3.887e-3	4
1004		min	-0.024	5	-0.762	2	0	6	0	2	-9.546e-4	3	-4.184e-3	3



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
1005	N541	max	-.02	3	-.729	4	.002	5	0	2	-6.857e-4	5	-4.109e-3	4
1006		min	-.022	5	-.762	2	0	6	0	2	-7.089e-4	2	-4.417e-3	3
1007	N542	max	-.018	3	-.729	4	.002	5	0	2	-3.585e-4	3	-4.419e-3	4
1008		min	-.021	5	-.762	2	0	6	0	2	-3.845e-4	2	-4.736e-3	3
1009	N543	max	-.016	3	-.729	4	.002	5	0	2	-2.383e-5	3	-4.765e-3	4
1010		min	-.019	5	-.762	2	0	6	0	2	-9.611e-5	5	-5.127e-3	3
1011	N544	max	-.017	3	-.729	4	.002	5	0	2	-2.253e-5	3	-4.953e-3	4
1012		min	-.02	5	-.762	2	0	6	0	2	-6.685e-5	5	-5.356e-3	3
1013	N545	max	-.016	3	-.729	4	.002	5	0	2	1.349e-4	3	-5.337e-3	5
1014		min	-.019	5	-.762	2	0	6	0	2	5.343e-5	5	-5.825e-3	3
1015	N546	max	-.017	3	-.729	4	.002	5	0	2	1.063e-4	3	-5.361e-3	5
1016		min	-.02	5	-.762	2	0	6	0	2	3.496e-5	5	-5.853e-3	3
1017	N547	max	-.02	3	-.729	4	.002	5	0	2	-4.121e-5	3	-5.216e-3	4
1018		min	-.023	5	-.762	2	0	6	0	2	-7.992e-5	4	-5.69e-3	3
1019	N548	max	-.022	3	-.729	4	.002	5	0	2	-2.806e-4	5	-4.95e-3	4
1020		min	-.025	2	-.762	2	0	6	0	2	-2.997e-4	4	-5.411e-3	3
1021	N549	max	-.025	4	-.729	4	.002	5	0	2	-4.817e-4	5	-4.709e-3	4
1022		min	-.027	2	-.762	2	0	6	0	2	-5.475e-4	3	-5.179e-3	3
1023	N550	max	-.026	4	-.729	4	.002	5	0	2	-7.938e-4	5	-3.973e-3	4
1024		min	-.029	2	-.762	2	0	6	0	2	-9.164e-4	2	-4.359e-3	3
1025	N551	max	-.028	4	-.729	4	.002	5	0	2	-1.192e-3	5	-3.409e-3	4
1026		min	-.031	2	-.762	2	0	6	0	2	-1.413e-3	3	-3.707e-3	3
1027	N552	max	-.029	4	-.728	4	.002	5	0	2	-1.184e-3	5	-3.103e-3	4
1028		min	-.032	2	-.762	2	0	6	0	2	-1.455e-3	3	-3.296e-3	3
1029	N553	max	-.031	4	-.728	4	.002	5	0	2	-6.748e-4	5	-3.176e-3	4
1030		min	-.034	2	-.762	2	0	6	0	2	-9.08e-4	3	-3.335e-3	2
1031	N554	max	-.031	4	-.728	4	.002	5	0	2	-1.847e-4	5	-3.441e-3	4
1032		min	-.034	2	-.762	2	0	6	0	2	-3.588e-4	3	-3.603e-3	2
1033	N555	max	-.024	3	-.728	4	.002	5	0	2	-1.084e-3	5	-4.025e-3	4
1034		min	-.026	2	-.762	2	0	6	0	2	-1.18e-3	3	-4.399e-3	3
1035	N556	max	-.022	3	-.729	4	.002	5	0	2	-5.6e-4	5	-4.443e-3	4
1036		min	-.025	2	-.762	2	0	6	0	2	-6.29e-4	3	-4.824e-3	3
1037	N557	max	-.02	3	-.729	4	.002	5	0	2	-2.162e-4	5	-4.847e-3	4
1038		min	-.023	5	-.762	2	0	6	0	2	-2.285e-4	4	-5.269e-3	3
1039	N558	max	-.02	3	-.729	4	.002	5	0	2	-4.077e-4	5	-4.421e-3	4
1040		min	-.022	5	-.762	2	0	6	0	2	-4.228e-4	2	-4.74e-3	3
1041	N559	max	-.021	3	-.729	4	.002	5	0	2	-6.626e-4	5	-4.249e-3	4
1042		min	-.024	5	-.762	2	0	6	0	2	-6.908e-4	3	-4.586e-3	3
1043	N560	max	-.026	4	-.729	4	.002	5	0	2	-1.39e-3	5	-3.366e-3	4
1044		min	-.029	2	-.762	2	0	6	0	2	-1.607e-3	3	-3.637e-3	3
1045	N561	max	-.028	4	-.728	4	.002	5	0	2	-1.047e-3	5	-3.315e-3	4
1046		min	-.031	2	-.762	2	0	6	0	2	-1.279e-3	3	-3.527e-3	3
1047	N562	max	-.023	3	-.729	4	.002	5	0	2	-5.992e-4	5	-4.473e-3	4
1048		min	-.026	2	-.762	2	0	6	0	2	-7.017e-4	3	-4.87e-3	3
1049	N563	max	-.125	4	-.013	3	0	2	1.079e-5	2	-3.134e-5	6	-7.758e-3	4
1050		min	-.133	2	-.014	2	0	6	7.813e-6	3	-5.791e-5	2	-8.246e-3	2
1051	N564	max	-.094	4	-.013	3	0	5	-6.217e-6	6	-4.261e-5	3	-7.666e-3	4
1052		min	-.1	2	-.014	2	0	6	-1.205e-5	2	-6.633e-5	2	-8.114e-3	2
1053	N565	max	-.142	4	-.013	3	0	5	6.058e-5	2	2.649e-4	2	-9.261e-3	3
1054		min	-.151	2	-.014	2	0	6	4.173e-5	3	1.819e-4	3	-1.047e-2	2
1055	N566	max	-.143	4	-.013	3	0	4	1.538e-5	2	1.167e-4	2	-9.22e-3	3
1056		min	-.151	2	-.014	2	0	6	1.004e-5	3	8.123e-5	4	-1.04e-2	2
1057	N567	max	-.102	4	-.013	3	0	5	-9.378e-6	3	-4.872e-5	3	-7.686e-3	4
1058		min	-.108	2	-.014	2	0	6	-1.527e-5	2	-7.672e-5	2	-8.142e-3	2
1059	N568	max	-.118	4	-.013	3	0	2	3.276e-6	6	-4.754e-5	3	-7.734e-3	4
1060		min	-.124	2	-.014	2	0	6	1.998e-6	4	-7.73e-5	2	-8.211e-3	2
1061	N569	max	-.137	4	-.013	3	0	5	0	2	9.117e-5	2	-9.166e-3	3





**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [ ...	LC	
1062		min	- .145	2	- .014	2	0	6	0	2	6.34e-5	4	-1.032e-2	2
1063	N570	max	- .131	4	- .013	3	0	5	0	2	-2.558e-5	3	-8.983e-3	3
1064		min	- .139	2	- .014	2	0	6	0	2	-4.729e-5	2	-1.005e-2	2
1065	N571	max	- .126	4	- .013	3	0	2	0	2	-2.444e-4	3	-8.606e-3	3
1066		min	- .133	2	- .014	2	0	6	0	2	-3.763e-4	2	-9.48e-3	2
1067	N572	max	- .121	4	- .013	3	0	2	0	2	-4.396e-4	3	-8.202e-3	4
1068		min	- .128	2	- .014	2	0	6	0	2	-6.695e-4	2	-8.887e-3	2
1069	N573	max	- .117	4	- .013	3	0	2	0	2	-5.656e-4	3	-7.871e-3	4
1070		min	- .123	2	- .014	2	0	6	0	2	-8.585e-4	2	-8.41e-3	2
1071	N574	max	- .112	4	- .013	3	0	2	0	2	-5.671e-4	3	-7.67e-3	4
1072		min	- .118	2	- .014	2	0	6	0	2	-8.6e-4	2	-8.12e-3	2
1073	N575	max	- .108	4	- .013	3	0	2	0	2	-4.564e-4	3	-7.586e-3	4
1074		min	- .114	2	- .014	2	0	6	0	2	-6.926e-4	2	-7.999e-3	2
1075	N576	max	- .104	4	- .013	3	0	2	0	2	-2.688e-4	3	-7.595e-3	4
1076		min	- .109	2	- .014	2	0	6	0	2	-4.094e-4	2	-8.011e-3	2
1077	N577	max	- .099	4	- .013	3	0	5	0	2	-1.086e-4	3	-7.648e-3	4
1078		min	- .105	2	- .014	2	0	6	0	2	-1.67e-4	2	-8.087e-3	2
1079	N578	max	- .142	4	- .013	3	0	5	4.087e-5	2	2.223e-4	2	-9.232e-3	3
1080		min	- .151	2	- .014	2	0	6	2.809e-5	3	1.536e-4	3	-1.042e-2	2
1081	N579	max	- .143	4	- .013	3	0	4	2.211e-5	2	1.484e-4	2	-9.22e-3	3
1082		min	- .151	2	- .014	2	0	6	1.485e-5	3	1.033e-4	4	-1.04e-2	2
1083	N580	max	- .129	4	- .013	3	0	5	0	2	-3.17e-4	3	-7.806e-3	4
1084		min	- .137	2	- .014	2	0	6	0	2	-4.841e-4	2	-8.315e-3	2
1085	N581	max	- .133	4	- .013	3	0	5	0	2	-2.538e-4	3	-7.908e-3	4
1086		min	- .141	2	- .014	2	0	6	0	2	-3.895e-4	2	-8.462e-3	2
1087	N582	max	- .138	4	- .013	3	0	5	0	2	6.943e-6	3	-8.185e-3	4
1088		min	- .145	2	- .014	2	0	6	0	2	1.715e-6	4	-8.862e-3	2
1089	N583	max	- .11	4	- .013	3	0	2	0	2	-1.934e-4	3	-7.692e-3	4
1090		min	- .117	2	- .014	2	0	6	0	2	-2.962e-4	2	-8.15e-3	2
1091	N584	max	- .118	4	- .013	3	0	2	0	2	-3.372e-4	3	-7.709e-3	4
1092		min	- .124	2	- .014	2	0	6	0	2	-5.134e-4	2	-8.176e-3	2
1093	N585	max	- .123	4	- .013	3	0	2	0	2	-2.82e-4	3	-7.761e-3	4
1094		min	- .13	2	- .014	2	0	6	0	2	-4.309e-4	2	-8.251e-3	2
1095	N586	max	- .127	4	- .013	3	0	2	0	2	-3.356e-4	3	-7.8e-3	4
1096		min	- .134	2	- .014	2	0	6	0	2	-5.12e-4	2	-8.307e-3	2
1097	N587	max	- .131	4	- .013	3	0	5	0	2	-2.878e-4	3	-7.924e-3	4
1098		min	- .138	2	- .014	2	0	6	0	2	-4.406e-4	2	-8.486e-3	2
1099	N588	max	- .134	4	- .013	3	0	5	0	2	-1.291e-4	3	-8.232e-3	4
1100		min	- .142	2	- .014	2	0	6	0	2	-2.023e-4	2	-8.929e-3	2
1101	N589	max	- .137	4	- .013	3	0	5	0	2	5.56e-5	2	-8.58e-3	3
1102		min	- .145	2	- .014	2	0	6	0	2	3.88e-5	4	-9.442e-3	2
1103	N590	max	- .136	4	- .013	3	0	5	0	2	2.348e-5	5	-8.658e-3	3
1104		min	- .144	2	- .014	2	0	6	0	2	1.541e-5	4	-9.558e-3	2
1105	N591	max	- .138	4	- .013	3	0	5	0	2	1.347e-4	2	-9.024e-3	3
1106		min	- .146	2	- .014	2	0	6	0	2	9.37e-5	4	-1.011e-2	2
1107	N592	max	- .136	4	- .013	3	0	5	0	2	7.755e-5	2	-9.022e-3	3
1108		min	- .144	2	- .014	2	0	6	0	2	5.394e-5	4	-1.011e-2	2
1109	N593	max	- .132	4	- .013	3	0	5	0	2	-6.726e-5	3	-8.826e-3	3
1110		min	- .139	2	- .014	2	0	6	0	2	-1.099e-4	2	-9.811e-3	2
1111	N594	max	- .128	4	- .013	3	0	2	0	2	-2.07e-4	3	-8.503e-3	3
1112		min	- .135	2	- .014	2	0	6	0	2	-3.198e-4	2	-9.326e-3	2
1113	N595	max	- .124	4	- .013	3	0	2	0	2	-3.882e-4	3	-8.153e-3	4
1114		min	- .13	2	- .014	2	0	6	0	2	-5.922e-4	2	-8.816e-3	2
1115	N596	max	- .12	4	- .013	3	0	2	0	2	-4.995e-4	3	-7.877e-3	4
1116		min	- .126	2	- .014	2	0	6	0	2	-7.59e-4	2	-8.418e-3	2
1117	N597	max	- .116	4	- .013	3	0	2	0	2	-5.28e-4	3	-7.703e-3	4
1118		min	- .122	2	- .014	2	0	6	0	2	-8.012e-4	2	-8.167e-3	2



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC
1119	N598	max	-.111	4	-.013	3	0	2	-4.489e-4	3	-7.628e-3	4
1120		min	-.117	2	-.014	2	0	2	-6.815e-4	2	-8.059e-3	2
1121	N599	max	-.107	4	-.013	3	0	2	-3.272e-4	3	-7.615e-3	4
1122		min	-.113	2	-.014	2	0	2	-4.976e-4	2	-8.04e-3	2
1123	N600	max	-.106	4	-.013	3	0	2	-2.165e-4	3	-7.659e-3	4
1124		min	-.113	2	-.014	2	0	2	-3.305e-4	2	-8.102e-3	2
1125	N601	max	-.124	4	-.013	3	0	2	-4.178e-4	3	-7.787e-3	4
1126		min	-.131	2	-.014	2	0	2	-6.357e-4	2	-8.289e-3	2
1127	N602	max	-.127	4	-.013	3	0	2	-3.226e-4	3	-8.029e-3	4
1128		min	-.134	2	-.014	2	0	2	-4.932e-4	2	-8.637e-3	2
1129	N603	max	-.13	4	-.013	3	0	2	-1.327e-4	3	-8.452e-3	3
1130		min	-.138	2	-.014	2	0	2	-2.081e-4	2	-9.248e-3	2
1131	N604	max	-.131	4	-.013	3	0	2	-2.055e-4	3	-8.167e-3	4
1132		min	-.139	2	-.014	2	0	2	-3.173e-4	2	-8.836e-3	2
1133	N605	max	-.129	4	-.013	3	0	2	-3.152e-4	3	-7.946e-3	4
1134		min	-.136	2	-.014	2	0	2	-4.819e-4	2	-8.518e-3	2
1135	N606	max	-.119	4	-.013	3	0	2	-4.66e-4	3	-7.749e-3	4
1136		min	-.126	2	-.014	2	0	2	-7.08e-4	2	-8.233e-3	2
1137	N607	max	-.114	4	-.013	3	0	2	-3.988e-4	3	-7.671e-3	4
1138		min	-.12	2	-.014	2	0	2	-6.06e-4	2	-8.12e-3	2
1139	N608	max	-.126	4	-.013	3	0	2	-3.306e-4	3	-8.143e-3	4
1140		min	-.133	2	-.014	2	0	2	-5.055e-4	2	-8.802e-3	2
1141	N609	max	-.126	4	-.013	3	0	3	-2.69e-6	3	1.151e-4	2
1142		min	-.133	2	-.014	2	0	6	-4.904e-6	2	8.161e-5	3
1143	N610	max	-.095	4	-.013	3	0	3	2.867e-5	2	8.934e-5	2
1144		min	-.1	2	-.014	2	0	6	2.078e-5	3	6.168e-5	3
1145	N611	max	-.142	4	-.013	3	0	3	-3.821e-5	3	-1.443e-4	3
1146		min	-.151	2	-.014	2	0	6	-5.667e-5	2	-2.255e-4	2
1147	N612	max	-.143	4	-.013	3	0	4	-1.481e-5	3	-4.588e-5	3
1148		min	-.152	2	-.014	2	0	6	-2.151e-5	2	-7.764e-5	2
1149	N613	max	-.102	4	-.013	3	0	3	2.854e-5	2	1.084e-4	2
1150		min	-.108	2	-.014	2	0	6	2.057e-5	3	7.506e-5	3
1151	N614	max	-.118	4	-.013	3	0	3	5.963e-6	6	1.258e-4	2
1152		min	-.125	2	-.014	2	0	6	4.505e-6	3	8.808e-5	3
1153	N615	max	-.137	4	-.013	3	0	3	0	2	-2.935e-5	3
1154		min	-.145	2	-.014	2	0	6	0	2	-5.285e-5	2
1155	N616	max	-.132	4	-.013	3	0	3	0	2	8.514e-5	2
1156		min	-.139	2	-.014	2	0	6	0	2	5.914e-5	4
1157	N617	max	-.126	4	-.013	3	0	3	0	2	4.146e-4	2
1158		min	-.133	2	-.014	2	0	6	0	2	2.819e-4	3
1159	N618	max	-.121	4	-.013	3	0	3	0	2	7.086e-4	2
1160		min	-.128	2	-.014	2	0	6	0	2	4.775e-4	3
1161	N619	max	-.117	4	-.013	3	0	3	0	2	8.99e-4	2
1162		min	-.123	2	-.014	2	0	2	0	2	6.039e-4	3
1163	N620	max	-.112	4	-.013	3	0	3	0	2	9.018e-4	2
1164		min	-.119	2	-.014	2	0	2	0	2	6.054e-4	3
1165	N621	max	-.108	4	-.013	3	0	3	0	2	7.348e-4	2
1166		min	-.114	2	-.014	2	0	2	0	2	4.938e-4	3
1167	N622	max	-.104	4	-.013	3	0	3	0	2	4.499e-4	2
1168		min	-.11	2	-.014	2	0	6	0	2	3.035e-4	3
1169	N623	max	-.099	4	-.013	3	0	3	0	2	2.001e-4	2
1170		min	-.105	2	-.014	2	0	6	0	2	1.364e-4	3
1171	N624	max	-.143	4	-.013	3	0	3	-2.58e-5	3	-1.16e-4	3
1172		min	-.151	2	-.014	2	0	6	-3.843e-5	2	-1.829e-4	2
1173	N625	max	-.143	4	-.013	3	0	3	-1.69e-5	3	-6.694e-5	3
1174		min	-.151	2	-.014	2	0	6	-2.494e-5	2	-1.093e-4	2
1175	N626	max	-.13	4	-.013	3	0	3	0	2	5.258e-4	2



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
1176		min	-0.137	2	-0.014	2	0	6	0	2	3.551e-4	3	-8.319e-3	2
1177	N627	max	-0.134	4	-0.013	3	0	3	0	2	4.284e-4	2	-7.915e-3	4
1178		min	-0.141	2	-0.014	2	0	6	0	2	2.905e-4	3	-8.47e-3	2
1179	N628	max	-0.138	4	-0.013	3	0	3	0	2	3.547e-5	2	-8.194e-3	4
1180		min	-0.146	2	-0.014	2	0	6	0	2	2.488e-5	4	-8.872e-3	2
1181	N629	max	-0.111	4	-0.013	3	0	3	0	2	3.377e-4	2	-7.694e-3	4
1182		min	-0.117	2	-0.014	2	0	6	0	2	2.288e-4	3	-8.153e-3	2
1183	N630	max	-0.118	4	-0.013	3	0	3	0	2	5.566e-4	2	-7.712e-3	4
1184		min	-0.125	2	-0.014	2	0	2	0	2	3.752e-4	3	-8.179e-3	2
1185	N631	max	-0.124	4	-0.013	3	0	3	0	2	4.753e-4	2	-7.765e-3	4
1186		min	-0.131	2	-0.014	2	0	6	0	2	3.213e-4	3	-8.255e-3	2
1187	N632	max	-0.127	4	-0.013	3	0	3	0	2	5.536e-4	2	-7.805e-3	4
1188		min	-0.134	2	-0.014	2	0	6	0	2	3.737e-4	3	-8.313e-3	2
1189	N633	max	-0.131	4	-0.013	3	0	3	0	2	4.797e-4	2	-7.931e-3	4
1190		min	-0.138	2	-0.014	2	0	6	0	2	3.247e-4	3	-8.493e-3	2
1191	N634	max	-0.134	4	-0.013	3	0	3	0	2	2.407e-4	2	-8.241e-3	4
1192		min	-0.142	2	-0.014	2	0	6	0	2	1.658e-4	3	-8.938e-3	2
1193	N635	max	-0.137	4	-0.013	3	0	3	0	2	-5.645e-6	3	-8.586e-3	3
1194		min	-0.145	2	-0.014	2	0	6	0	2	-1.7e-5	2	-9.452e-3	2
1195	N636	max	-0.136	4	-0.013	3	0	3	0	2	1.905e-5	5	-8.663e-3	3
1196		min	-0.144	2	-0.014	2	0	6	0	2	1.181e-5	4	-9.568e-3	2
1197	N637	max	-0.138	4	-0.013	3	0	3	0	2	-5.813e-5	3	-9.03e-3	3
1198		min	-0.146	2	-0.014	2	0	6	0	2	-9.604e-5	2	-1.012e-2	2
1199	N638	max	-0.136	4	-0.013	3	0	3	0	2	-2.031e-5	3	-9.027e-3	3
1200		min	-0.144	2	-0.014	2	0	6	0	2	-3.927e-5	2	-1.011e-2	2
1201	N639	max	-0.132	4	-0.013	3	0	3	0	2	1.48e-4	2	-8.831e-3	3
1202		min	-0.139	2	-0.014	2	0	6	0	2	1.028e-4	4	-9.82e-3	2
1203	N640	max	-0.128	4	-0.013	3	0	3	0	2	3.582e-4	2	-8.508e-3	3
1204		min	-0.135	2	-0.014	2	0	6	0	2	2.443e-4	3	-9.334e-3	2
1205	N641	max	-0.124	4	-0.013	3	0	3	0	2	6.312e-4	2	-8.161e-3	4
1206		min	-0.131	2	-0.014	2	0	6	0	2	4.259e-4	3	-8.823e-3	2
1207	N642	max	-0.12	4	-0.013	3	0	3	0	2	7.989e-4	2	-7.883e-3	4
1208		min	-0.127	2	-0.014	2	0	2	0	2	5.373e-4	3	-8.423e-3	2
1209	N643	max	-0.116	4	-0.013	3	0	3	0	2	8.424e-4	2	-7.707e-3	4
1210		min	-0.122	2	-0.014	2	0	2	0	2	5.659e-4	3	-8.17e-3	2
1211	N644	max	-0.111	4	-0.013	3	0	3	0	2	7.233e-4	2	-7.63e-3	4
1212		min	-0.118	2	-0.014	2	0	2	0	2	4.861e-4	3	-8.06e-3	2
1213	N645	max	-0.107	4	-0.013	3	0	3	0	2	5.385e-4	2	-7.615e-3	4
1214		min	-0.113	2	-0.014	2	0	2	0	2	3.627e-4	3	-8.039e-3	2
1215	N646	max	-0.107	4	-0.013	3	0	3	0	2	3.705e-4	2	-7.659e-3	4
1216		min	-0.113	2	-0.014	2	0	6	0	2	2.505e-4	3	-8.103e-3	2
1217	N647	max	-0.124	4	-0.013	3	0	3	0	2	6.758e-4	2	-7.793e-3	4
1218		min	-0.131	2	-0.014	2	0	6	0	2	4.551e-4	3	-8.294e-3	2
1219	N648	max	-0.127	4	-0.013	3	0	3	0	2	5.322e-4	2	-8.036e-3	4
1220		min	-0.135	2	-0.014	2	0	6	0	2	3.598e-4	3	-8.645e-3	2
1221	N649	max	-0.131	4	-0.013	3	0	3	0	2	2.465e-4	2	-8.457e-3	3
1222		min	-0.138	2	-0.014	2	0	6	0	2	1.699e-4	3	-9.257e-3	2
1223	N650	max	-0.132	4	-0.013	3	0	3	0	2	3.559e-4	2	-8.175e-3	4
1224		min	-0.139	2	-0.014	2	0	6	0	2	2.425e-4	3	-8.845e-3	2
1225	N651	max	-0.129	4	-0.013	3	0	3	0	2	5.212e-4	2	-7.953e-3	4
1226		min	-0.136	2	-0.014	2	0	6	0	2	3.524e-4	3	-8.525e-3	2
1227	N652	max	-0.119	4	-0.013	3	0	3	0	2	7.487e-4	2	-7.753e-3	4
1228		min	-0.126	2	-0.014	2	0	2	0	2	5.035e-4	3	-8.237e-3	2
1229	N653	max	-0.114	4	-0.013	3	0	3	0	2	6.478e-4	2	-7.672e-3	4
1230		min	-0.12	2	-0.014	2	0	2	0	2	4.358e-4	3	-8.122e-3	2
1231	N654	max	-0.126	4	-0.013	3	0	3	0	2	5.443e-4	2	-8.151e-3	4
1232		min	-0.133	2	-0.014	2	0	6	0	2	3.68e-4	3	-8.81e-3	2



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
1233	N655	max	-.016	3	-.012	3	0	6	-8.344e-6	3	8.606e-6	2	-7.677e-3	4
1234		min	-.017	2	-.014	2	0	3	-1.276e-5	2	-6.453e-6	6	-8.131e-3	2
1235	N656	max	-.047	4	-.012	3	0	6	2.55e-5	2	2.806e-6	2	-7.63e-3	4
1236		min	-.049	2	-.014	2	0	3	1.896e-5	3	-3.302e-6	6	-8.062e-3	2
1237	N657	max	0	2	-.012	3	0	6	-4.14e-5	3	-9.593e-5	3	-8.706e-3	3
1238		min	0	4	-.014	2	0	3	-6.056e-5	2	-1.562e-4	2	-9.651e-3	2
1239	N658	max	.001	2	-.012	3	0	6	-1.549e-5	3	-2.52e-5	3	-8.677e-3	3
1240		min	0	4	-.014	2	0	3	-2.184e-5	2	-4.98e-5	2	-9.608e-3	2
1241	N659	max	-.039	4	-.012	3	0	6	2.455e-5	2	1.34e-5	2	-7.637e-3	4
1242		min	-.041	2	-.014	2	0	3	1.796e-5	3	3.165e-6	6	-8.073e-3	2
1243	N660	max	-.024	3	-.012	3	0	6	1.045e-6	6	1.992e-5	2	-7.662e-3	4
1244		min	-.025	2	-.014	2	0	3	-6.126e-7	2	4.54e-6	6	-8.11e-3	2
1245	N661	max	-.004	3	-.012	3	0	6	0	2	-1.305e-5	3	-8.638e-3	3
1246		min	-.005	2	-.014	2	0	3	0	2	-3.162e-5	2	-9.549e-3	2
1247	N662	max	-.01	3	-.012	3	0	6	0	2	6.568e-5	2	-8.507e-3	3
1248		min	-.011	2	-.014	2	0	3	0	2	4.551e-5	4	-9.353e-3	2
1249	N663	max	-.015	3	-.012	3	0	6	0	2	2.928e-4	2	-8.239e-3	4
1250		min	-.016	2	-.014	2	0	3	0	2	2.01e-4	3	-8.954e-3	2
1251	N664	max	-.02	3	-.012	3	0	6	0	2	4.916e-4	2	-7.955e-3	4
1252		min	-.021	2	-.014	2	0	3	0	2	3.313e-4	3	-8.54e-3	2
1253	N665	max	-.024	3	-.012	3	0	2	0	2	6.13e-4	2	-7.73e-3	4
1254		min	-.026	2	-.014	2	0	3	0	2	4.094e-4	3	-8.213e-3	2
1255	N666	max	-.029	3	-.012	3	0	2	0	2	5.997e-4	2	-7.599e-3	4
1256		min	-.03	2	-.014	2	0	3	0	2	3.978e-4	3	-8.02e-3	2
1257	N667	max	-.033	3	-.012	3	0	2	0	2	4.668e-4	2	-7.55e-3	4
1258		min	-.035	2	-.014	2	0	3	0	2	3.071e-4	3	-7.948e-3	2
1259	N668	max	-.037	4	-.012	3	0	6	0	2	2.536e-4	2	-7.566e-3	4
1260		min	-.04	2	-.014	2	0	3	0	2	1.638e-4	3	-7.97e-3	2
1261	N669	max	-.042	4	-.012	3	0	6	0	2	7.582e-5	2	-7.61e-3	4
1262		min	-.044	2	-.014	2	0	3	0	2	4.585e-5	3	-8.034e-3	2
1263	N670	max	0	2	-.012	3	0	6	-2.834e-5	3	-7.569e-5	3	-8.685e-3	3
1264		min	0	4	-.014	2	0	3	-4.136e-5	2	-1.257e-4	2	-9.62e-3	2
1265	N671	max	.001	2	-.012	3	0	6	-1.791e-5	3	-4.034e-5	3	-8.677e-3	3
1266		min	0	4	-.014	2	0	3	-2.564e-5	2	-7.261e-5	2	-9.607e-3	2
1267	N672	max	-.012	3	-.012	3	0	6	0	2	3.432e-4	2	-7.703e-3	4
1268		min	-.013	2	-.014	2	0	3	0	2	2.292e-4	3	-8.171e-3	2
1269	N673	max	-.008	3	-.012	3	0	6	0	2	2.901e-4	2	-7.764e-3	4
1270		min	-.009	2	-.014	2	0	3	0	2	1.968e-4	3	-8.261e-3	2
1271	N674	max	-.004	3	-.012	3	0	6	0	2	2.511e-5	5	-7.951e-3	4
1272		min	-.004	2	-.014	2	0	3	0	2	1.608e-5	4	-8.533e-3	2
1273	N675	max	-.031	3	-.012	3	0	2	0	2	1.767e-4	2	-7.634e-3	4
1274		min	-.033	2	-.014	2	0	3	0	2	1.127e-4	3	-8.069e-3	2
1275	N676	max	-.023	3	-.012	3	0	2	0	2	3.442e-4	2	-7.64e-3	4
1276		min	-.025	2	-.014	2	0	3	0	2	2.259e-4	3	-8.078e-3	2
1277	N677	max	-.018	3	-.012	3	0	6	0	2	2.919e-4	2	-7.675e-3	4
1278		min	-.019	2	-.014	2	0	3	0	2	1.922e-4	3	-8.129e-3	2
1279	N678	max	-.014	3	-.012	3	0	6	0	2	3.628e-4	2	-7.694e-3	4
1280		min	-.015	2	-.014	2	0	3	0	2	2.422e-4	3	-8.158e-3	2
1281	N679	max	-.011	3	-.012	3	0	6	0	2	3.248e-4	2	-7.774e-3	4
1282		min	-.011	2	-.014	2	0	3	0	2	2.196e-4	3	-8.275e-3	2
1283	N680	max	-.007	3	-.012	3	0	6	0	2	1.651e-4	2	-7.982e-3	4
1284		min	-.008	2	-.014	2	0	3	0	2	1.131e-4	4	-8.579e-3	2
1285	N681	max	-.004	3	-.012	3	0	6	0	2	-8.254e-7	3	-8.227e-3	4
1286		min	-.004	2	-.014	2	0	3	0	2	-1.177e-5	2	-8.935e-3	2
1287	N682	max	-.006	3	-.012	3	0	6	0	2	1.653e-5	5	-8.28e-3	4
1288		min	-.006	2	-.014	2	0	3	0	2	8.908e-6	4	-9.013e-3	2
1289	N683	max	-.003	3	-.012	3	0	6	0	2	-3.458e-5	3	-8.538e-3	3



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
1290		min	-0.04	2	-0.14	2	0	3	0	2	-6.377e-5	2	-9.398e-3	2
1291	N684	max	-0.06	3	-0.12	3	0	6	0	2	-7.292e-6	3	-8.535e-3	3
1292		min	-0.06	2	-0.14	2	0	3	0	2	-2.278e-5	2	-9.394e-3	2
1293	N685	max	-.01	3	-0.12	3	0	6	0	2	1.081e-4	2	-8.398e-3	3
1294		min	-.01	2	-0.14	2	0	3	0	2	7.458e-5	4	-9.187e-3	2
1295	N686	max	-0.13	3	-0.12	3	0	6	0	2	2.518e-4	2	-8.166e-3	4
1296		min	-0.14	2	-0.14	2	0	3	0	2	1.732e-4	4	-8.847e-3	2
1297	N687	max	-0.17	3	-0.12	3	0	6	0	2	4.371e-4	2	-7.922e-3	4
1298		min	-0.19	2	-0.14	2	0	3	0	2	2.951e-4	3	-8.493e-3	2
1299	N688	max	-0.21	3	-0.12	3	0	6	0	2	5.442e-4	2	-7.736e-3	4
1300		min	-0.23	2	-0.14	2	0	3	0	2	3.641e-4	3	-8.221e-3	2
1301	N689	max	-0.25	3	-0.12	3	0	2	0	2	5.61e-4	2	-7.623e-3	4
1302		min	-0.27	2	-0.14	2	0	3	0	2	3.727e-4	3	-8.055e-3	2
1303	N690	max	-.03	3	-0.12	3	0	2	0	2	4.624e-4	2	-7.58e-3	4
1304		min	-.032	2	-0.14	2	0	3	0	2	3.047e-4	3	-7.991e-3	2
1305	N691	max	-0.34	4	-0.12	3	0	2	0	2	3.216e-4	2	-7.577e-3	4
1306		min	-0.36	2	-0.14	2	0	3	0	2	2.096e-4	3	-7.987e-3	2
1307	N692	max	-0.35	4	-0.12	3	0	2	0	2	1.983e-4	2	-7.612e-3	4
1308		min	-0.37	2	-0.14	2	0	3	0	2	1.27e-4	3	-8.037e-3	2
1309	N693	max	-0.17	3	-0.12	3	0	6	0	2	4.525e-4	2	-7.682e-3	4
1310		min	-0.18	2	-0.14	2	0	3	0	2	3.022e-4	3	-8.141e-3	2
1311	N694	max	-0.14	3	-0.12	3	0	6	0	2	3.645e-4	2	-7.841e-3	4
1312		min	-0.15	2	-0.14	2	0	3	0	2	2.465e-4	3	-8.374e-3	2
1313	N695	max	-0.11	3	-0.12	3	0	6	0	2	1.73e-4	2	-8.13e-3	4
1314		min	-0.12	2	-0.14	2	0	3	0	2	1.189e-4	4	-8.795e-3	2
1315	N696	max	-.01	3	-0.12	3	0	6	0	2	2.45e-4	2	-7.936e-3	4
1316		min	-0.11	2	-0.14	2	0	3	0	2	1.681e-4	4	-8.512e-3	2
1317	N697	max	-0.13	3	-0.12	3	0	6	0	2	3.53e-4	2	-7.788e-3	4
1318		min	-0.13	2	-0.14	2	0	3	0	2	2.381e-4	3	-8.296e-3	2
1319	N698	max	-0.22	3	-0.12	3	0	6	0	2	4.976e-4	2	-7.656e-3	4
1320		min	-0.23	2	-0.14	2	0	3	0	2	3.31e-4	3	-8.103e-3	2
1321	N699	max	-0.28	3	-0.12	3	0	2	0	2	4.092e-4	2	-7.612e-3	4
1322		min	-0.29	2	-0.14	2	0	3	0	2	2.693e-4	3	-8.038e-3	2
1323	N700	max	-0.15	3	-0.12	3	0	6	0	2	3.757e-4	2	-7.917e-3	4
1324		min	-0.16	2	-0.14	2	0	3	0	2	2.544e-4	3	-8.485e-3	2
1325	N701	max	-0.16	4	-0.12	3	0	6	1.911e-5	2	-5.688e-5	3	-7.673e-3	4
1326		min	-0.17	2	-0.14	2	0	2	1.383e-5	3	-7.677e-5	2	-8.127e-3	2
1327	N702	max	-0.47	4	-0.12	3	0	6	-4.063e-6	6	-2.514e-5	3	-7.631e-3	4
1328		min	-.05	2	-0.14	2	0	3	-9.032e-6	2	-3.427e-5	2	-8.063e-3	2
1329	N703	max	0	2	-0.12	3	0	6	6.572e-5	2	1.887e-4	2	-8.712e-3	3
1330		min	0	4	-0.14	2	0	3	4.588e-5	3	1.294e-4	4	-9.66e-3	2
1331	N704	max	0	2	-0.12	3	0	6	1.646e-5	2	8.729e-5	2	-8.681e-3	3
1332		min	0	4	-0.14	2	0	3	1.129e-5	3	6.005e-5	4	-9.613e-3	2
1333	N705	max	-0.39	4	-0.12	3	0	6	-6.655e-6	6	-3.866e-5	3	-7.637e-3	4
1334		min	-0.42	2	-0.14	2	0	2	-1.141e-5	2	-5.35e-5	2	-8.073e-3	2
1335	N706	max	-0.24	4	-0.12	3	0	6	8.6e-6	6	-5.64e-5	3	-7.661e-3	4
1336		min	-0.25	2	-0.14	2	0	2	6.623e-6	3	-7.771e-5	2	-8.108e-3	2
1337	N707	max	-0.05	3	-0.12	3	0	6	0	2	7.09e-5	2	-8.647e-3	3
1338		min	-0.05	2	-0.14	2	0	3	0	2	4.892e-5	4	-9.559e-3	2
1339	N708	max	-.01	3	-0.12	3	0	6	0	2	-6.86e-6	3	-8.526e-3	3
1340		min	-0.11	2	-0.14	2	0	3	0	2	-2.292e-5	2	-9.374e-3	2
1341	N709	max	-0.15	3	-0.12	3	0	6	0	2	-1.555e-4	3	-8.266e-3	4
1342		min	-0.16	2	-0.14	2	0	2	0	2	-2.49e-4	2	-8.986e-3	2
1343	N710	max	-.02	4	-0.12	3	0	6	0	2	-2.898e-4	3	-7.987e-3	4
1344		min	-0.21	2	-0.14	2	0	2	0	2	-4.52e-4	2	-8.58e-3	2
1345	N711	max	-0.24	4	-0.12	3	0	6	0	2	-3.795e-4	3	-7.761e-3	4
1346		min	-0.26	2	-0.14	2	0	2	0	2	-5.858e-4	2	-8.25e-3	2



**Envelope Joint Displacements (Continued)**

LC	Joint	max/min	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC
1347	N712	max	-0.029	4	-0.012	3	0	6	0	2	-3.863e-4	3	-7.621e-3	4
1348		min	-0.031	2	-0.014	2	0	2	0	2	-5.921e-4	2	-8.048e-3	2
1349	N713	max	-0.033	4	-0.012	3	0	6	0	2	-3.168e-4	3	-7.562e-3	4
1350		min	-0.035	2	-0.014	2	0	2	0	2	-4.818e-4	2	-7.962e-3	2
1351	N714	max	-0.038	4	-0.012	3	0	6	0	2	-1.924e-4	3	-7.567e-3	4
1352		min	-0.04	2	-0.014	2	0	2	0	2	-2.886e-4	2	-7.971e-3	2
1353	N715	max	-0.042	4	-0.012	3	0	6	0	2	-7.846e-5	3	-7.608e-3	4
1354		min	-0.045	2	-0.014	2	0	3	0	2	-1.144e-4	2	-8.031e-3	2
1355	N716	max	0	2	-0.012	3	0	6	4.475e-5	2	1.596e-4	2	-8.692e-3	3
1356		min	0	4	-0.014	2	0	3	3.136e-5	3	1.095e-4	4	-9.629e-3	2
1357	N717	max	0	2	-0.012	3	0	6	2.357e-5	2	1.091e-4	2	-8.682e-3	3
1358		min	0	4	-0.014	2	0	3	1.643e-5	3	7.501e-5	4	-9.614e-3	2
1359	N718	max	-0.012	4	-0.012	3	0	6	0	2	-2.171e-4	3	-7.707e-3	4
1360		min	-0.013	2	-0.014	2	0	3	0	2	-3.352e-4	2	-8.174e-3	2
1361	N719	max	-0.008	4	-0.012	3	0	6	0	2	-1.674e-4	3	-7.782e-3	4
1362		min	-0.009	2	-0.014	2	0	3	0	2	-2.635e-4	2	-8.283e-3	2
1363	N720	max	-0.004	4	-0.012	3	0	6	0	2	1.239e-5	3	-7.973e-3	4
1364		min	-0.004	2	-0.014	2	0	3	0	2	5.697e-6	4	-8.56e-3	2
1365	N721	max	-0.031	4	-0.012	3	0	6	0	2	-1.451e-4	3	-7.632e-3	4
1366		min	-0.033	2	-0.014	2	0	2	0	2	-2.159e-4	2	-8.067e-3	2
1367	N722	max	-0.024	4	-0.012	3	0	6	0	2	-2.393e-4	3	-7.642e-3	4
1368		min	-0.025	2	-0.014	2	0	2	0	2	-3.633e-4	2	-8.081e-3	2
1369	N723	max	-0.018	4	-0.012	3	0	6	0	2	-2.014e-4	3	-7.677e-3	4
1370		min	-0.019	2	-0.014	2	0	2	0	2	-3.067e-4	2	-8.131e-3	2
1371	N724	max	-0.015	4	-0.012	3	0	6	0	2	-2.296e-4	3	-7.707e-3	4
1372		min	-0.016	2	-0.014	2	0	3	0	2	-3.543e-4	2	-8.174e-3	2
1373	N725	max	-0.011	4	-0.012	3	0	6	0	2	-1.906e-4	3	-7.794e-3	4
1374		min	-0.012	2	-0.014	2	0	3	0	2	-2.986e-4	2	-8.3e-3	2
1375	N726	max	-0.007	4	-0.012	3	0	6	0	2	-8.033e-5	3	-8.005e-3	4
1376		min	-0.008	2	-0.014	2	0	3	0	2	-1.324e-4	2	-8.606e-3	2
1377	N727	max	-0.004	3	-0.012	3	0	6	0	2	4.526e-5	2	-8.246e-3	4
1378		min	-0.005	2	-0.014	2	0	3	0	2	3.099e-5	4	-8.958e-3	2
1379	N728	max	-0.006	3	-0.012	3	0	6	0	2	2.493e-5	5	-8.301e-3	4
1380		min	-0.006	2	-0.014	2	0	3	0	2	1.566e-5	4	-9.039e-3	2
1381	N729	max	-0.004	3	-0.012	3	0	6	0	2	1.003e-4	2	-8.553e-3	3
1382		min	-0.004	2	-0.014	2	0	3	0	2	6.896e-5	4	-9.415e-3	2
1383	N730	max	-0.006	3	-0.012	3	0	6	0	2	6.176e-5	2	-8.551e-3	3
1384		min	-0.006	2	-0.014	2	0	3	0	2	4.263e-5	4	-9.413e-3	2
1385	N731	max	-0.01	3	-0.012	3	0	6	0	2	-3.553e-5	3	-8.42e-3	3
1386		min	-0.011	2	-0.014	2	0	3	0	2	-6.629e-5	2	-9.212e-3	2
1387	N732	max	-0.013	3	-0.012	3	0	6	0	2	-1.309e-4	3	-8.193e-3	4
1388		min	-0.014	2	-0.014	2	0	2	0	2	-2.109e-4	2	-8.88e-3	2
1389	N733	max	-0.018	4	-0.012	3	0	6	0	2	-2.553e-4	3	-7.953e-3	4
1390		min	-0.019	2	-0.014	2	0	2	0	2	-3.993e-4	2	-8.53e-3	2
1391	N734	max	-0.021	4	-0.012	3	0	6	0	2	-3.344e-4	3	-7.764e-3	4
1392		min	-0.023	2	-0.014	2	0	2	0	2	-5.172e-4	2	-8.255e-3	2
1393	N735	max	-0.026	4	-0.012	3	0	6	0	2	-3.591e-4	3	-7.643e-3	4
1394		min	-0.027	2	-0.014	2	0	2	0	2	-5.511e-4	2	-8.08e-3	2
1395	N736	max	-0.03	4	-0.012	3	0	6	0	2	-3.11e-4	3	-7.59e-3	4
1396		min	-0.032	2	-0.014	2	0	2	0	2	-4.737e-4	2	-8.003e-3	2
1397	N737	max	-0.034	4	-0.012	3	0	6	0	2	-2.314e-4	3	-7.581e-3	4
1398		min	-0.036	2	-0.014	2	0	2	0	2	-3.494e-4	2	-7.991e-3	2
1399	N738	max	-0.035	4	-0.012	3	0	6	0	2	-1.584e-4	3	-7.611e-3	4
1400		min	-0.037	2	-0.014	2	0	2	0	2	-2.363e-4	2	-8.035e-3	2
1401	N739	max	-0.018	4	-0.012	3	0	6	0	2	-2.821e-4	3	-7.7e-3	4
1402		min	-0.019	2	-0.014	2	0	2	0	2	-4.356e-4	2	-8.163e-3	2
1403	N740	max	-0.014	4	-0.012	3	0	6	0	2	-2.124e-4	3	-7.867e-3	4



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
1404		min	-0.015	2	-0.014	2	0	2	0	2	-3.329e-4	2	-8.406e-3	2
1405	N741	max	-0.011	3	-0.012	3	0	6	0	2	-8.107e-5	3	-8.157e-3	4
1406		min	-0.012	2	-0.014	2	0	3	0	2	-1.347e-4	2	-8.827e-3	2
1407	N742	max	-.01	4	-0.012	3	0	6	0	2	-1.32e-4	3	-7.961e-3	4
1408		min	-0.011	2	-0.014	2	0	3	0	2	-2.112e-4	2	-8.543e-3	2
1409	N743	max	-0.013	4	-0.012	3	0	6	0	2	-2.094e-4	3	-7.81e-3	4
1410		min	-0.014	2	-0.014	2	0	3	0	2	-3.271e-4	2	-8.322e-3	2
1411	N744	max	-0.022	4	-0.012	3	0	6	0	2	-3.168e-4	3	-7.673e-3	4
1412		min	-0.024	2	-0.014	2	0	2	0	2	-4.871e-4	2	-8.123e-3	2
1413	N745	max	-0.028	4	-0.012	3	0	6	0	2	-2.784e-4	3	-7.617e-3	4
1414		min	-.03	2	-0.014	2	0	2	0	2	-4.235e-4	2	-8.044e-3	2
1415	N746	max	-0.016	4	-0.012	3	0	6	0	2	-2.167e-4	3	-7.946e-3	4
1416		min	-0.017	2	-0.014	2	0	2	0	2	-3.402e-4	2	-8.52e-3	2
1417	N747	max	-.007	3	-.74	4	0	6	1.006e-6	6	-2.246e-3	3	-1.976e-3	3
1418		min	-.01	5	-.774	2	-.002	5	-2.174e-5	5	-2.476e-3	2	-2.477e-3	4
1419	N748	max	-.004	4	-.74	4	0	6	6.36e-5	4	-2.108e-3	3	9.726e-4	3
1420		min	-.007	5	-.774	2	-.002	5	2.399e-5	3	-2.307e-3	2	6.64e-4	4
1421	N749	max	.001	3	-.74	4	0	6	7.232e-5	3	-6.023e-3	3	-9.478e-4	3
1422		min	-.002	5	-.774	2	-.002	5	2.496e-5	4	-6.274e-3	2	-2.233e-3	4
1423	N750	max	.019	3	-.74	4	0	6	-2.672e-5	3	-2.666e-3	3	-1.362e-3	3
1424		min	.016	5	-.774	2	-.002	5	-4.427e-5	5	-2.783e-3	2	-2.632e-3	4
1425	N751	max	-.004	4	-.74	4	0	6	6.731e-5	4	-2.288e-3	3	3.117e-4	3
1426		min	-.007	5	-.774	2	-.002	5	3.521e-5	3	-2.509e-3	2	-3.992e-5	4
1427	N752	max	-.006	4	-.74	4	0	6	3.973e-5	6	-2.452e-3	3	-1.206e-3	3
1428		min	-.008	5	-.774	2	-.002	5	1.928e-5	5	-2.695e-3	2	-1.659e-3	4
1429	N753	max	.018	3	-.74	4	0	6	0	2	-3.129e-3	3	-1.988e-3	3
1430		min	.016	5	-.774	2	-.002	5	0	2	-3.259e-3	2	-3.263e-3	4
1431	N754	max	.018	4	-.74	4	0	6	0	2	-3.113e-3	3	-3.257e-3	3
1432		min	.016	5	-.774	2	-.002	5	0	2	-3.241e-3	2	-4.511e-3	4
1433	N755	max	.019	4	-.74	4	0	6	0	2	-2.782e-3	3	-4.001e-3	3
1434		min	.017	5	-.774	2	-.002	5	0	2	-2.96e-3	4	-5.148e-3	4
1435	N756	max	.02	4	-.74	4	0	6	0	2	-3.654e-3	3	-2.405e-3	3
1436		min	.017	6	-.774	2	-.002	5	0	2	-3.962e-3	4	-3.402e-3	4
1437	N757	max	.018	4	-.74	4	0	6	0	2	-5.699e-3	3	-3.031e-4	3
1438		min	.016	6	-.774	2	-.002	5	0	2	-6.175e-3	2	-1.049e-3	4
1439	N758	max	.014	4	-.74	4	0	6	0	2	-7.019e-3	3	2.073e-3	3
1440		min	.011	5	-.774	2	-.002	5	0	2	-7.746e-3	2	1.65e-3	4
1441	N759	max	.007	4	-.74	4	0	6	0	2	-7.732e-3	3	2.487e-3	3
1442		min	.005	5	-.774	2	-.002	5	0	2	-8.561e-3	2	2.232e-3	4
1443	N760	max	.002	4	-.74	4	0	6	0	2	-5.451e-3	3	1.592e-3	3
1444		min	-.001	5	-.774	2	-.002	5	0	2	-6.049e-3	2	1.363e-3	4
1445	N761	max	-.002	4	-.74	4	0	6	0	2	-3.137e-3	3	9.232e-4	3
1446		min	-.005	5	-.774	2	-.002	5	0	2	-3.464e-3	2	6.327e-4	4
1447	N762	max	.007	3	-.74	4	0	6	1.309e-5	3	-5.242e-3	3	-1.22e-3	3
1448		min	.004	5	-.774	2	-.002	5	-2.061e-5	4	-5.464e-3	2	-2.498e-3	4
1449	N763	max	.016	3	-.74	4	0	6	-3.103e-5	3	-3.526e-3	3	-1.354e-3	3
1450		min	.013	5	-.774	2	-.002	5	-5.31e-5	5	-3.678e-3	2	-2.626e-3	4
1451	N764	max	-.005	3	-.74	4	0	6	0	2	-1.093e-2	3	-2.032e-3	3
1452		min	-.007	5	-.774	2	-.002	5	0	2	-1.163e-2	2	-2.652e-3	4
1453	N765	max	0	3	-.74	4	0	6	0	2	-8.566e-3	3	-3.78e-3	3
1454		min	-.003	5	-.774	2	-.002	5	0	2	-9.118e-3	2	-4.515e-3	4
1455	N766	max	0	3	-.74	4	0	6	0	2	-6.356e-3	3	-6.589e-3	3
1456		min	-.003	5	-.774	2	-.002	5	0	2	-6.72e-3	2	-7.511e-3	4
1457	N767	max	-.002	4	-.74	4	0	6	0	2	-4.522e-3	3	-6.606e-5	3
1458		min	-.005	5	-.774	2	-.002	5	0	2	-4.992e-3	2	-4.406e-4	4
1459	N768	max	0	4	-.74	4	0	6	0	2	-8.85e-3	3	6.206e-4	3
1460		min	-.003	5	-.774	2	-.002	5	0	2	-9.627e-3	2	2.326e-4	4



**Envelope Joint Displacements (Continued)**

LC	Joint	max/min	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC
1461	N769	max	-.003	4	-.74	4	0	6	0	2	-9.223e-3	3	-1.055e-3	3
1462		min	-.005	5	-.774	2	-.002	5	0	2	-9.889e-3	2	-1.599e-3	4
1463	N770	max	.001	4	-.74	4	0	6	0	2	-1.068e-2	3	-1.786e-3	3
1464		min	0	5	-.774	2	-.002	5	0	2	-1.141e-2	2	-2.416e-3	4
1465	N771	max	.004	3	-.74	4	0	6	0	2	-8.869e-3	3	-4.33e-3	3
1466		min	.002	5	-.774	2	-.002	5	0	2	-9.43e-3	2	-5.111e-3	4
1467	N772	max	.005	3	-.74	4	0	6	0	2	-6.293e-3	3	-6.272e-3	3
1468		min	.002	5	-.774	2	-.002	5	0	2	-6.672e-3	2	-7.225e-3	4
1469	N773	max	.005	3	-.74	4	0	6	0	2	-5.715e-3	3	-5.724e-3	3
1470		min	.002	5	-.774	2	-.002	5	0	2	-6.005e-3	2	-6.811e-3	4
1471	N774	max	.009	3	-.74	4	0	6	0	2	-3.931e-3	3	-5.535e-3	3
1472		min	.007	5	-.774	2	-.002	5	0	2	-4.141e-3	2	-6.678e-3	4
1473	N775	max	.012	3	-.74	4	0	6	0	2	-4.218e-3	3	-2.612e-3	3
1474		min	.01	5	-.774	2	-.002	5	0	2	-4.401e-3	2	-3.854e-3	4
1475	N776	max	.015	3	-.74	4	0	6	0	2	-3.719e-3	3	-2.919e-3	3
1476		min	.013	5	-.774	2	-.002	5	0	2	-3.877e-3	2	-4.173e-3	4
1477	N777	max	.017	4	-.74	4	0	6	0	2	-3.005e-3	3	-3.812e-3	3
1478		min	.014	5	-.774	2	-.002	5	0	2	-3.15e-3	2	-5.019e-3	4
1479	N778	max	.017	4	-.74	4	0	6	0	2	-3.014e-3	3	-3.803e-3	3
1480		min	.015	5	-.774	2	-.002	5	0	2	-3.211e-3	2	-4.899e-3	4
1481	N779	max	.018	4	-.74	4	0	6	0	2	-3.114e-3	3	-2.472e-3	3
1482		min	.015	5	-.774	2	-.002	5	0	2	-3.389e-3	4	-3.442e-3	4
1483	N780	max	.016	4	-.74	4	0	6	0	2	-5.072e-3	3	4.868e-4	3
1484		min	.013	5	-.774	2	-.002	5	0	2	-5.516e-3	2	-1.903e-4	4
1485	N781	max	.012	4	-.74	4	0	6	0	2	-7.168e-3	3	2.524e-3	3
1486		min	.009	5	-.774	2	-.002	5	0	2	-7.869e-3	2	2.09e-3	4
1487	N782	max	.006	4	-.74	4	0	6	0	2	-7.874e-3	3	2.082e-3	3
1488		min	.003	5	-.774	2	-.002	5	0	2	-8.683e-3	2	1.789e-3	4
1489	N783	max	.002	4	-.74	4	0	6	0	2	-6.41e-3	3	1.645e-3	3
1490		min	0	5	-.774	2	-.002	5	0	2	-7.09e-3	2	1.382e-3	4
1491	N784	max	-.001	4	-.74	4	0	6	0	2	-4.777e-3	3	5.961e-4	3
1492		min	-.004	5	-.774	2	-.002	5	0	2	-5.291e-3	2	2.793e-4	4
1493	N785	max	.008	4	-.74	4	0	6	0	2	-1.072e-2	3	3.464e-4	3
1494		min	.005	5	-.774	2	-.002	5	0	2	-1.149e-2	2	-3.005e-4	4
1495	N786	max	.013	4	-.74	4	0	6	0	2	-4.417e-3	3	-4.371e-3	3
1496		min	.011	5	-.774	2	-.002	5	0	2	-4.774e-3	2	-5.268e-3	4
1497	N787	max	.014	4	-.74	4	0	6	0	2	-2.96e-3	3	-4.994e-3	3
1498		min	.012	5	-.774	2	-.002	5	0	2	-3.156e-3	2	-6.075e-3	4
1499	N788	max	.009	4	-.74	4	0	6	0	2	-5.522e-3	3	-6.91e-3	3
1500		min	.007	5	-.774	2	-.002	5	0	2	-5.873e-3	2	-7.868e-3	4
1501	N789	max	.008	4	-.74	4	0	6	0	2	-7.951e-3	3	-4.363e-3	3
1502		min	.006	5	-.774	2	-.002	5	0	2	-8.472e-3	2	-5.189e-3	4
1503	N790	max	.01	4	-.74	4	0	6	0	2	-9.808e-3	3	2.004e-3	3
1504		min	.007	5	-.774	2	-.002	5	0	2	-1.066e-2	2	1.583e-3	4
1505	N791	max	.003	4	-.74	4	0	6	0	2	-7.97e-3	3	1.439e-3	3
1506		min	0	5	-.774	2	-.002	5	0	2	-8.74e-3	2	1.087e-3	4
1507	N792	max	.016	4	-.74	4	0	6	0	2	-3.311e-3	3	-3.729e-3	3
1508		min	.013	5	-.774	2	-.002	5	0	2	-3.627e-3	2	-4.644e-3	4
1509	N793	max	-.008	3	-.74	4	0	6	1.657e-6	4	2.594e-3	5	-1.982e-3	3
1510		min	-.01	5	-.774	2	-.001	5	-3.666e-5	3	2.462e-3	3	-2.478e-3	4
1511	N794	max	-.005	4	-.74	4	0	6	-6.505e-5	6	2.39e-3	2	9.603e-4	3
1512		min	-.008	5	-.774	2	-.002	5	-8.926e-5	5	2.257e-3	3	6.603e-4	4
1513	N795	max	0	3	-.74	4	0	6	-3.604e-5	4	6.323e-3	2	-1.003e-3	3
1514		min	-.002	5	-.774	2	-.002	5	-1.099e-4	3	6.09e-3	3	-2.253e-3	4
1515	N796	max	.019	3	-.74	4	0	6	3.835e-5	4	2.829e-3	2	-1.388e-3	3
1516		min	.016	5	-.774	2	-.002	5	6.92e-6	3	2.725e-3	3	-2.641e-3	4
1517	N797	max	-.004	4	-.74	4	0	6	-6.854e-5	6	2.6e-3	2	3.003e-4	3





**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [ ...	LC	
1518		min	-0.007	5	-0.774	2	-0.002	5	-8.847e-5	5	2.452e-3	3	-4.322e-5	4
1519	N798	max	-0.006	4	-0.74	4	0	6	-4.256e-5	6	2.802e-3	2	-1.214e-3	3
1520		min	-0.008	5	-0.774	2	-0.002	5	-7.21e-5	3	2.649e-3	3	-1.661e-3	4
1521	N799	max	.018	3	-0.74	4	0	6	0	2	3.303e-3	2	-2.027e-3	3
1522		min	.016	5	-0.774	2	-0.002	5	0	2	3.183e-3	3	-3.277e-3	4
1523	N800	max	.018	4	-0.74	4	0	6	0	2	3.283e-3	2	-3.313e-3	3
1524		min	.016	5	-0.774	2	-0.002	5	0	2	3.163e-3	3	-4.529e-3	4
1525	N801	max	.019	4	-0.74	4	0	6	0	2	2.992e-3	4	-4.066e-3	3
1526		min	.017	5	-0.774	2	-0.001	5	0	2	2.834e-3	3	-5.169e-3	4
1527	N802	max	.02	4	-0.74	4	0	6	0	2	3.997e-3	4	-2.467e-3	3
1528		min	.017	6	-0.774	2	-0.001	5	0	2	3.716e-3	3	-3.422e-3	4
1529	N803	max	.018	4	-0.74	4	0	6	0	2	6.231e-3	2	-3.572e-4	3
1530		min	.015	6	-0.774	2	-0.001	5	0	2	5.782e-3	3	-1.067e-3	4
1531	N804	max	.013	4	-0.74	4	0	6	0	2	7.812e-3	2	2.03e-3	3
1532		min	.011	5	-0.774	2	-0.002	5	0	2	7.123e-3	3	1.635e-3	4
1533	N805	max	.007	4	-0.74	4	0	6	0	2	8.638e-3	2	2.458e-3	3
1534		min	.004	5	-0.774	2	-0.002	5	0	2	7.863e-3	3	2.222e-3	4
1535	N806	max	.001	4	-0.74	4	0	6	0	2	6.138e-3	2	1.581e-3	3
1536		min	-0.002	5	-0.774	2	-0.002	5	0	2	5.61e-3	3	1.36e-3	4
1537	N807	max	-0.002	4	-0.74	4	0	6	0	2	3.554e-3	2	9.163e-4	3
1538		min	-0.005	5	-0.774	2	-0.002	5	0	2	3.3e-3	3	6.307e-4	4
1539	N808	max	.007	3	-0.74	4	0	6	1.047e-5	4	5.512e-3	2	-1.268e-3	3
1540		min	.004	5	-0.774	2	-0.002	5	-4.797e-5	3	5.306e-3	3	-2.515e-3	4
1541	N809	max	.015	3	-0.74	4	0	6	4.543e-5	4	3.725e-3	2	-1.387e-3	3
1542		min	.013	5	-0.774	2	-0.002	5	5.454e-6	3	3.586e-3	3	-2.638e-3	4
1543	N810	max	-0.005	3	-0.74	4	0	6	0	2	1.169e-2	2	-2.043e-3	3
1544		min	-0.008	5	-0.774	2	-0.001	5	0	2	1.104e-2	3	-2.655e-3	4
1545	N811	max	-0.001	3	-0.74	4	0	6	0	2	9.173e-3	2	-3.821e-3	3
1546		min	-0.004	5	-0.774	2	-0.001	5	0	2	8.645e-3	3	-4.528e-3	4
1547	N812	max	0	3	-0.74	4	0	6	0	2	6.769e-3	2	-6.648e-3	3
1548		min	-0.003	5	-0.774	2	-0.001	5	0	2	6.421e-3	3	-7.53e-3	4
1549	N813	max	-0.003	4	-0.74	4	0	6	0	2	5.084e-3	2	-7.295e-5	3
1550		min	-0.005	5	-0.774	2	-0.002	5	0	2	4.688e-3	3	-4.423e-4	4
1551	N814	max	0	4	-0.74	4	0	6	0	2	9.708e-3	2	6.078e-4	3
1552		min	-0.004	5	-0.774	2	-0.002	5	0	2	8.99e-3	3	2.289e-4	4
1553	N815	max	-0.003	4	-0.74	4	0	6	0	2	9.969e-3	2	-1.066e-3	3
1554		min	-0.006	5	-0.774	2	-0.001	5	0	2	9.362e-3	3	-1.602e-3	4
1555	N816	max	0	4	-0.74	4	0	6	0	2	1.148e-2	2	-1.814e-3	3
1556		min	-0.001	5	-0.774	2	-0.001	5	0	2	1.079e-2	3	-2.425e-3	4
1557	N817	max	.003	4	-0.74	4	0	6	0	2	9.486e-3	2	-4.375e-3	3
1558		min	.001	5	-0.774	2	-0.001	5	0	2	8.951e-3	3	-5.125e-3	4
1559	N818	max	.004	3	-0.74	4	0	6	0	2	6.723e-3	2	-6.33e-3	3
1560		min	.002	5	-0.774	2	-0.001	5	0	2	6.362e-3	3	-7.244e-3	4
1561	N819	max	.004	3	-0.74	4	0	6	0	2	6.054e-3	2	-5.784e-3	3
1562		min	.002	5	-0.774	2	-0.001	5	0	2	5.78e-3	3	-6.832e-3	4
1563	N820	max	.009	3	-0.74	4	0	6	0	2	4.187e-3	2	-5.597e-3	3
1564		min	.006	5	-0.774	2	-0.002	5	0	2	3.991e-3	3	-6.699e-3	4
1565	N821	max	.012	3	-0.74	4	0	6	0	2	4.447e-3	2	-2.664e-3	3
1566		min	.009	5	-0.774	2	-0.002	5	0	2	4.276e-3	3	-3.872e-3	4
1567	N822	max	.015	3	-0.74	4	0	6	0	2	3.921e-3	2	-2.972e-3	3
1568		min	.012	5	-0.774	2	-0.002	5	0	2	3.773e-3	3	-4.191e-3	4
1569	N823	max	.016	4	-0.74	4	0	6	0	2	3.193e-3	2	-3.871e-3	3
1570		min	.014	5	-0.774	2	-0.002	5	0	2	3.056e-3	3	-5.039e-3	4
1571	N824	max	.017	4	-0.74	4	0	6	0	2	3.256e-3	2	-3.866e-3	3
1572		min	.015	5	-0.774	2	-0.001	5	0	2	3.068e-3	3	-4.92e-3	4
1573	N825	max	.017	4	-0.74	4	0	6	0	2	3.425e-3	4	-2.531e-3	3
1574		min	.015	5	-0.774	2	-0.001	5	0	2	3.177e-3	3	-3.461e-3	4



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC			
1575	N826	max	.015	4	-.74	4	0	6	2	5.572e-3	2	4.365e-4	3		
1576		min	.013	5	-.774	2	-.001	5	2	5.152e-3	3	-2.071e-4	4		
1577	N827	max	.012	4	-.74	4	0	6	2	7.934e-3	2	2.486e-3	3		
1578		min	.009	5	-.774	2	-.001	5	2	7.269e-3	3	2.078e-3	4		
1579	N828	max	.006	4	-.74	4	0	6	2	8.758e-3	2	2.057e-3	3		
1580		min	.003	5	-.774	2	-.002	5	2	8.e-3	3	1.781e-3	4		
1581	N829	max	.002	4	-.74	4	0	6	2	7.175e-3	2	1.631e-3	3		
1582		min	-.001	5	-.774	2	-.002	5	2	6.559e-3	3	1.378e-3	4		
1583	N830	max	-.001	4	-.74	4	0	6	2	5.382e-3	2	5.887e-4	3		
1584		min	-.004	5	-.774	2	-.002	5	2	4.939e-3	3	2.771e-4	4		
1585	N831	max	.007	4	-.74	4	0	6	2	1.155e-2	2	3.166e-4	3		
1586		min	.005	5	-.774	2	-.001	5	2	1.082e-2	3	-3.099e-4	4		
1587	N832	max	.013	4	-.74	4	0	6	2	4.826e-3	2	-4.423e-3	3		
1588		min	.011	5	-.774	2	-.001	5	2	4.488e-3	3	-5.285e-3	4		
1589	N833	max	.014	4	-.74	4	0	6	2	3.202e-3	2	-5.057e-3	3		
1590		min	.011	5	-.774	2	-.001	5	2	3.017e-3	3	-6.096e-3	4		
1591	N834	max	.009	4	-.74	4	0	6	2	5.923e-3	2	-6.97e-3	3		
1592		min	.007	5	-.774	2	-.001	5	2	5.59e-3	3	-7.887e-3	4		
1593	N835	max	.008	4	-.74	4	0	6	2	8.528e-3	2	-4.409e-3	3		
1594		min	.005	5	-.774	2	-.001	5	2	8.033e-3	3	-5.204e-3	4		
1595	N836	max	.01	4	-.74	4	0	6	2	1.073e-2	2	1.969e-3	3		
1596		min	.007	5	-.774	2	-.001	5	2	9.906e-3	3	1.572e-3	4		
1597	N837	max	.003	4	-.74	4	0	6	2	8.818e-3	2	1.423e-3	3		
1598		min	0	5	-.774	2	-.002	5	2	8.101e-3	3	1.081e-3	4		
1599	N838	max	.015	4	-.74	4	0	6	2	3.675e-3	2	-3.788e-3	3		
1600		min	.013	5	-.774	2	-.001	5	2	3.374e-3	3	-4.664e-3	4		
1601	N839	max	-.034	4	-.741	4	0	6	2	-2.647e-5	6	-2.753e-4	5	4.278e-3	3
1602		min	-.039	5	-.774	2	-.002	5	3	-4.611e-5	3	-3.085e-4	3	4.083e-3	4
1603	N840	max	-.019	4	-.741	4	0	6	6	5.169e-7	6	-9.461e-4	3	3.74e-3	3
1604		min	-.023	5	-.774	2	-.002	5	3	-2.663e-5	3	-9.973e-4	2	3.568e-3	4
1605	N841	max	-.043	4	-.741	4	0	6	4	-9.664e-6	4	2.498e-4	3	3.874e-3	3
1606		min	-.048	2	-.774	2	-.002	5	3	-5.851e-5	3	1.251e-4	5	3.187e-3	4
1607	N842	max	-.044	4	-.741	4	0	6	4	-1.72e-5	4	1.283e-4	3	3.867e-3	3
1608		min	-.048	2	-.774	2	-.002	5	3	-3.357e-5	3	7.205e-5	4	3.194e-3	4
1609	N843	max	-.022	4	-.741	4	0	6	6	-9.989e-6	6	-7.574e-4	5	3.964e-3	3
1610		min	-.026	5	-.774	2	-.002	5	3	-3.105e-5	3	-7.899e-4	2	3.792e-3	4
1611	N844	max	-.03	4	-.741	4	0	6	6	-2.335e-5	6	-4.024e-4	5	4.224e-3	3
1612		min	-.034	5	-.774	2	-.002	5	3	-4.184e-5	3	-4.328e-4	3	4.038e-3	4
1613	N845	max	-.042	4	-.741	4	0	6	2	1.58e-4	3	3.86e-3	3		
1614		min	-.046	2	-.774	2	-.002	5	2	9.461e-5	4	3.194e-3	4		
1615	N846	max	-.04	4	-.741	4	0	6	2	1.93e-4	3	3.874e-3	3		
1616		min	-.044	5	-.774	2	-.002	5	2	1.427e-4	4	3.237e-3	4		
1617	N847	max	-.038	4	-.741	4	0	6	2	2.85e-4	5	3.991e-3	3		
1618		min	-.042	5	-.774	2	-.002	5	2	2.609e-4	3	3.415e-3	4		
1619	N848	max	-.035	4	-.741	4	0	6	2	4.75e-4	5	4.233e-3	3		
1620		min	-.04	5	-.774	2	-.002	5	2	3.788e-4	3	3.688e-3	4		
1621	N849	max	-.032	4	-.741	4	0	6	2	6.863e-4	5	4.527e-3	3		
1622		min	-.037	5	-.774	2	-.002	5	2	5.159e-4	3	4.107e-3	4		
1623	N850	max	-.029	4	-.741	4	0	6	2	8.792e-4	5	4.778e-3	3		
1624		min	-.034	5	-.774	2	-.002	5	2	5.558e-4	3	4.541e-3	4		
1625	N851	max	-.026	4	-.741	4	0	6	2	7.443e-4	5	4.803e-3	2		
1626		min	-.03	5	-.774	2	-.002	5	2	3.842e-4	3	4.624e-3	4		
1627	N852	max	-.023	4	-.741	4	0	6	2	7.108e-5	5	4.558e-3	2		
1628		min	-.027	5	-.774	2	-.002	5	2	-1.565e-4	3	4.384e-3	4		
1629	N853	max	-.021	4	-.741	4	0	6	2	-6.166e-4	5	4.12e-3	2		
1630		min	-.024	5	-.774	2	-.002	5	2	-6.802e-4	3	3.952e-3	4		
1631	N854	max	-.044	4	-.741	4	0	6	4	-1.889e-5	4	2.24e-4	3	3.871e-3	3



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
1632		min	-0.048	2	-0.774	2	-0.002	5	-5.385e-5	3	1.186e-4	5	3.193e-3	4
1633	N855	max	-0.044	4	-0.741	4	0	6	-2.17e-5	4	1.613e-4	3	3.869e-3	3
1634		min	-0.048	2	-0.774	2	-0.002	5	-4.262e-5	3	8.995e-5	4	3.194e-3	4
1635	N856	max	-0.037	4	-0.741	4	0	6	0	2	7.45e-4	5	4.287e-3	3
1636		min	-0.041	5	-0.774	2	-0.002	5	0	2	6.636e-4	3	3.997e-3	4
1637	N857	max	-0.039	4	-0.741	4	0	6	0	2	6.692e-4	5	4.249e-3	3
1638		min	-0.044	5	-0.774	2	-0.002	5	0	2	6.024e-4	3	3.942e-3	4
1639	N858	max	-0.041	4	-0.741	4	0	6	0	2	3.768e-4	3	4.035e-3	3
1640		min	-0.046	5	-0.774	2	-0.002	5	0	2	3.463e-4	4	3.698e-3	4
1641	N859	max	-0.027	4	-0.741	4	0	6	0	2	-5.004e-5	5	4.277e-3	2
1642		min	-0.031	5	-0.774	2	-0.002	5	0	2	-2.013e-4	3	4.106e-3	4
1643	N860	max	-0.031	4	-0.741	4	0	6	0	2	6.803e-4	5	4.487e-3	3
1644		min	-0.035	5	-0.774	2	-0.002	5	0	2	4.312e-4	3	4.306e-3	4
1645	N861	max	-0.034	4	-0.741	4	0	6	0	2	5.492e-4	5	4.345e-3	3
1646		min	-0.038	5	-0.774	2	-0.002	5	0	2	4.264e-4	3	4.088e-3	4
1647	N862	max	-0.036	4	-0.741	4	0	6	0	2	8.034e-4	5	4.36e-3	3
1648		min	-0.04	5	-0.774	2	-0.002	5	0	2	6.838e-4	3	4.064e-3	4
1649	N863	max	-0.038	4	-0.741	4	0	6	0	2	6.8e-4	5	4.213e-3	3
1650		min	-0.043	5	-0.774	2	-0.002	5	0	2	6.189e-4	3	3.888e-3	4
1651	N864	max	-0.04	4	-0.741	4	0	6	0	2	4.339e-4	2	4.017e-3	3
1652		min	-0.045	5	-0.774	2	-0.002	5	0	2	4.193e-4	3	3.645e-3	4
1653	N865	max	-0.042	4	-0.741	4	0	6	0	2	3.053e-4	3	3.917e-3	3
1654		min	-0.046	5	-0.774	2	-0.002	5	0	2	2.439e-4	4	3.458e-3	4
1655	N866	max	-0.041	4	-0.741	4	0	6	0	2	2.129e-4	3	3.887e-3	3
1656		min	-0.046	5	-0.774	2	-0.002	5	0	2	1.723e-4	4	3.377e-3	4
1657	N867	max	-0.042	4	-0.741	4	0	6	0	2	1.96e-4	3	3.887e-3	3
1658		min	-0.047	2	-0.774	2	-0.002	5	0	2	1.183e-4	4	3.249e-3	4
1659	N868	max	-0.041	4	-0.741	4	0	6	0	2	1.891e-4	3	3.875e-3	3
1660		min	-0.046	5	-0.774	2	-0.002	5	0	2	1.214e-4	4	3.233e-3	4
1661	N869	max	-0.04	4	-0.741	4	0	6	0	2	2.023e-4	3	3.91e-3	3
1662		min	-0.044	5	-0.774	2	-0.002	5	0	2	1.723e-4	4	3.308e-3	4
1663	N870	max	-0.038	4	-0.741	4	0	6	0	2	2.947e-4	5	4.042e-3	3
1664		min	-0.043	5	-0.774	2	-0.002	5	0	2	2.595e-4	3	3.492e-3	4
1665	N871	max	-0.036	4	-0.741	4	0	6	0	2	4.145e-4	5	4.24e-3	3
1666		min	-0.04	5	-0.774	2	-0.002	5	0	2	3.201e-4	3	3.716e-3	4
1667	N872	max	-0.034	4	-0.741	4	0	6	0	2	6.255e-4	5	4.575e-3	3
1668		min	-0.038	5	-0.774	2	-0.002	5	0	2	4.566e-4	3	4.189e-3	4
1669	N873	max	-0.031	4	-0.741	4	0	6	0	2	8.521e-4	5	4.757e-3	3
1670		min	-0.035	5	-0.774	2	-0.002	5	0	2	5.627e-4	3	4.497e-3	4
1671	N874	max	-0.028	4	-0.741	4	0	6	0	2	7.637e-4	5	4.714e-3	2
1672		min	-0.032	5	-0.774	2	-0.002	5	0	2	4.273e-4	3	4.536e-3	4
1673	N875	max	-0.025	4	-0.741	4	0	6	0	2	3.317e-4	5	4.564e-3	2
1674		min	-0.029	5	-0.774	2	-0.002	5	0	2	6.402e-5	3	4.39e-3	4
1675	N876	max	-0.024	4	-0.741	4	0	6	0	2	-4.798e-5	5	4.321e-3	2
1676		min	-0.028	5	-0.774	2	-0.002	5	0	2	-2.278e-4	3	4.15e-3	4
1677	N877	max	-0.035	4	-0.741	4	0	6	0	2	9.353e-4	5	4.493e-3	3
1678		min	-0.039	5	-0.774	2	-0.002	5	0	2	7.708e-4	3	4.117e-3	4
1679	N878	max	-0.037	4	-0.741	4	0	6	0	2	4.819e-4	5	4.164e-3	3
1680		min	-0.042	5	-0.774	2	-0.002	5	0	2	3.778e-4	3	3.747e-3	4
1681	N879	max	-0.039	4	-0.741	4	0	6	0	2	2.448e-4	5	3.998e-3	3
1682		min	-0.043	5	-0.774	2	-0.002	5	0	2	2.209e-4	3	3.493e-3	4
1683	N880	max	-0.039	4	-0.741	4	0	6	0	2	4.322e-4	5	4.003e-3	3
1684		min	-0.043	5	-0.774	2	-0.002	5	0	2	3.988e-4	3	3.636e-3	4
1685	N881	max	-0.037	4	-0.741	4	0	6	0	2	6.381e-4	5	4.19e-3	3
1686		min	-0.042	5	-0.774	2	-0.002	5	0	2	5.655e-4	3	3.828e-3	4
1687	N882	max	-0.032	4	-0.741	4	0	6	0	2	1.045e-3	5	4.707e-3	3
1688		min	-0.037	5	-0.774	2	-0.002	5	0	2	7.469e-4	3	4.472e-3	4



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
1689	N883	max	-0.029	4	-0.741	4	0	6	0	2	6.9e-4	5	4.564e-3	3
1690		min	-0.033	5	-0.774	2	-0.002	5	0	2	3.986e-4	3	4.389e-3	4
1691	N884	max	-0.037	4	-0.741	4	0	6	0	2	4.69e-4	5	4.197e-3	3
1692		min	-0.041	5	-0.774	2	-0.002	5	0	2	3.318e-4	3	3.758e-3	4
1693	N885	max	-0.035	4	-0.741	4	0	6	2.334e-5	6	3.057e-4	5	4.272e-3	3
1694		min	-0.039	5	-0.774	2	-0.002	5	3.593e-6	3	2.926e-4	6	4.08e-3	4
1695	N886	max	-0.019	4	-0.741	4	0	6	-7.124e-6	6	1.033e-3	5	3.728e-3	3
1696		min	-0.023	5	-0.774	2	-0.002	5	-3.184e-5	3	9.91e-4	6	3.563e-3	4
1697	N887	max	-0.044	4	-0.741	4	0	6	2.617e-5	6	-7.824e-5	5	3.862e-3	3
1698		min	-0.048	5	-0.774	2	-0.002	5	-2.175e-6	4	-2.111e-4	3	3.183e-3	4
1699	N888	max	-0.044	4	-0.741	4	0	6	2.24e-5	6	-2.695e-5	5	3.861e-3	3
1700		min	-0.049	2	-0.774	2	-0.002	5	1.193e-5	4	-8.357e-5	3	3.192e-3	4
1701	N889	max	-0.023	4	-0.741	4	0	6	6.764e-6	4	8.181e-4	5	3.954e-3	2
1702		min	-0.027	5	-0.774	2	-0.002	5	-2.205e-5	3	7.87e-4	6	3.788e-3	4
1703	N890	max	-0.031	4	-0.741	4	0	6	1.978e-5	6	4.432e-4	5	4.216e-3	3
1704		min	-0.035	5	-0.774	2	-0.002	5	-2.93e-6	3	4.271e-4	6	4.034e-3	4
1705	N891	max	-0.042	4	-0.741	4	0	6	0	2	-4.641e-5	5	3.845e-3	3
1706		min	-0.047	5	-0.774	2	-0.002	5	0	2	-1.105e-4	3	3.189e-3	4
1707	N892	max	-0.04	4	-0.741	4	0	6	0	2	-9.166e-5	5	3.843e-3	3
1708		min	-0.044	5	-0.774	2	-0.002	5	0	2	-1.413e-4	3	3.228e-3	4
1709	N893	max	-0.038	4	-0.741	4	0	6	0	2	-2.135e-4	3	3.947e-3	3
1710		min	-0.042	5	-0.774	2	-0.002	5	0	2	-2.481e-4	4	3.403e-3	4
1711	N894	max	-0.035	4	-0.741	4	0	6	0	2	-3.443e-4	3	4.192e-3	3
1712		min	-0.04	5	-0.774	2	-0.002	5	0	2	-4.346e-4	4	3.677e-3	4
1713	N895	max	-0.033	4	-0.741	4	0	6	0	2	-5.028e-4	3	4.504e-3	3
1714		min	-0.037	5	-0.774	2	-0.002	5	0	2	-6.47e-4	5	4.101e-3	4
1715	N896	max	-0.03	4	-0.741	4	0	6	0	2	-5.535e-4	3	4.764e-3	3
1716		min	-0.034	5	-0.774	2	-0.002	5	0	2	-8.416e-4	5	4.537e-3	4
1717	N897	max	-0.026	4	-0.741	4	0	6	0	2	-3.729e-4	3	4.8e-3	2
1718		min	-0.03	5	-0.774	2	-0.002	5	0	2	-6.998e-4	5	4.623e-3	4
1719	N898	max	-0.023	4	-0.741	4	0	6	0	2	1.727e-4	3	4.559e-3	2
1720		min	-0.027	5	-0.774	2	-0.002	5	0	2	-2.15e-5	5	4.384e-3	4
1721	N899	max	-0.021	4	-0.741	4	0	6	0	2	7.097e-4	3	4.119e-3	2
1722		min	-0.025	5	-0.774	2	-0.002	5	0	2	6.702e-4	6	3.95e-3	4
1723	N900	max	-0.044	4	-0.741	4	0	6	2.807e-5	6	-7.125e-5	5	3.86e-3	3
1724		min	-0.048	5	-0.774	2	-0.002	5	8.101e-6	4	-1.839e-4	3	3.19e-3	4
1725	N901	max	-0.044	4	-0.741	4	0	6	2.687e-5	6	-4.34e-5	5	3.86e-3	3
1726		min	-0.049	2	-0.774	2	-0.002	5	1.432e-5	4	-1.179e-4	3	3.192e-3	4
1727	N902	max	-0.037	4	-0.741	4	0	6	0	2	-6.279e-4	3	4.277e-3	3
1728		min	-0.041	5	-0.774	2	-0.002	5	0	2	-7.077e-4	2	3.994e-3	4
1729	N903	max	-0.039	4	-0.741	4	0	6	0	2	-5.683e-4	3	4.231e-3	3
1730		min	-0.044	5	-0.774	2	-0.002	5	0	2	-6.334e-4	2	3.936e-3	4
1731	N904	max	-0.042	4	-0.741	4	0	6	0	2	-3.098e-4	5	4.017e-3	3
1732		min	-0.046	5	-0.774	2	-0.002	5	0	2	-3.442e-4	3	3.693e-3	4
1733	N905	max	-0.027	4	-0.741	4	0	6	0	2	2.156e-4	3	4.276e-3	2
1734		min	-0.031	5	-0.774	2	-0.002	5	0	2	9.835e-5	5	4.104e-3	4
1735	N906	max	-0.031	4	-0.741	4	0	6	0	2	-4.077e-4	3	4.476e-3	3
1736		min	-0.035	5	-0.774	2	-0.002	5	0	2	-6.31e-4	5	4.302e-3	4
1737	N907	max	-0.034	4	-0.741	4	0	6	0	2	-4.021e-4	3	4.338e-3	3
1738		min	-0.038	5	-0.774	2	-0.002	5	0	2	-5.054e-4	2	4.085e-3	4
1739	N908	max	-0.036	4	-0.741	4	0	6	0	2	-6.516e-4	3	4.347e-3	3
1740		min	-0.041	5	-0.774	2	-0.002	5	0	2	-7.622e-4	2	4.059e-3	4
1741	N909	max	-0.038	4	-0.741	4	0	6	0	2	-5.873e-4	3	4.196e-3	3
1742		min	-0.043	5	-0.774	2	-0.002	5	0	2	-6.47e-4	2	3.882e-3	4
1743	N910	max	-0.04	4	-0.741	4	0	6	0	2	-3.85e-4	5	3.996e-3	3
1744		min	-0.045	5	-0.774	2	-0.002	5	0	2	-4.006e-4	2	3.639e-3	4
1745	N911	max	-0.042	4	-0.741	4	0	6	0	2	-2.011e-4	5	3.897e-3	3



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [ ...	LC	
1746		min	-0.046	5	-0.774	2	-0.002	5	0	2	-2.702e-4	3	3.453e-3	4
1747	N912	max	-0.041	4	-0.741	4	0	6	0	2	-1.326e-4	5	3.858e-3	3
1748		min	-0.046	5	-0.774	2	-0.002	5	0	2	-1.766e-4	3	3.369e-3	4
1749	N913	max	-0.042	4	-0.741	4	0	6	0	2	-7.026e-5	5	3.863e-3	3
1750		min	-0.047	5	-0.774	2	-0.002	5	0	2	-1.523e-4	3	3.242e-3	4
1751	N914	max	-0.041	4	-0.741	4	0	6	0	2	-7.246e-5	5	3.847e-3	3
1752		min	-0.046	5	-0.774	2	-0.002	5	0	2	-1.422e-4	3	3.225e-3	4
1753	N915	max	-0.04	4	-0.741	4	0	6	0	2	-1.255e-4	5	3.875e-3	3
1754		min	-0.044	5	-0.774	2	-0.002	5	0	2	-1.54e-4	3	3.298e-3	4
1755	N916	max	-0.038	4	-0.741	4	0	6	0	2	-2.156e-4	3	4.e-3	3
1756		min	-0.043	5	-0.774	2	-0.002	5	0	2	-2.55e-4	4	3.48e-3	4
1757	N917	max	-0.036	4	-0.741	4	0	6	0	2	-2.886e-4	3	4.204e-3	3
1758		min	-0.041	5	-0.774	2	-0.002	5	0	2	-3.732e-4	4	3.706e-3	4
1759	N918	max	-0.034	4	-0.741	4	0	6	0	2	-4.401e-4	3	4.551e-3	3
1760		min	-0.038	5	-0.774	2	-0.002	5	0	2	-5.847e-4	5	4.182e-3	4
1761	N919	max	-0.031	4	-0.741	4	0	6	0	2	-5.569e-4	3	4.741e-3	3
1762		min	-0.035	5	-0.774	2	-0.002	5	0	2	-8.131e-4	5	4.492e-3	4
1763	N920	max	-0.028	4	-0.741	4	0	6	0	2	-4.142e-4	3	4.71e-3	2
1764		min	-0.032	5	-0.774	2	-0.002	5	0	2	-7.188e-4	5	4.534e-3	4
1765	N921	max	-0.025	4	-0.741	4	0	6	0	2	-4.8e-5	3	4.564e-3	2
1766		min	-0.029	5	-0.774	2	-0.002	5	0	2	-2.832e-4	5	4.389e-3	4
1767	N922	max	-0.025	4	-0.741	4	0	6	0	2	-2.451e-4	3	4.321e-3	2
1768		min	-0.029	5	-0.774	2	-0.002	5	0	2	9.844e-5	5	4.149e-3	4
1769	N923	max	-0.035	4	-0.741	4	0	6	0	2	-7.469e-4	3	4.478e-3	3
1770		min	-0.04	5	-0.774	2	-0.002	5	0	2	-8.933e-4	2	4.112e-3	4
1771	N924	max	-0.037	4	-0.741	4	0	6	0	2	-3.598e-4	3	4.136e-3	3
1772		min	-0.042	5	-0.774	2	-0.002	5	0	2	-4.433e-4	2	3.739e-3	4
1773	N925	max	-0.039	4	-0.741	4	0	6	0	2	-1.823e-4	3	3.96e-3	3
1774		min	-0.044	5	-0.774	2	-0.002	5	0	2	-2.056e-4	4	3.483e-3	4
1775	N926	max	-0.039	4	-0.741	4	0	6	0	2	-3.691e-4	3	3.978e-3	3
1776		min	-0.044	5	-0.774	2	-0.002	5	0	2	-3.993e-4	2	3.629e-3	4
1777	N927	max	-0.038	4	-0.741	4	0	6	0	2	-5.391e-4	3	4.171e-3	3
1778		min	-0.042	5	-0.774	2	-0.002	5	0	2	-6.048e-4	2	3.822e-3	4
1779	N928	max	-0.033	4	-0.741	4	0	6	0	2	-7.214e-4	3	4.684e-3	3
1780		min	-0.037	5	-0.774	2	-0.002	5	0	2	-9.975e-4	5	4.465e-3	4
1781	N929	max	-0.029	4	-0.741	4	0	6	0	2	-3.823e-4	3	4.56e-3	2
1782		min	-0.033	5	-0.774	2	-0.002	5	0	2	-6.435e-4	5	4.386e-3	4
1783	N930	max	-0.037	4	-0.741	4	0	6	0	2	-2.951e-4	3	4.16e-3	3
1784		min	-0.042	5	-0.774	2	-0.002	5	0	2	-4.212e-4	5	3.747e-3	4
1785	N897A	max	.07	4	-0.73	4	0	6	3.186e-4	4	-2.011e-3	6	1.119e-2	4
1786		min	.067	6	-0.764	2	-0.002	5	2.436e-4	3	-2.096e-3	2	1.024e-2	5
1787	N898A	max	.07	4	-0.714	4	.002	6	3.186e-4	4	-1.383e-3	6	1.048e-2	3
1788		min	.067	6	-0.748	2	0	5	2.436e-4	3	-1.469e-3	5	9.573e-3	5
1789	N899A	max	.077	4	-0.539	4	0	5	2.544e-4	4	-1.892e-4	6	7.156e-3	5
1790		min	.074	3	-0.57	2	-0.002	6	1.83e-4	3	-2.268e-4	5	6.293e-3	6
1791	N900A	max	.077	4	-0.518	4	0	5	2.467e-4	4	-1.92e-4	4	8.067e-3	5
1792		min	.075	3	-0.549	2	0	6	1.757e-4	3	-2.078e-4	5	6.875e-3	6
1793	N901A	max	.078	4	-0.507	4	0	5	2.445e-4	4	-1.572e-4	4	8.39e-3	5
1794		min	.075	3	-0.537	2	0	6	1.737e-4	3	-1.692e-4	5	7.111e-3	6
1795	N902A	max	.078	4	-0.495	4	0	5	2.422e-4	4	-1.232e-4	4	8.334e-3	5
1796		min	.075	3	-0.525	2	0	6	1.716e-4	3	-1.384e-4	6	7.151e-3	6
1797	N903A	max	.083	2	-0.28	3	.002	6	2.057e-4	4	-1.177e-5	5	9.578e-3	2
1798		min	.079	3	-0.301	2	.001	3	1.378e-4	3	-4.363e-5	6	8.94e-3	3
1799	N904A	max	.083	2	-0.266	3	.002	6	2.046e-4	4	-6.605e-6	5	9.728e-3	5
1800		min	.08	3	-0.286	2	.001	3	1.367e-4	3	-3.047e-5	6	9.063e-3	3
1801	N905A	max	.083	2	-0.253	4	.002	6	2.035e-4	4	1.639e-6	5	9.528e-3	5
1802		min	.08	3	-0.272	2	.001	3	1.357e-4	3	-1.837e-5	6	8.899e-3	3



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
1803	N906A	max	.086	2	-.027	3	0	6	1.978e-4	4	4.228e-5	6	1.038e-2	2
1804		min	.081	3	-.03	2	0	5	1.311e-4	3	2.335e-5	5	9.193e-3	3
1805	N907A	max	.086	2	-.013	3	0	6	1.978e-4	4	2.698e-5	6	1.063e-2	2
1806		min	.081	3	-.015	2	0	5	1.311e-4	3	9.007e-6	5	9.369e-3	3
1807	N908A	max	.086	2	0	3	0	2	1.978e-4	4	3.312e-5	6	1.068e-2	2
1808		min	.081	3	0	2	0	3	1.311e-4	3	1.578e-5	5	9.403e-3	3
1809	N909A	max	-.057	4	-.23	3	-.002	3	-6.142e-5	4	-3.712e-5	6	8.611e-3	2
1810		min	-.064	5	-.248	2	-.002	5	-1.063e-4	3	-7.387e-5	5	8.091e-3	4
1811	N910A	max	-.044	4	-.73	4	0	6	-7.936e-5	4	-1.344e-4	5	5.069e-3	3
1812		min	-.049	5	-.763	2	-.002	5	-1.695e-4	3	-1.548e-4	3	4.474e-3	5
1813	N911A	max	-.049	4	-.62	4	0	6	-8.949e-5	4	7.427e-5	5	7.901e-3	2
1814		min	-.054	5	-.653	2	-.003	5	-1.678e-4	3	2.999e-5	6	7.591e-3	6
1815	N912A	max	-.052	4	-.507	4	0	6	-7.656e-5	4	1.67e-5	6	7.451e-3	5
1816		min	-.058	5	-.537	2	-.003	5	-1.449e-4	3	-8.636e-6	5	7.167e-3	6
1817	N913A	max	-.055	4	-.389	4	-.002	6	-6.365e-5	4	7.285e-5	6	8.183e-3	5
1818		min	-.061	5	-.416	2	-.003	5	-1.22e-4	3	-1.218e-5	5	7.777e-3	4
1819	N914A	max	-.057	4	-.266	3	-.002	4	-6.192e-5	4	1.773e-6	6	8.52e-3	2
1820		min	-.063	5	-.287	2	-.002	5	-1.098e-4	3	-5.063e-5	5	8.039e-3	4
1821	N915A	max	-.058	4	-.141	3	-.001	3	-5.299e-5	4	-7.286e-5	4	8.6e-3	2
1822		min	-.065	5	-.153	2	-.001	6	-9.871e-5	3	-9.218e-5	5	8.053e-3	4
1823	N916A	max	-.058	4	-.012	3	0	3	-5.299e-5	4	-3.425e-5	3	9.779e-3	2
1824		min	-.065	5	-.014	2	0	6	-9.871e-5	3	-4.737e-5	6	8.788e-3	3
1825	N917A	max	-.058	4	0	3	0	3	-5.299e-5	4	-3.74e-5	3	9.92e-3	2
1826		min	-.065	5	0	2	0	2	-9.871e-5	3	-5.116e-5	6	8.879e-3	3
1827	N918A	max	.07	4	-.73	4	0	6	-3.493e-4	3	2.089e-3	2	1.119e-2	4
1828		min	.067	6	-.764	2	-.001	5	-4.381e-4	5	1.971e-3	3	1.023e-2	5
1829	N919A	max	.07	4	-.714	4	-.003	6	-3.493e-4	3	1.442e-3	2	1.048e-2	4
1830		min	.067	6	-.748	2	-.004	5	-4.381e-4	5	1.348e-3	5	9.555e-3	5
1831	N920A	max	-.051	4	-.539	4	0	6	3.437e-5	6	3.553e-5	6	7.258e-3	2
1832		min	-.056	5	-.57	2	-.003	5	-7.539e-5	5	2.149e-5	3	6.964e-3	6
1833	N921A	max	.078	4	-.518	4	0	5	-2.814e-4	6	1.22e-4	4	8.064e-3	5
1834		min	.075	3	-.548	2	0	6	-3.752e-4	5	9.743e-5	5	6.846e-3	6
1835	N922A	max	.078	4	-.507	4	0	5	-2.79e-4	6	8.754e-5	4	8.386e-3	5
1836		min	.075	3	-.537	2	0	6	-3.729e-4	5	6.826e-5	5	7.085e-3	6
1837	N923A	max	.078	4	-.495	4	0	5	-2.766e-4	6	4.819e-5	4	8.33e-3	5
1838		min	.076	3	-.525	2	0	6	-3.707e-4	5	3.381e-5	6	7.128e-3	6
1839	N924A	max	.083	2	-.28	3	.002	6	-2.464e-4	6	4.619e-6	5	9.564e-3	2
1840		min	.08	3	-.301	2	.001	3	-3.376e-4	5	-3.138e-5	6	8.928e-3	3
1841	N925A	max	.084	2	-.266	3	.002	6	-2.451e-4	6	6.66e-6	5	9.722e-3	5
1842		min	.08	3	-.287	2	.001	3	-3.365e-4	5	-2.349e-5	6	9.05e-3	3
1843	N926A	max	.084	2	-.253	3	.002	6	-2.438e-4	6	1.207e-5	5	9.52e-3	5
1844		min	.08	3	-.272	2	.001	3	-3.354e-4	5	-1.555e-5	6	8.884e-3	3
1845	N927A	max	.086	2	-.027	3	0	6	-2.253e-4	6	7.278e-5	6	1.04e-2	2
1846		min	.082	3	-.03	2	0	3	-3.18e-4	5	5.059e-5	3	9.207e-3	3
1847	N928A	max	.086	2	-.013	3	0	6	-2.253e-4	6	7.495e-5	6	1.065e-2	2
1848		min	.082	3	-.015	2	0	3	-3.18e-4	5	5.351e-5	3	9.381e-3	3
1849	N929A	max	.086	2	0	3	0	3	-2.253e-4	6	6.843e-5	6	1.07e-2	2
1850		min	.082	3	0	2	0	2	-3.18e-4	5	4.802e-5	3	9.415e-3	3
1851	N930A	max	.084	2	-.227	4	.002	6	-2.418e-4	6	2.467e-5	5	8.837e-3	5
1852		min	.08	3	-.245	2	.001	3	-3.336e-4	5	7.611e-6	6	8.34e-3	3
1853	N931	max	-.044	4	-.73	4	0	6	6.94e-5	3	1.544e-4	5	5.076e-3	3
1854		min	-.049	5	-.763	2	-.002	5	-1.456e-5	5	1.169e-4	3	4.475e-3	5
1855	N932	max	-.049	4	-.62	4	0	6	5.53e-5	6	3.708e-6	5	7.9e-3	2
1856		min	-.053	2	-.652	2	-.003	5	-4.046e-5	5	-4.394e-5	6	7.596e-3	6
1857	N933	max	-.052	4	-.507	4	0	6	2.719e-5	6	5.781e-5	6	7.45e-3	5
1858		min	-.057	5	-.537	2	-.003	5	-8.212e-5	5	2.377e-5	5	7.155e-3	6
1859	N934	max	-.055	4	-.389	4	-.002	6	2.403e-6	6	6.505e-5	6	8.18e-3	5



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
1860		min	-061	5	-416	2	-003	5	-1.053e-4	5	-1.938e-5	5	7.773e-3	4
1861	N935	max	-056	4	-266	3	-002	4	-1.12e-5	6	-5.376e-6	6	8.513e-3	2
1862		min	-063	5	-287	2	-002	5	-1.169e-4	5	-5.195e-5	5	8.035e-3	4
1863	N936	max	-058	4	-141	3	-001	3	-2.48e-5	6	-6.687e-5	4	8.606e-3	2
1864		min	-065	5	-153	2	-001	6	-1.285e-4	5	-8.607e-5	5	8.059e-3	4
1865	N937	max	-058	4	-012	3	0	3	-2.48e-5	6	-5.106e-5	3	9.788e-3	2
1866		min	-065	5	-014	2	0	6	-1.285e-4	5	-6.786e-5	6	8.794e-3	3
1867	N938	max	-058	4	0	3	0	2	-2.48e-5	6	-4.764e-5	3	9.93e-3	2
1868		min	-065	5	0	2	0	3	-1.285e-4	5	-6.37e-5	6	8.885e-3	3
1869	N939	max	.074	4	-605	4	0	4	2.827e-4	4	5.311e-4	6	6.212e-3	2
1870		min	.071	6	-639	5	0	3	2.097e-4	3	4.342e-4	5	5.994e-3	4
1871	N940	max	.074	4	-605	4	0	4	-3.164e-4	6	-5.094e-4	6	6.213e-3	2
1872		min	.071	6	-639	5	-001	3	-4.067e-4	5	-6.039e-4	5	5.993e-3	5
1873	N941	max	.08	2	-392	4	.001	5	2.24e-4	4	-2.341e-6	5	7.659e-3	2
1874		min	.077	3	-42	2	0	3	1.547e-4	3	-6.02e-5	6	7.32e-3	4
1875	N942	max	.081	2	-392	4	.001	5	-2.615e-4	6	-6.089e-5	5	7.66e-3	2
1876		min	.078	3	-42	2	0	3	-3.542e-4	5	-1.192e-4	6	7.321e-3	4
1877	N943	max	.085	2	-141	3	.001	6	2.006e-4	4	7.434e-5	6	7.924e-3	2
1878		min	.08	3	-154	2	0	3	1.334e-4	3	5.251e-5	3	7.523e-3	4
1879	N944	max	.085	2	-141	3	.001	6	-2.345e-4	6	6.164e-5	6	7.931e-3	2
1880		min	.081	3	-155	2	0	3	-3.267e-4	5	3.953e-5	3	7.528e-3	4
1881	N945	max	.022	4	-73	4	0	6	-8.556e-5	6	3.745e-3	2	8.997e-3	2
1882		min	.019	5	-764	2	-002	5	-1.027e-4	3	3.551e-3	3	8.713e-3	6
1883	N946	max	.04	4	-731	4	0	6	4.49e-5	2	5.027e-3	2	1.304e-2	4
1884		min	.036	5	-764	2	-002	5	1.152e-5	3	4.715e-3	3	1.218e-2	5
1885	N947	max	-.03	4	-73	4	0	6	1.81e-5	6	1.04e-3	2	3.526e-3	3
1886		min	-.034	5	-763	2	-002	5	-3.144e-6	3	9.559e-4	3	3.327e-3	4
1887	N948	max	.039	4	-731	4	0	6	-4.289e-5	3	-4.681e-3	3	1.304e-2	4
1888		min	.036	5	-764	2	-002	5	-6.683e-5	5	-4.991e-3	2	1.219e-2	5
1889	N949	max	-.043	4	-73	4	0	6	1.707e-5	4	-8.474e-5	3	4.968e-3	3
1890		min	-.048	2	-763	2	-002	5	-8.709e-7	3	-1.231e-4	5	4.418e-3	5
1891	N950	max	-.043	4	-73	4	0	6	-1.114e-5	6	1.713e-4	5	4.962e-3	3
1892		min	-.048	5	-763	2	-002	5	-2.989e-5	3	1.273e-4	3	4.416e-3	5
1893	N951	max	-.03	4	-73	4	0	6	-1.411e-5	6	-9.896e-4	3	3.534e-3	3
1894		min	-.034	5	-764	2	-002	5	-3.295e-5	5	-1.044e-3	2	3.332e-3	4
1895	N952	max	.022	4	-73	4	0	6	8.907e-5	6	-3.588e-3	3	8.996e-3	2
1896		min	.019	5	-764	2	-002	5	7.075e-5	3	-3.748e-3	2	8.712e-3	6
1897	N953	max	.049	4	-013	3	0	6	-1.7e-5	3	1.177e-4	2	8.195e-3	2
1898		min	.046	3	-014	2	0	3	-2.336e-5	2	8.169e-5	3	7.731e-3	4
1899	N954	max	.087	2	-013	3	0	6	2.663e-5	2	-8.019e-5	3	1.042e-2	2
1900		min	.082	3	-014	2	0	3	1.79e-5	3	-1.289e-4	2	9.231e-3	3
1901	N955	max	-.024	4	-012	3	0	2	7.126e-6	2	-4.743e-5	3	8.11e-3	2
1902		min	-.029	5	-014	2	0	6	3.486e-6	6	-6.525e-5	2	7.671e-3	4
1903	N956	max	.087	2	-013	3	0	6	-1.739e-5	3	1.681e-4	2	1.042e-2	2
1904		min	.082	3	-014	2	0	4	-2.565e-5	2	1.169e-4	4	9.225e-3	3
1905	N957	max	-.059	4	-012	3	0	3	-1.942e-5	3	1.229e-4	2	9.633e-3	2
1906		min	-.066	5	-014	2	0	6	-2.773e-5	2	8.442e-5	4	8.693e-3	3
1907	N958	max	-.059	4	-012	3	0	3	2.786e-5	2	-4.954e-5	3	9.626e-3	2
1908		min	-.066	5	-014	2	0	6	1.926e-5	3	-8.665e-5	2	8.687e-3	3
1909	N959	max	-.024	4	-012	3	0	3	-1.394e-5	3	1.664e-5	2	8.111e-3	2
1910		min	-.029	5	-014	2	0	6	-1.891e-5	2	4.27e-6	6	7.671e-3	4
1911	N960	max	.049	4	-013	3	0	6	1.155e-5	2	-5.002e-5	3	8.189e-3	2
1912		min	.046	3	-014	2	0	2	6.94e-6	3	-7.97e-5	2	7.727e-3	4
1913	N961	max	.015	4	-731	4	0	6	0	2	1.2e-2	2	1.443e-2	2
1914		min	.012	5	-764	2	-001	5	0	2	1.148e-2	3	1.394e-2	3
1915	N962	max	.015	4	-731	4	-001	6	0	2	-1.146e-2	3	1.444e-2	2
1916		min	.012	5	-764	2	-002	5	0	2	-1.196e-2	2	1.397e-2	3



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
1917	N963	max	-.035	4	-.73	4	0	6	0	2	-9.532e-4	5	3.263e-3	3
1918		min	-.04	5	-.763	2	-.002	5	0	2	-1.074e-3	3	2.981e-3	4
1919	N964	max	-.036	4	-.73	4	0	6	0	2	1.102e-3	3	3.24e-3	3
1920		min	-.04	5	-.763	2	-.002	5	0	2	9.896e-4	5	2.974e-3	4
1921	N965	max	.066	2	-.013	3	0	6	0	2	6.667e-4	2	8.477e-3	2
1922		min	.063	3	-.014	2	0	3	0	2	4.484e-4	3	7.927e-3	4
1923	N966	max	.066	2	-.013	3	0	6	0	2	-4.113e-4	3	8.47e-3	2
1924		min	.063	3	-.014	2	0	2	0	2	-6.27e-4	2	7.92e-3	4
1925	N967	max	-.04	4	-.012	3	0	2	0	2	-2.747e-4	3	8.3e-3	2
1926		min	-.046	5	-.014	2	0	6	0	2	-4.269e-4	2	7.803e-3	4
1927	N968	max	-.04	4	-.012	3	0	3	0	2	4.533e-4	2	8.269e-3	2
1928		min	-.047	5	-.014	2	0	6	0	2	3.037e-4	3	7.777e-3	4
1929	N969	max	.081	2	-.367	3	.001	5	-2.579e-4	6	-3.649e-5	5	7.941e-3	2
1930		min	.078	3	-.394	2	0	3	-3.502e-4	5	-9.536e-5	6	7.534e-3	4
1931	N970	max	-.055	4	-.374	4	-.002	6	6.45e-7	6	6.436e-5	6	8.208e-3	5
1932		min	-.061	5	-.399	2	-.003	5	-1.068e-4	5	-2.16e-5	5	7.805e-3	4
1933	N971	max	-.055	4	-.374	4	-.002	6	-6.342e-5	4	6.762e-5	6	8.211e-3	5
1934		min	-.062	5	-.399	2	-.003	5	-1.205e-4	3	-1.769e-5	5	7.808e-3	4
1935	N972	max	.081	2	-.367	4	.001	5	2.196e-4	4	-1.516e-5	5	7.941e-3	2
1936		min	.078	3	-.393	2	0	3	1.506e-4	3	-7.536e-5	6	7.535e-3	4
1937	N973	max	.045	4	-.73	4	0	6	-2.488e-5	6	3.388e-3	2	1.126e-2	2
1938		min	.043	5	-.764	2	-.001	5	-5.5e-5	3	3.211e-3	3	1.089e-2	3
1939	N974	max	.009	4	-.73	4	0	6	-7.957e-5	6	3.338e-3	2	7.541e-3	2
1940		min	.006	5	-.764	2	-.002	5	-1.04e-4	5	3.16e-3	3	7.301e-3	6
1941	N975	max	.054	4	-.731	4	0	6	-4.148e-5	5	7.263e-3	2	1.235e-2	4
1942		min	.051	5	-.764	2	-.001	5	-8.886e-5	3	6.806e-3	3	1.146e-2	5
1943	N976	max	.033	4	-.731	4	0	6	4.077e-5	6	3.313e-3	2	1.309e-2	4
1944		min	.03	5	-.764	2	-.002	5	1.376e-5	3	3.108e-3	3	1.223e-2	5
1945	N977	max	.017	4	-.73	4	0	6	-8.679e-5	6	3.616e-3	2	8.409e-3	2
1946		min	.014	5	-.764	2	-.002	5	-1.069e-4	5	3.427e-3	3	8.143e-3	6
1947	N978	max	.035	4	-.73	4	0	6	-6.041e-5	6	3.752e-3	2	1.036e-2	2
1948		min	.032	5	-.764	2	-.001	5	-8.604e-5	3	3.558e-3	3	1.004e-2	6
1949	N979	max	.026	4	-.731	4	0	6	0	2	3.549e-3	2	1.453e-2	4
1950		min	.024	5	-.764	2	-.002	5	0	2	3.338e-3	3	1.37e-2	5
1951	N980	max	.018	4	-.731	4	0	6	0	2	3.111e-3	2	1.768e-2	2
1952		min	.016	5	-.764	2	-.001	5	0	2	2.956e-3	3	1.695e-2	5
1953	N981	max	.009	4	-.731	4	0	6	0	2	3.838e-3	2	2.028e-2	2
1954		min	.007	5	-.764	2	-.001	5	0	2	3.692e-3	5	1.963e-2	5
1955	N982	max	0	4	-.731	4	0	6	0	2	6.833e-3	2	1.918e-2	2
1956		min	-.003	2	-.764	2	-.001	5	0	2	6.571e-3	5	1.852e-2	3
1957	N983	max	-.005	4	-.731	4	0	6	0	2	1.21e-2	2	1.363e-2	2
1958		min	-.007	2	-.764	2	-.001	5	0	2	1.164e-2	3	1.318e-2	3
1959	N984	max	-.002	4	-.731	4	0	6	0	2	1.642e-2	2	8.102e-3	2
1960		min	-.004	2	-.764	2	-.001	5	0	2	1.572e-2	3	7.851e-3	6
1961	N985	max	.004	4	-.731	4	0	6	0	2	1.575e-2	2	5.598e-3	2
1962		min	.002	5	-.764	2	-.002	5	0	2	1.504e-2	3	5.41e-3	4
1963	N986	max	.009	4	-.731	4	0	6	0	2	1.05e-2	2	5.782e-3	2
1964		min	.007	5	-.764	2	-.002	5	0	2	1.002e-2	3	5.59e-3	6
1965	N987	max	.01	4	-.73	4	0	6	0	2	5.518e-3	2	7.212e-3	2
1966		min	.008	5	-.764	2	-.002	5	0	2	5.246e-3	3	6.98e-3	6
1967	N988	max	.047	4	-.731	4	0	6	6.218e-6	6	6.425e-3	2	1.277e-2	4
1968		min	.044	5	-.764	2	-.001	5	-3.28e-5	3	6.024e-3	3	1.19e-2	5
1969	N989	max	.037	4	-.731	4	0	6	4.855e-5	2	4.367e-3	2	1.307e-2	4
1970		min	.033	5	-.764	2	-.002	5	1.728e-5	3	4.097e-3	3	1.222e-2	5
1971	N990	max	.048	4	-.731	4	0	6	0	2	1.284e-2	2	1.34e-2	2
1972		min	.045	6	-.764	2	-.001	5	0	2	1.225e-2	3	1.294e-2	3
1973	N991	max	.048	4	-.731	4	0	6	0	2	1.204e-2	2	1.477e-2	2





**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
1974	min	.046	6	-.764	2	-.001	5	0	2	1.147e-2	3	1.426e-2	3	
1975	N992	max	.051	4	-.731	4	0	6	0	2	9.879e-3	2	1.645e-2	2
1976	min	.048	6	-.764	2	-.001	5	0	2	9.338e-3	3	1.594e-2	3	
1977	N993	max	.023	4	-.73	4	0	6	0	2	8.201e-3	2	8.816e-3	2
1978	min	.02	5	-.764	2	-.002	5	0	2	7.814e-3	3	8.537e-3	6	
1979	N994	max	.029	4	-.731	4	0	6	0	2	1.326e-2	2	9.16e-3	2
1980	min	.026	5	-.764	2	-.001	5	0	2	1.265e-2	3	8.873e-3	6	
1981	N995	max	.038	4	-.731	4	0	6	0	2	1.163e-2	2	1.16e-2	2
1982	min	.035	5	-.764	2	-.001	5	0	2	1.109e-2	3	1.122e-2	3	
1983	N996	max	.038	4	-.731	4	0	6	0	2	1.368e-2	2	1.291e-2	2
1984	min	.035	5	-.764	2	-.001	5	0	2	1.304e-2	3	1.247e-2	3	
1985	N997	max	.039	4	-.731	4	0	6	0	2	1.244e-2	2	1.544e-2	2
1986	min	.037	6	-.764	2	-.001	5	0	2	1.186e-2	3	1.49e-2	3	
1987	N998	max	.041	4	-.731	4	0	6	0	2	9.737e-3	2	1.7e-2	2
1988	min	.039	6	-.764	2	-.001	5	0	2	9.251e-3	3	1.648e-2	3	
1989	N999	max	.044	4	-.731	4	0	6	0	2	8.209e-3	2	1.644e-2	2
1990	min	.041	5	-.764	2	-.001	5	0	2	7.748e-3	3	1.587e-2	5	
1991	N1000	max	.036	4	-.731	4	0	6	0	2	6.442e-3	2	1.837e-2	2
1992	min	.034	5	-.764	2	-.001	5	0	2	6.087e-3	3	1.774e-2	5	
1993	N1001	max	.035	4	-.731	4	0	6	0	2	5.161e-3	2	1.589e-2	4
1994	min	.032	5	-.764	2	-.001	5	0	2	4.851e-3	3	1.516e-2	5	
1995	N1002	max	.029	4	-.731	4	0	6	0	2	4.297e-3	2	1.683e-2	2
1996	min	.026	5	-.764	2	-.001	5	0	2	4.048e-3	3	1.611e-2	5	
1997	N1003	max	.02	4	-.731	4	0	6	0	2	3.687e-3	2	1.87e-2	2
1998	min	.018	5	-.764	2	-.001	5	0	2	3.515e-3	3	1.801e-2	5	
1999	N1004	max	.014	4	-.731	4	0	6	0	2	4.802e-3	2	1.981e-2	2
2000	min	.012	5	-.764	2	-.001	5	0	2	4.616e-3	3	1.92e-2	5	
2001	N1005	max	.007	4	-.731	4	0	6	0	2	6.794e-3	2	1.855e-2	2
2002	min	.005	5	-.764	2	-.001	5	0	2	6.548e-3	5	1.792e-2	3	
2003	N1006	max	.004	4	-.731	4	0	6	0	2	1.126e-2	2	1.258e-2	2
2004	min	.002	5	-.764	2	-.001	5	0	2	1.082e-2	3	1.218e-2	3	
2005	N1007	max	.006	4	-.731	4	0	6	0	2	1.591e-2	2	8.419e-3	2
2006	min	.004	5	-.764	2	-.001	5	0	2	1.522e-2	3	8.16e-3	6	
2007	N1008	max	.01	4	-.731	4	0	6	0	2	1.553e-2	2	6.636e-3	2
2008	min	.008	5	-.764	2	-.002	5	0	2	1.483e-2	3	6.423e-3	6	
2009	N1009	max	.013	4	-.731	4	0	6	0	2	1.223e-2	2	6.367e-3	2
2010	min	.01	5	-.764	2	-.002	5	0	2	1.167e-2	3	6.159e-3	6	
2011	N1010	max	.017	4	-.73	4	0	6	0	2	8.913e-3	2	7.688e-3	2
2012	min	.014	5	-.764	2	-.002	5	0	2	8.495e-3	3	7.441e-3	6	
2013	N1011	max	.026	4	-.731	4	0	6	0	2	1.612e-2	2	1.228e-2	2
2014	min	.023	5	-.764	2	-.001	5	0	2	1.538e-2	3	1.187e-2	3	
2015	N1012	max	.022	4	-.731	4	0	6	0	2	1.04e-2	2	1.81e-2	2
2016	min	.02	5	-.764	2	-.001	5	0	2	9.941e-3	3	1.745e-2	3	
2017	N1013	max	.022	4	-.731	4	0	6	0	2	5.536e-3	2	1.975e-2	2
2018	min	.02	5	-.764	2	-.001	5	0	2	5.284e-3	3	1.915e-2	3	
2019	N1014	max	.032	4	-.731	4	0	6	0	2	9.358e-3	2	1.854e-2	2
2020	min	.03	5	-.764	2	-.001	5	0	2	8.92e-3	3	1.791e-2	3	
2021	N1015	max	.031	4	-.731	4	0	6	0	2	1.219e-2	2	1.62e-2	2
2022	min	.029	5	-.764	2	-.001	5	0	2	1.163e-2	3	1.562e-2	3	
2023	N1016	max	.015	4	-.731	4	0	6	0	2	1.642e-2	2	9.272e-3	2
2024	min	.013	5	-.764	2	-.001	5	0	2	1.568e-2	3	8.989e-3	6	
2025	N1017	max	.018	4	-.731	4	0	6	0	2	1.442e-2	2	8.008e-3	2
2026	min	.016	5	-.764	2	-.001	5	0	2	1.377e-2	3	7.754e-3	6	
2027	N1018	max	.014	4	-.731	4	0	6	0	2	7.128e-3	2	1.842e-2	2
2028	min	.012	5	-.764	2	-.001	5	0	2	6.857e-3	3	1.778e-2	3	
2029	N1019	max	.045	4	-.73	4	0	6	2.68e-5	6	-3.251e-3	3	1.125e-2	2
2030	min	.042	5	-.764	2	-.002	5	4.517e-6	5	-3.392e-3	2	1.089e-2	3	



**Envelope Joint Displacements (Continued)**

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC
2031	N1020	max	.009	4	-.73	4	0	6	8.473e-5	6	-3.196e-3	3	7.542e-3	2
2032		min	.005	5	-.764	2	-.002	5	5.696e-5	3	-3.341e-3	2	7.3e-3	6
2033	N1021	max	.054	4	-.731	4	0	6	5.748e-5	3	-6.775e-3	3	1.235e-2	4
2034		min	.051	5	-.764	2	-.002	5	1.579e-5	5	-7.229e-3	2	1.147e-2	5
2035	N1022	max	.033	4	-.731	4	0	6	-4.269e-5	6	-3.073e-3	3	1.309e-2	4
2036		min	.029	5	-.764	2	-.002	5	-5.986e-5	5	-3.276e-3	2	1.224e-2	5
2037	N1023	max	.016	4	-.73	4	0	6	9.093e-5	6	-3.464e-3	3	8.409e-3	2
2038		min	.013	5	-.764	2	-.002	5	6.819e-5	3	-3.619e-3	2	8.142e-3	6
2039	N1024	max	.035	4	-.73	4	0	6	6.284e-5	6	-3.596e-3	3	1.036e-2	2
2040		min	.032	5	-.764	2	-.002	5	4.296e-5	5	-3.755e-3	2	1.003e-2	6
2041	N1025	max	.026	4	-.731	4	0	6	0	2	-3.301e-3	3	1.453e-2	4
2042		min	.024	5	-.764	2	-.002	5	0	2	-3.513e-3	2	1.372e-2	5
2043	N1026	max	.018	4	-.731	4	0	6	0	2	-2.916e-3	3	1.768e-2	2
2044		min	.016	5	-.764	2	-.002	5	0	2	-3.073e-3	2	1.698e-2	5
2045	N1027	max	.008	4	-.731	4	-.001	6	0	2	-3.645e-3	5	2.029e-2	2
2046		min	.006	5	-.764	2	-.002	5	0	2	-3.804e-3	4	1.967e-2	5
2047	N1028	max	0	4	-.731	4	-.001	6	0	2	-6.529e-3	5	1.919e-2	2
2048		min	-.003	2	-.764	2	-.002	5	0	2	-6.798e-3	4	1.856e-2	3
2049	N1029	max	-.005	4	-.731	4	-.001	6	0	2	-1.161e-2	3	1.365e-2	2
2050		min	-.007	2	-.764	2	-.002	5	0	2	-1.207e-2	2	1.321e-2	3
2051	N1030	max	-.002	4	-.731	4	0	6	0	2	-1.571e-2	3	8.117e-3	2
2052		min	-.005	5	-.764	2	-.002	5	0	2	-1.64e-2	2	7.852e-3	6
2053	N1031	max	.004	4	-.731	4	0	6	0	2	-1.505e-2	3	5.608e-3	2
2054		min	.001	5	-.764	2	-.002	5	0	2	-1.574e-2	2	5.416e-3	6
2055	N1032	max	.009	4	-.731	4	0	6	0	2	-1.004e-2	3	5.787e-3	2
2056		min	.006	5	-.764	2	-.002	5	0	2	-1.05e-2	2	5.592e-3	6
2057	N1033	max	.01	4	-.731	4	0	6	0	2	-5.281e-3	3	7.213e-3	2
2058		min	.007	5	-.764	2	-.002	5	0	2	-5.52e-3	2	6.98e-3	6
2059	N1034	max	.047	4	-.731	4	0	6	1.404e-6	3	-5.991e-3	3	1.277e-2	4
2060		min	.044	5	-.764	2	-.002	5	-3.105e-5	5	-6.39e-3	2	1.191e-2	5
2061	N1035	max	.037	4	-.731	4	0	6	-4.862e-5	3	-4.062e-3	3	1.308e-2	4
2062		min	.033	5	-.764	2	-.002	5	-6.949e-5	5	-4.331e-3	2	1.223e-2	5
2063	N1036	max	.047	4	-.731	4	-.001	6	0	2	-1.223e-2	3	1.34e-2	2
2064		min	.045	5	-.764	2	-.002	5	0	2	-1.282e-2	2	1.294e-2	3
2065	N1037	max	.048	4	-.731	4	-.001	6	0	2	-1.144e-2	3	1.478e-2	2
2066		min	.046	5	-.764	2	-.002	5	0	2	-1.2e-2	2	1.428e-2	3
2067	N1038	max	.051	4	-.731	4	0	6	0	2	-9.308e-3	3	1.646e-2	2
2068		min	.048	5	-.764	2	-.002	5	0	2	-9.845e-3	2	1.596e-2	3
2069	N1039	max	.023	4	-.731	4	0	6	0	2	-7.842e-3	3	8.816e-3	2
2070		min	.02	5	-.764	2	-.002	5	0	2	-8.198e-3	2	8.537e-3	6
2071	N1040	max	.028	4	-.731	4	0	6	0	2	-1.266e-2	3	9.162e-3	2
2072		min	.026	5	-.764	2	-.002	5	0	2	-1.325e-2	2	8.872e-3	6
2073	N1041	max	.038	4	-.731	4	-.001	6	0	2	-1.109e-2	3	1.16e-2	2
2074		min	.035	5	-.764	2	-.002	5	0	2	-1.161e-2	2	1.123e-2	3
2075	N1042	max	.037	4	-.731	4	-.001	6	0	2	-1.303e-2	3	1.291e-2	2
2076		min	.035	5	-.764	2	-.002	5	0	2	-1.365e-2	2	1.248e-2	3
2077	N1043	max	.039	4	-.731	4	-.001	6	0	2	-1.183e-2	3	1.545e-2	2
2078		min	.036	5	-.764	2	-.002	5	0	2	-1.241e-2	2	1.492e-2	3
2079	N1044	max	.041	4	-.731	4	-.001	6	0	2	-9.22e-3	3	1.701e-2	2
2080		min	.038	5	-.764	2	-.002	5	0	2	-9.702e-3	2	1.65e-2	3
2081	N1045	max	.044	4	-.731	4	0	6	0	2	-7.716e-3	3	1.645e-2	2
2082		min	.041	5	-.764	2	-.002	5	0	2	-8.174e-3	2	1.59e-2	5
2083	N1046	max	.036	4	-.731	4	0	6	0	2	-6.053e-3	3	1.838e-2	2
2084		min	.033	5	-.764	2	-.002	5	0	2	-6.406e-3	2	1.777e-2	5
2085	N1047	max	.035	4	-.731	4	0	6	0	2	-4.816e-3	3	1.59e-2	4
2086		min	.032	5	-.764	2	-.002	5	0	2	-5.126e-3	2	1.518e-2	5
2087	N1048	max	.028	4	-.731	4	0	6	0	2	-4.011e-3	3	1.684e-2	4



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
2088		min	.026	5	-0.764	2	-0.002	5	0	2	-4.26e-3	2	1.613e-2	5
2089	N1049	max	.02	4	-0.731	4	0	6	0	2	-3.476e-3	3	1.871e-2	2
2090		min	.018	5	-0.764	2	-0.002	5	0	2	-3.649e-3	2	1.805e-2	5
2091	N1050	max	.014	4	-0.731	4	0	6	0	2	-4.578e-3	3	1.982e-2	2
2092		min	.012	5	-0.764	2	-0.002	5	0	2	-4.763e-3	2	1.925e-2	5
2093	N1051	max	.007	4	-0.731	4	-0.001	6	0	2	-6.508e-3	5	1.857e-2	2
2094		min	.005	5	-0.764	2	-0.002	5	0	2	-6.756e-3	2	1.795e-2	3
2095	N1052	max	.004	4	-0.731	4	-0.001	6	0	2	-1.079e-2	3	1.26e-2	2
2096		min	.002	5	-0.764	2	-0.002	5	0	2	-1.122e-2	2	1.221e-2	6
2097	N1053	max	.006	4	-0.731	4	0	6	0	2	-1.521e-2	3	8.432e-3	2
2098		min	.003	5	-0.764	2	-0.002	5	0	2	-1.589e-2	2	8.161e-3	6
2099	N1054	max	.01	4	-0.731	4	0	6	0	2	-1.484e-2	3	6.644e-3	2
2100		min	.007	5	-0.764	2	-0.002	5	0	2	-1.551e-2	2	6.424e-3	6
2101	N1055	max	.012	4	-0.731	4	0	6	0	2	-1.169e-2	3	6.371e-3	2
2102		min	.009	5	-0.764	2	-0.002	5	0	2	-1.222e-2	2	6.16e-3	6
2103	N1056	max	.017	4	-0.731	4	0	6	0	2	-8.523e-3	3	7.689e-3	2
2104		min	.014	5	-0.764	2	-0.002	5	0	2	-8.91e-3	2	7.442e-3	6
2105	N1057	max	.025	4	-0.731	4	-0.001	6	0	2	-1.537e-2	3	1.229e-2	2
2106		min	.023	5	-0.764	2	-0.002	5	0	2	-1.609e-2	2	1.189e-2	3
2107	N1058	max	.022	4	-0.731	4	-0.001	6	0	2	-9.91e-3	3	1.812e-2	2
2108		min	.019	5	-0.764	2	-0.002	5	0	2	-1.036e-2	2	1.748e-2	3
2109	N1059	max	.022	4	-0.731	4	0	6	0	2	-5.248e-3	3	1.976e-2	2
2110		min	.02	5	-0.764	2	-0.002	5	0	2	-5.499e-3	2	1.917e-2	3
2111	N1060	max	.032	4	-0.731	4	-0.001	6	0	2	-8.888e-3	3	1.855e-2	2
2112		min	.029	5	-0.764	2	-0.002	5	0	2	-9.323e-3	2	1.793e-2	3
2113	N1061	max	.031	4	-0.731	4	-0.001	6	0	2	-1.16e-2	3	1.621e-2	2
2114		min	.029	5	-0.764	2	-0.002	5	0	2	-1.215e-2	2	1.565e-2	3
2115	N1062	max	.015	4	-0.731	4	-0.001	6	0	2	-1.567e-2	3	9.282e-3	2
2116		min	.013	5	-0.764	2	-0.002	5	0	2	-1.64e-2	2	8.989e-3	6
2117	N1063	max	.018	4	-0.731	4	0	6	0	2	-1.378e-2	3	8.012e-3	2
2118		min	.015	5	-0.764	2	-0.002	5	0	2	-1.441e-2	2	7.755e-3	6
2119	N1064	max	.014	4	-0.731	4	-0.001	6	0	2	-6.823e-3	3	1.843e-2	2
2120		min	.011	5	-0.764	2	-0.002	5	0	2	-7.091e-3	2	1.781e-2	3
2121	N1065	max	-0.038	4	-0.73	4	0	6	1.761e-5	6	4.992e-4	2	3.28e-3	3
2122		min	-0.042	5	-0.763	2	-0.002	5	9.49e-7	3	4.45e-4	3	3.055e-3	4
2123	N1066	max	-0.024	4	-0.73	4	0	6	3.44e-6	6	1.504e-3	2	3.927e-3	3
2124		min	-0.028	5	-0.763	2	-0.002	5	-1.697e-5	5	1.401e-3	3	3.754e-3	4
2125	N1067	max	-0.044	4	-0.73	4	0	6	1.12e-5	4	-1.086e-4	3	4.991e-3	3
2126		min	-0.048	2	-0.763	2	-0.002	5	-2.052e-5	5	-1.709e-4	5	4.427e-3	5
2127	N1068	max	-0.043	4	-0.73	4	0	6	1.176e-5	4	-4.867e-5	3	4.968e-3	3
2128		min	-0.048	2	-0.763	2	-0.002	5	-4.635e-6	3	-7.346e-5	2	4.419e-3	5
2129	N1069	max	-0.028	4	-0.73	4	0	6	1.478e-5	6	1.214e-3	2	3.655e-3	3
2130		min	-0.032	5	-0.763	2	-0.002	5	-6.016e-6	3	1.122e-3	3	3.465e-3	4
2131	N1070	max	-0.034	4	-0.73	4	0	6	1.881e-5	6	6.981e-4	2	3.344e-3	3
2132		min	-0.039	5	-0.763	2	-0.002	5	-2.445e-7	3	6.311e-4	3	3.128e-3	4
2133	N1071	max	-0.04	4	-0.73	4	0	6	0	2	-8.376e-5	3	4.964e-3	3
2134		min	-0.045	5	-0.763	2	-0.002	5	0	2	-1.062e-4	4	4.434e-3	5
2135	N1072	max	-0.038	4	-0.73	4	0	6	0	2	-1.769e-4	5	4.868e-3	3
2136		min	-0.042	5	-0.763	2	-0.002	5	0	2	-1.9e-4	4	4.38e-3	4
2137	N1073	max	-0.035	4	-0.73	4	0	6	0	2	-4.251e-4	5	4.473e-3	3
2138		min	-0.04	5	-0.763	2	-0.002	5	0	2	-5.024e-4	3	4.06e-3	4
2139	N1074	max	-0.034	4	-0.73	4	0	6	0	2	-7.582e-4	5	3.845e-3	3
2140		min	-0.038	5	-0.763	2	-0.002	5	0	2	-8.939e-4	3	3.507e-3	4
2141	N1075	max	-0.032	4	-0.73	4	0	6	0	2	-1.103e-3	5	3.094e-3	3
2142		min	-0.037	5	-0.763	2	-0.002	5	0	2	-1.274e-3	3	2.815e-3	4
2143	N1076	max	-0.031	4	-0.73	4	0	6	0	2	-1.172e-3	5	2.602e-3	3
2144		min	-0.036	5	-0.763	2	-0.002	5	0	2	-1.346e-3	3	2.364e-3	4



**Envelope Joint Displacements (Continued)**

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC
2145	N1077	max	-0.031	4	-.73	4	0	6	0	2	-7.131e-4	5	2.552e-3	3
2146		min	-0.035	5	-.763	2	-.002	5	0	2	-8.655e-4	3	2.341e-3	4
2147	N1078	max	-.029	4	-.73	4	0	6	0	2	1.91e-4	5	2.887e-3	3
2148		min	-.033	5	-.763	2	-.002	5	0	2	7.715e-5	3	2.692e-3	4
2149	N1079	max	-.027	4	-.73	4	0	6	0	2	1.048e-3	2	3.441e-3	3
2150		min	-.031	5	-.763	2	-.002	5	0	2	9.475e-4	3	3.254e-3	4
2151	N1080	max	-.043	4	-.73	4	0	6	1.562e-5	4	-1.056e-4	3	4.973e-3	3
2152		min	-.048	2	-.763	2	-.002	5	-7.965e-6	5	-1.574e-4	5	4.418e-3	5
2153	N1081	max	-.043	4	-.73	4	0	6	1.578e-5	4	-7.131e-5	3	4.968e-3	3
2154		min	-.048	2	-.763	2	-.002	5	-1.687e-6	3	-1.042e-4	5	4.419e-3	5
2155	N1082	max	-.039	4	-.73	4	0	6	0	2	-7.868e-4	5	3.333e-3	3
2156		min	-.043	5	-.763	2	-.002	5	0	2	-8.826e-4	3	3.092e-3	4
2157	N1083	max	-.04	4	-.73	4	0	6	0	2	-8.36e-4	5	3.403e-3	3
2158		min	-.045	5	-.763	2	-.002	5	0	2	-9.059e-4	3	3.133e-3	4
2159	N1084	max	-.042	4	-.73	4	0	6	0	2	-4.831e-4	3	3.794e-3	3
2160		min	-.046	5	-.763	2	-.002	5	0	2	-5.064e-4	2	3.468e-3	4
2161	N1085	max	-.032	4	-.73	4	0	6	0	2	3.014e-4	5	3.254e-3	3
2162		min	-.036	5	-.763	2	-.002	5	0	2	2.101e-4	3	3.046e-3	4
2163	N1086	max	-.035	4	-.73	4	0	6	0	2	-5.372e-4	5	3.04e-3	3
2164		min	-.039	5	-.763	2	-.002	5	0	2	-6.533e-4	3	2.818e-3	4
2165	N1087	max	-.037	4	-.73	4	0	6	0	2	-4.745e-4	5	3.219e-3	3
2166		min	-.041	5	-.763	2	-.002	5	0	2	-5.717e-4	3	2.987e-3	4
2167	N1088	max	-.038	4	-.73	4	0	6	0	2	-8.689e-4	5	3.216e-3	3
2168		min	-.042	5	-.763	2	-.002	5	0	2	-9.692e-4	3	2.968e-3	4
2169	N1089	max	-.039	4	-.73	4	0	6	0	2	-8.844e-4	5	3.44e-3	3
2170		min	-.043	5	-.763	2	-.002	5	0	2	-9.645e-4	3	3.166e-3	4
2171	N1090	max	-.04	4	-.73	4	0	6	0	2	-6.135e-4	5	3.887e-3	3
2172		min	-.045	5	-.763	2	-.002	5	0	2	-6.46e-4	3	3.552e-3	4
2173	N1091	max	-.041	4	-.73	4	0	6	0	2	-3.446e-4	3	4.3e-3	3
2174		min	-.046	5	-.763	2	-.002	5	0	2	-3.72e-4	2	3.895e-3	4
2175	N1092	max	-.04	4	-.73	4	0	6	0	2	-2.761e-4	3	4.493e-3	3
2176		min	-.045	5	-.763	2	-.002	5	0	2	-2.938e-4	2	4.072e-3	4
2177	N1093	max	-.041	4	-.73	4	0	6	0	2	-1.169e-4	3	4.845e-3	3
2178		min	-.046	5	-.763	2	-.002	5	0	2	-1.488e-4	2	4.348e-3	4
2179	N1094	max	-.04	4	-.73	4	0	6	0	2	-1.296e-4	3	4.883e-3	3
2180		min	-.045	5	-.763	2	-.002	5	0	2	-1.518e-4	2	4.386e-3	4
2181	N1095	max	-.038	4	-.73	4	0	6	0	2	-2.409e-4	5	4.706e-3	3
2182		min	-.043	5	-.763	2	-.002	5	0	2	-2.624e-4	3	4.249e-3	4
2183	N1096	max	-.036	4	-.73	4	0	6	0	2	-4.256e-4	5	4.314e-3	3
2184		min	-.041	5	-.763	2	-.002	5	0	2	-4.904e-4	3	3.921e-3	4
2185	N1097	max	-.035	4	-.73	4	0	6	0	2	-6.88e-4	5	3.766e-3	3
2186		min	-.039	5	-.763	2	-.002	5	0	2	-8.082e-4	3	3.438e-3	4
2187	N1098	max	-.034	4	-.73	4	0	6	0	2	-9.801e-4	5	3.074e-3	3
2188		min	-.038	5	-.763	2	-.002	5	0	2	-1.132e-3	3	2.795e-3	4
2189	N1099	max	-.033	4	-.73	4	0	6	0	2	-1.137e-3	5	2.701e-3	3
2190		min	-.037	5	-.763	2	-.002	5	0	2	-1.297e-3	3	2.459e-3	4
2191	N1100	max	-.032	4	-.73	4	0	6	0	2	-7.603e-4	5	2.696e-3	3
2192		min	-.036	5	-.763	2	-.002	5	0	2	-9.079e-4	3	2.48e-3	4
2193	N1101	max	-.031	4	-.73	4	0	6	0	2	-1.457e-4	5	2.883e-3	3
2194		min	-.035	5	-.763	2	-.002	5	0	2	-2.699e-4	3	2.681e-3	4
2195	N1102	max	-.03	4	-.73	4	0	6	0	2	3.301e-4	5	3.196e-3	3
2196		min	-.034	5	-.763	2	-.002	5	0	2	2.306e-4	3	2.996e-3	4
2197	N1103	max	-.036	4	-.73	4	0	6	0	2	-1.152e-3	5	3.088e-3	3
2198		min	-.041	5	-.763	2	-.002	5	0	2	-1.271e-3	3	2.836e-3	4
2199	N1104	max	-.037	4	-.73	4	0	6	0	2	-8.136e-4	5	3.666e-3	3
2200		min	-.041	5	-.763	2	-.002	5	0	2	-9.082e-4	3	3.369e-3	4
2201	N1105	max	-.038	4	-.73	4	0	6	0	2	-3.799e-4	5	4.262e-3	3



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC	
2202		min	-0.042	5	-0.763	2	-0.002	5	0	2	-4.207e-4	3	3.881e-3	4
2203	N1106	max	-0.039	4	-0.73	4	0	6	0	2	-6.646e-4	5	3.878e-3	3
2204		min	-0.043	5	-0.763	2	-0.002	5	0	2	-7.221e-4	3	3.556e-3	4
2205	N1107	max	-0.038	4	-0.73	4	0	6	0	2	-8.863e-4	5	3.497e-3	3
2206		min	-0.042	5	-0.763	2	-0.002	5	0	2	-9.761e-4	3	3.217e-3	4
2207	N1108	max	-0.034	4	-0.73	4	0	6	0	2	-1.14e-3	5	2.85e-3	3
2208		min	-0.039	5	-0.763	2	-0.002	5	0	2	-1.279e-3	3	2.604e-3	4
2209	N1109	max	-0.033	4	-0.73	4	0	6	0	2	-6.445e-4	5	2.892e-3	3
2210		min	-0.037	5	-0.763	2	-0.002	5	0	2	-7.78e-4	3	2.673e-3	4
2211	N1110	max	-0.036	4	-0.73	4	0	6	0	2	-6.322e-4	5	3.782e-3	3
2212		min	-0.04	5	-0.763	2	-0.002	5	0	2	-7.353e-4	3	3.46e-3	4
2213	N1111	max	-0.038	4	-0.73	4	0	6	-1.477e-5	6	-4.793e-4	3	3.29e-3	3
2214		min	-0.042	5	-0.763	2	-0.002	5	-3.15e-5	5	-5.05e-4	2	3.061e-3	4
2215	N1112	max	-0.025	4	-0.73	4	0	6	2.338e-6	4	-1.435e-3	3	3.934e-3	3
2216		min	-0.028	5	-0.764	2	-0.002	5	-1.835e-5	3	-1.508e-3	2	3.758e-3	4
2217	N1113	max	-0.044	4	-0.73	4	0	6	6.256e-6	6	2.174e-4	5	4.984e-3	3
2218		min	-0.049	5	-0.763	2	-0.002	5	-2.101e-5	3	1.48e-4	3	4.425e-3	5
2219	N1114	max	-0.043	4	-0.73	4	0	6	-9.86e-6	6	1.223e-4	5	4.964e-3	3
2220		min	-0.048	5	-0.763	2	-0.002	5	-2.663e-5	3	9.293e-5	3	4.418e-3	5
2221	N1115	max	-0.028	4	-0.73	4	0	6	-1.025e-5	6	-1.156e-3	3	3.662e-3	3
2222		min	-0.032	5	-0.764	2	-0.002	5	-2.88e-5	5	-1.218e-3	2	3.47e-3	4
2223	N1116	max	-0.035	4	-0.73	4	0	6	-1.566e-5	6	-6.646e-4	3	3.353e-3	3
2224		min	-0.039	5	-0.763	2	-0.002	5	-3.356e-5	5	-7.031e-4	2	3.133e-3	4
2225	N1117	max	-0.041	4	-0.73	4	0	6	0	2	1.54e-4	5	4.955e-3	3
2226		min	-0.045	5	-0.763	2	-0.002	5	0	2	1.297e-4	3	4.43e-3	5
2227	N1118	max	-0.038	4	-0.73	4	0	6	0	2	2.347e-4	3	4.849e-3	3
2228		min	-0.043	5	-0.763	2	-0.002	5	0	2	2.21e-4	4	4.373e-3	4
2229	N1119	max	-0.036	4	-0.73	4	0	6	0	2	5.512e-4	3	4.443e-3	3
2230		min	-0.04	5	-0.763	2	-0.002	5	0	2	4.761e-4	5	4.05e-3	4
2231	N1120	max	-0.034	4	-0.73	4	0	6	0	2	9.367e-4	3	3.811e-3	3
2232		min	-0.038	5	-0.763	2	-0.002	5	0	2	8.049e-4	5	3.496e-3	4
2233	N1121	max	-0.032	4	-0.73	4	0	6	0	2	1.303e-3	3	3.063e-3	3
2234		min	-0.037	5	-0.763	2	-0.002	5	0	2	1.141e-3	5	2.805e-3	4
2235	N1122	max	-0.032	4	-0.73	4	0	6	0	2	1.356e-3	3	2.581e-3	3
2236		min	-0.036	5	-0.763	2	-0.002	5	0	2	1.198e-3	5	2.358e-3	4
2237	N1123	max	-0.031	4	-0.73	4	0	6	0	2	8.565e-4	3	2.542e-3	3
2238		min	-0.035	5	-0.763	2	-0.002	5	0	2	7.265e-4	5	2.338e-3	4
2239	N1124	max	-0.03	4	-0.73	4	0	6	0	2	-1.024e-4	3	2.889e-3	3
2240		min	-0.034	5	-0.763	2	-0.002	5	0	2	-1.894e-4	5	2.693e-3	4
2241	N1125	max	-0.027	4	-0.73	4	0	6	0	2	-9.798e-4	3	3.447e-3	3
2242		min	-0.031	5	-0.764	2	-0.002	5	0	2	-1.051e-3	2	3.257e-3	4
2243	N1126	max	-0.044	4	-0.73	4	0	6	-4.503e-6	6	2.046e-4	5	4.965e-3	3
2244		min	-0.048	5	-0.763	2	-0.002	5	-2.692e-5	3	1.462e-4	3	4.416e-3	5
2245	N1127	max	-0.043	4	-0.73	4	0	6	-1.132e-5	6	1.529e-4	5	4.963e-3	3
2246		min	-0.048	5	-0.763	2	-0.002	5	-2.926e-5	3	1.146e-4	3	4.417e-3	5
2247	N1128	max	-0.039	4	-0.73	4	0	6	0	2	8.962e-4	3	3.332e-3	3
2248		min	-0.044	5	-0.763	2	-0.002	5	0	2	8.153e-4	5	3.093e-3	4
2249	N1129	max	-0.041	4	-0.73	4	0	6	0	2	9.344e-4	3	3.388e-3	3
2250		min	-0.045	5	-0.763	2	-0.002	5	0	2	8.731e-4	5	3.129e-3	4
2251	N1130	max	-0.042	4	-0.73	4	0	6	0	2	5.422e-4	2	3.774e-3	3
2252		min	-0.047	5	-0.763	2	-0.002	5	0	2	5.185e-4	3	3.463e-3	4
2253	N1131	max	-0.032	4	-0.73	4	0	6	0	2	-2.365e-4	3	3.26e-3	3
2254		min	-0.036	5	-0.764	2	-0.002	5	0	2	-2.996e-4	5	3.05e-3	4
2255	N1132	max	-0.035	4	-0.73	4	0	6	0	2	6.434e-4	3	3.042e-3	3
2256		min	-0.039	5	-0.763	2	-0.002	5	0	2	5.51e-4	5	2.82e-3	4
2257	N1133	max	-0.037	4	-0.73	4	0	6	0	2	5.68e-4	3	3.22e-3	3
2258		min	-0.041	5	-0.763	2	-0.002	5	0	2	4.934e-4	5	2.989e-3	4



**Envelope Joint Displacements (Continued)**

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC
2259	N1134	max	-.038	4	-.73	4	0	6	0	2	9.827e-4	3	3.207e-3	3
2260		min	-.043	5	-.763	2	-.002	5	0	2	8.974e-4	5	2.967e-3	4
2261	N1135	max	-.039	4	-.73	4	0	6	0	2	9.924e-4	3	3.422e-3	3
2262		min	-.044	5	-.763	2	-.002	5	0	2	9.212e-4	5	3.161e-3	4
2263	N1136	max	-.04	4	-.73	4	0	6	0	2	6.816e-4	3	3.866e-3	3
2264		min	-.045	5	-.763	2	-.002	5	0	2	6.556e-4	5	3.547e-3	4
2265	N1137	max	-.041	4	-.73	4	0	6	0	2	4.095e-4	2	4.281e-3	3
2266		min	-.046	5	-.763	2	-.002	5	0	2	3.83e-4	3	3.89e-3	4
2267	N1138	max	-.041	4	-.73	4	0	6	0	2	3.329e-4	2	4.47e-3	3
2268		min	-.045	5	-.763	2	-.002	5	0	2	3.175e-4	3	4.065e-3	4
2269	N1139	max	-.041	4	-.73	4	0	6	0	2	1.969e-4	5	4.83e-3	3
2270		min	-.046	5	-.763	2	-.002	5	0	2	1.601e-4	3	4.343e-3	4
2271	N1140	max	-.04	4	-.73	4	0	6	0	2	1.98e-4	5	4.865e-3	3
2272		min	-.045	5	-.763	2	-.002	5	0	2	1.751e-4	3	4.381e-3	4
2273	N1141	max	-.038	4	-.73	4	0	6	0	2	3.102e-4	3	4.682e-3	3
2274		min	-.043	5	-.763	2	-.002	5	0	2	2.884e-4	4	4.241e-3	4
2275	N1142	max	-.037	4	-.73	4	0	6	0	2	5.363e-4	3	4.284e-3	3
2276		min	-.041	5	-.763	2	-.002	5	0	2	4.747e-4	5	3.911e-3	4
2277	N1143	max	-.035	4	-.73	4	0	6	0	2	8.495e-4	3	3.733e-3	3
2278		min	-.039	5	-.763	2	-.002	5	0	2	7.336e-4	5	3.428e-3	4
2279	N1144	max	-.034	4	-.73	4	0	6	0	2	1.161e-3	3	3.047e-3	3
2280		min	-.038	5	-.763	2	-.002	5	0	2	1.018e-3	5	2.787e-3	4
2281	N1145	max	-.033	4	-.73	4	0	6	0	2	1.309e-3	3	2.683e-3	3
2282		min	-.037	5	-.763	2	-.002	5	0	2	1.164e-3	5	2.454e-3	4
2283	N1146	max	-.032	4	-.73	4	0	6	0	2	9.019e-4	3	2.689e-3	3
2284		min	-.036	5	-.763	2	-.002	5	0	2	7.755e-4	5	2.478e-3	4
2285	N1147	max	-.031	4	-.73	4	0	6	0	2	2.504e-4	3	2.883e-3	3
2286		min	-.035	5	-.763	2	-.002	5	0	2	1.514e-4	5	2.682e-3	4
2287	N1148	max	-.031	4	-.73	4	0	6	0	2	-2.579e-4	3	3.201e-3	3
2288		min	-.035	5	-.764	2	-.002	5	0	2	-3.301e-4	5	2.999e-3	4
2289	N1149	max	-.036	4	-.73	4	0	6	0	2	1.289e-3	3	3.074e-3	3
2290		min	-.041	5	-.763	2	-.002	5	0	2	1.182e-3	5	2.833e-3	4
2291	N1150	max	-.037	4	-.73	4	0	6	0	2	9.418e-4	3	3.64e-3	3
2292		min	-.042	5	-.763	2	-.002	5	0	2	8.542e-4	5	3.361e-3	4
2293	N1151	max	-.038	4	-.73	4	0	6	0	2	4.641e-4	3	4.233e-3	3
2294		min	-.043	5	-.763	2	-.002	5	0	2	4.275e-4	5	3.872e-3	4
2295	N1152	max	-.039	4	-.73	4	0	6	0	2	7.588e-4	3	3.853e-3	3
2296		min	-.043	5	-.763	2	-.002	5	0	2	7.075e-4	5	3.549e-3	4
2297	N1153	max	-.038	4	-.73	4	0	6	0	2	1.004e-3	3	3.477e-3	3
2298		min	-.043	5	-.763	2	-.002	5	0	2	9.233e-4	5	3.212e-3	4
2299	N1154	max	-.035	4	-.73	4	0	6	0	2	1.292e-3	3	2.836e-3	3
2300		min	-.039	5	-.763	2	-.002	5	0	2	1.167e-3	5	2.6e-3	4
2301	N1155	max	-.033	4	-.73	4	0	6	0	2	7.701e-4	3	2.89e-3	3
2302		min	-.037	5	-.763	2	-.002	5	0	2	6.585e-4	5	2.673e-3	4
2303	N1156	max	-.036	4	-.73	4	0	6	0	2	7.745e-4	3	3.753e-3	3
2304		min	-.041	5	-.763	2	-.002	5	0	2	6.765e-4	5	3.451e-3	4
2305	N1157	max	.068	2	-.013	3	0	6	4.71e-6	2	1.155e-4	2	8.278e-3	2
2306		min	.065	3	-.015	2	0	3	2.509e-6	3	8.2e-5	3	7.789e-3	4
2307	N1158	max	.037	4	-.013	3	0	6	-2.106e-5	3	8.89e-5	2	8.147e-3	2
2308		min	.034	3	-.014	2	0	3	-2.895e-5	2	6.128e-5	3	7.698e-3	4
2309	N1159	max	.087	2	-.013	3	0	6	5.616e-5	2	-1.432e-4	3	1.049e-2	2
2310		min	.082	3	-.014	2	0	3	3.778e-5	3	-2.238e-4	2	9.274e-3	3
2311	N1160	max	.087	2	-.013	3	0	6	2.155e-5	2	-4.566e-5	3	1.042e-2	2
2312		min	.082	3	-.014	2	0	3	1.485e-5	3	-7.7e-5	2	9.229e-3	3
2313	N1161	max	.045	4	-.013	3	0	6	-2.077e-5	3	1.08e-4	2	8.175e-3	2
2314		min	.042	3	-.014	2	0	3	-2.872e-5	2	7.478e-5	3	7.717e-3	4
2315	N1162	max	.06	2	-.013	3	0	6	-4.675e-6	3	1.259e-4	2	8.244e-3	2



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [ ...	LC	
2316		min	.057	3	-.014	2	0	3	-6.13e-6	6	8.816e-5	3	7.765e-3	4
2317	N1163	max	.081	2	-.013	3	0	6	0	2	-2.931e-5	3	1.034e-2	2
2318		min	.077	3	-.014	2	0	3	0	2	-5.243e-5	2	9.177e-3	3
2319	N1164	max	.074	2	-.013	3	0	6	0	2	8.457e-5	2	1.007e-2	2
2320		min	.071	3	-.014	2	0	3	0	2	5.88e-5	4	8.996e-3	3
2321	N1165	max	.069	2	-.013	3	0	6	0	2	4.118e-4	2	9.508e-3	2
2322		min	.066	3	-.014	2	0	3	0	2	2.793e-4	3	8.621e-3	3
2323	N1166	max	.064	4	-.013	3	0	2	0	2	7.038e-4	2	8.918e-3	2
2324		min	.061	3	-.014	2	0	3	0	2	4.734e-4	3	8.229e-3	3
2325	N1167	max	.059	4	-.013	3	0	2	0	2	8.93e-4	2	8.442e-3	2
2326		min	.056	3	-.014	2	0	3	0	2	5.989e-4	3	7.903e-3	4
2327	N1168	max	.055	4	-.013	3	0	2	0	2	8.96e-4	2	8.151e-3	2
2328		min	.052	3	-.014	2	0	3	0	2	6.006e-4	3	7.701e-3	4
2329	N1169	max	.05	4	-.013	3	0	2	0	2	7.303e-4	2	8.027e-3	2
2330		min	.047	3	-.014	2	0	3	0	2	4.901e-4	3	7.615e-3	4
2331	N1170	max	.046	4	-.013	3	0	6	0	2	4.474e-4	2	8.038e-3	2
2332		min	.043	3	-.014	2	0	3	0	2	3.014e-4	3	7.622e-3	4
2333	N1171	max	.042	4	-.013	3	0	6	0	2	1.992e-4	2	8.116e-3	2
2334		min	.039	3	-.014	2	0	3	0	2	1.356e-4	3	7.676e-3	4
2335	N1172	max	.087	2	-.013	3	0	6	3.81e-5	2	-1.152e-4	3	1.044e-2	2
2336		min	.082	3	-.014	2	0	3	2.551e-5	3	-1.815e-4	2	9.244e-3	3
2337	N1173	max	.087	2	-.013	3	0	6	2.486e-5	2	-6.654e-5	3	1.042e-2	2
2338		min	.082	3	-.014	2	0	3	1.684e-5	3	-1.084e-4	2	9.23e-3	3
2339	N1174	max	.073	2	-.013	3	0	6	0	2	5.225e-4	2	8.345e-3	2
2340		min	.069	3	-.014	2	0	3	0	2	3.524e-4	3	7.835e-3	4
2341	N1175	max	.077	2	-.013	3	0	6	0	2	4.256e-4	2	8.495e-3	2
2342		min	.073	3	-.014	2	0	3	0	2	2.881e-4	3	7.94e-3	4
2343	N1176	max	.081	2	-.013	3	0	6	0	2	3.533e-5	2	8.895e-3	2
2344		min	.077	3	-.014	2	0	3	0	2	2.489e-5	4	8.214e-3	3
2345	N1177	max	.053	4	-.013	3	0	6	0	2	3.36e-4	2	8.18e-3	2
2346		min	.05	3	-.014	2	0	3	0	2	2.274e-4	3	7.721e-3	4
2347	N1178	max	.06	4	-.013	3	0	2	0	2	5.534e-4	2	8.206e-3	2
2348		min	.057	3	-.014	2	0	3	0	2	3.725e-4	3	7.739e-3	4
2349	N1179	max	.066	2	-.013	3	0	6	0	2	4.726e-4	2	8.282e-3	2
2350		min	.063	3	-.014	2	0	3	0	2	3.19e-4	3	7.792e-3	4
2351	N1180	max	.07	2	-.013	3	0	6	0	2	5.501e-4	2	8.339e-3	2
2352		min	.066	3	-.014	2	0	3	0	2	3.707e-4	3	7.832e-3	4
2353	N1181	max	.074	2	-.013	3	0	6	0	2	4.766e-4	2	8.519e-3	2
2354		min	.07	3	-.014	2	0	3	0	2	3.22e-4	3	7.957e-3	4
2355	N1182	max	.078	2	-.013	3	0	6	0	2	2.392e-4	2	8.961e-3	2
2356		min	.074	3	-.014	2	0	3	0	2	1.643e-4	3	8.258e-3	3
2357	N1183	max	.081	2	-.013	3	0	6	0	2	-5.733e-6	3	9.471e-3	2
2358		min	.077	3	-.014	2	0	3	0	2	-1.677e-5	2	8.597e-3	3
2359	N1184	max	.079	2	-.013	3	0	6	0	2	1.901e-5	5	9.586e-3	2
2360		min	.075	3	-.014	2	0	3	0	2	1.193e-5	4	8.673e-3	3
2361	N1185	max	.082	2	-.013	3	0	6	0	2	-5.782e-5	3	1.013e-2	2
2362		min	.078	3	-.014	2	0	3	0	2	-9.529e-5	2	9.037e-3	3
2363	N1186	max	.079	2	-.013	3	0	6	0	2	-2.033e-5	3	1.013e-2	2
2364		min	.075	3	-.014	2	0	3	0	2	-3.894e-5	2	9.034e-3	3
2365	N1187	max	.075	2	-.013	3	0	6	0	2	1.47e-4	2	9.836e-3	2
2366		min	.071	3	-.014	2	0	3	0	2	1.021e-4	4	8.84e-3	3
2367	N1188	max	.071	2	-.013	3	0	6	0	2	3.558e-4	2	9.354e-3	2
2368		min	.067	3	-.014	2	0	3	0	2	2.421e-4	3	8.519e-3	3
2369	N1189	max	.066	4	-.013	3	0	6	0	2	6.269e-4	2	8.847e-3	2
2370		min	.063	3	-.014	2	0	3	0	2	4.222e-4	3	8.181e-3	3
2371	N1190	max	.062	4	-.013	3	0	2	0	2	7.936e-4	2	8.449e-3	2
2372		min	.059	3	-.014	2	0	3	0	2	5.328e-4	3	7.909e-3	4



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC
2373	N1191	max	.058	4	-.013	3	0	2	8.369e-4	2	8.198e-3	2
2374		min	.055	3	-.014	2	0	3	5.613e-4	3	7.734e-3	4
2375	N1192	max	.054	4	-.013	3	0	2	7.188e-4	2	8.088e-3	2
2376		min	.051	3	-.014	2	0	3	4.824e-4	3	7.657e-3	4
2377	N1193	max	.05	4	-.013	3	0	2	5.354e-4	2	8.068e-3	2
2378		min	.047	3	-.014	2	0	3	3.601e-4	3	7.643e-3	4
2379	N1194	max	.049	4	-.013	3	0	6	3.686e-4	2	8.131e-3	2
2380		min	.046	3	-.014	2	0	3	2.489e-4	3	7.687e-3	4
2381	N1195	max	.067	2	-.013	3	0	6	6.714e-4	2	8.321e-3	2
2382		min	.063	3	-.014	2	0	3	4.514e-4	3	7.819e-3	4
2383	N1196	max	.07	2	-.013	3	0	6	5.286e-4	2	8.669e-3	2
2384		min	.067	3	-.014	2	0	3	3.567e-4	3	8.061e-3	4
2385	N1197	max	.073	2	-.013	3	0	6	2.449e-4	2	9.278e-3	2
2386		min	.07	3	-.014	2	0	3	1.683e-4	3	8.468e-3	3
2387	N1198	max	.075	2	-.013	3	0	6	3.536e-4	2	8.868e-3	2
2388		min	.071	3	-.014	2	0	3	2.404e-4	3	8.196e-3	3
2389	N1199	max	.072	2	-.013	3	0	6	5.178e-4	2	8.55e-3	2
2390		min	.068	3	-.014	2	0	3	3.494e-4	3	7.979e-3	4
2391	N1200	max	.062	4	-.013	3	0	2	7.439e-4	2	8.264e-3	2
2392		min	.059	3	-.014	2	0	3	4.995e-4	3	7.779e-3	4
2393	N1201	max	.056	4	-.013	3	0	2	6.439e-4	2	8.149e-3	2
2394		min	.053	3	-.014	2	0	3	4.326e-4	3	7.7e-3	4
2395	N1202	max	.068	2	-.013	3	0	6	5.407e-4	2	8.833e-3	2
2396		min	.065	3	-.014	2	0	3	3.648e-4	3	8.172e-3	3
2397	N1203	max	.068	2	-.013	3	0	6	-7.907e-6	3	-2.972e-5	6
2398		min	.065	3	-.014	2	0	2	-1.087e-5	2	-5.617e-5	2
2399	N1204	max	.037	4	-.013	3	0	6	1.146e-5	2	-4.201e-5	3
2400		min	.034	3	-.014	2	0	5	5.665e-6	6	-6.553e-5	2
2401	N1205	max	.086	2	-.013	3	0	6	-4.146e-5	3	2.632e-4	2
2402		min	.082	3	-.014	2	0	5	-6.023e-5	2	1.803e-4	3
2403	N1206	max	.087	2	-.013	3	0	6	-9.772e-6	3	1.16e-4	2
2404		min	.082	3	-.014	2	0	4	-1.506e-5	2	8.076e-5	4
2405	N1207	max	.044	4	-.013	3	0	6	1.476e-5	2	-4.783e-5	3
2406		min	.041	3	-.014	2	0	5	8.923e-6	3	-7.56e-5	2
2407	N1208	max	.06	4	-.013	3	0	6	-2.189e-6	4	-4.62e-5	3
2408		min	.057	3	-.014	2	0	2	-3.467e-6	6	-7.569e-5	2
2409	N1209	max	.081	2	-.013	3	0	6	0	2	9.059e-5	2
2410		min	.076	3	-.014	2	0	5	0	2	6.305e-5	4
2411	N1210	max	.074	2	-.013	3	0	6	0	2	-2.558e-5	3
2412		min	.071	3	-.014	2	0	5	0	2	-4.692e-5	2
2413	N1211	max	.068	4	-.013	3	0	6	0	2	-2.425e-4	3
2414		min	.066	3	-.014	2	0	2	0	2	-3.735e-4	2
2415	N1212	max	.064	4	-.013	3	0	6	0	2	-4.359e-4	3
2416		min	.061	3	-.014	2	0	2	0	2	-6.646e-4	2
2417	N1213	max	.059	4	-.013	3	0	6	0	2	-5.607e-4	3
2418		min	.056	3	-.014	2	0	2	0	2	-8.521e-4	2
2419	N1214	max	.055	4	-.013	3	0	6	0	2	-5.62e-4	3
2420		min	.052	3	-.014	2	0	2	0	2	-8.535e-4	2
2421	N1215	max	.05	4	-.013	3	0	6	0	2	-4.521e-4	3
2422		min	.047	3	-.014	2	0	2	0	2	-6.871e-4	2
2423	N1216	max	.046	4	-.013	3	0	6	0	2	-2.659e-4	3
2424		min	.043	3	-.014	2	0	2	0	2	-4.058e-4	2
2425	N1217	max	.041	4	-.013	3	0	6	0	2	-1.072e-4	3
2426		min	.038	3	-.014	2	0	5	0	2	-1.652e-4	2
2427	N1218	max	.087	2	-.013	3	0	6	-2.79e-5	3	2.209e-4	2
2428		min	.082	3	-.014	2	0	5	-4.062e-5	2	1.521e-4	3
2429	N1219	max	.087	2	-.013	3	0	6	-1.463e-5	3	1.475e-4	2





**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [ ...	LC	
2430		min	.082	3	-.014	2	0	4	-2.184e-5	2	1.026e-4	4	9.224e-3	3
2431	N1220	max	.072	2	-.013	3	0	6	0	2	-3.141e-4	3	8.341e-3	2
2432		min	.069	3	-.014	2	0	5	0	2	-4.802e-4	2	7.832e-3	4
2433	N1221	max	.077	2	-.013	3	0	6	0	2	-2.516e-4	3	8.487e-3	2
2434		min	.073	3	-.014	2	0	5	0	2	-3.865e-4	2	7.933e-3	4
2435	N1222	max	.081	2	-.013	3	0	6	0	2	6.769e-6	3	8.884e-3	2
2436		min	.077	3	-.014	2	0	5	0	2	1.94e-6	4	8.208e-3	4
2437	N1223	max	.053	4	-.013	3	0	6	0	2	-1.911e-4	3	8.178e-3	2
2438		min	.05	3	-.014	2	0	2	0	2	-2.933e-4	2	7.719e-3	4
2439	N1224	max	.06	4	-.013	3	0	6	0	2	-3.338e-4	3	8.203e-3	2
2440		min	.057	3	-.014	2	0	2	0	2	-5.091e-4	2	7.736e-3	4
2441	N1225	max	.066	2	-.013	3	0	6	0	2	-2.791e-4	3	8.278e-3	2
2442		min	.063	3	-.014	2	0	2	0	2	-4.272e-4	2	7.788e-3	4
2443	N1226	max	.07	2	-.013	3	0	6	0	2	-3.325e-4	3	8.333e-3	2
2444		min	.066	3	-.014	2	0	2	0	2	-5.08e-4	2	7.826e-3	4
2445	N1227	max	.074	2	-.013	3	0	6	0	2	-2.853e-4	3	8.511e-3	2
2446		min	.07	3	-.014	2	0	5	0	2	-4.373e-4	2	7.949e-3	4
2447	N1228	max	.077	2	-.013	3	0	6	0	2	-1.28e-4	3	8.951e-3	2
2448		min	.074	3	-.014	2	0	5	0	2	-2.007e-4	2	8.252e-3	3
2449	N1229	max	.081	2	-.013	3	0	6	0	2	5.534e-5	2	9.46e-3	2
2450		min	.077	3	-.014	2	0	5	0	2	3.872e-5	4	8.59e-3	3
2451	N1230	max	.079	2	-.013	3	0	6	0	2	2.342e-5	5	9.575e-3	2
2452		min	.075	3	-.014	2	0	5	0	2	1.552e-5	4	8.667e-3	3
2453	N1231	max	.082	2	-.013	3	0	6	0	2	1.339e-4	2	1.012e-2	2
2454		min	.077	3	-.014	2	0	5	0	2	9.313e-5	4	9.03e-3	3
2455	N1232	max	.079	2	-.013	3	0	6	0	2	7.708e-5	2	1.012e-2	2
2456		min	.075	3	-.014	2	0	5	0	2	5.368e-5	4	9.028e-3	3
2457	N1233	max	.075	2	-.013	3	0	6	0	2	-6.688e-5	3	9.827e-3	2
2458		min	.071	3	-.014	2	0	5	0	2	-1.091e-4	2	8.834e-3	3
2459	N1234	max	.07	2	-.013	3	0	6	0	2	-2.053e-4	3	9.345e-3	2
2460		min	.067	3	-.014	2	0	2	0	2	-3.175e-4	2	8.514e-3	3
2461	N1235	max	.066	4	-.013	3	0	6	0	2	-3.85e-4	3	8.838e-3	2
2462		min	.063	3	-.014	2	0	2	0	2	-5.878e-4	2	8.176e-3	4
2463	N1236	max	.062	4	-.013	3	0	6	0	2	-4.952e-4	3	8.443e-3	2
2464		min	.059	3	-.014	2	0	2	0	2	-7.533e-4	2	7.902e-3	4
2465	N1237	max	.058	4	-.013	3	0	6	0	2	-5.232e-4	3	8.195e-3	2
2466		min	.055	3	-.014	2	0	2	0	2	-7.951e-4	2	7.73e-3	4
2467	N1238	max	.053	4	-.013	3	0	6	0	2	-4.447e-4	3	8.087e-3	2
2468		min	.05	3	-.014	2	0	2	0	2	-6.761e-4	2	7.656e-3	4
2469	N1239	max	.049	4	-.013	3	0	6	0	2	-3.239e-4	3	8.068e-3	2
2470		min	.046	3	-.014	2	0	2	0	2	-4.934e-4	2	7.643e-3	4
2471	N1240	max	.049	4	-.013	3	0	6	0	2	-2.14e-4	3	8.131e-3	2
2472		min	.046	3	-.014	2	0	2	0	2	-3.274e-4	2	7.686e-3	4
2473	N1241	max	.066	2	-.013	3	0	6	0	2	-4.141e-4	3	8.315e-3	2
2474		min	.063	3	-.014	2	0	2	0	2	-6.309e-4	2	7.813e-3	4
2475	N1242	max	.07	2	-.013	3	0	6	0	2	-3.199e-4	3	8.661e-3	2
2476		min	.067	3	-.014	2	0	2	0	2	-4.895e-4	2	8.053e-3	4
2477	N1243	max	.073	2	-.013	3	0	6	0	2	-1.317e-4	3	9.268e-3	2
2478		min	.07	3	-.014	2	0	2	0	2	-2.065e-4	2	8.463e-3	3
2479	N1244	max	.074	2	-.013	3	0	6	0	2	-2.038e-4	3	8.858e-3	2
2480		min	.071	3	-.014	2	0	2	0	2	-3.149e-4	2	8.19e-3	4
2481	N1245	max	.071	2	-.013	3	0	6	0	2	-3.125e-4	3	8.542e-3	2
2482		min	.068	3	-.014	2	0	2	0	2	-4.782e-4	2	7.971e-3	4
2483	N1246	max	.061	4	-.013	3	0	6	0	2	-4.618e-4	3	8.26e-3	2
2484		min	.058	3	-.014	2	0	2	0	2	-7.026e-4	2	7.775e-3	4
2485	N1247	max	.056	4	-.013	3	0	6	0	2	-3.95e-4	3	8.148e-3	2
2486		min	.053	3	-.014	2	0	2	0	2	-6.011e-4	2	7.698e-3	4



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
2487	N1248	max	.068	2	-.013	3	0	6	0	2	-3.279e-4	3	8.824e-3	2
2488		min	.065	3	-.014	2	0	2	0	2	-5.017e-4	2	8.166e-3	4
2489	N1249	max	-.042	4	-.012	3	0	2	-1.39e-5	3	-5.878e-5	3	8.154e-3	2
2490		min	-.048	5	-.014	2	0	6	-1.917e-5	2	-7.869e-5	2	7.701e-3	4
2491	N1250	max	-.011	4	-.012	3	0	3	8.483e-6	2	-2.632e-5	3	8.091e-3	2
2492		min	-.016	5	-.014	2	0	6	3.547e-6	6	-3.544e-5	2	7.658e-3	4
2493	N1251	max	-.058	4	-.012	3	0	3	-4.566e-5	3	1.878e-4	2	9.678e-3	2
2494		min	-.065	5	-.014	2	0	6	-6.542e-5	2	1.287e-4	4	8.722e-3	3
2495	N1252	max	-.059	4	-.012	3	0	3	-1.106e-5	3	8.712e-5	2	9.631e-3	2
2496		min	-.066	5	-.014	2	0	6	-1.618e-5	2	5.997e-5	4	8.691e-3	3
2497	N1253	max	-.019	4	-.012	3	0	2	1.094e-5	2	-3.996e-5	3	8.101e-3	2
2498		min	-.024	5	-.014	2	0	6	6.216e-6	6	-5.478e-5	2	7.665e-3	4
2499	N1254	max	-.034	4	-.012	3	0	2	-6.798e-6	3	-5.803e-5	3	8.135e-3	2
2500		min	-.04	5	-.014	2	0	6	-8.77e-6	6	-7.933e-5	2	7.688e-3	4
2501	N1255	max	-.053	4	-.012	3	0	3	0	2	7.088e-5	2	9.578e-3	2
2502		min	-.06	5	-.014	2	0	6	0	2	4.897e-5	4	8.657e-3	3
2503	N1256	max	-.048	4	-.012	3	0	3	0	2	-6.305e-6	3	9.394e-3	2
2504		min	-.055	5	-.014	2	0	6	0	2	-2.225e-5	2	8.537e-3	3
2505	N1257	max	-.043	4	-.012	3	0	2	0	2	-1.538e-4	3	9.01e-3	2
2506		min	-.049	5	-.014	2	0	6	0	2	-2.468e-4	2	8.286e-3	3
2507	N1258	max	-.038	4	-.012	3	0	2	0	2	-2.872e-4	3	8.606e-3	2
2508		min	-.044	5	-.014	2	0	6	0	2	-4.487e-4	2	8.013e-3	4
2509	N1259	max	-.034	4	-.012	3	0	2	0	2	-3.765e-4	3	8.278e-3	2
2510		min	-.039	5	-.014	2	0	6	0	2	-5.819e-4	2	7.788e-3	4
2511	N1260	max	-.029	4	-.012	3	0	2	0	2	-3.837e-4	3	8.077e-3	2
2512		min	-.035	5	-.014	2	0	6	0	2	-5.887e-4	2	7.65e-3	4
2513	N1261	max	-.025	4	-.012	3	0	2	0	2	-3.153e-4	3	7.992e-3	2
2514		min	-.03	5	-.014	2	0	6	0	2	-4.797e-4	2	7.59e-3	4
2515	N1262	max	-.02	4	-.012	3	0	2	0	2	-1.924e-4	3	7.999e-3	2
2516		min	-.025	5	-.014	2	0	6	0	2	-2.883e-4	2	7.595e-3	4
2517	N1263	max	-.016	4	-.012	3	0	3	0	2	-7.942e-5	3	8.06e-3	2
2518		min	-.021	5	-.014	2	0	6	0	2	-1.153e-4	2	7.636e-3	4
2519	N1264	max	-.059	4	-.012	3	0	3	-3.121e-5	3	1.589e-4	2	9.647e-3	2
2520		min	-.066	5	-.014	2	0	6	-4.454e-5	2	1.09e-4	4	8.702e-3	3
2521	N1265	max	-.059	4	-.012	3	0	3	-1.625e-5	3	1.088e-4	2	9.632e-3	2
2522		min	-.066	5	-.014	2	0	6	-2.334e-5	2	7.479e-5	4	8.692e-3	3
2523	N1266	max	-.046	4	-.012	3	0	3	0	2	-2.158e-4	3	8.202e-3	2
2524		min	-.052	5	-.014	2	0	6	0	2	-3.335e-4	2	7.734e-3	4
2525	N1267	max	-.05	4	-.012	3	0	3	0	2	-1.66e-4	3	8.31e-3	2
2526		min	-.056	5	-.014	2	0	6	0	2	-2.617e-4	2	7.809e-3	4
2527	N1268	max	-.054	4	-.012	3	0	3	0	2	1.254e-5	3	8.586e-3	2
2528		min	-.061	5	-.014	2	0	6	0	2	5.904e-6	4	7.999e-3	4
2529	N1269	max	-.027	4	-.012	3	0	2	0	2	-1.455e-4	3	8.095e-3	2
2530		min	-.032	5	-.014	2	0	6	0	2	-2.161e-4	2	7.66e-3	4
2531	N1270	max	-.034	4	-.012	3	0	2	0	2	-2.386e-4	3	8.109e-3	2
2532		min	-.04	5	-.014	2	0	6	0	2	-3.621e-4	2	7.67e-3	4
2533	N1271	max	-.04	4	-.012	3	0	2	0	2	-2.008e-4	3	8.159e-3	2
2534		min	-.046	5	-.014	2	0	6	0	2	-3.057e-4	2	7.705e-3	4
2535	N1272	max	-.043	4	-.012	3	0	3	0	2	-2.282e-4	3	8.201e-3	2
2536		min	-.05	5	-.014	2	0	6	0	2	-3.524e-4	2	7.734e-3	4
2537	N1273	max	-.047	4	-.012	3	0	3	0	2	-1.891e-4	3	8.327e-3	2
2538		min	-.054	5	-.014	2	0	6	0	2	-2.967e-4	2	7.821e-3	4
2539	N1274	max	-.051	4	-.012	3	0	3	0	2	-7.947e-5	3	8.632e-3	2
2540		min	-.057	5	-.014	2	0	6	0	2	-1.314e-4	2	8.03e-3	4
2541	N1275	max	-.054	4	-.012	3	0	3	0	2	4.525e-5	2	8.981e-3	2
2542		min	-.06	5	-.014	2	0	6	0	2	3.103e-5	4	8.266e-3	3
2543	N1276	max	-.052	4	-.012	3	0	3	0	2	2.512e-5	5	9.061e-3	2



**Envelope Joint Displacements (Continued)**

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [ ...	LC	
2544		min	-0.059	5	-0.014	2	0	6	0	2	1.588e-5	4	8.319e-3	3
2545	N1277	max	-0.054	4	-0.012	3	0	3	0	2	1.e-4	2	9.435e-3	2
2546		min	-0.061	5	-0.014	2	0	6	0	2	6.879e-5	4	8.564e-3	3
2547	N1278	max	-0.052	4	-0.012	3	0	3	0	2	6.178e-5	2	9.433e-3	2
2548		min	-0.059	5	-0.014	2	0	6	0	2	4.272e-5	4	8.563e-3	3
2549	N1279	max	-0.048	4	-0.012	3	0	3	0	2	-3.478e-5	3	9.234e-3	2
2550		min	-0.055	5	-0.014	2	0	6	0	2	-6.538e-5	2	8.433e-3	3
2551	N1280	max	-0.045	4	-0.012	3	0	2	0	2	-1.294e-4	3	8.904e-3	2
2552		min	-0.051	5	-0.014	2	0	6	0	2	-2.091e-4	2	8.217e-3	3
2553	N1281	max	-0.04	4	-0.012	3	0	2	0	2	-2.53e-4	3	8.556e-3	2
2554		min	-0.046	5	-0.014	2	0	6	0	2	-3.963e-4	2	7.979e-3	4
2555	N1282	max	-0.037	4	-0.012	3	0	2	0	2	-3.318e-4	3	8.283e-3	2
2556		min	-0.042	5	-0.014	2	0	6	0	2	-5.138e-4	2	7.791e-3	4
2557	N1283	max	-0.032	4	-0.012	3	0	2	0	2	-3.567e-4	3	8.108e-3	2
2558		min	-0.038	5	-0.014	2	0	6	0	2	-5.48e-4	2	7.671e-3	4
2559	N1284	max	-0.028	4	-0.012	3	0	2	0	2	-3.095e-4	3	8.032e-3	2
2560		min	-0.033	5	-0.014	2	0	6	0	2	-4.716e-4	2	7.618e-3	4
2561	N1285	max	-0.024	4	-0.012	3	0	2	0	2	-2.31e-4	3	8.019e-3	2
2562		min	-0.029	5	-0.014	2	0	6	0	2	-3.485e-4	2	7.609e-3	4
2563	N1286	max	-0.023	4	-0.012	3	0	2	0	2	-1.587e-4	3	8.064e-3	2
2564		min	-0.028	5	-0.014	2	0	6	0	2	-2.363e-4	2	7.639e-3	4
2565	N1287	max	-0.04	4	-0.012	3	0	2	0	2	-2.801e-4	3	8.191e-3	2
2566		min	-0.047	5	-0.014	2	0	6	0	2	-4.33e-4	2	7.727e-3	4
2567	N1288	max	-0.044	4	-0.012	3	0	2	0	2	-2.106e-4	3	8.432e-3	2
2568		min	-0.05	5	-0.014	2	0	6	0	2	-3.305e-4	2	7.894e-3	4
2569	N1289	max	-0.047	4	-0.012	3	0	3	0	2	-8.006e-5	3	8.851e-3	2
2570		min	-0.053	5	-0.014	2	0	6	0	2	-1.335e-4	2	8.181e-3	4
2571	N1290	max	-0.048	4	-0.012	3	0	3	0	2	-1.307e-4	3	8.569e-3	2
2572		min	-0.054	5	-0.014	2	0	6	0	2	-2.095e-4	2	7.987e-3	4
2573	N1291	max	-0.045	4	-0.012	3	0	3	0	2	-2.077e-4	3	8.35e-3	2
2574		min	-0.051	5	-0.014	2	0	6	0	2	-3.249e-4	2	7.837e-3	4
2575	N1292	max	-0.036	4	-0.012	3	0	2	0	2	-3.147e-4	3	8.152e-3	2
2576		min	-0.042	5	-0.014	2	0	6	0	2	-4.843e-4	2	7.701e-3	4
2577	N1293	max	-0.03	4	-0.012	3	0	2	0	2	-2.772e-4	3	8.072e-3	2
2578		min	-0.036	5	-0.014	2	0	6	0	2	-4.218e-4	2	7.645e-3	4
2579	N1294	max	-0.043	4	-0.012	3	0	2	0	2	-2.147e-4	3	8.546e-3	2
2580		min	-0.049	5	-0.014	2	0	6	0	2	-3.377e-4	2	7.972e-3	4
2581	N1295	max	-0.042	4	-0.012	3	0	3	1.249e-5	2	6.214e-6	2	8.159e-3	2
2582		min	-0.048	5	-0.014	2	0	6	8.097e-6	3	-8.722e-6	6	7.704e-3	4
2583	N1296	max	-0.011	4	-0.012	3	0	3	-1.925e-5	3	1.529e-6	2	8.091e-3	2
2584		min	-0.016	5	-0.014	2	0	6	-2.581e-5	2	-4.519e-6	6	7.657e-3	4
2585	N1297	max	-0.059	4	-0.012	3	0	3	5.996e-5	2	-9.489e-5	3	9.668e-3	2
2586		min	-0.066	5	-0.014	2	0	6	4.09e-5	3	-1.549e-4	2	8.715e-3	3
2587	N1298	max	-0.059	4	-0.012	3	0	3	2.185e-5	2	-2.46e-5	3	9.626e-3	2
2588		min	-0.066	5	-0.014	2	0	6	1.55e-5	3	-4.908e-5	2	8.687e-3	3
2589	N1299	max	-0.019	4	-0.012	3	0	3	-1.817e-5	3	1.18e-5	2	8.102e-3	2
2590		min	-0.024	5	-0.014	2	0	6	-2.476e-5	2	1.645e-6	6	7.665e-3	4
2591	N1300	max	-0.034	4	-0.012	3	0	3	3.828e-7	2	1.776e-5	2	8.139e-3	2
2592		min	-0.04	5	-0.014	2	0	6	-1.261e-6	6	2.489e-6	6	7.69e-3	4
2593	N1301	max	-0.054	4	-0.012	3	0	3	0	2	-1.251e-5	3	9.568e-3	2
2594		min	-0.06	5	-0.014	2	0	6	0	2	-3.098e-5	2	8.648e-3	3
2595	N1302	max	-0.048	4	-0.012	3	0	3	0	2	6.577e-5	2	9.372e-3	2
2596		min	-0.055	5	-0.014	2	0	6	0	2	4.567e-5	4	8.518e-3	3
2597	N1303	max	-0.043	4	-0.012	3	0	3	0	2	2.914e-4	2	8.976e-3	2
2598		min	-0.049	5	-0.014	2	0	6	0	2	2.e-4	3	8.256e-3	3
2599	N1304	max	-0.038	4	-0.012	3	0	3	0	2	4.889e-4	2	8.565e-3	2
2600		min	-0.044	5	-0.014	2	0	6	0	2	3.29e-4	3	7.979e-3	4



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...]	LC		
2601	N1305	max	-0.034	4	-0.012	3	0	3	0	2	6.091e-4	2	8.239e-3	2
2602		min	-0.04	5	-0.014	2	0	2	0	2	4.062e-4	3	7.756e-3	4
2603	N1306	max	-0.029	4	-0.012	3	0	3	0	2	5.954e-4	2	8.048e-3	2
2604		min	-0.035	5	-0.014	2	0	2	0	2	3.943e-4	3	7.626e-3	4
2605	N1307	max	-0.025	4	-0.012	3	0	3	0	2	4.628e-4	2	7.977e-3	2
2606		min	-0.03	5	-0.014	2	0	2	0	2	3.037e-4	3	7.578e-3	4
2607	N1308	max	-0.021	4	-0.012	3	0	3	0	2	2.505e-4	2	7.999e-3	2
2608		min	-0.026	5	-0.014	2	0	6	0	2	1.611e-4	3	7.594e-3	4
2609	N1309	max	-0.016	4	-0.012	3	0	3	0	2	7.384e-5	2	8.062e-3	2
2610		min	-0.021	5	-0.014	2	0	6	0	2	4.401e-5	3	7.638e-3	4
2611	N1310	max	-0.059	4	-0.012	3	0	3	4.097e-5	2	-7.478e-5	3	9.638e-3	2
2612		min	-0.066	5	-0.014	2	0	6	2.799e-5	3	-1.246e-4	2	8.695e-3	3
2613	N1311	max	-0.059	4	-0.012	3	0	3	2.553e-5	2	-3.965e-5	3	9.625e-3	2
2614		min	-0.066	5	-0.014	2	0	6	1.781e-5	3	-7.176e-5	2	8.687e-3	3
2615	N1312	max	-0.046	4	-0.012	3	0	3	0	2	3.406e-4	2	8.198e-3	2
2616		min	-0.053	5	-0.014	2	0	6	0	2	2.27e-4	3	7.731e-3	4
2617	N1313	max	-0.05	4	-0.012	3	0	3	0	2	2.883e-4	2	8.288e-3	2
2618		min	-0.057	5	-0.014	2	0	6	0	2	1.953e-4	3	7.79e-3	4
2619	N1314	max	-0.054	4	-0.012	3	0	3	0	2	2.522e-5	5	8.558e-3	2
2620		min	-0.061	5	-0.014	2	0	6	0	2	1.622e-5	4	7.975e-3	4
2621	N1315	max	-0.027	4	-0.012	3	0	3	0	2	1.74e-4	2	8.098e-3	2
2622		min	-0.033	5	-0.014	2	0	2	0	2	1.103e-4	3	7.662e-3	4
2623	N1316	max	-0.035	4	-0.012	3	0	3	0	2	3.409e-4	2	8.107e-3	2
2624		min	-0.041	5	-0.014	2	0	2	0	2	2.231e-4	3	7.668e-3	4
2625	N1317	max	-0.04	4	-0.012	3	0	3	0	2	2.89e-4	2	8.157e-3	2
2626		min	-0.046	5	-0.014	2	0	6	0	2	1.898e-4	3	7.702e-3	4
2627	N1318	max	-0.044	4	-0.012	3	0	3	0	2	3.601e-4	2	8.186e-3	2
2628		min	-0.05	5	-0.014	2	0	6	0	2	2.399e-4	3	7.721e-3	4
2629	N1319	max	-0.047	4	-0.012	3	0	3	0	2	3.228e-4	2	8.302e-3	2
2630		min	-0.054	5	-0.014	2	0	6	0	2	2.179e-4	3	7.8e-3	4
2631	N1320	max	-0.051	4	-0.012	3	0	3	0	2	1.643e-4	2	8.603e-3	2
2632		min	-0.058	5	-0.014	2	0	6	0	2	1.125e-4	4	8.007e-3	4
2633	N1321	max	-0.054	4	-0.012	3	0	3	0	2	-5.274e-7	3	8.957e-3	2
2634		min	-0.061	5	-0.014	2	0	6	0	2	-1.14e-5	2	8.245e-3	3
2635	N1322	max	-0.052	4	-0.012	3	0	3	0	2	1.679e-5	5	9.034e-3	2
2636		min	-0.059	5	-0.014	2	0	6	0	2	9.187e-6	4	8.296e-3	3
2637	N1323	max	-0.055	4	-0.012	3	0	3	0	2	-3.394e-5	3	9.418e-3	2
2638		min	-0.061	5	-0.014	2	0	6	0	2	-6.298e-5	2	8.549e-3	3
2639	N1324	max	-0.052	4	-0.012	3	0	3	0	2	-6.81e-6	3	9.413e-3	2
2640		min	-0.059	5	-0.014	2	0	6	0	2	-2.22e-5	2	8.546e-3	3
2641	N1325	max	-0.049	4	-0.012	3	0	3	0	2	1.079e-4	2	9.207e-3	2
2642		min	-0.055	5	-0.014	2	0	6	0	2	7.449e-5	4	8.409e-3	3
2643	N1326	max	-0.045	4	-0.012	3	0	3	0	2	2.507e-4	2	8.87e-3	2
2644		min	-0.051	5	-0.014	2	0	6	0	2	1.724e-4	4	8.187e-3	3
2645	N1327	max	-0.041	4	-0.012	3	0	3	0	2	4.346e-4	2	8.517e-3	2
2646		min	-0.047	5	-0.014	2	0	6	0	2	2.931e-4	3	7.947e-3	4
2647	N1328	max	-0.037	4	-0.012	3	0	3	0	2	5.408e-4	2	8.248e-3	2
2648		min	-0.043	5	-0.014	2	0	6	0	2	3.613e-4	3	7.762e-3	4
2649	N1329	max	-0.033	4	-0.012	3	0	3	0	2	5.57e-4	2	8.083e-3	2
2650		min	-0.038	5	-0.014	2	0	2	0	2	3.694e-4	3	7.65e-3	4
2651	N1330	max	-0.028	4	-0.012	3	0	3	0	2	4.585e-4	2	8.02e-3	2
2652		min	-0.034	5	-0.014	2	0	2	0	2	3.014e-4	3	7.608e-3	4
2653	N1331	max	-0.024	4	-0.012	3	0	3	0	2	3.182e-4	2	8.016e-3	2
2654		min	-0.029	5	-0.014	2	0	2	0	2	2.067e-4	3	7.606e-3	4
2655	N1332	max	-0.023	4	-0.012	3	0	3	0	2	1.955e-4	2	8.066e-3	2
2656		min	-0.029	5	-0.014	2	0	2	0	2	1.245e-4	3	7.64e-3	4
2657	N1333	max	-0.041	4	-0.012	3	0	3	0	2	4.494e-4	2	8.169e-3	2



**Envelope Joint Displacements (Continued)**

Joint	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [ ...	LC
2658		min	-.047	5	-.014	2	0	6	2.997e-4	3	7.709e-3	4
2659	N1334	max	-.044	4	-.012	3	0	3	3.624e-4	2	8.4e-3	2
2660		min	-.05	5	-.014	2	0	6	2.448e-4	3	7.867e-3	4
2661	N1335	max	-.047	4	-.012	3	0	3	1.723e-4	2	8.818e-3	2
2662		min	-.054	5	-.014	2	0	6	1.184e-4	4	8.152e-3	3
2663	N1336	max	-.048	4	-.012	3	0	3	2.437e-4	2	8.537e-3	2
2664		min	-.055	5	-.014	2	0	6	1.671e-4	4	7.961e-3	4
2665	N1337	max	-.045	4	-.012	3	0	3	3.508e-4	2	8.322e-3	2
2666		min	-.052	5	-.014	2	0	6	2.363e-4	3	7.814e-3	4
2667	N1338	max	-.036	4	-.012	3	0	3	4.941e-4	2	8.131e-3	2
2668		min	-.042	5	-.014	2	0	6	3.281e-4	3	7.683e-3	4
2669	N1339	max	-.031	4	-.012	3	0	3	4.056e-4	2	8.066e-3	2
2670		min	-.036	5	-.014	2	0	2	2.662e-4	3	7.64e-3	4
2671	N1340	max	-.043	4	-.012	3	0	3	3.736e-4	2	8.51e-3	2
2672		min	-.049	5	-.014	2	0	6	2.527e-4	3	7.942e-3	4
2673	N1345	max	.015	4	-.736	4	0	6	-4.049e-4	3	4.178e-3	3
2674		min	.012	5	-.769	2	-.001	5	-4.817e-4	4	3.267e-3	4
2675	N1346	max	.015	4	-.736	4	0	6	5.398e-4	5	4.155e-3	3
2676		min	.012	5	-.769	2	-.002	5	4.909e-4	3	3.257e-3	5
2677	N1347	max	-.035	4	-.735	4	0	6	9.41e-5	5	4.54e-3	3
2678		min	-.04	5	-.769	2	-.002	5	6.711e-5	3	3.82e-3	4
2679	N1348	max	-.036	4	-.735	4	0	6	-7.634e-5	5	4.521e-3	3
2680		min	-.04	5	-.769	2	-.002	5	-1.037e-4	3	3.814e-3	4